

Another Look at the Job Satisfaction–Life Satisfaction Relationship

Timothy A. Judge and Shinichiro Watanabe

The relationship between job satisfaction and life satisfaction has been heavily researched over the years. In spite of this research interest, results have not proved conclusive in demonstrating the causal nature of the relationship. In the present study, a causal model was hypothesized and tested that involved simultaneous consideration of cross-sectional and longitudinal effects between job and life satisfaction. This type of analysis has not previously been conducted and allows the strongest conclusions to date regarding the causality between these constructs. Results based on a national probability sample of workers indicated that job and life satisfaction were significantly and reciprocally related. The cross-sectional results suggested a relatively strong relationship between job and life satisfaction, but the longitudinal results suggested a weaker relationship over a 5-year period, particularly with respect to the effect of job satisfaction on life satisfaction. The meaning of these results in the context of past research on the job satisfaction–life satisfaction relationship is discussed.

Recently, Tait, Padgett, and Baldwin (1989) provided the first meta-analytic estimate of the relationship between job satisfaction and life satisfaction. Using correlations from 34 studies, Tait et al. (1989) estimated the average corrected correlation between the constructs to be .44. The authors concluded their review with this comment: “On the basis of the substantial relationship between job and life satisfaction documented here, further explanatory research of this nature is now clearly warranted” (p. 505). In a recent review of the literature, Rain, Lane, and Steiner (1991) held that although Tait et al.’s study was useful in providing an overall assessment of the job satisfaction–life satisfaction relationship, it did not address the direction of causality between the constructs. Rain et al. argued that more efforts investigating the causality between job and life satisfaction were needed.

Thus, despite extensive research, the critical question concerning what the direction of influence between job and life satisfaction is remains unanswered. The correlation estimated in Tait et al.’s (1989) meta-analysis suggests that a positive relationship exists, but this study provided no information regarding whether job satisfaction causes life satisfaction, life satisfaction causes job satisfaction, or the two constructs are mutually causative. A causal influence from life satisfaction to job satisfaction is supportive of the dispositional perspective (Judge & Hulin, *in press*; Judge & Locke, 1993; Staw, Bell, & Clausen,

1986; Staw & Ross, 1985), in which general affective states “spill over” onto evaluations of the job. Conversely, other researchers have argued that the dominant causal direction is from job satisfaction to life satisfaction (Rousseau, 1978) because of the importance of work to individuals (Near, Rice, & Hunt, 1978).

A review of past research on the job satisfaction–life satisfaction relationship reveals that the causal relationship between job and life satisfaction has been investigated using two distinct methodologies: cross-lagged correlations and nonrecursive models. Cross-lagged correlations, utilizing longitudinal data, have been used in two studies investigating the relationship between job and life satisfaction (Orpen, 1978; Schmitt & Mellon, 1980). Another study (Chacko, 1983) used frequencies of changes in job and life satisfaction. Schmitt and Mellon’s results suggested that life satisfaction causes job satisfaction. On the other hand, Orpen and Chacko concluded that their results supported the inference that job satisfaction causes life satisfaction. Limitations in the studies may explain the inconsistent results. First, the time period between the longitudinal measurements was relatively short for both Schmitt and Mellon’s and Orpen’s studies, which may have limited the validity of the causal inferences drawn (Markus, 1979). Second, the sample sizes were small and the samples of jobs also were relatively narrow (e.g., 73 South African managers in Orpen’s [1978] study), as Schmitt and Mellon also pointed out with respect to their study. Finally, the computational procedure used by Chacko yielded ambiguous results, supporting the spillover model for extrinsic satisfaction but not for intrinsic satisfaction. Conversely, his results supported a compensation model for intrinsic satisfaction but not for extrinsic satisfaction. Cumulatively, the conclusions one can draw from these results about the job satisfaction–life satisfaction relationship are very ambiguous; any confident conclusions about the relationship would appear impossible. Further caution in interpreting these results is warranted in light of Rogosa’s (1980) substantial criticism of cross-lagged correlations as a means of drawing causal conclusions.

Two studies have investigated the causality between job satisfaction and life satisfaction using nonrecursive models with cross-sectional data. Using three-stage least squares, Keon and

Timothy A. Judge, Department of Personnel and Human Resource Studies, Center for Advanced Human Resource Studies; Shinichiro Watanabe, Department of Organizational Behavior; New York State School of Industrial and Labor Relations, Cornell University.

An earlier version of this article was presented at the Annual Meeting of the Academy of Management in Atlanta, Georgia, August 1993. We thank Bob Bretz, Barry Gerhart, Ed Locke, and three anonymous reviewers for comments on an earlier version of this article.

Correspondence concerning this article should be addressed to Timothy A. Judge, Department of Personnel and Human Resource Studies, Center for Advanced Human Resource Studies, New York State School of Industrial and Labor Relations, Cornell University, 393 Ives Hall, Ithaca, New York 14853-3901.

McDonald (1982) concluded that job and life satisfaction were jointly determined. However, the authors acknowledged that a serious limitation in their study was that the exogenous variables specified in their system of equations were not theory driven. Most of the variables used to predict job and life satisfaction were facet satisfactions (e.g., satisfaction with intrinsic rewards, satisfaction with work environment, or satisfaction with advancement). This approach is controversial because it confounds the measurement of job satisfaction with the prediction of job satisfaction. Furthermore, there were no direct influences on life satisfaction, only job-related variables were chosen. This failure to embed the relationships in a network of relevant influences severely limits the confidence that can be placed in the results (L. R. James, 1991; L. R. James, Mulaik, & Brett, 1982).

Schmitt and Bedeian (1982) used LISREL and two-stage least squares to test the causal relationship between job satisfaction and life satisfaction. Consistent with Keon and McDonald (1982), the authors found a reciprocal relationship between job and life satisfaction. However, the influences were quite weak (betas of .11 and .16 for job satisfaction and life satisfaction, respectively). As with the studies mentioned previously, several limitations are apparent with Schmitt and Bedeian's study. First, as noted by the authors, the measurement of the constructs was imperfect (the job satisfaction measurement equation was underidentified). Second, the instruments used to predict job and life satisfaction were limited in scope. For example, facets of intrinsic factors were the only exogenous variables used to predict job satisfaction. Again, important influences on job satisfaction likely were omitted, making the results difficult to interpret. Although Schmitt and Bedeian's focus was not exclusively the nature of the job satisfaction–life satisfaction relationship but, rather, was to illustrate the use of nonrecursive techniques, these limitations do circumscribe the conclusions about job and life satisfaction that can be drawn from their study.

