

M. JOSEPH SIRGY, DAVID EFRATY, PHILLIP SIEGEL and DONG-JIN LEE

## A NEW MEASURE OF QUALITY OF WORK LIFE (QWL) BASED ON NEED SATISFACTION AND SPILLOVER THEORIES

(Accepted 14 February, 2001)

**ABSTRACT.** A new measure of QWL was developed based on need satisfaction and spillover theories. The measure was designed to capture the extent to which the work environment, job requirements, supervisory behavior, and ancillary programs in an organization are perceived to meet the needs of an employee. We identified seven major needs, each having several dimensions. These are: (a) health and safety needs (protection from ill health and injury at work and outside of work, and enhancement of good health), (b) economic and family needs (pay, job security, and other family needs), (c) social needs (collegiality at work and leisure time off work), (d) esteem needs (recognition and appreciation of work within the organization and outside the organization), (e) actualization needs (realization of one's potential within the organization and as a professional), (f) knowledge needs (learning to enhance job and professional skills), and (g) aesthetic needs (creativity at work as well as personal creativity and general aesthetics). The measure's convergent and discriminant validities were tested and the data provided support to the construct validity of the QWL measure. Furthermore, the measure's nomological (predictive) validity was tested through hypotheses deduced from spillover theory. Three studies were conducted – two studies using university employees and the third using accounting firms. The results from the pooled sample provided support for the hypotheses and thus lent some support to the nomological validity to the new measure.

Although there is no formal definition of quality of working life (QWL), industrial psychologists and management scholars agree in general that QWL is a construct that deals with the well being of employees, and that QWL differs from job satisfaction (e.g., Champoux, 1981; Davis and Cherns, 1975; Efraty and Sirgy, 1988; Hackman and Suttle, 1977; Kabanoff, 1980; Kahn, 1981; Lawler, 1982; Near et al., 1980; Quinn and Shephard, 1974; Quinn and Staines, 1979; Staines, 1980). QWL differs from job satisfaction in that job satisfaction is construed as one of many outcomes of QWL. QWL does not only affect job satisfaction but also satisfac-



tion in other life domains such as family life, leisure life, social life, financial life, and so on. Therefore, the focus of QWL is beyond job satisfaction. It involves the effect of the workplace on satisfaction with the job, satisfaction in non-work life domains, and satisfaction with overall life, personal happiness, and subjective well being. For example, Danna and Griffin (1999) view QWL as a hierarchy of concepts that includes life satisfaction (top of the hierarchy), job satisfaction (middle of the hierarchy), and work-specific facet satisfaction such as satisfaction with pay, co-workers, supervisor, among others. In this paper, we define QWL as *employee satisfaction with a variety of needs through resources, activities, and outcomes stemming from participation in the workplace*. Thus, need satisfaction resulting from workplace experiences contributes to job satisfaction and satisfaction in other life domains. Satisfaction in the major life domains (e.g., work life, family life, home life, leisure life) contributes directly to satisfaction with overall life.

Why is quality-of-work-life (QWL) important? There is some evidence showing that a happy employee is a productive employee; a happy employee is a dedicated and loyal employee (e.g., Greenhaus et al., 1987). Much research has shown that QWL may have a significant impact on employee behavioral responses, such as organizational identification, job satisfaction, job involvement, job effort, job performance, intention to quit, organizational turnover, personal alienation (e.g., Carter et al., 1990; Efraty and Sirgy, 1990; Efraty et al., 1991; Lewellyn and Wibker, 1990). Danna and Griffin (1999), in a recent review and synthesis of the literature on health and well being in the workplace, provided much evidence for the consequences of low levels of health and well-being. These include absenteeism, reduced productivity and efficiency, reduced product and service quality, high compensation claims, costly health insurance, and direct medical expenses.<sup>1</sup>

There are two dominant theoretical approaches in the QWL literature, namely need satisfaction and spillover (see Loscoco and Roschelle, 1991, for an excellent review of the QWL literature). Our measure of QWL is based on these two theoretical perspectives. The *need satisfaction* approach to QWL is based on need-satisfaction models developed by Maslow (1954), McClelland (1961), Herzberg (1966), and Alderfer (1972). The basic tenet of

this approach to QWL is that people have basic needs they seek to fulfill through work. Employees derive satisfaction from their jobs to the extent that their jobs meet these needs. For example, Porter (1961) developed a QWL measure to gauge need satisfaction in an organizational context. Porter's Need Satisfaction Questionnaire (NSQ) was used to assess (a) the level of employee needs that are pursued on the job, (b) the level of organizational resources relevant to the needs experienced by the employee, and (c) the congruence between a person's needs and organizational resources – with greater congruence reflecting increased need fulfillment by the organization. Four need categories, including seven needs based on Maslow's hierarchy were covered by the NSQ measure. These are:

- Survival needs:
  - Security needs, and
  - Pay.
- Social needs:
  - Need of interpersonal interactions friendships, and
  - Need for membership and being-in-the-know in a significant social group.
- Ego needs:
  - Need for self-esteem, and
  - Need for autonomy.
- Self-actualization needs.

Using security needs as an example, respondents are asked: "The feeling of security in my position: (a) How much is there now? And (b) how much should there?" The response scale is a 7-point scale varying from "minimum" (1) to "maximum" (7). The rating of the first of the two questions yields a measure of perceived organizational resources, while rating of the second question yields a measure of need level. The possible scores of organizational resources and needs range from 1 to 7 for the security need, the need for pay, and the need for being-in-the-know, all of which are represented by one item each. The need for interpersonal interactions and friendships are represented by two items, self-esteem and self-actualization are represented by three items each, and the need

for autonomy is represented by four items. Need satisfaction (an index of congruence between organizational resources and personal needs) is derived by taking the absolute difference between "is" (organizational resources) and "should" (need) scores. The nomological (predictive) validity of this measure was established by Hall et al. (1970) (cf. Cohen et al., 1997; Golembiewski and Sun, 1988, 1989, 1990).

