

VALIDITY OF PAY  
SATISFACTION  
QUESTIONNAIRE

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**Validity of the Dimensions of the Pay Satisfaction Questionnaire:  
Implications for Research and Practice**

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**RUNNING HEAD: PAY SATISFACTION QUESTIONNAIRE**

This paper has not undergone formal review or approval of the faculty of the ILR School. It is intended to make results of Center Research, conferences, and projects available to others interested in human resource management in preliminary form to encourage discussion and suggestions.

### **Abstract**

Pay satisfaction has long been a topic of interest to researchers and practitioners. However, only in the past several years have researchers begun to realize that pay satisfaction is a multidimensional construct. Heneman and Schwab (1979, 1985) are largely responsible for hypothesizing the multidimensionality of pay satisfaction, and their Pay Satisfaction Questionnaire (PSQ) is the only instrument available to measure dimensions of pay satisfaction. Recent research, however, has questioned the validity of the PSQ and the measurement of the dimensions of pay satisfaction. Although this research has been informative, it really has not constituted a formal test of the construct validity of the PSQ and its dimensions. Using a heterogeneous sample of employees from a large corporation, the present study found supportive evidence for the validity of the dimensions of the PSQ. The items from the PSQ loaded on their hypothesized dimensions, and the dimensions were empirically distinct. Furthermore, the dimensions displayed differing patterns of correlations with their hypothesized influences. Implications of the results for research and practice are discussed.

## **Validity of the Dimensions of the Pay Satisfaction Questionnaire:**

### **Implications for Research and Practice**

Compensation is an important area in personnel/human resources management because of its cost to organizations and its ability to influence individual behavior in organizations. Because the linkage between affect and behavior is well established (Hulin, 1991), employee compensation satisfaction is an important area of study. In fact, past research has suggested that pay satisfaction influences a number of behaviors, including turnover (Heneman & Schwab, 1979; Motowidlo, 1983; Weiner, 1980), voting for a union (Getman, Goldberg, & Herman, 1976; Schriesheim, 1978), and absenteeism (Weiner, 1980).

While there have been a number of studies investigating the determinants of pay satisfaction (Berger & Schwab, 1980; Dreher, 1981; Dyer & Theriault, 1976; Lawler, 1971; Ronan & Organt, 1973; Schwab & Wallace, 1974), Milkovich and Newman (1990) have pointed out that despite past research considerable ambiguity remains regarding the antecedents of pay satisfaction. A potential path out of this confusion lies in considering pay satisfaction as a multidimensional construct. Because the factors that cause pay satisfaction may differ among the various dimensions of pay satisfaction, inconsistent results obtained with respect to the determinants of pay satisfaction may be due to unidimensional conceptualizations and measurement of pay satisfaction. Based on this rationale, Heneman (1985), and more recently Miceli and Lane (1991), have issued calls for research investigating the determinants of pay satisfaction dimensions. Such work may have considerable practical appeal, in that the steps an organization takes to remedy pay dissatisfaction likely depend on the source of the dissatisfaction.

The purpose of the present study is to investigate the validity of the Pay Satisfaction Questionnaire (PSQ) dimensions. Drawing from past research, it is hypothesized that pay satisfaction is comprised of four distinct dimensions, and that those dimensions are differentially predicted by a series of antecedents. Using covariance structure modeling,

the results indicate support for the hypothesized dimensionality of pay satisfaction and for its differential prediction by hypothesized antecedents.

### **Past Research on Pay Satisfaction**

Treating pay satisfaction as a component of job satisfaction is not new. In fact, pay satisfaction is measured by the two most widely used job satisfaction scales, the Job Descriptive Index (JDI; Smith, Kendall, & Hulin, 1969) and the Minnesota Satisfaction Questionnaire (MSQ; Weiss, Dawis, England, & Lofquist, 1967). Although suggestions of the multidimensionality of pay satisfaction came as early as Locke (1976), Heneman and Schwab (1979, 1985) were the first to explicitly hypothesize that pay satisfaction is a multidimensional construct. In developing the PSQ, Heneman and Schwab (1985) initially hypothesized five dimensions of pay satisfaction: pay level, pay raises, benefits, structure, and administration. Based on initial factor analysis results, the validity of the level, raises, and benefits dimensions was supported, but the structure and administration dimensions were combined. This four-factor solution was then replicated on another sample of workers.

In subsequent work, Ash, Dreher, and Bretz (1987) found that a three-factor solution (pay level, benefits, and structure/administration) emerged among a sample of law enforcement officers. Scarpello, Huber, and Vandenberg (1988) reported that the dimensionality of the PSQ varied by job classification, and found that except for the benefits scale, the other three scales were moderately correlated. Based on further analyses, they called for substantial modification of the PSQ to make the dimensions more independent and stable across job classifications. On the other hand, results by R. Heneman, Greenberger, and Strasser (1988) were more supportive of the four-factor structure hypothesized by Heneman and Schwab (1985). Miceli and Lane (1991) reviewed the results of several unpublished studies that reach contradictory conclusions about the dimensionality of the PSQ.

It is important to keep several points in mind when considering past research on the PSQ. First, the dimensions of pay satisfaction are not independent, and in fact several are fairly highly related. However, this does not necessarily undermine the validity of the PSQ. Dimensions of compensation are not independent, so one should not expect dimensions of pay satisfaction to be independent. For example, since pay raises subsequently affect pay level, individuals satisfied with their pay raises are likely in turn to be more satisfied with their pay level. The real issue seems to be if the dimensions are conceptually and empirically separable (i.e., are they capable of being distinguished from one another?). If they are not, there is little to be gained from measuring separate dimensions because they essentially measure the same thing.

Second, because pay delivery systems, the ratio of benefits to total compensation costs, the magnitude and type of pay increases awarded, and pay level differ between job levels (Gerhart & Milkovich, in press; Milkovich & Newman, 1990), one might expect to observe a different pattern of correlations among pay satisfaction dimensions across different job levels/classifications. Rather than indicating that the dimensions of the PSQ are invalid, it quite logically suggests that the relationships among various aspects of pay, and thus individuals' reactions to those dimensions, differ among various groups of employees.

Finally, the fact that specific items contained in the PSQ have large cross-loadings (i.e., load on factors in addition to the factor on which they are hypothesized to load) is a valid concern. However, one would expect some degree of cross-loadings if the factors are related. Even well-accepted measure of job satisfaction like the JDI have items which cross load on other factors (Smith et al., 1969).