In summary, whereas there has been some research investigating the causal relationship between job satisfaction and life satisfaction, various limitations in the studies do not permit confident conclusions to be drawn regarding these influences. The five studies reviewed reached the following divergent conclusions: job satisfaction causes life satisfaction, life satisfaction causes job satisfaction, the two constructs are mutually causative, and the two constructs are weakly related. As a whole, these confusing results demonstrate the need for a study, designed to build on past work, that offers more definitive causal evidence regarding the relationship between job and life satisfaction. Particularly crucial in such a study would be the use of extensive controls derived from past theory and research and reliance on a combination of cross-sectional and longitudinal causal techniques, neither of which has been done to date.

Causal Model

Figure 1 shows that the hypothesized reciprocal relationship between job satisfaction and life satisfaction is modeled in two ways. First, a nonrecursive relationship between job and life satisfaction at Time 1 is hypothesized. Second, job satisfaction at Time 1 is hypothesized to influence life satisfaction at Time 2

(5 years later), and life satisfaction at Time 1 is hypothesized to influence job satisfaction at Time 2. Simultaneous testing of these relationships, cross-sectionally and longitudinally, has not been previously attempted; such testing should permit stronger conclusions about the nature of the job satisfaction–life satisfaction relationship.

Proper interpretation of the nonrecursive relationship between job satisfaction and life satisfaction requires that relevant influences on each construct have been included. There are two related means through which this can be accomplished. One way is to rely on influences that are suspected to exist on theoretical grounds. The other way is to use variables that past empirical research has identified as important influences. These latter influences may not always have what is recognized as a formal theory supporting their relationship to the criterion variable. The ideal situation would be to use variables that both theory and past research have identified as important. However, using this as a requirement for variable inclusion may leave very few variables in the causal model. As noted by L. R. James (1991), excluding potentially important variables presents severe problems in drawing causal inferences. Because our goal in the present study was to include relevant influences on job and life satisfaction, variables that either were suspected to be important on the basis of theoretical grounds or have been suggested as important by past research were included in the model. Although it is never possible to include all possible influences, we hoped that this strategy would decrease the likelihood that the causal relationship observed between job and life satisfaction was spurious (L. R. James, 1991).

The exogenous influences on job and life satisfaction are displayed in Figure 1. The justification for including these exogenous variables is explained below. Rather than search the relevant literatures in a piecemeal fashion, selecting an influence from one study and selecting another influence from another study, we thought it was better to rely on comprehensive frameworks for the selection of influences. Specifically, Diener's (1984) review of the subjective well-being literature served as the basis for determining what influences life satisfaction. As noted by Diener and by Wilson (1967), because of the nature of past research, analysis of what influences subjective well-being and life satisfaction must rely more on empirically identified influences than on theoretical influences. Thus, we used Diener's review because it is the most comprehensive review of the literature to date. In terms of job satisfaction, the situation was more promising with respect to deriving theoretical influences. Specifically, Hulin, Roznowski, and Hachiya's (1985) theoretically based model of job satisfaction served as the basis for selecting the relevant influences on job satisfaction (see also Hulin, 1991). We explain exogenous influences on life satisfaction below and then discuss relevant influences on job satisfaction.

Exogenous Influences on Life Satisfaction

Diener's (1984) review of past research on subjective well-being suggested a number of demographic influences on life satisfaction. Age was included in the model because Diener's review of recent evidence suggested that life satisfaction increases with age. Diener concluded that minorities generally have been

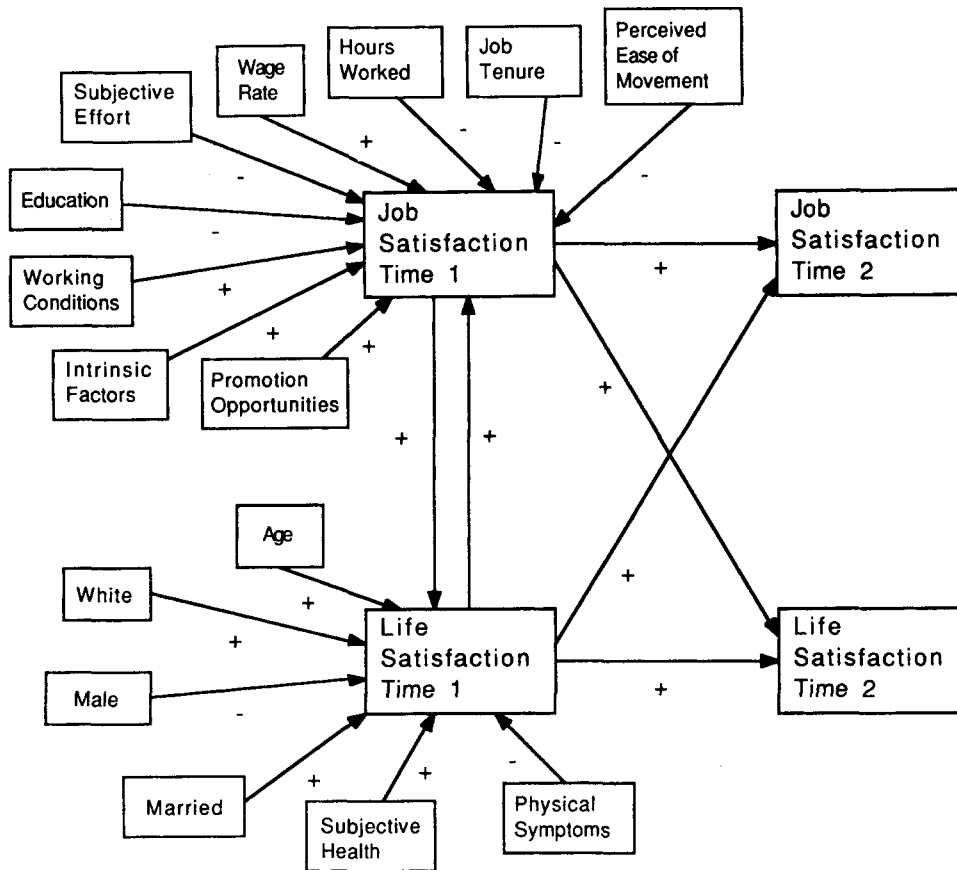


Figure 1. Hypothesized causal model.

found to have lower life satisfaction than Whites, perhaps because of urbanicity and lower socioeconomic status. Therefore, we also included race in the model. Diener (1984) suggested that “virtually all relationships [between marital status and life satisfaction] are positive” (p. 556). Accordingly, we expected that married individuals would have higher levels of life satisfaction than would unmarried individuals. It has also been suggested that women are more likely to be satisfied with their lives than are men, although the evidence is somewhat inconsistent (Diener, 1984). Therefore, we expected that women would report higher levels of life satisfaction than would men. Finally, Diener’s review clearly indicated that health increases life satisfaction. In reviewing the effect of health on subjective well-being, Brief, Butcher, George, and Link (1993) and Diener distinguished between objective health and subjective health. *Objective health* refers to the number of physical symptoms or health problems an individual is experiencing. *Subjective health* refers to how individuals subjectively assess their health. These will not always be the same. For example, subjective health may depend rather heavily on comparisons—comparisons with one’s own past and with other individuals one knows. On the other hand, objective health is not relative—reports of the symptoms should not subjectively vary across individuals. Because subjective health and objective health may actually reflect different dimensions of one’s health, it is important to assess each sepa-

rately. The links between these exogenous variables and life satisfaction are represented in Figure 1.