The *spillover* approach to QWL posits that satisfaction in one area of life may influence satisfaction in another. For example, satisfaction with one's job may influence satisfaction in other life domains such as family, leisure, social, health, financial, etc. (e.g., Andrisani and Shapiro, 1978; Bromet et al., 1990; Crohan et al., 1989; Crouter, 1984; George and Brief, 1990; Kabanoff, 1980; Kavanagh and Halpern, 1977; Leiter and Durup, 1996; Levitin and Quinn, 1974; Loscocco, 1989; Orpen, 1978; Rice et al., 1980; Schmitt and Bedian, 1982; Schmitt and Mellon, 1980; Staines, 1980; Steiner and Truxillo, 1989). There is horizontal spillover and vertical spillover. *Horizontal spillover* is the influence of affect in one life domain on a neighboring domain. For example, job satisfaction may influence feelings of satisfaction in the family life domain, and vice versa. To understand the concept of *vertical spillover*, we need to first understand the notion of domain hierarchy. Life domains (job, family, leisure, community, etc.) are organized hierarchically in people's minds. At the top of the hierarchy is the most superordinate domain, namely overall life. Feelings in this most superordinate domain reflect what quality-of-life (QOL) researchers call life satisfaction, personal happiness, or subjective well being. Subordinate to the most superordinate life domain are the major life domains such as family, job, leisure, community, and so on.

Satisfaction/dissatisfaction within each of these major life domains "spills over" to the most superordinate domain, thus affecting life satisfaction. For example, satisfaction in the job domain spills over vertically (bottom-up) affecting life satisfaction. This is *vertical bottom-up spillover*, which is different from *vertical top-down spillover*. The latter concept refers to the influence of life satisfaction on a particular life domain (e.g., job satisfaction). Related to the concepts of spillover are the concepts of segmentation

and compensation. *Segmentation* is the opposite of spillover. That is, the individual chooses to block any spillover, thus segmenting affect in that life domain (Wilensky, 1960). For example, if a person feels dissatisfied with his job, he may segment his negative feelings within the job domain, thus preventing these feelings from affecting other aspects of his personal life. *Compensation* refers to the balance of affect between/among the life domains. If the person is dissatisfied in one life domain, he may choose to overcome this dissatisfaction by engaging in enjoyable activities in another life domain, thus ensuring satisfaction. Therefore, the satisfaction in one domain “compensates” for the dissatisfaction in another. For example, if a person is highly dissatisfied with his job, he may choose to become more involved in church activities and derive pleasure from those activities. Doing so overcomes the deficiency in satisfaction experienced in the work domain.

The purpose of this paper is to report on the development of a new measure of QWL based on both need satisfaction and spillover theories. The new measure builds on Porter’s (1961) Need Satisfaction Questionnaire (NSQ) in the way it employs a comparable taxonomy of needs in an organizational context. We believe our new measure is significantly better than Porter’s NSQ on several grounds. *First*, the measure does not only capture need satisfaction *per se* but also employees’ perceptions of organizational sources of need satisfaction stemming from the work environment, job requirements, supervisory behavior, and ancillary programs. Thus, our measure may have better diagnostic value for management action. Managers can administer this measure to their employees (through a confidential and anonymous survey), and the survey results should reveal strategic gaps in the organization’s work environment, job requirements, supervisory behavior, and ancillary programs.

*Second*, the validity of our measure is not only tested through traditional tests of convergence and discrimination validity but also tested through specific hypotheses logically deduced from spillover theory and to a lesser extent need satisfaction theory. We are aware that need-based theories of QWL have been criticized in relation to the need prepotency notion, i.e., the assumption that lower-order needs have a stronger prepotency than higher-order needs (e.g., O’Brien, 1986; Roberts and Glick, 1981; Salanick and Pfeffer,

1977). It should be noted that our QWL measure is partly based on Maslow's taxonomy of needs, not his notion of need prepotency.

*Third*, our measure does not rely on computing a difference score between "actual states" and "need levels." Such difference scores have been criticized by many methodologists (e.g., Berger-Gross, 1982; Cronbach and Furby, 1970; Johns, 1981; Peter, Churchill and Brown, 1993; Wall and Payne, 1973). In particular, measures based on difference scores have been criticized as being potentially unreliable, having systematic correlations with their components, having spurious correlations with other variables, having questionable construct validity, and restricting variance.

#### THE QWL MEASURE

The basic premise of our QWL construct and measure is that workers bring a cluster of their needs to their employing organization and are likely to enjoy a sense of QWL to the extent that these needs are satisfied through work in that organization. Specifically, we conceptualize QWL in terms of satisfaction of seven needs. Mathematically stated,

$$QWL = NS_{hs} + NS_{er} + NS_s + NS_t + NS_a + NS_k + NS_{cs}$$

where

$NS_{hs}$  = satisfaction of health and safety needs which involves three need dimensions:

- Protection from ill health and injury at work, i.e., safety at work;
- Protection from ill health and injury outside of work, i.e., job-related health benefits;
- Enhancement of good health, i.e., encouragement at work of preventative measures of health care;

$NS_{er}$  = satisfaction of economic and family needs which involves three need dimensions:

