Change in Job and Marital Experiences and Change in Psychological Distress: A Longitudinal Study of Dual-Earner Couples

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Are changes in job quality more closely linked to changes in distress for men than for women? Conversely, are changes in marital quality more closely linked to changes in distress for women than for men? These questions were addressed in a longitudinal analysis of a random sample of 210 full-time employed dual-earner couples. Change over time in job role quality was significantly associated with change over time in distress, and the magnitude of the relationship differed little, if at all, by gender. In contrast, change over time in marital role quality was also associated with change in distress, but the magnitude of the association depended on gender. Among full-time employed married women, change in marital experience was more closely linked to change in distress than among their husbands.

The dual-earner family is the dominant family form in the United States today and for the foreseeable future (Hayghe, 1990). There has been much concern about the mental health consequences for men and women of this new family form (Kessler & McRae, 1982; Rosenfeld, 1980). As a result of taking on the role of employee in addition to their family roles, it was feared that women would be under increased strain, with serious mental health consequences (see Barnett, 1993, for a review). Concern has also been expressed that men married to employed wives will experience heightened psychological distress (Cleary & Mechanic, 1983; Rosenfeld, 1980). However, because of the “second shift” (Hochschild & Machung, 1989) and the presumed greater demands of this family form on women, it has generally been thought that the dual-earner family will take a higher toll on women’s than on men’s mental health.

Although primary concern is voiced about the cumulative or long-term effects of the dual-earner family form on mental health, few studies have addressed this issue directly. More specifically, scant empirical research has focused on the mental health consequences of variations over time in job role and marital role quality among women and men in dual-earner families (Repetti, Matthews, & Waldron, 1989; Rodin & Ickovics, 1990). In this article we examine gender differences in the relationships between change over time in job quality and marital quality and change over time in psychological distress among full-time employed men and women in a longitudinal analysis of a random sample of 210 dual-earner couples.

Most analyses of dual-earner couples have been cross sectional (Rapaport & Rapaport, 1976), and many have compared relative levels of particular stressors between husbands and wives. For example, recent findings suggest that employed mothers report higher levels of parental stress than do their husbands (Biernat & Wortman, 1991). Although such studies are valuable, their contribution to understanding gender effects in the relationship between role experiences and psychological distress is limited. Longitudinal analyses are needed.

Of the few longitudinal studies, most are limited by design to analyzing responses at a particular time (the posttest) after controlling statistically for their responses at an earlier time (the pretest) within only one gender (e.g., Waldron & Jacobs, 1989; Wethington & Kessler, 1989). These analyses provide little information about within-individual change over time. (In contrast, see Barnett, Marshall, & Singer [1992] and Willett [1988]). Establishing that persons who have decreasing job quality have increasing psychological distress, for example, even after controlling for prior levels of distress, shows that there is...
some relationship between change in job experiences and change in distress. However, such analyses consider only linear change in the independent variable. Thus, for example, a pattern of acceleration or deceleration might be ignored in such an analysis. These other techniques also do not take into account measurement error in the dependent variable. Neither can within-sex studies address the question of gender effects on these relationships. To our knowledge, no previous study has used an approach that can model simultaneous changes in predictors and an outcome to examine gender effects on the within-individual relationship between variations in job and marital quality and variation in distress in dual-earner couples.

Furthermore, few studies have focused on full-time employed couples—a rapidly growing proportion of all dual-earner couples, and one presumed to be especially vulnerable to stress-related health problems. Indications are that full-time employed couples may differ from those in which employment is less than full-time. To illustrate, among married women, the relationship between experiences in the employee role and distress may differ by full-time versus part-time employment (Thoits, 1982). Also, the distress of one spouse is related to the distress of the other (Barnett, Marshall, Raudenbush, & Brennan, 1993; Levenson & Gottman, 1983); therefore, the particular stressors experienced by husbands of full-time employed wives may differ from those experienced by husbands of women employed less than full-time. Moreover, it appears that when women are economically independent, the association between marital satisfaction and distress is attenuated among women and exacerbated among men (Cleary & Mechanic, 1983). Accordingly, the distress associated with a troubled marriage may be greater among men with full-time compared to those with part-time employed wives. Thus, it is questionable whether findings based on earlier samples in which a high proportion of wives were employed less than full-time can be readily generalized to those in which the wife is employed full-time. Furthermore, when prior studies have focused on dual-earner couples they have examined only selected occupations (Biernat & Wortman, 1991; Rapaport & Rapaport, 1976; for an exception, see Piotrowski & Katz, 1983). Thus, little information is available on representative samples of full-time employed dual-earner couples.

Recent methodological advances make it possible to take better advantage than was possible previously of the richness of couples' data for the study of the relationship between change over time in role quality and change over time in distress, and for the study of gender effects on this relationship. To illustrate, individuals and couples no doubt vary in their average level of job role and marital role quality as well as in their average level of distress (Bolger & Schilling, 1991). If we are to understand the relationship between change over time in role experiences and change over time in distress, the stable components of job role and marital role quality and distress need to be distinguished from the time-varying components. Moreover, distress is relational; the distress of one member of a marital dyad has been shown to be related to the distress of the other (Barnett et al., 1993; Hatfield, Cacioppo, & Rapson, 1992; Levenson & Gottman, 1983). Accordingly, change over time in the distress of one member of a marital dyad is most likely also related to change in the distress of the other. An analytic strategy that takes into account couple-level as well as individual-level predictors and time-varying as well as time-invariant predictors is, therefore, necessary. The analytic procedure we present, hierarchical linear modeling, takes into account both of the above factors.