Exogenous Influences on Job Satisfaction

The theoretical underpinnings of Hulin et al.’s (1985) model of job satisfaction can be traced to March and Simon (1958), who hypothesized that affective responses to work-role memberships are a function of the discrepancy between contributions and inducements. The more inducements that employees receive relative to the contributions they invest, the more satisfied they are expected to be with their jobs. This theoretical framework and its explication by Hulin et al. should help provide justification for specific linkages in the model.

Hulin et al.’s (1985) model proposes that job satisfaction is a function of the balance between work-role inputs, or what the individual invests in the work role (e.g., education, time, and effort), in comparison with work-role outcomes, or what is received (e.g., pay, status, working conditions, or intrinsic factors). As outcomes received relative to inputs invested increase, work-role satisfaction is hypothesized to increase. In the present study, educational level, hours worked, and perceived effort were selected as representations of work-role inputs. We expected that, controlling for work-role outcomes, the more education the employee has achieved and the more hours worked

and effort put forth, the lower the predicted level of job satisfaction would be. We chose wage rate, intrinsic factors, promotion opportunity, and working conditions as manifestations of work-role outcomes, and we expected such outcomes to influence job satisfaction positively.

Hulin et al. (1985) further proposed that employees' direct costs and opportunity costs exert an effect on job satisfaction. In periods of labor oversupply (i.e., high unemployment), employees will perceive their inputs as less valuable because there are others in the labor market willing to contribute their inputs for a given level of outcomes and the opportunity cost of employees' work-roles subsequently declines (i.e., current work-role membership is less costly relative to other opportunities). Therefore, as unemployment rises, the subjective utility of inputs falls, reducing the perceived value of inputs relative to outcomes and, thus, increasing job satisfaction. The converse was also hypothesized, in which low unemployment (and many alternatives) reduces job satisfaction. Figure 1 shows that we expected perceived ease of movement (March & Simon, 1958) to be positively related to job satisfaction: Employees who believe it would be difficult to find a comparable job are more likely to be satisfied with their current level of outcomes.

Finally, Hulin et al. (1985) hypothesized that an employee's frame of reference, which they defined as *past experience with relevant outcomes*, is expected to influence how an employee perceives current outcomes that are received. In other words, workers become accustomed to a certain level of outcomes, and those experiences influence how they evaluate their outcomes. Figure 1 shows that, as a frame-of-reference variable, we expected job tenure to relate negatively to job satisfaction. Employees who have had past experience with a certain level of outcomes are more likely to be critical in evaluating current job outcomes.

Although Diener's (1984) and Hulin et al.'s (1985) frameworks served as guidelines for the derivation of exogenous influences on job satisfaction and life satisfaction in the present study, it should be noted that our article does not constitute a formal test of these frameworks. In suggesting a number of relevant influences on job and life satisfaction derived from past theory and research, Hulin et al. and Diener did not specify how these models should be tested. For example, it is possible that a proper test of Hulin et al.'s model requires that total work-role inputs are subtracted from work-role outcomes in predicting job satisfaction. In the present study, we used these frameworks to establish a network of relevant control variables, not for the purposes of specifically testing the validity of these frameworks. Explicit tests of these frameworks would probably require a greater array of variables, and perhaps different analytical approaches, than those used in the present study. However, by serving as theoretical bases for the inclusion of relevant control variables, the models were well suited for our purposes. Controlling for the influences on job and life satisfaction suggested by these frameworks makes it less likely that the causal interpretations drawn from the results are spurious.

A prominent area of research in the job satisfaction area is the dispositional perspective. Researchers have conceptualized and measured affective disposition by the constructs of positive affectivity or negative affectivity (Watson & Clark, 1984). Although some may view this as an additional causal variable

affecting job satisfaction, several points should be kept in mind with respect to the implications of affectivity for the present study. First, Diener (1990), Judge (1992), and Judge and Locke (1993) have demonstrated conceptually and empirically that measurements of affectivity and life satisfaction are highly related. Diener (1984, 1990) and Judge and Locke have argued that they may represent measurements of the same construct. Second, if there are satisfaction dispositions borne from early childhood experiences or genetic characteristics (Arvey, Bouchard, Segal, & Abraham, 1989; Staw et al., 1986), then these dispositions most likely influence life satisfaction rather than job satisfaction. It is unlikely, for example, that individuals are born dissatisfied with their jobs. Rather, it is more likely that individuals are born with the predisposition to be happy and satisfied with their lives in general than with their as-yet-occupied jobs. This rationale implies that life satisfaction is probably at least partly a dispositional construct. In short, it is not clear that measures of dispositional affectivity and life satisfaction are distinct (Judge & Locke, 1993), and even if these measures are distinct, dispositional effects on job satisfaction should operate through life satisfaction. Thus, failing to measure dispositional affectivity should not present severe problems in interpreting our results. Research on the dispositional source of job satisfaction should be viewed as supporting, rather than contradicting, the hypothesized link from life satisfaction to job satisfaction.

Method

Sample and Procedure

The data used in this study were obtained from the Quality of Employment Surveys (QES; Quinn & Staines, 1979). Two waves of data were collected: the first in the winter of 1972–1973 and the second in 1977. The QES utilized a national probability sample that was representative of the U.S. workforce in terms of demographic and occupational characteristics. Subjects were interviewed in their households in 1972–1973 (Time 1) and in 1977 (Time 2). The interviewer recorded the responses of subjects on a standardized questionnaire. The advantages of the QES are twofold. First, the representativeness of the sample offers greater generalizability than have samples used in past research on the relationship between job satisfaction and life satisfaction (Keon & McDonald, 1982; Orpen, 1978; Schmitt & Mellon, 1980). Second, the data on job and life satisfaction were collected longitudinally, facilitating causal interpretations (Vroom, 1966). We included only those individuals for which complete data were available (no missing values) in our analyses; this left 804 observations available for the model we tested. This sample of 804 individuals was representative of the larger sample with respect to the variables used in the analysis.

Measures

Job satisfaction. For Times 1 and 2, overall job satisfaction was measured by a five-item scale designed to assess overall satisfaction with one's job. Respondents indicated their degree of overall job satisfaction by responding to several statements about their jobs on a 4-point Likert-type scale (e.g., "All in all, how satisfied are you with your job") that ranged from *not at all satisfied* (1) to *very satisfied* (4). The coefficient alpha reliability estimate for this scale was .75 in Time 1 and .74 in Time 2.