- Pay, i.e., adequate wages;
- Job security, i.e., feeling secure knowing that one is not likely to get laid off;

- Other family needs; i.e., having enough time from work to attend to family needs;

$NS_s$  = satisfaction of social needs which involves two dimensions:

- Collegiality at work, i.e., positive social interactions at work;
- Leisure time off work, i.e., having enough time from work to relax and experience leisure;

$NS_t$  = satisfaction of esteem needs which involves two dimensions

- Recognition and appreciation of one's work within the organization, i.e., recognition and awards for doing a good job at work;
- Recognition and appreciation of one's work outside the organization, i.e., recognition and awards by the local community and/or professional associations for work done within the organization or on behalf of the organization;

$NS_a$  = satisfaction of actualization needs which involves two dimensions:

- Realization of one's potential within the organization, i.e., job is perceived to allow recognition of potential;
- Realization of one's potential as a professional, i.e., job is perceived to allow the person to become an expert in his or her field of expertise;

$NS_k$  = satisfaction of knowledge needs which involves two dimensions:

- Learning to enhance job skills, i.e., perceives opportunities to learn to do the job better;
- Learning to enhance professional skills, i.e., perceives opportunities to learn to become an expert in one's field;

$NS_{cs}$  = satisfaction of aesthetics needs which involves two dimensions:

- Creativity at work, i.e., perceives opportunities to be creative in solving job-related problems;
- Personal creativity and general aesthetics, i.e., perceives opportunities at work to allow personal development of one's sense of aesthetics and creative expression.

The need satisfaction measure consists of 16 items relating to the 16 need satisfaction dimensions of the seven needs – one item for each dimension. The idea of multiple indicators was ruled out because of the great number of constructs and dimensions tapped in the questionnaire and the possible response bias that may result from lengthy questionnaires. Subjects are asked to respond to each item by checking a 7-point scale ranging from “Very Untrue” to “Very True” (see Appendix 1 for the dimensions and the indicators).

Note that QWL is conceptualized as a summation of satisfaction of various needs. We assume that each of the 16 need-satisfaction dimensions contributes something unique and distinctive to the conceptual domain of the QWL construct. Note that we do not assume that certain need dimensions vary in prepotency. (Of course, there are likely to be individual differences in prepotency among the 16 need dimensions. Future research may study what individual difference variables account for variations in the importance of these need dimensions.). Therefore, we use a summation index to capture need satisfaction across all 16 need dimensions.

#### *Testing the Construct Validity of the QWL Measure*

Testing the factor structure of the QWL measure is an effective method of demonstrating construct validity. The QWL measure has 16 items reflecting 7 different needs. A second-order confirmatory factor analysis can be used to test the factor structure of the measure. Construct validation can be demonstrated with results showing that 16 observed items arise from seven first-order factors (reflecting seven different needs) and these seven first-order factors arise from a single second-order factor (QWL).

#### *Testing the Nomological (Predictive) Validity of the QWL Measure*

To provide nomological validation of our QWL measure (based on our conceptualization of QWL as employee satisfaction of seven major needs with each major need divided into several dimensions of needs), we hypothesized antecedents and consequences of QWL (see Figure 1).

*Hypothesis 1 and 1a (The Predictive Effects of the Need Satisfaction with the Work Environment, Job Requirements, Supervisory Beha-*



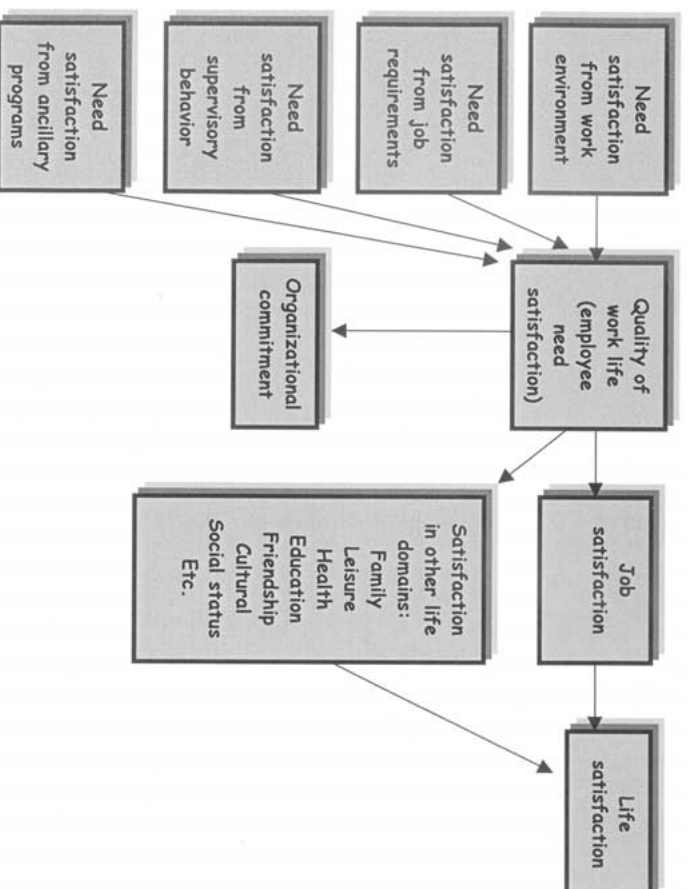


Figure 1. Antecedents and Consequences of QWL.