In addition, the present analyses control for negative affectivity (NA), a stable, mood dispositional dimension that is thought to influence relations between self-reports of stressors and distress symptoms (Payne, 1988; Schroeder & Costa, 1984). Individuals high in NA—that is, in the stable, pervasive tendency to negative emotionality—compared with those low in NA, are: (a) more likely to experience distress and dissatisfaction; (b) more introspective and dwell more on their failures and shortcomings; c) tend to focus on the negative side of the world in general; and, therefore, d) have a less favorable self-view and are more dissatisfied with themselves and their lives” (Burke, Brief, & George, 1993, pp. 402-403). Hence, the relationship between perceived job conditions and marital experiences and self-reports of distress would “be inflated considerably by NA” (Burke et al., 1993, p. 403). Progress toward determining how much of the variance in distress is attributable to NA compared with perceptions of job and marital conditions can be made by controlling for NA. One recognized indicator of the NA construct (Watson & Clark, 1984) is the Trait Anxiety Scale (Spielberger, 1983), which we administered and used as a control in the following analyses.

Development of the Hypotheses

Change Over Time in Role Experiences

Change in job role quality over time was related to change in distress in a longitudinal study of employed women who varied in labor force commitment (Barnett et al., 1992). Importantly, however, marital and parental status moderated that relationship. For women who occupied at least one family role, there was no significant relationship between change in job experiences and change in distress. It is not known whether these relationships would emerge among full-time employed women.

Longitudinal data on employed men have indicated that mortality risk was associated with reports of persistent elevated job stress at two data points (House, Strecher, Metzner, & Robbins, 1986). Men with moderate to high levels of job tension at each of two data collections (3 years apart) were “three times as likely to die” during the study period (i.e., 9–12 years from the original data collection) “than men whose level of job pressure or tension was low on at least one interview point, even if high on the other” (p. 62). No data were presented on the men’s marital status, nor were data presented on the wives’ employment status. Thus, it was not possible to determine whether these relationships differed for men who also occupied a family role, or for men married to employed women compared with those married to nonemployed women, or to full-time employed compared with part-time employed women. As was true for women, no studies have estimated the relationship between change over time in marital quality and change over time in psychological distress for men.

Gender Effects

Hypotheses concerning the effect of gender on the relationship between change over time in job and marital experiences
and change over time in distress can be deduced from two competing hypotheses: the sex-role and the social-role hypotheses. Although these hypotheses concern the relationship between role occupancy and psychological outcome variables, their tenets can readily be applied to the relationship between role experiences and distress.

The sex-role hypothesis predicts that gender moderates the relationship between social roles and distress. It posits that the nature of role demands differs for men and women, so that, for example, the effect of being a partner or an employee is conditional on the sex of the role incumbent. By extension, the relationship between role quality and distress is hypothesized to differ by gender.

Support for the sex-role hypothesis comes from several sources. Most important, developmental theories suggest that boys and girls from an early age on are socialized to identify differentially with family and work roles. Females are socialized to view family roles as primary, whereas males are socialized to view the work role as primary. This early differential socialization is reinforced by cultural beliefs and structural factors. In particular, women but not men are held responsible for the quality of family experiences, and men’s identity more than women’s is thought to depend on their success at the workplace (Erikson, 1959). Elaborating on this formulation, identity theorists (Simon, 1992; Stryker, 1987; Thoits, 1992, 1993) postulate that although adults occupy several roles, the salience of their roles varies by gender. Potential gender differences in role salience are important because they result in differential vulnerability to role strain. More specifically, “strains in salient role domains are more threatening to well-being” than strains in less salient role domains (Simon, 1992, p. 26). Accordingly, change in marital experiences ought to have a greater impact on women’s than men’s psychological distress, whereas change in job experiences ought to have a greater impact on men’s than women’s psychological distress (Bernard, 1972; Kessler & McLeod, 1984; Simon, 1992; Stryker, 1987; Thoits, 1992; Wheaton, 1990).

In general, empirical support for these hypothesized gender differences has been relatively weak (Simon, 1992; Thoits, 1992). One possible explanation for this weakness is the failure of identity theorists to take into account profound changes in the experiences of today’s women. These changes are likely to affect current attitudes as well as socialization practices, especially with respect to the salience of the employee role.

Most employed women today work full-time all year and are as committed to the employee role as their male counterparts (Biely & Biely, 1989). Moreover, most mothers today are employed, and most young children are reared by working mothers (Barnett, 1993). Thus, most young girls today expect to be employed (as well as married) as adults. In addition, most men expect that their wives will be employed. The paid employee role is consequently a central component of the adult lives of women as well as men. Thus, it is reasonable to assume that, with respect to the employee role, there has been a softening in the rigid gender differentiation in socialization posited by the sex-role hypothesis.

This change of expectations about the employee role has not been matched by a change in expectations about the marital role. Married women still bear the primary responsibility for the management of the family. Moreover, women themselves, as well as the larger society, hold women, not men, responsible for the well-being of the family (Ferree, 1991).

Taking into account changes in current attitudes as well as in socialization for the employee role, the modified sex-role hypothesis leads to the prediction that gender will moderate the relationship between change in marital role experiences, but not job role experiences, and change in psychological distress over time.

The social-role hypothesis, in contrast, predicts a direct relationship between social roles and psychological distress outcomes, that is, gender does not moderate the relationship between social-role experiences and distress (Gore & Mangione, 1983). It posits that the stress-inducing or -ameliorating effects of a social role inhere in the role itself, regardless of the gender of the role incumbent. Differences between the role of female employee and male employee, for example, as well as those between wife and husband are assumed to be negligible. Therefore, the “benefits and liabilities of work, marriage, and other structured social experiences should be identical for all populations” (Gore & Mangione, 1983, p. 200). By extension, the relationship between change over time in role experiences and change over time in distress should not differ by gender.

Several empirical findings lend support to this hypothesis. For example, controlling for social-role membership eradicated the significant effect of sex on psychological distress (Aneshensel, Frerichs, & Clark, 1981; Gore & Mangione, 1983). In addition, with respect to social-role quality, previous analyses with this sample indicate that, after controlling for several gender-related covariates (full-time employment, occupational prestige, household income), gender had little effect on the cross-sectional association between job and marital experiences and psychological distress (Barnett, Brennan, Raudenbush, & Marshall, 1994; Barnett et al., 1993). On the basis of these findings, one would expect that the relationship between change in job and marital experiences should each be related to change in distress and that there should be no gender difference in these relationships. However, well-documented gender differences in responsibility for the emotional work of the marriage (Mederer, 1993) suggest that over time women may be more affected than men by changes in the quality of their marriages.