Life satisfaction. For Times 1 and 2, life satisfaction was measured with a 12-item scale designed to assess overall life satisfaction. Respondents reacted to 10 bipolar adjectives describing their lives, indicating

their degree of agreement with each item along a 7-point Likert-type scale (e.g., my life is *miserable-enjoyable*, *useless-worthwhile*, or *discouraging-hopeful*). Additionally, respondents reacted to two general questions about their lives (e.g., "In general, how satisfied are you with the ways you're spending your life these days?"). The coefficient alpha for the composite scale was .89 for Times 1 and 2.

Intrinsic factors. Intrinsic factors were measured only at Time 1 with 12 questions assessing the degree to which intrinsic job characteristics were present in an employee's job. The particular questions included such characteristics as skill variety, autonomy, skill utilization, control over work and over work decisions from beginning to end, and learning new things on the job. These items were chosen to capture the meaning of the job characteristics model. Thus, the measurements bear similarity to Hackman and Oldham's (1975) measure of intrinsic characteristics. The coefficient alpha for this scale was .74.

Subjective health. Subjective health was measured by the health ladder at Time 1 (Suchman, Phillips, & Strieb, 1978). The measure consists of a picture of a ladder; the top of the seven-step ladder represents perfect health, and the bottom of the ladder represents total and permanent disability. Each respondent indicated which step was most descriptive of his or her present overall health.

Physical symptoms. As indicated earlier, in addition to global subjective measures of health, it is often important to measure specific physical symptoms. Therefore, a scale was formed consisting of items for which respondents indicated if they had experienced a number of physical conditions in the past year, including difficulty breathing, excessive fatigue, insomnia, heart palpitations, sweating hands, and excessive nervousness. The frequency of occurrence of each symptom was rated on a scale from 1 (*never*) to 4 (*very often*). The reliability of this scale was .80, confirming that health problems are often interrelated (Bultena & Oyler, 1971). Although this measure is still somewhat subjective in that the symptoms were self-reported, short of a medical examination it may be the most objective assessment of health available.

Perceived effort. Effort on the job was measured at Time 1 by a question asking individuals to indicate how much effort they put forth into their job beyond what was required of them; responses were made on a 4-point scale ranging from *none* (1) to *a lot* (4). Although this is a subjective measure, we expected conceptually perceived effort (representing the individual's own estimate of work-role inputs), rather than actual effort per se, to have the greatest effect on job satisfaction. Sixty-one percent of the individuals indicated that they put in as much effort as required, 6% indicated that they put in less than required, and 33% indicated that they put in more effort than was required.

Other variables. Age, race, sex, educational attainment, job tenure, hours worked per week, wage rate or salary, marital status, subjective estimate of working conditions, perceived ease of movement in finding a different job, and number of promotions were each measured by individual questions on the QES. For the purposes of the analysis, all of these variables were assessed only at Time 1.

Covariance Structure Model

The causal nature of the relationship between job satisfaction and life satisfaction, embedded in the causal model in Figure 1, was estimated using a covariance structure model. Covariance structure models, estimated in the present study with LISREL 7 (Jöreskog & Sörbom, 1989), allow nonrecursive model estimations for the purposes of drawing causal inferences. Although covariance structure models do not establish proof of causality, properly identified models do support inferences of causality (Hayduk, 1987; L. A. James & James, 1989; L. R. James et al., 1982; Jöreskog & Sörbom, 1989).

With covariance structure models, it is essential to first examine the overall fit of the model. Models that do not provide an adequate fit to the data may indicate that specific coefficient estimates in the model are biased (James et al., 1982). Several statistics provide information on the

fit of the model. The most widely used measure is the chi-square statistic. Perhaps the most conventional use of chi-square is to examine the ratio of chi-square relative to the degrees of freedom (χ^2/df). Other indexes that have been recommended include the goodness-of-fit index (GFI), the adjusted GFI, the root-mean-square residual (rmsr), the coefficient of determination (Jöreskog & Sörbom, 1989), the normed-fit index (Bentler & Bonnett, 1980), the Tucker-Lewis index (Marsh, Balla, & McDonald, 1988), and the parsimonious fit index (L. R. James et al., 1982; Mulaik et al., 1989). Although one must be cautious in interpreting all of these indexes because their underlying distributions are unknown, recent articles, such as those cited above, have provided information that is useful in making such interpretations. It is important when evaluating the adequacy of a model to consider the fit indexes cumulatively (L. A. James & James, 1989).

Hayduk (1987) encouraged researchers to sequester error variances of concepts based on manifest variables' known psychometric properties before estimating relationships between them. Accordingly, we fixed the error variances for each variable measured by multiple items at the variable's variance minus its reliability and multiplied by its variance. Because it was not possible to estimate measurement errors for single-item measures (e.g., wage rates or education), we did not assign an error component to these variables.

As shown in Figure 1, the relationship between job satisfaction and life satisfaction also was estimated using panel data. Like nonrecursive models, panel models do not prove causality. However, they do allow causal inferences to be drawn, allowing one "to exploit inter-temporal variation in such a way as to simplify causal inference" (Hannan & Young, 1977, p. 54).

An important advantage of covariance structure models that has not been previously exploited is the ability to test nonrecursive cross-sectional models and panel models simultaneously. This allows comparisons of causal predominance among job satisfaction and life satisfaction to be evaluated directly in model testing. Also, as noted by Gollob and Reichardt (1987), properly estimated longitudinal models are likely to satisfy more of the assumptions necessary for causal inference than are cross-sectional models. Combining cross-sectional and longitudinal effects into a simultaneous estimation is a relatively novel approach and should permit the strongest inferences to date regarding the causal relationship between job and life satisfaction.

Results

Consistent with Cudeck's (1989) recommendations, we used a covariance matrix to input data into the LISREL program. Table 1 provides the means, standard deviations, and intercorrelations of the variables used in the structural analysis.