The present study seeks to address a number of research needs regarding the PSQ. First, given that a reasonable basis exists for hypothesizing the dimensions of pay satisfaction, and since many of the assumptions of exploratory factor analysis are tenuous (Long, 1983), confirmatory rather than exploratory factor analysis should be used since

with confirmatory factor analysis the hypothesized factor structure appropriately drives the analysis rather than the analysis being "data driven" (Bobko, 1990). Investigations of the dimensionality of the PSQ have largely relied on exploratory factor analysis. Interpretation of exploratory factor analysis results is limited by the subjectivity in which factor loadings, cross-factor loadings, and factor independence are assessed. Perhaps as a result, these investigations have yielded competing results regarding the dimensions of the PSQ. A confirmatory approach that is theory-driven should help reduce this ambiguity. Second, there has been no direct investigation of the discriminant validity of the PSQ. Covariance structure modeling is well-suited for investigations of discriminant validity (Long, 1983), including comparing the fit of alternative models and examining patterns of correlations between factors with other variables. Finally, research has not investigated antecedents of the dimensions of pay satisfaction. Heneman (1985) and Miceli and Lane (1991) have hypothesized that the antecedents of pay satisfaction are likely to differ among the dimensions of pay satisfaction, and issued a call for more research on the subject.

#### **Model of Pay Satisfaction**

A hypothesized model of pay satisfaction is presented in Figure 1. The figure represents three general propositions about pay satisfaction and a number of more specific hypotheses. First, the general propositions will be reviewed.

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Insert Figure 1 About Here

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It is hypothesized that items from the PSQ will load on their hypothesized dimensions, and that the four dimensions of pay satisfaction are empirically distinguishable. This follows from the dimensions hypothesized by Heneman and Schwab (1985). As pointed out by Heneman (1985) and Heneman and Schwab (1985), each dimension reflects a relatively distinct (although perhaps related) aspect of pay. For example, the criteria

used to establish benefit coverage of employees is not likely to strongly depend on how pay structures are established, the magnitude of pay raises given, and so on.

Second, consistent with the development of the PSQ, it is hypothesized that together the four dimensions of the PSQ will contribute to an overall pay satisfaction construct. There has been no research demonstrating that the dimensions of the PSQ contribute to an underlying construct that could be interpreted as representing overall pay satisfaction (Heneman, 1985). It also is important to estimate the relative contribution of each dimension to overall pay satisfaction.

Third, it is hypothesized that the determinants of pay satisfaction will differ across the dimensions of pay satisfaction. This concerns the discriminant validity of the PSQ dimensions. One common method of demonstrating discriminant validity is to determine if the constructs (in this case the PSQ dimensions) are empirically separable, which was hypothesized above. Another means of demonstrating discriminant validity is to compare the correlations that constructs (i.e., the PSQ dimensions) have with other variables (Gerhart & Judge, 1991; Schwab, 1980). If the purportedly different constructs display similar patterns of correlations with other variables, the utility of distinguishing between the constructs is called into question. For example, if the variables that influence one dimension of pay satisfaction similarly influence the other dimensions, there would be a strong basis for doubting the discriminant validity of the dimensions.

Figure 1 illustrates the hypothesized influences on each dimension of pay satisfaction. This set of variables is not intended to be wholly inclusive (i.e., the goal is not to explain 100% of the variance in the dimensions). Rather, the objective is to determine if the influences that have been identified by past research affect the dimensions of pay satisfaction as hypothesized. If they do, it lends support to the validity of the dimensions of pay satisfaction. If they do not, it calls into serious question the utility of distinguishing between the dimensions. The choice of variables used in the analysis was based on influences identified by past research. Justification of each dimension's influences follows.

Pay level satisfaction. Not surprisingly, salary or wages as measures of pay level consistently have been shown to influence pay satisfaction (Berger & Schwab, 1980; Dreher, 1980; Dreher et al., 1988; Futrell, 1978; Lawler, 1971; Motowidlo, 1982; Ronan & Organt, 1973; Schwab & Wallace, 1974). Of the four dimensions of pay satisfaction, one would expect that pay level would most strongly influence pay level satisfaction (Miceli & Lane, 1991). In addition to salary, it also is hypothesized that the perceived amount of pay relative to others working in similar jobs in other organizations positively influences pay level satisfaction. The importance of external comparisons in shaping judgments of pay satisfaction has been emphasized by a number of authors (Dyer & Theriault, 1976; Gerhart & Milkovich, in press; Lawler, 1971; Miceli & Lane, 1991; Rice, Phillips, & McFarlin, 1990). Since these comparisons probably most often involve the individual's pay level relative to others, external comparisons should most strongly influence pay level satisfaction.

Pay raise satisfaction. Several variables are hypothesized to influence pay raise satisfaction. First, the past raise history of the individual is expected to positively influence pay raise satisfaction (Dyer & Theriault, 1976). Individuals who historically have received higher raises in the past should be more satisfied with their raises. Since pay raises contribute to pay level, pay raise history may have an indirect effect on pay level satisfaction, but it is expected that the most proximal influence is on pay raise satisfaction. Second, it is hypothesized that attitudes about the performance appraisal process positively influence pay raise satisfaction. Dyer and Theriault (1976) hypothesized that the perceived accuracy of performance assessment positively influences pay satisfaction. Since merit pay is based on performance ratings, these attitudes should particularly influence pay raise satisfaction. Third, the perceived contingency between performance and pay is hypothesized to influence pay raise satisfaction. Dyer and Theriault (1976) hypothesized that perceived appropriateness of pay criteria influences pay satisfaction. It is expected that in a merit pay context employees who perceive pay increases based on criteria other

than performance are also less likely to see the criteria as appropriate. Therefore, lower satisfaction with pay raises should result. Support for this hypothesis comes from Folger and Konovsky (1989), who found that the perceived fairness of pay raise procedures explained variance in pay raise satisfaction beyond the effect due to pay raises. Finally, the time interval over which merit raises are given is expected to influence pay raise satisfaction. Employees who are eligible for pay increases over longer time intervals are receiving lower effective annual increases (e.g., an employee who receives a 5% raise every 8 months receives 50% higher real pay increases than an employee receiving the same raise over 12 month intervals). Therefore, the longer the interval over which employees are eligible for a merit raise, the less satisfied they are expected to be with their raises.