*viator, and Ancillary Programs on Employee's Overall Work-Related Need Satisfaction*): The hypothesized antecedents are (a) need satisfaction with the work environment, (b) need satisfaction with job requirements, (c) need satisfaction with supervisory behavior, and (d) need satisfaction with ancillary programs. In other words, the more employees perceive that the work environment, job requirements, supervisory behavior, and ancillary programs meet their needs, the more likely they would experience high need satisfaction (*Hypothesis 1* or **H1**). These four dimensions of organizational sources of need satisfaction are partially derived from a review of the literature on work and emotional well being (Loscocco and Roschelle, 1991).

But more specifically, we hypothesize that satisfaction of a particular need is directly related to perceived aspects of the work environment, job requirements, supervisory behavior, and ancillary programs that address that need (*Hypothesis 1a*). For example, satisfaction of health and safety needs (the need for protection from ill

health and injury) is impacted by one's work environment (e.g., sanitary condition and accident rate at work), job requirements, (e.g., the health and safety effects of the physical demands of the job), and supervisory behavior (e.g., supervisor protects employees from job-related injuries and related health hazards at work), and ancillary programs (e.g., placement of signs in the work place alerting them and warning them of potential health hazards).

In relation to *need satisfaction through the work environment*, studies have shown that factors such as physical and social work environment affect employees' emotional well being (e.g., Cummings and Malloy, 1977; Glaser, 1980; Lawler, 1986; Sheppard and Herrick, 1972; Simmons and Mares, 1985; Susman 1976). For example, noisy and noxious work sites cause emotional distress (e.g., Kahn, 1981; Menaghan and Merves, 1984). Furthermore, social support from co-workers influence employees' mental health (e.g., Caplan et al., 1980; Loscocco and Spitze, 1990; Lowe and Northcott, 1988).

With respect to the QWL determinant of *need satisfaction through job requirements*, one can argue that the various needs of employees are easily frustrated when job demands are too great (Loscocco and Roschelle, 1990). Studies have shown that excessive workloads, forced overtime, and ambiguous or conflicting role demands cause emotional distress (e.g., Bacharach et al., 1990; Caplan et al., 1980; House et al., 1979; Menaghan and Merves, 1984). Studies also have shown that factors such as job rewards, substantive complexity, challenge, autonomy, and meaningfulness of work affect emotional well being (e.g., Adelman, 1987; Caplan et al., 1980; Cummings and Malloy 1977; Lawler 1986; Lowe and Northcott, 1988; Loscocco and Spitze, 1990; Sheppard and Herrick, 1972; Simmons and Mares, 1985; Susman, 1976). For example, a study by McFarlin and Rice (1991) has demonstrated that job facets (e.g., opportunity to take action, freedom to do work own way, learning opportunities, opportunity to suggest work procedures, involvement in the solution of work problems, performance feedback, and contact with client or customer) contribute significantly to job satisfaction (cf. Rice et al., 1991). Teamwork, as a job requirement, has been argued to enhance both QWL and job performance (e.g., Nadan and Nadan, 1995; Qvale and Hanssen-Bauer, 1990).

With respect to *need satisfaction through supervisory behavior*, studies have shown that supervisory behavior affect employees' emotional well being (e.g., Caplan et al., 1980; Loscocco and Spitze, 1990; Lowe and Northcott, 1988). For example, Teas, Wacker and Hughes (1979) conducted a study in which salespeople's need fulfillment was directly related to performance feedback. That is, higher levels of performance feedback leads to higher levels of job satisfaction and QWL. The study also found that participation in decision making and role clarity contributes positively and significantly to QWL.

With respect to *need satisfaction through ancillary programs*, one can argue that there are many ancillary programs designed to enhance QWL. Common programs are those that manipulate work arrangements such as full-time work-at-home, part-time work-at-home, flextime, compressed work week, and regular work arrangements (e.g., Duxbury and Haines 1990, 1991; Ronen, 1981). Other ancillary programs include safety improvement programs (e.g., Cooper and Davis, 1997), programs dealing with alcohol abuse (e.g., Tse and Jackson, 1990).

*Hypothesis 2 (The Predictive Effect of QWL on Organizational Commitment):* The concept of organizational commitment is based on the assumption that commitment is comprised of three factors: (a) a strong belief and acceptance of the organizational goals and values; (b) a readiness to exert effort on behalf of the organization; and (c) a strong desire to remain a member of the organization (Porter et al., 1974; Mowday et al., 1979). Extensive reviews of the literature on the concept of organizational commitment (e.g., Mowday et al., 1982) demonstrate that organizational commitment is related to high job performance (e.g., Mowday et al., 1974), overall organizational effectiveness (e.g., Steers, 1977), low employee turnover (e.g., Porter et al., 1974), and high job satisfaction (e.g., Aranya et al., 1982; Aranya and Ferris, 1984; Lachman and Aranya, 1986).

Based on the literature, we hypothesized employee need satisfaction enhances the likelihood of organizational commitment (see Figure 1). We reasoned that a worker who enjoys a sense of QWL (i.e., need satisfaction) via her/his employing organization is likely to feel positive about the organization, and this positive attitude is

likely to result in commitment to the organization. Thus, we hypothesize that QWL is positively related to organizational commitment (*Hypothesis 2* or **H2**).

*Hypothesis 3 (The Predictive Effect of QWL on Job Satisfaction):* One can easily argue that QWL affects job satisfaction (e.g., Danna and Griffin, 1999; Hall et al., 1970; Porter, 1961). Employees whose QWL is high are likely to feel satisfied with their jobs. That is, the individual who experiences a higher level of need satisfaction is likely to experience a higher level of job satisfaction. Why? This is because based on the theoretical logic of spillover theory (Wilensky, 1960), affect is compartmentalized in a variety of life domains, e.g., family life, leisure life, community life, and work life. The work life domain is considered to be a psychological space in which all affective experiences related to work are stored in that psychological space. Affective experiences in the work life domain stem from satisfaction of the employee's needs as manifested at work. Thus, the extent to which a person's needs are satisfied at work, the greater the overall satisfaction with the job, i.e., job satisfaction. Based on that logic, we hypothesize that QWL is a predictor of job satisfaction (*Hypothesis 3* or **H3**).