Fundamental to the integrity of the structural model tested is the assumption that the measures of job satisfaction and life satisfaction are distinct (i.e., not essentially measures of the same construct). To ensure that the life satisfaction scale and the job satisfaction scale had sufficient discriminant validity from one another (Campbell & Fiske, 1959; Schwab, 1980), we performed confirmatory factor analysis on these scales for Time 1. Consistent with the procedure used by Brooke, Russell, and Price (1988), a model we estimated that constrained the 5 measures of job satisfaction and the 12 measures of life satisfaction to load on their respective constructs yielded strong and significant factor loadings (the average factor loading was .62; all were significant at the .01 level). Also, this model fit the data acceptably, $\chi^2(118, N = 925) = 333.94, p < x$; adjusted GFI = .94, rmsr = .04. Furthermore, this model fit significantly better than a single-factor model, $\Delta\chi^2(1, N = 925) = 518.56, p < .01$. On

Table 1
Means, Standard Deviations, and Intercorrelations of Variables Used in Causal Model

Variable	M	SD	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	
1. Job satisfaction—Time 1	19.16	5.04	—																			
2. Life satisfaction—Time 1	63.04	11.65	.41	—																		
3. Job satisfaction—Time 2	18.62	4.43	.38	.35	—																	
4. Life satisfaction—Time 2	62.37	10.96	.25	.51	.44	—																
5. Age	35.97	11.19	.14	.06	.07	.15	—															
6. Male	0.73	0.44	.03	-.04	.01	-.03	-.03	—														
7. White	0.93	0.25	.17	.06	.13	-.02	.03	.23	—													
8. Married	0.79	0.41	.05	.13	.03	.01	.08	.32	.18	—												
9. Subjective health	6.09	0.96	.14	.25	.04	.11	-.07	.07	.03	.06	—											
10. Education	4.58	1.33	.17	.07	.12	.08	-.03	.06	.10	-.01	.09	—										
11. Job tenure	4.51	1.60	.06	-.04	-.01	.01	.37	.03	-.03	.04	.04	-.02	—									
12. Hours worked per week	35.05	14.13	.09	.02	.04	-.02	.05	.37	.06	.25	.06	.04	.06	—								
13. Wage rate	4.96	3.36	.12	.02	.07	.08	.20	.40	.16	.26	.12	.30	.23	.34	—							
14. Ease of movement	2.93	1.57	.15	.12	.05	-.01	-.13	.04	.00	-.02	.13	-.02	-.11	.08	-.08	—						
15. Subjective effort	2.32	0.57	-.07	-.08	-.09	-.15	-.02	.02	-.04	.04	.06	.06	.01	.23	.15	.02	—					
16. Working conditions	3.12	0.95	.33	.28	.20	.15	.10	-.10	.02	-.03	.11	.08	.05	-.03	.02	.08	-.10	—				
17. Intrinsic factors	39.22	7.73	.51	.30	.21	.20	.18	.12	.15	.14	.07	.24	.19	.21	.28	.08	.03	.30	—			
18. Promotion opportunities	0.85	1.48	.03	-.09	.02	.03	.05	.08	.01	.00	-.05	.04	.01	.06	.16	-.14	-.03	-.08	.05	—		
19. Physical symptoms	33.03	5.33	.22	.32	.15	.14	-.06	.17	.02	-.02	.41	.12	.01	.02	.08	.06	-.07	.19	.14	.14	-.05	—

Note. Correlations greater than .08 are significant at the .05 level (two-tailed). Variables 5–19 were assessed only at Time 1.

the basis of these results, we concluded that the measures of job satisfaction and life satisfaction were distinct.

Having demonstrated that the measures of job and life satisfaction were distinct, we next proceeded to estimate the hypothesized structural model. The fit statistics from the hypothesized model estimation are displayed in the first column of data in Table 2. These fit statistics were within the range normally considered to indicate an acceptable fit. The second column of data in Table 2 shows the fit statistics for the null model, where all possible relationships among the variables are constrained to be equal to zero. Comparison of the fit statistics for the hypothesized and null models indicated that the hypothesized model fit the data significantly better than the null model. In addition to the information on the adequacy of the hypothesized model provided by the fit statistics, examination of the modification indexes obtained from the structural model estimation suggested that the model was correctly specified. Specifically, in the gamma matrix (the effects of the exogenous variables on job satisfaction and life satisfaction), only one modification index was highly significant. Freeing the coefficient from the male variable to job satisfaction at Time 1 resulted in a significant improvement in model fit but did not change the significance of any other coefficient in the model. This evidence suggests that the exogenous variables that were intended to influence job satisfaction but not life satisfaction, and vice versa, were correctly modeled. In summary, inspection of the fit statistics and modification indexes supported the hypothesis that the causal model in Figure 1 is an adequate representation of the data. As a result, it is appropriate to interpret the specific parameter estimates within the model.

Figure 2 provides the parameter estimates of the causal model. As hypothesized, job satisfaction at Time 1 significantly influenced life satisfaction at Time 1. The relatively large coefficient (.51) indicates that those employees satisfied with their jobs were much more likely to be satisfied with their lives, when we controlled for other factors influencing life satisfaction. Also as hypothesized, the reciprocal coefficient from life satisfaction to job satisfaction (.43) also was significant, and it was somewhat smaller in magnitude than the job satisfaction to life satisfaction coefficient. To determine whether or not these effects were significantly different, we estimated a model (Model A) constraining these reciprocal effects to be equal. As is shown in Table 2, constraining these coefficients to be equal did not significantly reduce the fit of the model. Thus, the reciprocal effects between job satisfaction and life satisfaction at Time 1 were not found to be significantly different in magnitude.

Also included in Figure 2 are the cross-lagged regression coefficients that were estimated simultaneously with the cross-sectional coefficients. The figure shows that both cross-lagged regression coefficients were significant but that the longitudinal effect of life satisfaction on job satisfaction was stronger than was the converse. To determine whether or not the lagged effect of life satisfaction on job satisfaction was significantly stronger than the lagged effect of job satisfaction on life satisfaction, we estimated a model constraining these two effects to be equal (Model B). As is shown in Table 2, the strengths of these effects were, in fact, significantly different: Life satisfaction had a significantly stronger lagged effect on job satisfaction than did job satisfaction on life satisfaction.

Table 2
Fit Statistics of Hypothesized and Alternative Models

Statistic	Model					
	Hypothesized	Null	A	B	C	D
χ^2/df	2.67	15.38	2.65	2.73	2.95	2.66
Increase in χ^2 over hypothesized model	NA	1,986.67*	0.01	10.54*	38.06*	1.84
Goodness-of-fit index (GFI)	.96	.69	.96	.96	.96	.96
Adjusted GFI	.94	.65	.94	.94	.93	.94
Root-mean-square residual	.05	.16	.05	.05	.05	.05
Coefficient of determination	.69	.00	.69	.68	.59	.63
Tucker-Lewis index	.88	NA	.89	.88	.86	.88
Normed fit index	.86	NA	.86	.85	.84	.85
Parsimonious fit index	.71	NA	.72	.71	.70	.71

Note. Model A = equating cross-sectional reciprocal effects; Model B = equating longitudinal reciprocal effects; Model C = equating both cross-sectional effects and longitudinal effects of job satisfaction to life satisfaction; Model D = equating both cross-sectional effects and longitudinal effects of life satisfaction to job satisfaction; NA = not applicable.

* $p < .01$.