Structure/administration satisfaction. Dyer and Theriault (1976) hypothesized that perceived understanding of pay criteria positively influences pay satisfaction. Since understanding of pay criteria pertains to how pay policies are communicated and administered, one would expect that the more individuals understand a pay system, the higher structure/administration satisfaction they will report. In a merit pay system, managers are particularly influential over the way pay is administered. As hypothesized by Miceli and Lane (1991), perceived managerial influence over pay should affect satisfaction with the way the pay system is administered; those who believe that their manager has little influence over their pay in general should be less satisfied with the administration of their pay. Therefore, perceived managerial influence over pay is hypothesized to positively influence structure/administration satisfaction. It also is hypothesized that attitudes about the performance appraisal process influence structure/administration satisfaction. This follows from Heneman (1985), who argued that attitudes about the performance appraisal process were often related to pay system administration, and based on Dyer and Theriault's (1976) findings, such attitudes should influence pay satisfaction.

Benefit satisfaction. Two of the principal influences on benefit satisfaction are benefit coverage and employee cost (Dreher, Ash, & Bretz, 1988). Since benefit coverage

within an organization is often constant across employees (i.e., benefits are offered to all employees regardless of their position in the organization), when one is concerned with employees in a single organization, it may be fruitful to investigate factors that differ between individuals (Gerhart & Milkovich, in press; Miceli & Lane, 1991). Thus, in situations where employee benefit coverage is fixed, one would expect that individual differences that affect the relative use or cost of benefits would be most predictive of benefit satisfaction. Specifically, it is hypothesized that age negatively influences benefit satisfaction (Miceli & Lane, 1991). The use of medical benefits, the most expensive benefits to employers and often employees (Milkovich & Newman, 1990), increases with age (Taubman & Rosen, 1982). This often results in greater expense to employees because under most plans co-payments and deductibles increase with benefit usage. Since older employees may be particularly sensitive to out of pocket benefit expenses (Barringer, Milkovich, & Mitchell, 1990), they are expected to be less satisfied with their benefits. Second, salary grade level is hypothesized to be negatively related to benefit satisfaction. Miceli and Lane (1991) argued that as inputs into the benefit system (co-payment, deductibles, etc.) increase relative to benefit outcomes, satisfaction with benefits should decrease. Since in the organization under study co-payments into the health insurance fund are based on salary grade, yet coverage is constant across salary grades, it is expected that the higher the salary grade an employee is in, the lower the level of benefit satisfaction the employee will report.

## Method

### Setting and Subjects

The setting for this research was a strategic business unit (SBU) from a Fortune 100 company that is involved in production of high technology goods and services. The SBU is organized into five divisions, which are geographically dispersed from the mid-Atlantic coast area to New England to California. Employees were surveyed from all five divisions of the SBU. In the SBU, pay increases were awarded through a variable-time merit pay

program, which allocated pay increases as a function of the total merit increase pool, the employee's current performance rating, and the employee's position in the salary grade. Employees positioned high in their salary grade received lower increases, and were eligible for increases less often, than employees positioned low in their salary grade. Benefit coverage was constant across all employees. All employees were eligible for the following benefits: paid vacation and holidays, dental, medical, and disability insurance, profit sharing for retirement, employee stock ownership, tuition reimbursement, and child care salary tax deferrals.

Subjects consisted of four principal employee groupings: managers (28%), professional/technical employees (42%), sales representatives (10%), and nonexempt employees (20%). Education level of the respondents was as follows: high school diploma or associates degree (34%), undergraduate degree (47%), master's degree (17%), and doctorate degree (2%). The average annual salary of the employees was \$55,755 ( $SD = \$22,398$ ), within a range from \$17,576 to \$145,750. The average respondent had received roughly 1 promotion in the last 3 years. Respondents were aged from 18 to 64 years old, with an average age of 40.7 years. Organizational tenure ranged from newly employed to 32 years; average tenure with the organization was 10.6 years. Sixty-two percent of employees were male, and 26% were members of minority groups. The average employee had been in their present salary grade for about 29 months, had averaged a 4.6% merit pay raise over the past 3 years, and was eligible for pay increases approximately every 14 months.

### Measures

Pay satisfaction. Pay satisfaction was measured by the 18-item version of the Pay Satisfaction Questionnaire (Heneman & Schwab, 1985). The coefficient alpha reliability estimate for the overall scale was .89.

Causal employee perceptions. Understanding of the pay system was measured by soliciting the respondents' reaction to the following statement, "I understand the criteria my

organization uses to administer pay." Perceived managerial influence over pay was measured by respondent reactions to the following statement, "My manager has a large influence over salary decisions." Perceived contingency between performance and pay was measured by asking the respondent to react to the following statement, "If I improve my performance, I will receive an appropriate increase in pay rewards and other financial recognition." Respondents indicated their agreement with these statements on a 1 (strongly disagree) to 5 (strongly agree) point scale. Perceived pay relative to others performing similar work in other organizations was measured by asking the individual to compare their pay to those who work in similar jobs in other organizations (1 = our organization's pay is much lower to 5 = our organization's pay is much higher). Finally, employee attitudes about the organization's performance appraisal system were measured by a 7-item scale which consisted of statements about the accuracy, understanding, and developmental quality of the performance appraisal process. Respondents indicated their agreement with these questions on a 1 (strongly disagree) to 5 (strongly agree) point scale. The coefficient alpha reliability estimate for this scale was .73.

Archival information. Salary, age, salary grade, interval between pay raise eligibility, and past raise history (average of past 3 merit raises) were collected from data contained in the organization's human resource information system.

### Procedure

Prior to survey administration, the president and vice-president of human resources announced that an attitude survey was to be conducted focussing on employee pay satisfaction, and asked for voluntary participation in the process. Survey administration was coordinated by a human resource manager in the SBU. Secretaries in each division maintained a roster of participants, and were responsible for follow-up. The actual survey contained a letter and informed consent form from the survey administrator and the author informing employees of the purpose and intended use of the survey. Feedback regarding the results of the survey was promised and subsequently delivered. Before completing the

survey, employees were asked to provide their employee identification number.

Confidentiality of the results was assured.

Seven hundred and eighty-two employees worked in the SBU. Six hundred and sixty-four individuals returned surveys. Six hundred and thirty individuals completed usable surveys, representing a response rate of 81%. Using data obtained from the human resource information system, no significant differences were found between respondents and nonrespondents with respect to salary, pay raise history, age, salary grade, or interval between pay raise eligibility. Prior to data analysis, survey responses were matched with archival data using the employees' identification numbers.