*Hypothesis 4 and 4a (The Predictive Effect of QWL on Satisfaction in Non-work Life Domains):* QWL does not only affect job satisfaction but also satisfaction in other life domains such as leisure, family, financial, health, education, friendships, neighborhood, community, spiritual, environment, housing, cultural, and social status (*Hypothesis 4* or **H4**). This is because satisfaction from one life domain tends to spill over to other life domains (Wilensky, 1960). As described earlier, this phenomenon is known as "horizontal spillover" (in contrast to "vertical spillover"). Horizontal spillover refers to the notion that feelings of satisfaction in one life domain (e.g., work life) affect the satisfaction of another (e.g., family life). Vertical spillover, on the other hand, refers to the influence of satisfaction in certain life domains on one's overall assessment of life in general (the most superordinate life domain). This particular type of spillover is referred to as "bottom-up spillover." In contrast, there is "top-down spillover" in which feelings of life

satisfaction/dissatisfaction influences satisfaction/dissatisfaction in particular life domains such as family, job, health, leisure, and so on (see Figure 1).

Furthermore, one can argue that meeting employee needs through work overlaps significantly with other life domains. Hence, satisfaction in a particular life domain (e.g., family life) is directly influenced by QWL because the work domain plays a direct role in satisfying needs pertaining to that life domain. For example, consider the social needs satisfied through work. The life domain of friendship overlaps significantly with friendships at work and outside of work. Satisfaction of the social needs at work thus should make a significant contribution to overall satisfaction felt in relation to friendships at large.

Based on this logic, we hypothesize that satisfaction of health and safety needs at work contributes positively to satisfaction in two primary life domains – health and job; satisfaction of economic and family needs at work contributes positively to satisfaction in three primary life domains – family, finances, and job; satisfaction of social needs at work contributes positively to satisfaction in three primary life domains – leisure, friendships, and job; satisfaction of esteem needs at work contributes positively to satisfaction in two primary life domains – social status and job; satisfaction of actualization needs at work contributes positively to satisfaction in the spiritual and job life domains; satisfaction of knowledge needs at work contributes positively to satisfaction in two primary life domains – education and job; and satisfaction of aesthetics needs at work contributes positively to satisfaction in four primary life domains – culture, community, the environment, and job (*Hypothesis 4a* or **H4a**).

*Hypothesis 5 (The Effect of QWL on Life Satisfaction through the Mediation of Job Satisfaction and Satisfaction in the Various Life Domains):* The spillover concept suggests a positive relationship between work and non-work experiences implying that job satisfaction or dissatisfaction is generalized (spills over) to other life domains (spillover effect), thus affecting life satisfaction or dissatisfaction. Conversely, one's overall life satisfaction or dissatisfaction spills over to job satisfaction or dissatisfaction. Comprehensive

reviews of the research literature (Kabanoff, 1980; Liou, Sylvia and Brunk, 1990; Tait et al., 1989; Rice et al., 1980; Rain et al., 1991) report a consistent positive relationship between job satisfaction and life satisfaction across a variety of settings and individuals. Numerous studies have suggested that work or on-the-job experiences and satisfaction influence non-work satisfaction (e.g., Caplan et al., 1980; Courter, 1984; Greenhaus et al., 1987; Kabanoff, 1980; Leiter and Durup, 1996; Loscocco and Roschelle, 1991). Some studies (e.g., Schmitt and Bedeian, 1982; Schmitt and Mellon, 1980) reported findings suggesting a reciprocal relationship between job and life satisfaction, as proposed by Rice et al. (1980).

As a continuation of our argument (expressed in hypotheses 3 and 4), one would expect that need satisfaction at work affects life satisfaction through job satisfaction and satisfaction felt on other life domains (e.g., leisure, family, social, financial, health). Specifically, it is hypothesized that QWL does not influence life satisfaction directly but indirectly through job satisfaction and satisfaction from other life domains (*Hypothesis 5* or **H5**).

## METHOD

### *Sampling and Method of Data Collection*

Three samples were collected for this study – two samples involved faculty and staff from two different universities, and the third sample involved accountants from various accounting organizations. The subjects involved in Sample 1 were selected from payroll lists of a southwestern urban university in the United States. The size of that population at the time of data collection was 490. Data collection was done through a mail survey; 490 questionnaires were mailed out to faculty and staff during fall semester of 1998. Twenty questionnaires were returned because of change in status; 180 questionnaires were returned completed. From those, seven were discarded because of significant problems noted in completing the questionnaire. The net response was 37 percent.

The subjects involved in Sample 2 were selected from faculty/staff directory of a Mid-Atlantic rural university in the United States. The size of that population at the time of data collection was 6,500.

One thousand names were randomly selected from the directory and a survey questionnaire was mailed to them during fall 1998 semester. Forty-six survey questionnaires were returned because of sample respondents moved on; 310 completed questionnaires were returned. The final response rate was 32.5 percent.

The subjects involved in Sample 3 were selected from several accounting firms located in the United States. The size of that population at the time of data collection was 200. Data collection was done through a mail survey. Two hundred questionnaires were mailed out to accountants during the spring of 1999; 15 questionnaires were returned because of change in status or address; and 73 questionnaires were returned completed. The net response was 39 percent.