It is also of note that the longitudinal coefficients were smaller than the coefficients obtained in the cross-sectional model. The largest difference between the cross-sectional and longitudinal effects was observed with respect to the effect of job satisfaction on life satisfaction. To determine if the job satisfaction to life satisfaction effect and the life satisfaction to job satisfaction effect differed significantly between the cross-sectional and longitudinal models, we estimated two different models (Models C and D) in which the cross-sectional and longitudinal effects were constrained to be equal. As is shown in Table 2 (Model C), equating the cross-sectional and longitudinal effects of job satisfaction to life satisfaction resulted in a significant decrease in fit. Conversely, with respect to the effect of life satisfaction on job satisfaction, constraining the cross-sectional and longitudinal effects to be equal did not result in a significant decrease in fit (see Table 2, Model D). In summary, the cross-sectional and longitudinal results suggested that the relationship between job satisfaction and life satisfaction is bidirectional and significant. Furthermore, the cross-sectional effects are stronger in magnitude than are the longitudinal effects, particularly with respect to the effect of job satisfaction on life satisfaction.

Discussion

The results of this study suggest that job satisfaction and life satisfaction are positively and reciprocally related. Life satisfaction significantly influenced job satisfaction, and job satisfaction significantly influenced life satisfaction. Results from the cross-sectional model suggest that the effects at one point in time are relatively strong and that the mutual effects are not significantly different. When one examines the results from the longitudinal analysis, job and life satisfaction remained significantly positively and mutually related. However, the effect of life satisfaction on job satisfaction was significantly stronger than the effect of job satisfaction on life satisfaction. Furthermore, both longitudinal effects were weaker than the cross-sectional effects. Several aspects of these findings deserve discussion.

It is not surprising that the longitudinal results showed weaker causal effects than did the cross-sectional results. Theoretically and statistically, the two analyses assess different aspects of the interrelationship between job satisfaction and life satisfaction. Theoretically, the cross-sectional results measure the nearly instantaneous effect of job satisfaction and life satisfaction on one another, whereas the longitudinal results measure effects over a considerable time interval (5 years). From a conceptual standpoint, one would not expect that these effects are equivalent in magnitude. Given that the mind is capable of processing information very quickly, the effect of one affective state on another probably occurs quite rapidly. Because the cognitive processes by which individuals process affective information may be similar (Porac, 1987), the strong reciprocal relationship between job satisfaction and life satisfaction may demonstrate the degree to which these cognitive processes are closely intertwined and spill over onto one another.

In contrast to the cross-sectional results, the longitudinal results revealed relatively small effect sizes. For example, the results suggest that a 1-unit increase in job satisfaction results in a .07 unit increase in life satisfaction 5 years later. Although it is tempting to dismiss these results as trivial, and as indicating that job satisfaction and life satisfaction are truly weakly related, the causal implications of these results must be kept in mind. Contrary to the conclusions of some researchers (e.g., L. R. James et al., 1982; Kenny, 1975), Gollob and Reichardt (1987) have pointed out that there is no one proper time lag after which causal effects should occur. Different time lags tell different things about the nature of the causal relationship between two variables. As an example, Gollob and Reichardt commented that taking two aspirin has an effect on a headache but that there is no one right or wrong time in which the effect occurs. The aspirin probably has a trivial effect 30 s after it is taken, a fairly strong effect 1 hr later, and a relatively small effect 4 hr later. Conceptually, the results of this study reveal that the causal effect of life satisfaction on job satisfaction is significant and moderate over a 5-year period and that the effect of job

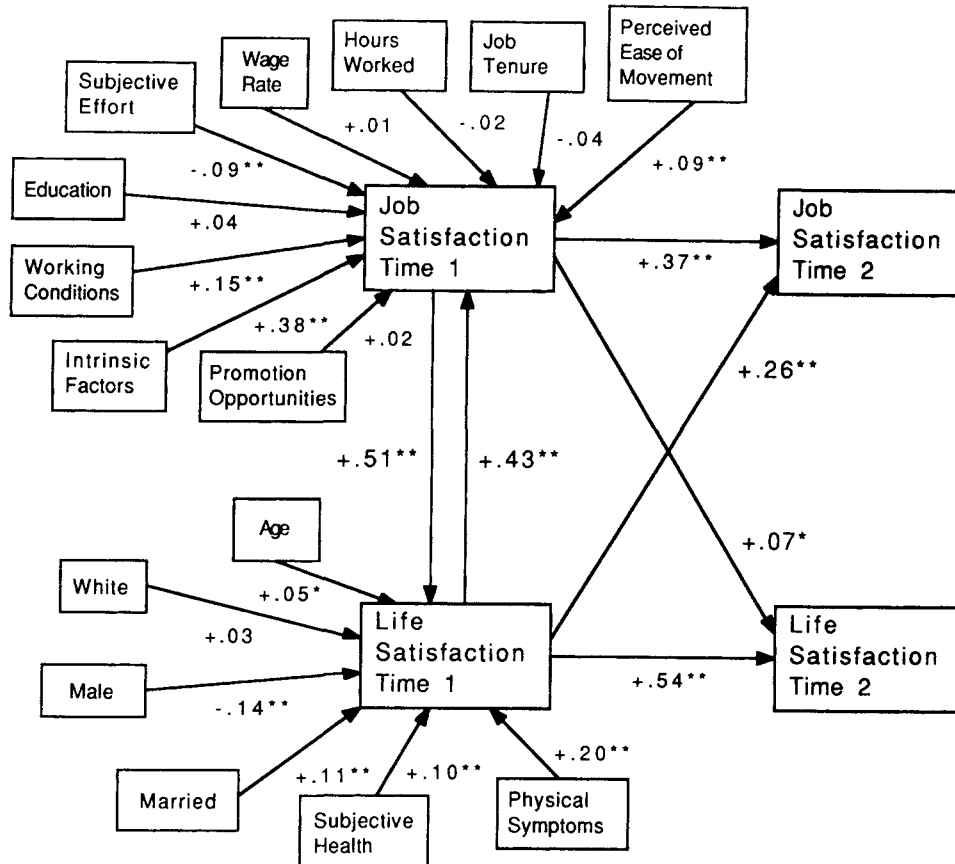


Figure 2. Causal model estimates. (* $p < .05$, one-tailed. ** $p < .01$, one-tailed.)

satisfaction on life satisfaction is also significant, but weak, over the same time interval. Because different time lags generate different effect sizes, it is quite possible that a shorter interval would generate stronger interrelationships between the two variables.