#### Confirmatory Factor Analysis

Confirmatory factor analysis, conducted in the present study using LISREL 7 (Joreskog & Sorbom, 1989), allows one to determine if the measures adequately represent the hypothesized constructs (Long, 1983). Confirmatory factor analysis is particularly well suited to investigate construct validity, since it allows direct investigation of the degree to which specific items jointly load on their hypothesized constructs (i.e., convergent validity), and the degree to which purportedly different constructs are capable of being distinguished from one another (i.e., discriminant validity) (Bollen, 1989; Long, 1983).

In confirmatory factor analysis, it is essential to examine first the overall fit of the model. If a model does not fit the data acceptably, the overall hypothesis that the model is an accurate representation of the data is rejected. In such a case, interpretation of specific parameter estimates in the model may be inappropriate (James, Mulaik, & Brett, 1982). Values for fit indices represent rules of thumb for judging the adequacy of the fit of a hypothetical model to the data. Thus, interpretation of these indices is necessarily subjective. The most widely used measure of fit is the chi-square ( $\chi^2$ ) statistic. Perhaps the most popular use of the  $\chi^2$  statistic is to examine the ratio of  $\chi^2$  relative to the degrees of freedom (df), because levels of  $\chi^2$  depend on the sample size (Hoetler, 1983; La Du & Tanaka, 1989; Marsh, Balla, & McDonald, 1988). Chi-square to degrees of freedom ratios

of 2:1 (Hertig, 1985), 3:1 (Carmines & McIver, 1981), or even 5:1 (Marsh & Hocevar, 1985; Wheaton, Muthen, Alwin, & Summers, 1977) have been claimed to indicate an acceptable fit. Other popular fit statistics include the goodness-of-fit index, adjusted goodness-of-fit index, root-mean-square residual, and coefficient of determination ( $R^2$ ). Values of at least .80 for the adjusted goodness-of-fit index and at most .10 for the root-mean-square-residual represent the limits normally used to claim acceptable levels of fit with complex or restrictive models (Mumford, Weeks, Harding, & Fleishman, 1988; Rock, Bennett, & Jirele, 1988; Thacker, Fields, & Tetrick, 1989; Vance, MacCallum, Coovert, & Hedge, 1988).

### Results

Table 1 presents the correlations and scale reliabilities among the four PSQ dimensions for the total sample, and for the four employee groups represented in the SBU. The intercorrelations among the dimensions are consistent with past research (Scarpello et al., 1988). Specifically, the benefits dimension correlated considerably lower with the other three dimensions than those dimensions did with each other. The pay raise scale correlated .62 with the pay level and structure/administration scales, and the structure/administration scale correlated .52 with the pay level scale. Although these correlations are moderately high, they are far from unity, even when corrected for unreliability. Finally, the scale reliabilities for the PSQ dimensions were comparable to those found in past research.

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Insert Table 1 About Here  
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Table 1 also shows the correlations among the PSQ dimensions for the four employee groups. Overall, the pattern of correlations is similar for the different groups of employees. The average absolute difference in correlations between the four dimensions across all employee groups was .09. The largest differences across the employee groups

were the correlations between the pay level scale and the other dimensions. This may be due to the fact that the actual level of pay differs widely among the levels. Finally, the reliabilities of the dimensions are relatively stable across the employee groupings.

#### Convergent Validity Evidence

For all LISREL analyses, correlations served as input for the LISREL model. Table 2 provides the parameter estimates (factor loadings) of the measures on their respective constructs for the hypothesized four dimension pay satisfaction model. All factor loadings for the four dimensions of pay satisfaction are relatively strong (average loading = .727) and highly significant ( $p < .01$ ). The factor structure of the PSQ was relatively stable across the various employee groups. The absolute average difference in factor loadings across the four employee groups was .076 ( $SD = .040$ ), with a range from .16 (item 17) to .03 (items 4 and 5).

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Insert Table 2 About Here  
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By the conventions discussed earlier, the fit statistics from the confirmatory factor analysis indicate that the hypothesized measurement model provides an adequate fit to the data ( $\chi^2 = 490.79$  with 129 degrees of freedom;  $\chi^2 / df = 3.80$ ; goodness-of-fit index = .92; adjusted goodness-of-fit index = .89; root-mean-square residual = .05;  $R^2 = .99$ ). While the ratio of  $\chi^2$  to degrees of freedom is relatively high, this is undoubtedly due to the relatively large sample size (La Du & Tanaka, 1989; Marsh et al., 1988). In fact, re-estimating the model assuming a sample size of 150 yields a  $\chi^2 / df$  ratio of 0.91. Thus, the hypothesis that the measurement model provides an adequate fit to the data is not rejected. These results support the hypothesis that the specific items converge on their hypothesized constructs (convergent validity).

In order to compare the results obtained from the confirmatory factor analysis with those obtained from an exploratory factor analysis, a principal components analysis was

conducted. The analysis revealed 4 factors with eigenvalues greater than 1. The factors were easily interpretable as the hypothesized factors. For the pay level factor, the average item loading on the hypothesized factor was .80, and the average cross-factor loading was .18. The pay raise factor revealed a similar result -- the average item loading on the hypothesized factor was .87, and the average cross-factor loading was .08. For the factor interpreted to represent benefit satisfaction, the average item loading on the hypothesized factor was .63, and the average cross-factor loading was .27. Finally, for the structure/administration factor, the average item loading on the hypothesized factor was .48, and the average cross-factor loading was .12.

#### Discriminant Validity Evidence

The discriminant validity of the dimensions of pay satisfaction was first investigated by comparing the fit of the hypothesized model with a model consisting of one general pay satisfaction construct. If the measures do not have adequate discriminant validity, the fit of a single factor model will not be significantly worse than the hypothesized four factor model. In such a case, a single factor model would adequately describe the data, and the hypothesis of the multidimensional nature of pay satisfaction would be rejected.

The single factor model provided a very poor fit to the data ( $\chi^2 = 2,809.58$  with 135 degrees of freedom). This fit was significantly worse than the hypothesized model (increase in  $\chi^2 = 2,318.79$  with 6 degrees of freedom,  $p < .01$ ). Even forming the most highly related dimensions, pay raise satisfaction with structure/administration satisfaction and pay raise satisfaction with pay level satisfaction, into one resulted in a significant decrease in fit (increase in  $\chi^2 = 140.48$  with 3 degrees of freedom,  $p < .01$ , and increase in  $\chi^2 = 359.61$  with 3 degrees of freedom,  $p < .01$ , respectively).