Combining the predictions based on modifications of both the sex-role and the social-role hypotheses, we hypothesized that the relationship between change in job experiences and change in distress would not vary by gender but that the relationship between change in marital experiences and change in distress would.

**Parental Status**

It is widely believed that employed married mothers, by virtue of their relatively high level of stress, are more vulnerable to mental health problems than are their husbands (Barnett et al., 1993; for a review of this literature, see McLanahan & Adams, 1987). For example, Cleary and Mechanic (1983) found that for employed mothers, but not employed fathers, parenthood was related to depression. Aneshensel et al. (1981), in a study of the relationship between the marital role and distress, reported that, after taking into account employment status, age,
and income, there was no effect of parent status. However, in the above studies, not all the employed women were employed full-time, and not all the men were married to full-time employed wives. Because of the possible association between parental status and psychological distress among full-time employed men and women in dual-earner couples, we include parental status as a control variable.

In sum, in this sample of 210 full-time employed dual-earner couples, we tested the following four hypotheses: 1. change over time in job role quality is negatively associated with change over time in psychological distress; 2. the relationship between change over time in job role quality and change over time in distress does not vary by gender; 3. change over time in marital role quality is negatively associated with change over time in psychological distress; 4. the relationship between change over time in marital role quality and change over time in distress varies by gender.

Method

Sample

The data for these analyses come from a three-wave data collection (over 2 years) of a random sample of 300 dual-earner couples residing in eastern Massachusetts, in which both spouses were employed full-time, and the men were between the ages of 25-40 at the first data collection (Fall of 1989—Spring of 1990). The sample was stratified on parental status; at the first wave, 60% (n = 180) of the sample were parents, 40% (n = 120) were not. The attrition rate across the three waves was 8%. The 210 couples (72%) who remained married and employed and who did not have a first child or a subsequent child over the 2-year study period constitute the sample for this analysis.

The sample was drawn from the town lists of all residents of two Boston-area towns. These towns were selected because they were socioeconomically diverse and included a large proportion of working women. (In one town, 70% of women aged 20–34 were employed in 1980, according to the U.S. Bureau of the Census [1980]). In the other, 75% of women aged 20–40 were employed in 1980, according to the U.S. Bureau of the Census [1980].) The participation rate among the eligible couples whom we were able to contact was 68%. (See Barnett & Marshall, 1993, for a complete description of the sampling procedures.)

Although the sample includes respondents with a range of educational attainment, the study sample is better educated than the people in the two towns from which the sample was drawn. Of the sample men, 73% had completed a bachelor's degree or more, compared with 58% of men, aged 25–44, in the two towns. Comparable figures for the women are 74% for the sample and 58% for the population. A higher refusal rate from working-class respondents, which these data suggest, is not uncommon in large, in-depth research studies.

The two towns that served as the sampling frame for this study are also better educated than the greater Boston area of which they are a part (only 44% of the men aged 25–44, and 42% of the women aged 25–44 in the Boston Greater Metropolitan Statistical Area have completed a bachelor's degree). In spite of these educational differences, the mean family income, for families with husband and wife employed, are similar: $71,139 for the two towns, $73,548 for the greater Boston area, and $76,953 for the sample (U.S. Bureau of the Census [1990]). To the extent that the results presented in this article may be affected by respondents' education or social class, the generalizability of the findings may be limited. The sample is, however, representative of population income levels for two-earner married couple families.

The population of these towns is overwhelmingly White, as is the sample we obtained. Thus, we were unable to examine race differences.

The actual racial composition of the entire sample was: 97% Caucasian, 1% Hispanic, 1% Black, and 1% Native American and other. Obtaining an analyzable sample of Black or Hispanic couples would have required a sampling design beyond the scope of the project.

Table 1 provides some descriptive statistics. On average, the men in the sample were 35.43 years (SD = 4.26 years), whereas the women's average age was 34.85 (SD = 4.81). The men and women, on average, had completed 16 years of schooling, that is, they completed a college degree (M = 16.26, SD = 2.34, and M = 16.17, SD = 2.14, for men and women, respectively). However, there was a wide range of educational attainment: Among the men, 29% had not completed 4 years of college, whereas 39% had some graduate education; among the women, 28% had not completed 4 years of college compared with 38% who had some postcollege education.

On average, the couples had been married 8.90 years (range = 1–22 years, SD = 5.45), and for couples with children, the average family size was 1.91 children (range = 1–4, SD = 0.70). Most of the couples (63%) were rearing preschool or school-age children: 40% had at least one preschooler in the home; 23% had at least one school-age child in the home. In contrast, only 16% had at least one toddler child in the home.

The majority of both men and women were employed in managerial/professional occupations (68% of the men and 71% of the women). Approximately one quarter of the women (25%) compared with less than 20% of the men (18%) were employed in technical/sales/administrative support occupations. Finally, more men than women (15% compared with 4%) were employed in either service/precision production/crafts/repair occupations or as operators or laborers.

Procedures

Participants were interviewed separately in their homes or offices by trained interviewers. The interval between interviews was approximately 1 year (12–15 months). The interviews took about 1.5 hr and covered many aspects of the men's and women's lives, including the rewards and concerns in their job, and marital roles, as well as measures of psychological distress. Prior to each interview the participants received a packet of forms to be filled out and returned to the interviewer. Each partner was instructed to complete the forms individually. Each couple received $25 for participating in each wave. All measures on which the following analyses are based were included in the face-to-face interview.