On the other hand, from a statistical standpoint, there is reason to be more confident in the validity of the longitudinal results than in the validity of the cross-sectional results. As noted by Gollob and Reichardt (1987), cross-sectional causal models are limited in their failure to meet three necessary restrictions. First, because values of a variable can only be caused by values of prior variables, cross-sectional models must assume instantaneous causal effects. However, causal effects are rarely perfectly instantaneous. Thus, cross-sectional causal models violate the principle of time-dependent effects to an unknown degree. Second, most cross-sectional models ignore the possibility of autoregressive effects, or the effect that a variable can have on itself. Because most attitudes are probably influenced by prior levels of the attitude, cross-sectional causal models omit a potentially important variable. Given dispositional research suggesting that prior job attitudes influence current job attitudes (Arvey et al., 1989; Pulakos & Schmitt, 1983; Staw et al., 1986; Staw & Ross, 1985), the assumption that there are no autore-

gressive effects inherent in cross-sectional models seems tenuous at best. Finally, cross-sectional models do not specify the time interval between the causal effects. Although causal effects can occur over numerous time intervals, the failure of cross-sectional models to specify any interval makes interpretation of the effect sizes ambiguous. Because our longitudinal results met all three of these principles, more confidence can be placed in the validity of our longitudinal results than in the validity of our cross-sectional results.

In short, we can be fairly confident that job satisfaction and life satisfaction are reciprocally and positively related, that the effect sizes are relatively modest over a 5-year time interval, and that the effect of life satisfaction on job satisfaction appears to be stronger than the effect of job satisfaction on life satisfaction over the same time interval. We can be less confident in the results suggesting that job satisfaction and life satisfaction are strongly related over a very short time period. This clearly points to a topic for future research. Using our research design, future researchers should simultaneously investigate the cross-sectional and longitudinal relationships between job satisfaction and life satisfaction while studying the longitudinal results over a shorter time period than a 5-year interval. It would be particularly useful to study time lags that are quite short (e.g., a

week or a month) as well as those somewhat longer in duration (e.g., a year).

Beyond those areas identified above, there are other areas for future research that will permit greater understanding of the nature of the job satisfaction–life satisfaction relationship. More research is needed to address the psychological causes of the reciprocal relationship between job satisfaction and life satisfaction. The present results show that the job satisfaction–life satisfaction relationship is positive and reciprocal and that these positive reciprocal effects are significantly different from zero. Interpretations not supported by these results are that job satisfaction and life satisfaction are generally unrelated (cf. Dubin, 1973; Gupta & Beehr, 1981), or negatively related (cf. Rousseau, 1978), or unidirectionally related (cf. Orpen, 1978; Schmitt & Mellon, 1980). However, knowing that the constructs are significantly positively and mutually related does not address the issue of why job satisfaction and life satisfaction are mutually causative. Although we can present no data on this subject here, we can offer several possibilities for future research. Perhaps the easier link to understand is that from job satisfaction to life satisfaction. Writers for many years have demonstrated the considerable impact of work on people's lives (Kornhauser, 1965). Thus, job satisfaction may influence life satisfaction because jobs are such a central part of people's lives. However, this does not explain psychologically how the process operates. Concepts such as work centrality and job importance may be helpful (although, we think, not completely) in this regard. Job importance is only one of potentially many psychological processes that may underlie the effect of job satisfaction on life satisfaction. More work on this issue is clearly needed.

Perhaps even less understood is the effect of life satisfaction on job satisfaction. Why does this relationship exist? Some have argued that it represents a dispositional effect (Staw et al., 1986; Staw & Ross, 1985), but, again, this suggestion alone does not inform us about the psychology of the process. Considerable research from the social cognition literature has suggested that individuals in positive affective states recall positive material more often (Bower, 1981). This suggests that individuals satisfied with their lives are more likely to be satisfied with their jobs because their general state of satisfaction influences their encoding, recall, and evaluation of job conditions and past job events. Given that positive affect and life satisfaction are closely related (Diener, 1984; Judge & Hulin, in press), judgments of one's job may be influenced by life satisfaction because how individuals feel about their lives influences how they process job information. A direct test of this interpretation seems warranted on the basis of our results.

Several limitations in our study need to be noted. First, it is possible that our causal model omitted relevant influences. For example, we argued earlier that consideration of dispositional effects should not undermine our results. Although there is evidence to suggest that widely used measures of dispositional affect are not distinct from measures of life satisfaction (Diener, 1990; Judge, 1992), we cannot directly address this question with our data. It is possible that dispositions formed through genetic characteristics (Arvey et al., 1989) or early childhood experiences (Staw et al., 1986) were omitted from our model. Second, the data analyzed in this study are nearly 2 decades old. Although we have no reason to believe that the age of the data

influenced the results of the study, our findings should be replicated using more recent data. Finally, although the selection of control variables for job satisfaction and life satisfaction was based on Diener's (1984) and on Hulin et al.'s (1985) reviews of the literature, we were not able to use all of the variables suggested by these authors. This limitation in our study suggests that proper caution should be exercised in interpreting the results observed as tests of these frameworks.

Conclusion

In summary, the results presented in this study, along with the methods used to derive them, should allow more confidence to be placed in the nature of the relationship between job satisfaction and life satisfaction. Overall, this relationship is positive and significant, and the constructs appear to mutually influence one another. The cross-sectional results suggest a strong bidirectional relationship that is equivalent in magnitude. The longitudinal results, which may be more valid, suggest a significant and moderate effect of life satisfaction on job satisfaction over a 5-year period and a significant, but relatively weak, effect of job satisfaction on life satisfaction over the same time interval. Beyond replication of the results, it seems that the most fruitful means for future research to build on these results is to investigate cognitive processes underlying the reciprocal relationships between job satisfaction and life satisfaction both at one point in time and over time.

References

- Arvey, R. D., Bouchard, T. J., Segal, N. L., & Abraham, L. M. (1989). Job satisfaction: Environmental and genetic components. *Journal of Applied Psychology, 74*, 187–192.
- Bentler, P. M., & Bonnett, D. G. (1980). Significance tests and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88*, 588–606.
- Bower, G. H. (1981). Mood and memory. *American Psychologist, 36*, 129–148.
- Brief, A. P., Butcher, A. H., George, J. M., & Link, K. E. (1993). Integrating bottom-up and top-down theories of subjective well-being: The case of health. *Journal of Personality and Social Psychology, 64*, 646–653.
- Brooke, P. P., Russell, D. W., & Price, J. L. (1988). Discriminant validation of measures of job satisfaction, job involvement, and organizational commitment. *Journal of Applied Psychology, 73*, 139–145.
- Bultena, G. L., & Oyler, R. (1971). Effects of health on disengagement and morale. *Aging and Human Development, 2*, 142–148.
- Campbell, D. T., & Fiske, D. W. (1959). Convergent and discriminant validity by the multitrait-multimethod matrix. *Psychological Bulletin, 56*, 81–105.
- Chacko, T. I. (1983). Job and life satisfactions: A causal analysis of their relationships. *Academy of Management Journal, 26*, 163–169.
- Cudeck, R. (1989). Analysis of correlation matrices using covariance structure models. *Psychological Bulletin, 105*, 317–327.
- Diener, E. (1984). Subjective well-being. *Psychological Bulletin, 95*, 542–575.
- Diener, E. (1990). *Challenges in measuring subjective well-being and ill-being*. Manuscript submitted for publication.
- Dubin, R. (1973). Work and nonwork: Institutional perspectives. In M. D. Dunnette (Ed.), *Work and nonwork in the year 2001*. Monterey, CA: Brooks/Cole.