We collected three samples from various organizations for the purpose of ensuring high variance in the study construct. No attempt was made in this study to generalize these results to the populations from which the samples were derived. This is because our goal in this study is construct and nomological validation of the QWL. Therefore, our major concern here was to maximize the internal validity of this study, not external validity.

### *The Survey Questionnaire*

Subjects were introduced to the survey questionnaire via a cover letter from the principal investigators describing the objectives of the study as aiming to assess the quality of work life in their organization. Subjects were assured that their responses would remain confidential and anonymous. The questionnaire consisted of ten sections. The first seven sections of the questionnaire related to satisfaction with seven categories of human needs (and 16 dimensions within) and items relating to the work environment, job requirements, supervisory behavior, and ancillary programs as they relate to the satisfaction of each need satisfaction dimension. The eighth section of the questionnaire included a measure of organizational commitment, while the ninth section focused on measures of job and life satisfaction. The last (tenth) section of the questionnaire contained demographic questions related to gender, age, educational level, salary, occupational title, years of service in current type of work, and years of service.

*Measures for Constructs Used for Nomological (Predictive) Validation*

To provide nomological validation of the QWL measure, the goal was to test five hypotheses. **H1** posits that the work environment, job requirements, supervisory behavior, and ancillary programs have a direct effect on employee need satisfaction. The measures pertaining to QWL (i.e., overall need satisfaction, need satisfaction attributed to the work environment, need satisfaction attributed to job requirements, need satisfaction attributed to supervisory behavior, and need satisfaction attributed to ancillary programs) are as follows:

The measure of *need satisfaction with work environment* focuses on the extent to which one's work environment facilitates satisfaction of seven need states. The measure is composed of 16 items corresponding to the 16 need dimensions. Subjects are instructed to respond to each item by agreeing or disagreeing with the accuracy of the statement on a 7-point scale ranging from "Very Untrue" to "Very True." Higher ratings mean higher satisfaction with the need dimension in question. A sample item of the work environment measure as it relates to the satisfaction of one's need for health and safety is: "My place of work is safe and sanitary." A sample item of the work environment measure as it relates to the satisfaction of one's need for creativity/aesthetics is "At (name of organization), everyone is encouraged to express his/her creativity" (see Appendix 2).

The measure of *need satisfaction with job requirements* focuses on the extent to which the employee's job requirements facilitate satisfaction of seven need states. The measure is composed of 16 items corresponding to the 16 dimensions of the seven needs. Subjects are instructed to respond to each item by agreeing or disagreeing with the accuracy of the statement on a 7-point scale ranging from "Very Untrue" to "Very True." The higher the rating the higher is the satisfaction with the job requirements as enhancing need satisfaction. A sample item of the job requirements' measure as it relates to the satisfaction of one's need for health and safety is: "The physical demands of my job are not hazardous for my health and safety." A sample item of the job requirements measure as it relates to the satisfaction of one's need for creativity/aesthetics is



“My job requires me to express a certain degree of creativity” (see Appendix 3).

The measure *need satisfaction with supervisory behavior* focuses on the extent to which the behavior of the employee's supervisor facilitates satisfaction of seven need states. The measure is composed of 16 items corresponding to the 16 dimensions of the seven needs. Subjects are instructed to respond to each item by agreeing or disagreeing with the accuracy of the statement on a 7-point scale ranging from “Very Untrue” to “Very True.” Higher ratings mean greater satisfaction with supervisory behavior contributing to need satisfaction. A sample item of the supervisory behavior measure as it relates to the satisfaction of one's need for health and safety is: “My supervisor does his or her best to protect me and others from job injuries and related health hazards at the work place.” A sample item of the supervisory behavior measure as it relates to the satisfaction of one's need for creativity/aesthetics is “My supervisor encourages me to express creative thinking on the job” (see Appendix 4).

The measure *need satisfaction with ancillary programs* focuses on the extent to which certain programs facilitate satisfaction of seven need states. The measure is composed of 16 items corresponding to the 16 dimensions of the seven needs. Subjects are instructed to respond to each item by agreeing or disagreeing with the accuracy of the statement on a 7-point scale ranging from “Very Untrue” to “Very True.” Higher ratings mean greater satisfaction with ancillary programs contributing to need satisfaction. A sample item of the ancillary programs measure as it relates to the satisfaction of one's need for health and safety is: “The janitors and maintenance people we have at work do a good job keeping the place clean and sanitary.” A sample item of the ancillary programs measure as it relates to the satisfaction of one's need for creativity/aesthetics is: “The design of my work facilities is beautiful” (see Appendix 5).

Now we turn our attention to describing the measures of constructs involved in hypotheses 2–5. *Hypothesis 2* posits that QWL enhances the likelihood of organizational commitment. That is, QWL is positively related to organizational commitment. Therefore, we need a measure of organizational commitment to test

this relationship. We used the Organizational Commitment Questionnaire (OCQ—Modway et al., 1979) to measure *organizational commitment*. Respondents express their agreement or disagreement (a 7-point Likert scale: 1=strongly disagree to 7=strongly agree) to a series of 15 statements (see Appendix 6). These statements deal with an individual's belief in and acceptance of the values and goals of the organization, willingness to exert considerable effort on behalf of the organization, and his/her desire to maintain membership in the organization. Example items are: "I find that my values and the organization's values are very similar;" "I am willing to put in a great deal of effort beyond that is normally expected in order to help this organization to be successful." "I would accept almost any type of job assignment in order to keep working for this organization." Responses were summed to create a single measure of an individual's commitment to the organization. Since the organizational commitment measure was a multiple indicator measure, a Cronbach Alpha reliability analysis was conducted on the pooled sample. Items 9, 11, and 15 were deleted as a function of the reliability analysis. The resultant Cronbach Alpha was 0.78.