Measures

Psychological distress. Psychological distress was measured with two parallel scales, which are essentially frequency-of-symptoms measures —

1 Nine couples were excluded because at least 1 partner was unemployed for two of the three data collections; 5 couples left the geographical area; 12 couples had been divorced or separated; 64 couples had either a first child (n = 31) or a subsequent child (n = 33). Couples who had a child during the study period were excluded for two major reasons. First, to adequately capture variations in change in parent status, we would have to add the following three predictors and three complicated interaction terms to the already complex model. These additional terms are: whether the child is a first child or a subsequent child, and time since birth. Time since birth is important because the data collection periods were roughly 1 year apart. Therefore, a couple who had a child between, say, T1 and T2, might at T2 have a 1-month-old infant or a 12-month-old baby. In addition, we would need to include the interaction of Time Since Birth X First Child and Time Since Birth X Subsequent Child as well as the interaction between birth and change in employment status. Second, preliminary analyses with this set of variables indicated that change in parent status had no significant effect on change over time in distress.
To incorporate information about symptoms of depression (Derogatis, 1975), they had been bothered by each of 10 symptoms of anxiety and 14 symptoms of depression (Barnett et al., 1993). Participants indicated on a 5-point scale (that ranged from 0 = not at all to 4 = extremely) how often in the past week they had been bothered by each of these symptoms, parallel scales were constructed by matching items on their sample standard deviations. From each pair, the items were randomly assigned to each of the two scales, yielding two parallel scales with similar distributions. The characteristic positive skewness of the distributions was addressed through natural log transformations of each of the scales. In the interest of interpretability, the scales were adjusted to have means of 50 and standard deviations of 10. The scales are well correlated if the correlations for the items were well correlated with each other (r = .834). Construction of two parallel scales enabled the estimation of variance attributable to “true score” variation and measurement error, as described in detail below.

Role quality. According to previous research (Barnett et al., 1993, 1994; 1993) and pilot studies, we identified the rewarding and distressing aspects of men’s and women’s job and marital roles. On the basis of response frequency, we identified 32 job-reward and 28 job-concern items as well as 26 marital-reward and 26 marital-concern items. These scales were administered at each data collection.

Participants used a 4-point scale (that ranged from 1 = not at all to 4 = extremely) to indicate to what extent, if at all, each of the items was currently rewarding or of concern. For example, with respect to the marital role, participants were asked how rewarding was “enjoying the same activities” and how much of a concern was “your partner being critical of you.” With respect to the job role, participants were asked how concerning was “doing work you consider significant,” and how much of a concern was “limited opportunity for professional or career development.” Concern items were negatively weighted, and “reward” items were positively weighted in constructing the role-quality score, which was the weighted average of the item scores.

The role-quality score constituted our overall index of the quality of experience in a role. (See Barnett et al., 1993) for the job and marital role scales.) We calculated test–retest stability coefficients for approximately 10% of the sample (n = 64: 32 men and 32 women) who were re-interviewed within 3 months of their initial interview. For marital role quality, the test–retest stability coefficients were .94 and .89, for the men and women, respectively; for job role quality, the figures were .67 and .74.3

Occupational prestige. We used the code occupational prestige. This index uses the 1980 Census Three-Digit Occupation Code and assigns prestige values separately for each gender.

Education. This individual-level variable is the number of years of education that each respondent completed.

Household income per capita. For each data collection, we divided household income by the number of children in the home plus 2. Household income here is the sum of the two partners’ salaries plus their unearned income. Because the distribution of this variable is highly skewed, we use the natural log of per capita income, which we refer to as log income.

Table 1
Means and Standard Deviations of Selected Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Women</th>
<th></th>
<th>Men</th>
<th></th>
<th>Couple</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
<td>M</td>
<td>SD</td>
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<tr>
<td>Individual-level, time-invariant</td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Age</td>
<td>34.85</td>
<td>4.81</td>
<td></td>
<td></td>
<td>35.43</td>
<td>4.26</td>
</tr>
<tr>
<td>Occupational prestige</td>
<td>59.20</td>
<td>14.80</td>
<td></td>
<td></td>
<td>61.16</td>
<td>16.19</td>
</tr>
<tr>
<td>Education</td>
<td>16.17</td>
<td>2.14</td>
<td></td>
<td></td>
<td>16.26</td>
<td>2.34</td>
</tr>
<tr>
<td>Couple-level, time invariant</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Years together</td>
<td>59.20</td>
<td>4.81</td>
<td></td>
<td></td>
<td>61.16</td>
<td>16.19</td>
</tr>
<tr>
<td>Parental status</td>
<td>16.17</td>
<td>2.14</td>
<td></td>
<td></td>
<td>16.26</td>
<td>2.34</td>
</tr>
</tbody>
</table>

Years together. This couple-level variable is the absolute number of years the couple had been married or partnered (i.e., living together). Only 9 couples (3%) of the sample were partnered; 97% were married. For simplicity’s sake, therefore, we refer to marital role quality in describing the quality of men’s and women’s relationships with their partners.

Parental status. We created a dummy variable to indicate parental status (1 = has children, 0 = does not have children).

Employment status. For each data collection, we created a dummy variable (1 = full time, 0 = less than full time) to indicate full-time employment, defined as working more than 30 hr per week. At Time 2 (T2), 5% of the sample was employed less than 30 hr per week; at Time 3, the comparable figure was 10%. Between 1% and 2% were employed less than 20 hr at any one data collection.

N/A. NA was assessed with the Trait Anxiety Scale (Spielberger, 1983), a 10-item frequency-of-feelings scale. Using a 4-point Likert scale (that ranged from 1 = almost never to 4 = almost always), respondents are instructed to describe how they generally feel about such items as: “I am a steady person,” and “I worry too much over something that really does not matter.” Participants completed the Trait Anxiety Scale at Time 1 (T1) and T2 and we used the average of their scores as the measure of trait anxiety. The correlation between the two time points was .77. This figure is consistent with stability coefficients of between .73 to .86 in college populations over a 2-year period (Spielberger, 1983).