Based on exploratory factor analyses using data collected from a sample of law enforcement officers, Ash et al. (1987) concluded that a three-factor solution (pay level, benefits, and structure/administration) represented the appropriate factor structure of the PSQ. The three-factor solution was obtained by allocating two of the items from the pay

raise scale (items 3 and 7) to the pay level factor and the other two items (items 4 and 16) to the structure/administration factor. However, in the present case, this allocation resulted in a significant decrement in fit when compared to the hypothesized factor structure (increase in  $\chi^2 = 158.67$  with 3 degrees of freedom,  $p < .01$ ). This indicates, at least in this sample, the factor structure more closely approximates that hypothesized by Heneman and Schwab (1985) than that hypothesized by Ash et al. (1987).

Consistent with Brooke, Russell, and Price (1988) and Mathieu and Farr (1991), discriminant validity was further investigated by examining if measures of purportedly different constructs display different patterns of correlations with other variables. The correlations of the hypothesized influences on the dimensions of pay satisfaction are presented in Table 3. The table indicates that the pattern of correlations generally is as hypothesized. Each variable correlated most highly with the dimension it was hypothesized to influence. The only exception to this is manager influence over pay. Although the correlation between manager influence over pay with structure/administration satisfaction is significant, the relationship between manager influence over pay and pay raise satisfaction is slightly stronger.

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In order to investigate if this pattern of correlations differed significantly across the PSQ dimensions, two models were estimated for each of the hypothesized influences. One model allowed the correlations between each hypothesized influence with each of the four dimensions of pay satisfaction to be freely estimated. The other model constrained the correlations between the hypothesized influence with each dimension to be equal. For example, one model allowed the correlations between salary and the four PSQ dimensions to be freely estimated. The other model constrained the correlations between salary and the four PSQ dimensions to be equal. If the fit of these two models is not significantly

different, then that variable exerts a similar influence on all dimensions. In each case, equating the correlations between the four dimensions and each hypothesized influence resulted in a significant decrease in fit ( $p < .01$ ). This suggests that the variables do exhibit different pattern of correlations with other variables, and these patterns generally follow expectations. Overall, this evidence suggests the factors, as assessed, are valid; the measures converge on their respective constructs yet are relatively distinct.

#### Evidence for Overall Pay Satisfaction Construct

In order to ascertain if the dimensions of pay satisfaction formed an overall pay satisfaction construct, second order factor analysis was conducted. While discriminant validity of the dimensions of pay satisfaction was established earlier, second order factor analysis is used to determine if there is sufficient relationships among the factors to extract a higher order factor (Joreskog & Sorbom, 1989). For example, it is possible to form an overall job satisfaction construct from facets of the Job Descriptive Index (Smith et al., 1969). This does not mean that facets of job satisfaction are indiscriminate; it does suggest that together the facets comprise overall job satisfaction (Judge & Hulin, in press). This procedure is particularly critical in determining whether or not the PSQ is an appropriate measure of overall pay satisfaction. It is also useful to determine the relative contribution of the four dimensions of pay satisfaction to an overall construct.

The results of the second order factor analysis indicated that the dimensions did comprise a general pay satisfaction construct. Overall, the second order factor fit the data acceptably ( $\chi^2 / df = 4.08$ ; goodness of fit index = .89; adjusted goodness of fit index = .87; root-mean-square residual = .09;  $R^2 = .92$ ). As shown in Figure 2, all dimensions of pay satisfaction significantly loaded on the overall construct ( $p < .01$ ). Thus, it is possible to form an overall pay satisfaction construct from the four dimensions measured by the PSQ.

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### Model of Pay Satisfaction

Using LISREL, the hypothesized model of pay satisfaction presented in Figure 1 was tested. The overall fit of the model was acceptable ( $\chi^2 = 939.18$  with 314 degrees of freedom;  $\chi^2 / df = 2.99$ ; goodness-of-fit index = .90; adjusted goodness-of-fit index = .86; root-mean-square residual = .09;  $R^2 = .64$ ). The specific links within the model are displayed in Figure 2. As the figure illustrates, all links were supported. Specifically, those who earned higher salaries and those who perceived their pay to be high relative to others doing similar work in other companies were significantly more satisfied with their pay level. Older employees and those in higher salary grades were significantly less satisfied with their benefits. Employees who had a history of higher pay raises, had positive attitudes about the performance appraisal process, perceived a high contingency between their performance and their pay, and those who received pay increases on a shorter interval were significantly more satisfied with their pay raises. Finally, those who understood their pay system, had positive attitudes about the performance appraisal process, and those who perceived that their supervisor had influence over their pay were significantly more satisfied with the structure and administration of their pay.

### **Discussion**

The results of the present study support the validity of the Pay Satisfaction Questionnaire. The items from the PSQ loaded highly on their hypothesized dimensions, and the overall fit also supported the hypothesized model. Furthermore, the factor structure was similar across job classifications. All of this provides supportive evidence regarding the convergent validity of the PSQ.

The correlations among the dimensions of the PSQ essentially replicated that of past research. Consistent with Scarpello et al. (1988), the pay raises dimension displayed a relatively high correlation with the pay level and structure/administration dimensions. On the other hand, the intercorrelations among the dimensions of the PSQ appear to be more stable across job classifications than those reported by Scarpello et al. (1988). An

advantage that the Scarpello et al. (1988) results possess over those presented in this study is that several organizations were surveyed. On the other hand, pay raise satisfaction was not assessed for nonexempt employees in the Scarpello et al. (1988) article. Furthermore, organization and job classification were confounded to some degree in the Scarpello et al. (1988) study. Yet another difference is that in the Scarpello et al. (1988) study exploratory rather than confirmatory factor analysis was conducted. These differences prohibit direct comparison of the results of the present study with those of Scarpello et al. (1988). Since this is a critical issue, further work is needed in this area. Clearly, the patterns of intercorrelations among the dimensions of the PSQ identified by this study and past research reveal that the dimensions are not independent. As indicated earlier, this should not be surprising given that past research on job satisfaction has revealed a similar situation (Smith et al., 1969), and that conceptually one would not expect each dimension of pay, and thus pay satisfaction, to be completely uncorrelated with the other.

Several empirical tests supported the discriminant validity of the PSQ. First, the dimensions of the PSQ were empirically separable; combining even the most highly related dimensions significantly reduced the fit of the model. Also, in contrast to the conclusions reached by Ash et al. (1987), a three-factor solution was outperformed by the hypothesized four-factor solution. Second, the dimensions displayed differing patterns of correlations with hypothesized influences. Scientifically, the combination of convergent and discriminant validity evidence suggests that the dimensions of the PSQ are construct valid. On a practical level, this indicates that combining the dimensions loses important information about the potential causes of, and remedies to, pay satisfaction.