**H3** posits that job satisfaction is a positive function of QWL. We measured *job satisfaction* using a single indicator-item, commonly used in quality-of-life studies (e.g., Andrews and Withey, 1976; Efraty and Sirgy, 1990, 1992; Efraty et al., 1997). The measure involved asking subjects "How do you feel about your present job in general?" Responses were captured on 5-point rating scales ranging from "very dissatisfied" (1) to "very satisfied" (5) – (see exact measure and norms in Appendix 7, #2).

**H4** posits that QWL contributes significantly to satisfaction/dissatisfaction in other life domains such as family, leisure, health, and so on.

Satisfaction/dissatisfaction in other life domains besides work was measured using single indicator-items in the same manner that job satisfaction was measured. These measures were borrowed from past quality-of-life studies (e.g., Andrews and Withey, 1976; Efraty and Sirgy, 1990, 1992; Efraty et al., 1997). The measure involved asking subjects "How do you feel about your (particular life domain, e.g., family situation in general)?" Responses were captured on 5-point rating scales ranging from "very dissatisfied"

(1) to “very satisfied” (5). The descriptive statistics for the life domain satisfaction measures are shown in Appendix 7, #1 and #3–15.

**H5** posits that QWL (need satisfaction) affects life satisfaction through the mediating effects of job satisfaction and satisfaction in other life domains. We measured *life satisfaction* using a single indicator-item in the same manner job satisfaction and satisfaction in other life domains were measured. Again, we borrowed this measure from past quality-of-life studies (e.g., Andrews and Withey, 1976; Efraty and Sirgy, 1990, 1992; Efraty et al., 1997). The measure involved asking subjects “How satisfied are you with your life as a whole?” Responses were captured on 5-point rating scales ranging from “very dissatisfied” (1) to “very satisfied” (5) (see exact measure and norms in Appendix 7).

## RESULTS

The results are reported by two major tests, one pertaining to construct validity and the other pertaining to nomological validity.

### *Testing Construct Validity of the QWL Measure*

As noted previously, QWL has been conceptualized as a higher-order construct composed of satisfaction of seven needs, and each need has its corresponding observed indicators. A second-order confirmatory factor analysis was conducted and the results are shown in Table I. The second-order model represents the data well. All of the loadings are large and significant (i.e., t-values of standardized loadings are greater than 2.0) and the second-order model of QWL provided a good fit to the data ( $\chi^2_{.97} = 366.2$ ,  $p = 0.0$ ; GFI = 0.92; AGFI = 0.88; CFI = 0.89; NFI = 0.86; RMSEA = 0.07). QWL produced a reliability coefficient of 0.78.

### *Testing the Nomological (Predictive) Validity of the QWL Measure*

Before testing the nomological validity of the QWL measure through hypothesis testing, we performed a set of analyses to demonstrate the convergent and discriminant validity of the constructs involved in the hypothesis-testing part of the study.

TABLE I  
A Second-Order Confirmatory Factor Analysis for QWL

Indicator	Health & Safety Needs	Economic & Family Needs	Social Needs	Esteem Needs	Actualization Needs	Knowledge Needs	Aesthetics Needs
<i>First Order Loadings</i> ( $\chi_{ij}$ )							
Protection from ill health an injury at work	0.53 (2.74)						
Protection from ill health and injury outside of work	0.41 (2.75)						
Enhancement of good health	0.21 (2.42)						
Pay		0.66 (9.70)					
Job security		0.53 (8.74)					
Other family needs		0.73 (9.83)					
Collegiality at work			0.34 (1.36)				
Leisure time off work			0.48 (1.35)				
Recognition/appreciation of work within				0.75 (1.16)			
Recognition/appreciation of work outside				0.60 (1.17)			
Realization of one's potential within					0.89 (11.42)		
Realization of one's potential outside					0.68 (12.34)		

TABLE I

Continued

Indicator	Health & Safety Needs	Economic & Family Needs	Social Needs	Esteem Needs	Actualization Needs	Knowledge Needs	Aesthetics Needs
Learning to enhance job skills						0.74 (15.50)	
Learning to enhance job skills						0.88 (14.79)	
Creativity at work							0.65 (5.12)
Personal creativity and general aesthetics							0.32 (5.39)
<i>Second Order Loadings (<math>\gamma_{jk}</math>)</i>							
<i>First order construct</i>	<i>QWL</i>						
Health & safety needs	0.89 (2.68)						
Economic & family needs	0.83 (8.43)						
Social needs	0.92 (1.33)						
Esteem needs	0.98 (1.14)						
Actualization needs	0.81 (9.45)						
Knowledge needs	0.73 (10.78)						
Aesthetics needs	0.60 (4.75)						

NOTES: All loadings are standardized and t-values in parenthesis.