Analytic Overview

Hierarchical linear models provide a conceptual orientation and a flexible set of analytic techniques for studying psychological change in longitudinal studies. Such models have also been widely used in cross-sectional data on persons clustered within social settings such as classrooms or schools (see many examples in Bryk & Raudenbush, 1992; Raudenbush & Willms, 1991), countries (Mason, Wong, & Entwistle, 1983) and, more recently, when persons are paired within couples (Barnett et al., 1993). In this article, we combine the longitudinal hierarchical model for individual changes with the cross-sectional model for matched pairs for application in longitudinal studies of matched pairs.

2 The decision to combine the anxiety and depression scores into one scale was based on the following two criteria: (a) the alpha for the combined scale was .90; and (b) the pattern of correlations between each of the separate scales and the variables of interest was virtually identical.

3 A possible explanation for the relatively low test–retest stability coefficient for the job scores is that the re-interviews took place amidst general concern about the Massachusetts economy and massive layoffs in companies and industries in which many of the participants, their spouses, or their friends were employed.
Hierarchical models for individual change. Bryk and Raudenbush (1987) demonstrated how a hierarchical model could be formulated to address a number of longstanding problems in the measurement of change. The investigator first formulates a model for each individual’s growth or change. A common model would be a quadratic growth model having the form

\[ Y_i = \alpha_0 + \alpha_1(Y_i) + \alpha_2(\text{Quadratic})_i + e_i. \]  

Here \( Y_i \) is the outcome variable for Participant \( i \) measured at Time \( t \). It is often convenient to use orthogonal polynomial contrasts to represent the linear and quadratic components; these are represented by (Linear) \( i \) and (Quadratic) \( i \). Under such a specification, we have the following definitions:

\[ \alpha_0 \] is the mean outcome for Participant \( i \);
\[ \alpha_1 \] is the average linear rate of increase in \( Y \) for Participant \( i \) over the time period under study;
\[ \alpha_2 \] is the rate of acceleration in \( Y \) (the rate at which the linear rate is increasing); and
\[ e_i \] is a random, within-subject error commonly, though not necessarily, assumed normally distributed.

Equation 1 represents a within-subjects or Level 1 model. It defines for every participant three parameters \( (\alpha_0, \alpha_1, \alpha_2) \) that characterize that participant’s trajectory across time. This set of \( y \)s becomes the latent quantities of interest for each participant. A Level 2, or between-subjects model conceives these \( y \)s as multiple outcomes, to be explained by differences between persons in their background and environment. The average of the \( y \)s describes the population mean growth curve or change function; the variation in the \( y \)s about their average indicates the extent to which individual change functions vary around the mean change function. Bryk and Raudenbush (1987) used this framework to estimate the reliability of measures of status and change, to provide an unbiased estimate of the correlation of each \( y \), the extent to which couples vary in \( y \), and to study correlates of change. Raudenbush and Chan (1993) illustrated in addition how to specify time-varying covariates, that is, predictor variables that vary over time, by elaborating the Level 1 model.

Cross-sectional hierarchical models for matched pairs. Many cross-sectional studies of married couples aim to explain outcomes measured at the person level using covariates measured on persons and households. An appropriate model should incorporate the dependence that arises because of the nesting of persons within couples. If the same covariates are used to predict the female and male outcomes, a classical multivariate regression model can be used with estimation by means of ordinary least squares. The model is not appropriate, however, if different variables are used to predict the female outcome than those used to predict the male outcome or if data are missing for some members of some couples. In such cases, the assumptions of ordinary least squares are violated; a more flexible approach by means of generalized least squares is appropriate. Barnett et al. (1993) developed such an approach and extended it to include measurement error of the outcomes. Specifically, two parallel measures of psychological distress were constructed on the basis of interview responses of each member of each couple. Thus, for each couple, there were four outcome scores—two for the man and two for the woman. Each pair of outcomes measured a “true distress score,” and the purpose of the analysis was to account for variation in these true scores.

Combining the longitudinal model for individuals and the cross-sectional model for matched pairs. The data analyzed below involve a pair of parallel scores for each couple at each of three time points. Thus, a couple with complete data has 12 observations; 2 for each of three time points for each partner. To adapt the standard model for individual change (Equation 1) to our study requires a change function for each partner in a couple. Rather than having three change parameters per person, we shall specify six change parameters per couple. This can be accomplished in a variety of ways (see Raudenbush, Brennan, & Barnett, 1995, for a full discussion). In a simple preliminary analysis of our data, we estimated the two-level model described below.

Level 1 model. Variation within couples arises because of gender differences, changes over time, and Gender \( \times \) Time interactions. We therefore formulated the model

\[ Y_{it} = \beta_0 + \beta_1(lin)_{it} + \beta_2(quad)_{it} + \beta_3(sex)_{it} + \epsilon_{it}, \]  

where \( Y_{it} \) is observed Outcome (psychological distress) for Couple \( i \), with \( t = 1, \ldots, 12 \) outcomes per couple and \( i = 1, \ldots, 210 \) couples; \( \beta_0 \) is the mean psychological distress for Couple \( i \) over the 3 years of the study; \( (lin)_{it} \) is a linear contrast coded -1, 0, and 1 at Times 1, 2, and 3 of the study, respectively; \( \beta_1 \) is therefore the linear rate of change in psychological distress for Couple \( i \) during the 3 years of the study; \( (quad)_{it} \) is a quadratic contrast coded -1, 2, -1 at Times 1, 2, and 3, respectively, so that \( \beta_2 \) is the quadratic rate of change in psychological distress for Couple \( i \) and captures any tendency within Couple \( i \) for psychological distress to accelerate (e.g., change at an increasing rate) or decelerate (e.g., change at a declining rate); \( (sex)_{it} \) is coded .5 for women and -.5 for men, so that \( \beta_3 \) is the mean difference between the female and male partner on psychological distress within Couple \( i \) averaged over the 3 years of the study; \( (sex)_{it} \) is the product of the linear and sex contrasts, so that \( \beta_4 \) captures the female minus male difference in linear rates of psychological distress change during the 3 years of the study; \( (quad*sex)_{it} \) is the product of the quadratic and sex contrasts, so that \( \beta_5 \) captures the female minus male difference in quadratic rates of psychological distress change during the 3 years of the study (e.g., the female's distress may decelerate more than the male's); \( \epsilon_{it} \) is a measurement error assumed normally and independently distributed with a mean of 0 and variance \( \sigma^2 \).