Finally, the hypothesized model of pay satisfaction received strong support from the results. The hypothesized influences on pay satisfaction, although not inclusive, were derived from a review of past research. This provides more indication that the dimensions of the PSQ are valid; the variables exerted influences on the dimensions of pay satisfaction consistent with what was hypothesized.

### Limitations, Contributions, and Future Research

This study has several limitations that need to be noted. First, while the organization under study was heterogeneous with respect to demography, job classifications of its employees, and geographical region, it is still only one organization. This raises the possibility that the findings are firm specific. On the other hand, the organization under study is relatively decentralized with a fair amount of variance in the pay practices across the subunits. Comparison of the results across subunits revealed little difference in the structure of the PSQ dimensions. Thus, although there is no particular reason to believe that the results obtained are unique to the organization, this obviously is an empirical question that could be answered with further research.

Second, and related, while the present study suggests some similarities and some differences with respect to Scarpello et al.'s (1988) results, overall the conclusions regarding the dimensionality of the PSQ are more positive in the present study. However, neither study provides direct evidence about why the dimensionality of the PSQ may differ across job classifications. If this in fact is the case, future research oriented toward understanding why the dimensionality differs by job classification, and what the implications of this are, would make a contribution.

Finally, the methods used to establish the validity of the PSQ dimensions, although sophisticated, are nonetheless imperfect. LISREL is well-suited to investigate construct validity (Long, 1983), but one should not interpret the results as proof of validity (Gerhart & Judge, 1991). Like any other method of analysis, restrictive assumptions must be met before causal inferences can be made (James et al., 1982). For example, while it seems logical that performance to pay contingencies should influence pay raise satisfaction, it is possible that such a perception is influenced by pay raise satisfaction. The failure to meet the assumption of strong causal ordering suggests that the results should be interpreted with some degree of caution pending further confirmatory evidence.

Despite these limitations, the present study adds to the current state of knowledge of pay satisfaction in several ways. First, the results suggest that the PSQ is a valid measure of the dimensions of pay satisfaction. The combination of convergent and discriminant validity indicates that overall the specific items contained in the PSQ contribute to their hypothesized dimensions, and that these dimensions are conceptually and empirically distinct. It is prudent, however, to take this as one piece of evidence. Others have reached somewhat different conclusions about the PSQ.

Second, this study provides the first evidence regarding the differential determinants of the dimensions of pay satisfaction. Heneman (1985) and Miceli and Lane (1991) have called for research investigating the influences on each specific dimension of pay satisfaction, yet no previous research has compared the relative determinants of the four dimensions of pay satisfaction hypothesized by Heneman and Schwab (1985). This is the first study to do that. More research along these lines is needed, and such research might expand the range of influences considered.

Finally, this study supports the ability of the PSQ to measure overall pay satisfaction. While others have used the PSQ to predict other measurements of pay satisfaction such as the JDI and MSQ subscales, these results are inconclusive since research indicates that the MSQ and JDI subscales are primarily measures of pay level satisfaction (Heneman, 1985). Heneman (1985) called for research to answer the question of whether or not there is such a construct as overall pay satisfaction. The results of the present study suggest that there is, and that it is adequately measured by the PSQ. The dimensions of the PSQ are distinct, yet they share enough covariance to form a common construct. The results also suggest that all dimensions significantly contributed to overall satisfaction, but that pay level and pay raise satisfaction contributed more variance than the other dimensions. Future research directly toward determining which are the most important dimensions of pay satisfaction also is needed.

Beyond the areas identified above, there are several other areas for future research suggested by the results. Most writings on the subject of pay satisfaction emphasize the importance of referents (Gerhart & Milkovich, in press; Heneman, 1985; Miceli & Lane, 1991). Ash and Bretz (1988) hypothesized that different equity perspectives -- individual, internal, or external -- would involve different comparison others, and that evaluation of the dimensions of pay satisfaction may involve different equity comparisons. This perspective could serve a useful role in further understanding the psychological processes underlying judgments of pay satisfaction. Thus, it is a fruitful area for future research.

Another area for research lies in item development. The present study employed the 18-item version of the PSQ (Heneman & Schwab, 1985). However, based on the recommendations of Scarpello et al. (1988) and Ash et al. (1987), Dreher and Ash (1990) have revised several items from the PSQ in an effort to more accurately measure the dimensions. While there should be no expectation that the dimensions of the PSQ are orthogonal, it is possible that some of the covariation among the dimensions is due to artifacts or imperfections in the PSQ. The results of this study do not present as compelling a case for modification of the PSQ as has been presented elsewhere (Ash et al., 1987; Scarpello et al., 1988). Nevertheless, future research oriented toward item development of the PSQ, particularly with respect to the raise and structure/administration scales, is needed. Much in the way that Roznowski (1989) recently revised the JDI, retaining some items and replacing others, such work may be warranted in future research with respect to the PSQ.

The results suggest that from the employee's perspective, the dimensions of pay satisfaction are related but distinct; when evaluating their compensation employees seem to distinguish between different aspects of their pay. It would be interesting to see if perceptions of procedural and distributive justice (Folger & Konovsky, 1989) differ depending on the dimension of pay. For example, do the factors that influence the perceived fairness of employee's benefits similarly affect the perceived fairness of their pay

level, raises, and structure/administration? As noted by Heneman (1985), we also have little knowledge regarding the relative importance of the dimensions of pay satisfaction in predicting overall pay satisfaction. Although the results of the second order factor analysis provide some indications, they do not constitute a direct test. Furthermore, we have no knowledge of the cognitive processes underlying judgments of pay satisfaction. For example, do individuals use compensatory models when arriving at a judgment of overall pay satisfaction based on the dimensions of pay satisfaction, or are there threshold effects? Finally, while the present results suggest the dimensions of pay satisfaction measured by the PSQ are distinct, we do not know how the different dimensions of pay satisfaction affect various employee behaviors. This also is an important area for future research.

#### Implications for Practice

The results of this study provide a number of implications for practice. First, the results suggest that organizations wishing to measure pay satisfaction should strongly consider the PSQ. It appears to be an adequate measure of overall pay satisfaction, and is the only available measure of pay satisfaction dimensions. While one should be mindful of the cautions provided by Ash et al. (1987) and Scarpello et al. (1988), past research suggests that the JDI and MSQ subscales primarily measure pay level satisfaction. The present research suggests that all PSQ dimensions contribute to overall pay satisfaction, and that the PSQ is an adequate measure of the dimensionality of pay satisfaction.