- Gollob, H. F., & Reichardt, C. S. (1987). Taking account of time lags in causal models. *Child Development*, 58, 80-92.
- Gupta, N. R., & Beehr, T. (1981). Relationships among employees' work and nonwork responses. *Journal of Occupational Behavior*, 2, 203-207.
- Hackman, J. R., & Oldham, G. R. (1975). Development of the Job Diagnostic Survey. *Journal of Applied Psychology*, 60, 159-170.
- Hannan, M. T., & Young, A. A. (1977). Estimation in panel models: Results on pooling cross sections and time series. In D. R. Heise (Ed.), *Sociological methodology*. San Francisco: Jossey-Bass.
- Hayduk, L. A. (1987). *Structural equation modeling with LISREL: Essentials and advances*. Baltimore: Johns Hopkins University Press.
- Hulin, C. L. (1991). Adaptation, persistence, and commitment in organizations. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 2, pp. 445-505). Palo Alto, CA: Consulting Psychologists Press.
- Hulin, C. L., Roznowski, M., & Hachiya, D. (1985). Alternative opportunities and withdrawal decisions: Empirical and theoretical discrepancies and an integration. *Psychological Bulletin*, 97, 233-250.
- James, L. A., & James, L. R. (1989). Causal modeling in organizational research. In C. Cooper & I. Robertson (Eds.), *International review of industrial and organizational psychology* (pp. 371-404). New York: Wiley.
- James, L. R. (1991). Testing hypotheses in the context of the unmeasured variables problem. *Human Resource Management Review*, 1, 273-291.
- James, L. R., Mulaik, S. A., & Brett, J. M. (1982). *Causal analysis: Assumptions, models, and data*. Beverly Hills, CA: Sage.
- Jöreskog, K. G., & Sörbom, D. (1989). *LISREL 7: A guide to the program and applications*. Chicago: SPSS.
- Judge, T. A. (1992). The dispositional perspective in human resources research. In G. R. Ferris & K. M. Rowland (Eds.), *Research in personnel and human resources management* (Vol. 10, pp. 31-72). Greenwich, CT: JAI Press.
- Judge, T. A., & Hulin, C. L. (in press). Job satisfaction as a reflection of disposition: A multiple source causal analysis. *Organizational Behavior and Human Decision Processes*.
- Judge, T. A., & Locke, E. A. (1993). Effect of dysfunctional thought processes on subjective well-being and job satisfaction. *Journal of Applied Psychology*, 78, 475-490.
- Kenny, D. A. (1975). Cross-lagged panel correlations: A test for spuriousness. *Psychological Bulletin*, 82, 887-903.
- Keon, T. L., & McDonald, B. (1982). Job satisfaction and life satisfaction: An empirical evaluation of their interrelationship. *Human Relations*, 35, 167-180.
- Kornhauser, A. (1965). *Mental health of the industrial worker: A Detroit study*. New York: Wiley.
- March, J. G., & Simon, H. A. (1958). *Organizations*. New York: Wiley.
- Markus, G. B. (1979). *Analyzing panel data*. Beverly Hills, CA: Sage.
- Marsh, H. W., Balla, J. R., & McDonald, R. P. (1988). Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin*, 103, 391-410.
- Mulaik, S. A., James, L. R., Alstine, J. A., Bennett, N., Lind, S., & Stilwell, C. D. (1989). Evaluation of goodness-of-fit indices for structural equation models. *Psychological Bulletin*, 103, 430-445.
- Near, J. P., Rice, R. W., & Hunt, R. G. (1978). Work and extra-work correlates of life and job satisfaction. *Academy of Management Journal*, 21, 248-264.
- Orpen, C. (1978). Work and nonwork satisfaction: A causal-correlational analysis. *Journal of Applied Psychology*, 63, 530-532.
- Porac, J. F. (1987). The job satisfaction questionnaire as a cognitive event: First- and second-order processes in affective commentary. In K. M. Rowland & G. R. Ferris (Eds.), *Research in personnel and human resources management* (Vol. 5, pp. 51-102). Greenwich, CT: JAI Press.
- Pulakos, E. D., & Schmitt, N. (1983). A longitudinal study of a valence model approach for the prediction of job satisfaction of new employees. *Journal of Applied Psychology*, 68, 307-312.
- Quinn, R. P., & Staines, G. (1979). *Quality of Employment Survey, 1973-1977: Panel*. Ann Arbor, MI: University of Michigan, Inter-University Consortium for Political and Social Research.
- Rain, J. S., Lane, I. M., & Steiner, D. D. (1991). A current look at the job satisfaction/life satisfaction relationship: Review and future considerations. *Human Relations*, 44, 287-307.
- Rogosa, D. (1980). A critique of cross-lagged correlations. *Psychological Bulletin*, 88, 245-258.
- Rousseau, D. M. (1978). Relationship of work and nonwork. *Journal of Applied Psychology*, 63, 513-517.
- Schmitt, N., & Bedeian, A. G. (1982). A comparison of LISREL and two-stage least squares analysis of a hypothesized life-job satisfaction relationship. *Journal of Applied Psychology*, 67, 806-817.
- Schmitt, N., & Mellon, P. M. (1980). Life and job satisfaction: Is the job central? *Journal of Vocational Behavior*, 16, 51-58.
- Schwab, D. P. (1980). Construct validity in organizational behavior. In B. M. Staw & L. L. Cummings (Eds.), *Research in organizational behavior* (Vol. 2, pp. 3-43). Greenwich, CT: JAI Press.
- Staw, B. M., Bell, N. E., & Clausen, J. A. (1986). The dispositional approach to job attitudes: A lifetime longitudinal test. *Administrative Science Quarterly*, 31, 56-77.
- Staw, B. M., & Ross, J. (1985). Stability in the midst of change: A dispositional approach to job attitudes. *Journal of Applied Psychology*, 70, 469-480.
- Suchman, E., Phillips, B., & Strieb, G. (1978). An analysis of the validity of health questionnaires. *Social Forces*, 36, 223-232.
- Tait, M., Padgett, M. Y., & Baldwin, T. T. (1989). Job and life satisfaction: A reexamination of the strength of the relationship and gender effects as a function of the date of the study. *Journal of Applied Psychology*, 74, 502-507.
- Vroom, F. H. (1966). A comparison of static and dynamic correlational methods in the study of organizations. *Organizational Behavior and Human Performance*, 1, 55-70.
- Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive psychological states. *Psychological Bulletin*, 96, 465-490.
- Wilson, W. (1967). Correlates of avowed happiness. *Psychological Bulletin*, 67, 294-306.

Received October 30, 1991

Revision received April 5, 1993

Accepted April 6, 1993 ■