Level 2 model. Equation 2 defines the change trajectories within a couple as a function of an average curve (a quadratic function characterized by \( \beta_0, \beta_1, \beta_2, \beta_3 \) for the 2 members of the couple plus a gender difference \( \beta_3 \) plus Gender \( \times \) Time interactions \( \beta_4, \beta_5 \)). Our preliminary baseline Level 2 model assumes simply that each of these parameters varies around a population average:

\[ \pi_p = \beta_p + \eta_p. \]  

where \( p \) indexes the change parameters; thus \( p = 0, 1, \ldots, 5 \). Of interest are the average values, \( \beta_p \), each \( \pi \), the extent to which couples vary in their change parameters (variance of the \( \eta_p \)) as well as the correlations between the \( y \)s.

Estimation of Equations 2 and 3 by means of maximum likelihood sets a context for interpreting the results to be discussed later. We found highly reliable variation between couples in their mean levels of distress (reliability of .960), linear rates of increase in distress (reliability of .662), and gender gaps in distress (reliability of .934). These substantial reliabilities imply that it should be possible to find measured covariates that help explain why some couples are more distressed than others, why some couples’ rates of distress are increasing more than others, and why, in some couples, the gap between the woman and the man in distress is larger than in other couples. We also found that partners’ level of distress were correlated at T1 (\( r = .26 \)) and that their rates of increase
in distress were quite correlated ($r = .42$). Thus, distress and change in distress must be viewed as relational: the profiles of psychological distress were quite correlated ($r = .42$). Thus, distress and change in quality of job and marital roles, on the one hand, and change over time in stress, controlling for exogenous covariates that might otherwise be confounded with job role and marital role quality.

To this model we first added a predictor representing the effect of NA on psychological distress (i.e., trait anxiety). The addition of NA has important effects on the variance of psychological distress as well as on the variance of the gender slope. For the psychological distress intercept, the variance is reduced from 41.5 to 21.2 or some 49%. This reduction demonstrates that a considerable proportion of the variation between the man and woman within a couple is accounted for by differences in NA.

By fitting this baseline model in which variance in psychological distress attributable to NA has been accounted for through the inclusion of an accepted measure of NA, we guard against finding spurious relationships between our predictors and psychological distress that may be accounted for by differences in NA. Also, we establish baseline variance estimates that can serve as denominators in assessing the effects of our explanatory models net of the effect of NA. The combination of controlling for NA in our baseline model and testing for relationships between changes in psychological distress and change in job role quality and marital role quality provides a strong model for establishing a relationship between these experiences and distress.

To this baseline model we then added predictors representing control variables and variables to address our primary research questions. In all, we included 15 predictor variables. Four of our constructs can vary over time, namely: job role quality, marital role quality, employment status, and log of per capita income. Predictors that change over time can be related to the outcome for two reasons: because changes in the predictor are related to changes in the outcome, and because the stable component of the predictor is related to the stable component of the outcome. To investigate the contributions of each of our time-varying predictors to both the changing and stable components of psychological distress, we divided each of these predictors (job role quality, marital role quality, employment status, and log of per capita income) into two components: an individual's mean level of each predictor averaged over the three time points (the stable component), and the deviation of that individual's value on that variable at a given time point from the individual's mean (the change component). For example, if an individual had three observations at each of three time points for a given variable, $x$, with values of 3, 4, and 5, this would be transformed into two variables: $x_{\text{average}}$ (the stable component), with a constant value of 4 for that person, and $x_{\text{change}}$ (the change component), which would take on values of $-1$, 0, and 1 at the three time points.

To the resulting 8 time-varying predictors we added 2 interaction terms: job role quality change $\times$ gender, and marital role quality change $\times$ gender. Finally, we added five time-invariant covariates viewed as exogenous to job and marital role: NA, age, occupational prestige, years together at Wave 1, and parental status at Wave 1.

In the framework of the hierarchical linear modeling program, those covariates that take on different values within a couple are added to the Level 1 or within-couples model (Equation 2), and those covariates that are invariant within couples are added to the Level 2 or between-couples model (Equation 3). Only 3 covariates are invariant within couples (average household income, years together at Wave 1, and parental status at Wave 1). Thus, these 3 were added to the Level 2 model with the remaining 8 predictors added at Level 1. All 15 of these predictors are viewed as having fixed coefficients, the only reasonable approach given that the random variation between couples is completely represented by the 6 coefficients in Equation 3 (i.e., with 12 records per couple there are enough degrees of freedom to estimate the 6 random effects plus the Level 1 error term). When the 15 covariates are added to Equations 2 and 3, we refer to these equations as constituting the explanatory model, as distinguished from the baseline model that does not include the covariates.

Results

Results of fitting the explanatory model are displayed in Table 2. Let us first consider hypotheses involving interactions with gender, for if the interactions are significant, main effects must be interpreted in conjunction with these interactions. We see that Hypothesis 2 (that the relationship between change in job role quality and change in distress does not vary by gender) can be sustained. The regression coefficient for gender, $\hat{\beta}_2$, did not differ significantly from 0 ($t = 0.17, ns$). There is no evidence that the relationship between change in job role quality and change in distress is different for women than it is for men. However, Hypothesis 4 (that the relationship between change in marital role quality and change in distress varies by gender) is confirmed, as indicated by $\hat{\beta}_4 = -3.0, SE = 0.91, t = -3.34$. This result indicates that women's level of psychological distress is more negatively related to change in marital role quality than men's level of psychological distress.