Second, the results of this study suggest that organizations concerned about the pay satisfaction of their employees may be well-advised to consider the dimensionality of pay satisfaction. Reliance on measures of overall pay satisfaction may provide limited information about the causes of pay dissatisfaction, and may mask potential problems. For example, high employee satisfaction on some dimensions of pay satisfaction may offset strong dissatisfaction with other dimensions. The results obtained from the organization under study provide a case in point. The mean level of benefit satisfaction ( $\underline{M} = 14.49$ ;  $\underline{SD} = 3.02$ ) was significantly higher than the average level of pay raise satisfaction ( $\underline{M} = 11.11$ ;

SD = 3.24). If one only considered overall pay satisfaction, these two would average out and obscure the fact that pay raise satisfaction is not viewed favorably by employees relative to the other dimensions of pay satisfaction.

The results also possess clear implications for organizational interventions designed to raise employee pay satisfaction. Since past research has identified a number of behaviors influenced by pay satisfaction, organizations might be advised to take pay attitudes seriously. More specifically, the results of the present study strongly suggest that the antecedents of pay satisfaction differ by dimension. For example, if benefit satisfaction is perceived to be a problem, increasing the perceived link between performance and pay on the part of employees through changes in the performance appraisal or compensation system would be futile. On the other hand, such changes may have a rather dramatic effect on pay raise satisfaction. Similarly, changing how employees perceive their pay relative to others doing similar work in other companies may alter pay level satisfaction, but would have a limited effect on the other dimensions of pay satisfaction. Thus, if the results of the present study are valid, it suggests the ideal course of action may lie in identifying the sources of pay satisfaction or dissatisfaction through the PSQ, and then considering corrective actions based on the factors most likely to influence the dimension(s) that seems to be the problem. Of course, it also is true that some of the influences identified in this study are easier to change than others. Obviously, attempting to change the age composition in one's organization is not feasible, but many of the other influences potentially can be corrected.

In sum, the present study provided evidence that pay satisfaction is multidimensional in the manner hypothesized by Heneman and Schwab (1985). The results suggest that the dimensions of pay satisfaction are distinct, and are differentially influenced by factors that are consistent with expectations. The results possess practical applications for organizations interested in pay satisfaction, and suggest areas where future research might further inform practitioners and researchers on this important topic.

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Table 1

## Reliabilities and Correlations Among PSQ Dimensions

PSQ Dimension	Total Sample ( <u>n</u> =630)				Manager Sample ( <u>n</u> =179)				P-T Sample ( <u>n</u> =263)				Sales Sample ( <u>n</u> =61)				Nonexempt Sample ( <u>n</u> =127)			
	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. Pay Level	(89)				(88)				(90)				(87)				(89)			
2. Pay Raises	62 (90)				57 (88)				67 (92)				61 (91)				52 (87)			
3. Benefits	17 18 (79)				23 16 (79)				31 24 (81)				10 26 (70)				11 19 (75)			
4. S/A	52 62 33 (78)				58 67 31 (78)				57 61 38 (80)				56 73 29 (74)				35 51 36 (75)			

**Note:** Decimals are omitted. Scale reliabilities are in diagonals. P-T = Professional/Technical; Sales = Sales Representatives; S/A = Structure/Administration.

Table 2

LISREL Estimates of PSQ Factor Loadings

Item	Level	Benefits	Raise	Structure/ Administration
1	.886			
5	.918			
10	.901			
14	.585			
2		.846		
6		.804		
11		.911		
15		.794		
3			.729	
4			.652	
7			.656	
16			.741	
8				.754
9				.558
12				.445
13				.720
17				.596
18				.589

Note: All loadings are significant at the .01 level;  $N = 630$ .

Table 3

## Correlations Between PSQ Dimensions and External Variables

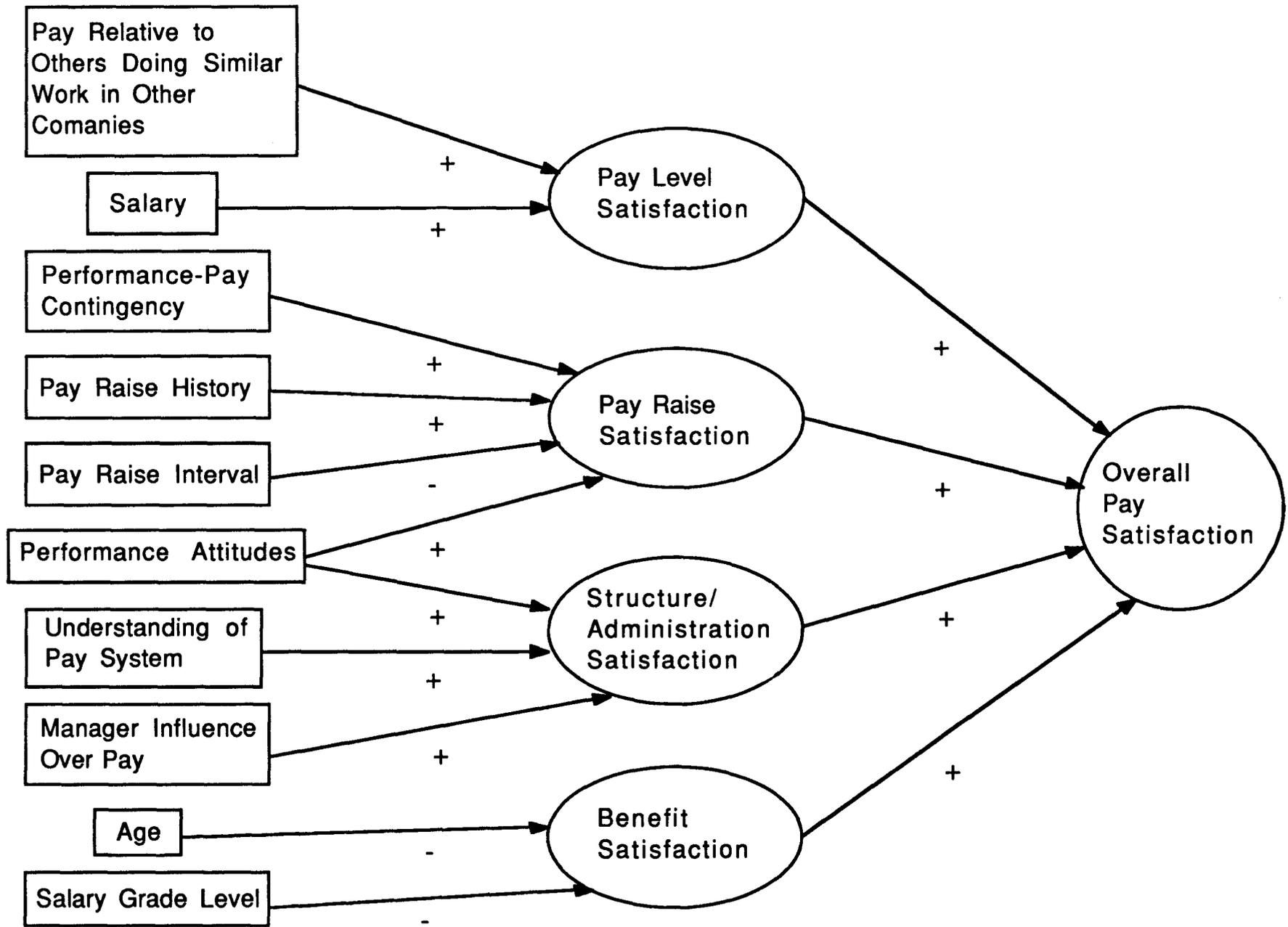
<u>External Correlate</u>	<u>PSQ Dimension</u>			
	<u>Level</u>	<u>Benefits</u>	<u>Raise</u>	<u>S/A</u>
Salary	.303	-.295	.086	.024
Pay Raise History	.036	.080	.248	.101
Understanding of Pay System	.182	.058	.227	.301
Salary Grade	.129	-.199	.097	.102
Age	.135	-.196	-.013	.012
Performance Appraisal Attitudes	.302	.168	.536	.419
Performance - Pay Contingency	.345	.072	.522	.442
Manager Influence Over Pay	.025	-.001	.184	.171
Pay Raise Interval	.067	-.124	-.173	-.084
Pay Relative to Others Doing Similar Work in Other Companies	.443	.176	.240	.286