To get a sense for how confident we should be in our interpretation of these interactions, particularly for the finding of no interaction of job role quality and gender, we computed 95% confidence intervals for the interaction terms. These interaction terms represent the mean difference between male and female members of couples for each of the effects. The 95% confidence interval for the term representing the interaction of gender and job role quality is $-1.56$ to $1.93$; we are 95% confident that the population mean difference between men and women is no greater than 1.9; as another means for assessing the size of the possible difference between men and women, we standardized the coefficients in the confidence interval, yielding a range of $-0.11$ to $0.13$; thus we see that with 95% confidence the maximum mean difference in the coefficients is no more than 0.13 in standardized units. We repeated this analysis for the Marital Role Quality Change $\times$ Gender interaction. In this case, the 95% confidence interval on the original metric included values from $-1.24$ to $-4.79$. We are 95% confident that the population mean difference between men and women in the effect of marital role quality on distress is at least 1.24 and not more than 4.79 in the original metric. Expressed as standardized coefficients, the minimum difference is 0.10, and the maximum is 0.38.

Main effects can now be interpreted together with these interaction effects. We see a significantly negative relationship between change in job role quality and change in psychological distress overall, $\hat{\beta}_3 = -2.09, SE = .44, t = -4.80$, supporting Hypothesis 1. This relationship is similar for men and women, as indicated by the nonsignificant interaction mentioned above. We also see a significantly negative relationship between change in marital role quality and change in distress, $\hat{\beta}_4 = -2.46, SE = 0.46, t = -5.33$. However, this result must be interpreted in light of the significant interaction effect mentioned above. We see
that, for women, the effect of change in marital role quality on change in distress is $-2.46 + 0.5 \times (-3.04) = -3.98$, whereas for men the effect is $-2.46 - 0.5 \times (-3.04) = -0.94$. Thus, the negative impact of marital role quality on distress is significantly more pronounced for women than for men. This relationship is depicted in Figure 1. As marital role quality increases, distress decreases, but the rate of decrease is far more pronounced for women than for men. This relationship is conditional on the moderating effect of gender. Thus, support for Hypothesis 3, that change in marital role quality is negatively related to change in distress, is supported. However, the relationship is conditional on the moderating effect of gender.

**Effects of Covariates**

All of the estimates described so far are net of the effects of other covariates in the model. Although we used these covariates to minimize bias in testing our hypotheses, their relationships to distress are of some intrinsic interest. Table 2 shows significant negative effects of average job role quality and average marital role quality on average levels of distress. None of the other covariates (with the exception of trait anxiety, discussed above) had a significant relationship to distress. It must be emphasized that we have discussed only the direct effects of these covariates, net of the effects associated with change in job role quality, change in marital role quality, and gender. This does not imply that the covariates are unrelated to distress, because their effects could operate indirectly by affecting job role quality and marital role quality.

**Gender Differences**

Once all predictors were controlled, gender differences that did not appear in the baseline model emerged. Women were found to be significantly more distressed than men on average, $\beta_{30} = 1.25$, $SE = 0.52$, $t = 2.38$. There is, however, some evidence of a smaller linear rate of increase for women than for men, $t = -2.09$.

**Comparison Between Baseline and Explanatory Models**

The baseline model with NA gives estimates of the variance across couples in trajectories traced by partners controlling for the effect of NA on psychological distress (Table 3, Column 1). The explanatory model gives the estimates of variance across couples assuming that all covariates are held constant (Table 3, Column 2). Our hope is that by adequately specifying the important mechanisms of change in the model, residual variances across couples would diminish, perhaps substantially. Table 3 allows us to compare the variances for the six growth and gender parameters between our baseline model including only those parameters and NA and our explanatory model with all predictor variables included. Despite the reductions, significant variation in each of these parameters exists across couples. The largest reduction is seen in the reduction of the variance of psychological distress; some 26% of the variance is explained by the gender term itself is fundamentally unchanged by addition of our explanatory variables to the model.

**Discussion and Conclusions**

The main findings of this study of full-time employed, primarily middle class, White, married men and women in dual-earner couples are: (a) change over time in job role quality is negatively related to change over time in distress, and the magnitude of the relationship is not affected by gender; and (b)
change over time in marital role quality is negatively related to change over time in distress, but the magnitude of this effect is significantly more pronounced for women than for men.

For these full-time employed men and women alike, when job quality decreased, distress increased. When married women are employed full-time, they are as vulnerable as their husbands to increasing stress on the job. Similarly, when job quality improved over time, distress decreased comparably for men and women. Thus, full-time employed married women derive a mental health benefit from improvement in the quality of their jobs that, on the basis of past literature, women less fully employed appear not to enjoy.4

In a previous study (Barnett et al., 1992), with women who were employed less than full-time and who varied in marital status, the relationship between change over time in job experiences and change over time in distress was conditioned by marital status. Change in job experiences had a direct effect on distress among single, but not married, women. Being married buffered these less-than-full-time-employed women from the mental health consequences of deteriorating job situations. Part-time employment might reflect weaker commitment to the labor force than full-time employment. Speculatively, then, among married women the relationship between change in job experiences and change in distress might depend on full-time versus part-time labor force participation or strength of labor force commitment. It also is possible that the same factors might moderate the relationship between change over time in job role experiences and change over time in distress among employed married men.

As noted earlier, although proponents of the sex-role hypothesis have argued differently, our findings indicate that when commitment to the job role (as indexed by full-time employment and job tenure) is equivalent, the magnitude of the relationship between change in job quality and change in distress was not affected by gender, as predicted by identity theory. This finding supports the social-role hypothesis, that is, there is a direct relationship between role experiences and psychological distress.

The relationship between change in marital role quality and change in distress did, however, vary by gender, lending support to the sex-role hypothesis. If the quality of the marital relationship deteriorated over time, women's mental health suffered significantly more than did that of men. Conversely, if the quality

Table 3

<table>
<thead>
<tr>
<th>Random effect</th>
<th>Baseline model</th>
<th>Explanatory</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Intercept, $\tau_0$</td>
<td>21.16</td>
<td>15.62</td>
<td>-26.19</td>
</tr>
<tr>
<td>Linear, $\tau_{11}$</td>
<td>9.99</td>
<td>9.94</td>
<td>-0.50</td>
</tr>
<tr>
<td>Quadratic, $\tau_{13}$</td>
<td>23.63</td>
<td>21.36</td>
<td>-9.61</td>
</tr>
<tr>
<td>Gender, $\tau_g$</td>
<td>50.64</td>
<td>44.57</td>
<td>-11.99</td>
</tr>
<tr>
<td>Linear*Gender, $\tau_{41}$</td>
<td>20.23</td>
<td>17.83</td>
<td>-11.86</td>
</tr>
<tr>
<td>Quadratic*Gender, $\tau_{51}$</td>
<td>41.66</td>
<td>35.74</td>
<td>-14.21</td>
</tr>
</tbody>
</table>

4 Several cross-sectional studies have indicated that women who are employed part time do not derive the same mental health benefits enjoyed by women employed full time. Wethington and Kessler (1989), in a longitudinal study, found a decrease in distress over a 3-year period among married women who were housewives and increased their labor force participation to full-time but not part-time employment.
of the marital relationship improved over time, women's mental health benefited significantly more than men's. This finding suggests that women more than men may feel more responsible for the quality of their marriages.

It is, however, possible that these findings reflect differences in commitment to the marital role, rather than gender differences per se. In an exploratory analysis with a subsample \((N = 70 \text{ couples})\) in which a preliminary marital commitment scale was devised,\(^5\) the interaction effect of commitment on the relationship between change in marital quality and change in distress was significant \((B = -3.61, p < .05)\). Among men and women with high (but not low) commitment to the marriage, marital role quality improved over time, distress decreased; as marital role quality declined over time, distress increased.

It is, of course, possible that the findings reflect reverse directionality, that is, that as participants' distress increases, they experience their jobs and marriages more negatively. Although one cannot rule out this possibility, the Marital Role Quality \times Gender interaction makes this interpretation less appealing. To explain this effect, one would need a theory to explain why in men increased distress would be reflected only in the evaluation of their jobs but not of their marriages. Such a theory has far less appeal than a theory that proposes job and marital role quality as joint causes of distress.

If current trends toward collaborative marriages persist (Aburdene & Naisbitt, 1992), husbands may invest more of their energies into their marriages and as a result may feel as responsible for the quality of their marriages as do their wives. Thus, with time, as commitment to and responsibility for the marital relationship becomes more comparable for men and women, the moderating effect of gender may disappear.

Our data also shed light on the frequently reported correlations between spouse pairs on such mental health indicators as marital satisfaction (Hatfield et al., 1992; Levenson & Gottman, 1983). Longitudinal data were needed to sort out whether such correlations were attributable primarily to shared circumstances or reciprocity or to mate selection (Matthews et al., 1992). In this longitudinal analysis, there was a much stronger positive correlation between partners in the magnitude of change in distress over time than in the absolute level of distress at the first data collection. Increases or decreases in distress over time of one partner were mirrored in the changes in distress of the other. Thus, it appears that correlations reported between marital partners on mental health indicators are due largely to shared circumstances or reciprocal effects over time rather than to initial mate selection.

These findings suggest that theoretical models predicting the relationship between role conditions and distress outcomes need to be modified to reflect the fact that most individuals live in dyads and that the distress of one's partner is an important source of one's own distress. These effects may be particularly strong in longitudinal analyses. An illustrative example is the model predicting a relationship between job demands and mental health outcomes. As job demands increase over time, distress is predicted to increase. On the basis of the findings of this analysis, we predict that as the employee's distress increases, so too will that of his or her spouse, which will in turn increase the employee's distress. Thus, change over time in the employee's distress will be a function of both change over time in job demands and change over time in partner's distress.

After taking into account such individual-level predictors as age, education, occupational prestige, NA, and change in both job role and marital role quality, and such couple-level variables as household income, years together, and parental status, women in dual-earner couples report a significantly higher level of distress than do men. It is possible that other gender-related variables such as the stress associated with working in gender discriminatory environments account for women's excess psychological distress. Finally, it is important to remember that these couples were predominantly White and middle class, and the findings might, therefore, not generalize to full-time employed couples who vary in racial and social-class membership.

\(^5\) A subsample \((n = 70 \text{ couples})\) did complete the Spanier Marital Dysfunction Scale (Spanier, 1976), which contains the following two items thought to reflect commitment to the marital relationship: (1) How often do you discuss divorce, separation, or terminating your relationship? and (2) Do you ever regret that you married or lived together? Using the summed responses to these items \((a = .31)\) as an indicator of commitment, we estimated both the interaction effect of commitment and the interaction effect of Commitment \times Gender on the relationship between change in marital role quality and change in distress. The interaction effect of commitment was significant \((B = -3.61, p < .05)\); the relationship between change in partner role quality and change in distress varied by level of commitment to the marriage. We found the interaction effect of Commitment \times Gender was not significant. Therefore, among men and women with high commitment to the marriage, marital role quality declined over time, distress increased; as marital role quality improved over time, distress decreased. In contrast, among men and women with low commitment to the marriage, there was no relationship between change in marital role quality and change in distress.

References

CHANGE IN JOB AND MARITAL EXPERIENCES

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Call for Nominations

The Publications and Communications Board has opened nominations for the editorships of the *Journal of Experimental Psychology: Animal Behavior Processes*, the "Personality Processes and Individual Differences" section of the *Journal of Personality and Social Psychology*, the *Journal of Family Psychology, Psychological Assessment*, and *Psychology and Aging* for the years 1998–2003. Stewart H. Hulse, PhD; Russell G. Geen, PhD; Ronald F. Levant, EdD; James N. Butcher, PhD; and Timothy A. Salthouse, PhD, respectively, are the incumbent editors.

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