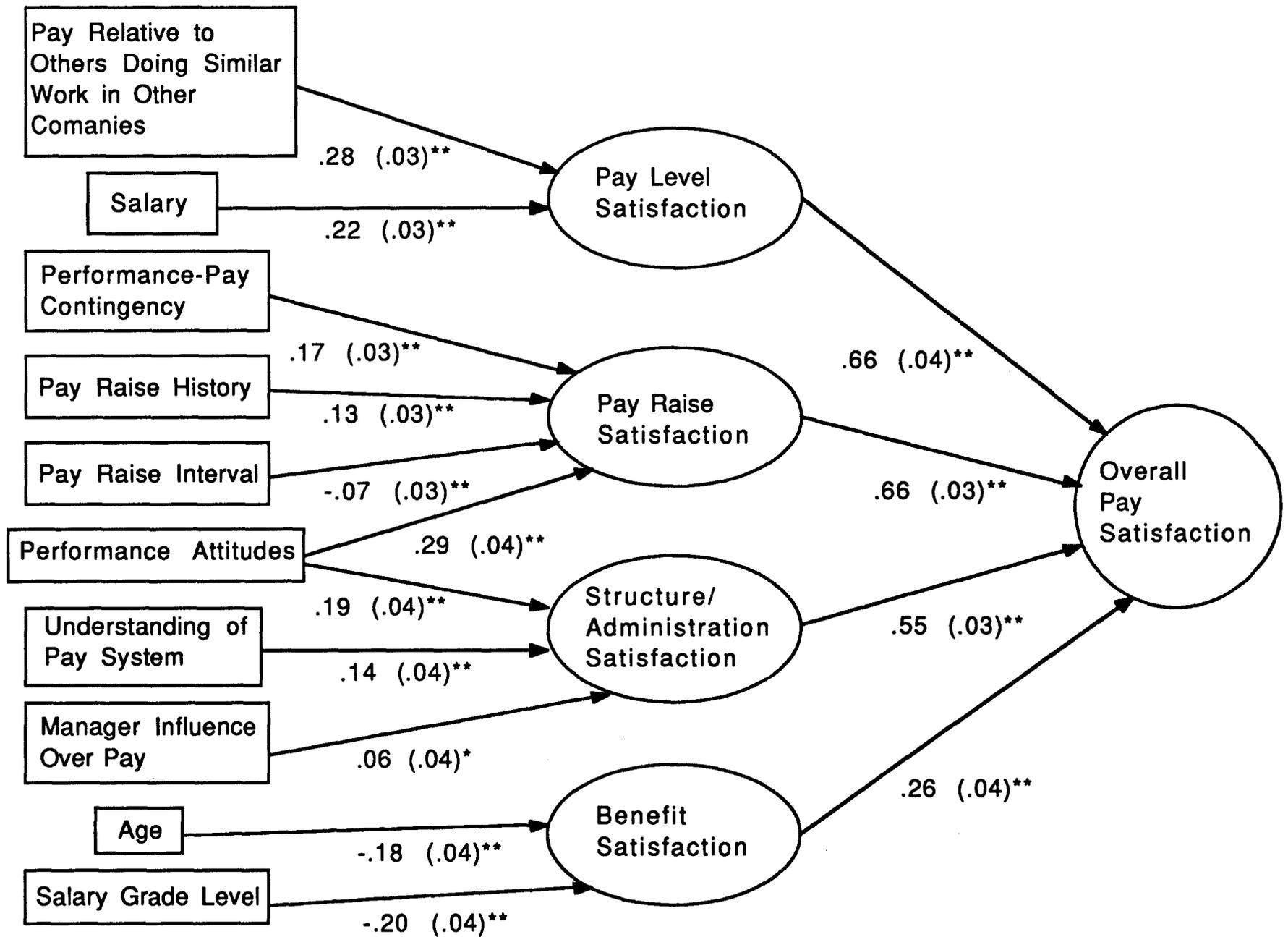
Note: S/A = Structure/Administration. Correlations greater than .08 are significant at the .01 level.

**Figure Captions**

**Figure 1. Hypothesized Model of Pay Satisfaction.**

**Figure 2. LISREL Estimates of Hypothesized Model.**





Note: \*  $p < .05$ ; \*\*  $p < .01$ . Standard errors are in parentheses.