Model fit  $\chi^2_{,97} = 366.2$ ,  $p = 0.0$ , GFI = 0.92, AGFI = 0.88, CFI = 0.89, NFI = 0.86, RMSEA = 0.07

TABLE II

Within-Construct Confirmatory Factor Analyses and Reliability

Construct # of items	Factor	$\chi^2$ (df)	P	GFI	CFI	RMSEA	Standardized Alpha	
QWL	7	1	41.19 (9)	0.00	0.97	0.96	0.08	0.78
JR	7	1	118 (14)	0.00	0.94	0.84	0.12	0.71
WE	7	1	74.24 (14)	0.00	0.97	0.96	0.08	0.83
SB	7	1	144.5 (14)	0.00	0.92	0.96	0.13	0.77
AP	7	1	40.1 (14)	0.00	0.98	0.97	0.05	0.77
OC	12	1	445 (54)	0.00	0.87	0.87	0.11	0.87

Legend:

QWL= quality of work life

JR = need satisfaction based on job requirements

WE = need satisfaction based on the work environment

SB = need satisfaction based on supervisory behavior

AP = need satisfaction based on ancillary programs

OC = organizational commitment

Given the large number of constructs and items in the model, the following steps were taken to establish convergent and discriminant validity of the measures involved in the theoretical model. First, within construct confirmatory factor analyses were conducted for each construct (see Table II). The results indicate that all measures are unidimensional and items load significantly to their underlying constructs (see Table II).

Second, a series of nested confirmatory factor analyses were conducted for each construct pair – Chi-square difference tests were conducted between the unconstrained model and the constrained model ( $\Phi = 1.0$ ). For all 27 construct pairs, the results indicate that all constructs are significantly different from one another (see Table III). Statistically speaking, the unconstrained model provided a significantly better fit than the constrained model ( $p < 0.05$ ). These findings are evidence in support of the discriminant validity of the theoretical constructs and their measures (see Table III).

Given that we found the constructs to have convergent and discriminant validity, we proceeded to test the overall model shown in Figure 1. The results are reported in Table IV. Path analysis results

TABLE III  
Discriminant Validity of the Constructs

Paired constructs	Unconstrained Model Chi-Square (df)	Constrained Model Chi-Square (df)	Chi-square difference (df = 1)	P-value
QWL-WE	750 (76)	806 (77)	56	P < 0.05
QWL-JR	829 (76)	857 (77)	28	P < 0.05
QWL-SB	618 (76)	765 (77)	147	P < 0.05
QWL-AP	365 (76)	438 (77)	73	P < 0.05
QWL-OC	692 (151)	1039 (77)	347	P < 0.05
QWL-JS	73 (20)	114 (21)	41	P < 0.05
QWL-LS	88 (20)	829 (21)	741	P < 0.05
WE-JR	520 (76)	585 (77)	65	P < 0.05
WE-SB	701 (76)	1165 (77)	464	P < 0.05
WE-AP	367 (76)	392 (77)	25	P < 0.05
WE-OC	833 (151)	1301 (152)	468	P < 0.05
WE-JS	102 (20)	1028 (21)	926	P < 0.05
WE-LS	93 (20)	1470 (21)	1377	P < 0.05
JR-SB	660 (76)	755 (77)	95	P < 0.05
JR-AP	333 (76)	401 (77)	68	P < 0.05
JR-OC	764 (151)	1032 (152)	268	P < 0.05
JR-JS	156 (20)	403 (21)	247	P < 0.05
JR-LS	129 (20)	584 (21)	455	P < 0.05
SB-AP	374 (76)	681 (77)	307	P < 0.05
SB-OC	787 (151)	2402 (152)	1615	P < 0.05
SB-JS	149 (20)	2056 (21)	1907	P < 0.05
SB-LS	148 (20)	2783 (21)	2635	P < 0.05
AP-OC	668 (151)	1067 (152)	399	P < 0.05
AP-JS	64 (20)	668 (21)	604	P < 0.05
AP-LS	51 (20)	889 (21)	838	P < 0.05
OC-JS	519 (65)	1895 (66)	1376	P < 0.05
OC-LS	491 (65)	2703 (66)	2212	P < 0.05
QWL-Family	75 (20)	919 (21)	844	P < 0.05
QWL-Leisure	140 (20)	919 (21)	779	P < 0.05

TABLE III  
Continued

Paired constructs	Unconstrained Model Chi-Square (df)	Constrained Model Chi-Square (df)	Chi-square difference (df = 1)	P-value
QWL-Finance	140 (20)	754 (21)	636	P < 0.05
QWL-Health	101 (20)	943 (21)	842	P < 0.01
QWL-Education	72 (20)	867 (21)	795	P < 0.05
QWL-Friends	115 (20)	800 (21)	685	P < 0.05
QWL-Neighborhood	82 (20)	958 (21)	876	P < 0.05
QWL-Community	82 (20)	862 (21)	780	P < 0.05
QWL-Spiritual	78 (20)	944 (21)	866	P < 0.05
QWL-Environment	80 (20)	861 (21)	781	P < 0.05
QWL-Housing	97 (20)	941 (21)	844	P < 0.05
QWL-Cultural	73 (20)	916 (21)	843	P < 0.05
QWL-Social Status	76 (20)	850 (21)	774	P < 0.05

Legend:

LS = life satisfaction

QWL = quality-of-work life

JR = need satisfaction based on job requirements

WE = need satisfaction based on the work environment

SB = need satisfaction based on supervisory behavior

AP = need satisfaction based on ancillary programs

OC = organizational commitment

Family = satisfaction with family life domain

Leisure = satisfaction with leisure life domain

Finance = satisfaction with financial life domain

Health = satisfaction with health life domain

Education= satisfaction with education life domain

Friends = satisfaction with friend life domain

Neighbor = satisfaction with neighbor life domain

Community = satisfaction with community life domain

Spiritual = satisfaction with spiritual life domain

Environment = satisfaction with environment domain

Housing =satisfaction with housing life domain

Culture =satisfaction with cultural life domain

Social status = satisfaction with social status life domain



TABLE IV

Testing the QWL Model at Large: Goodness-of-Fit and LISREL Estimates

Dependent variable	Independent variables	Pooled	
		Estimates (t-value)	R <sup>2</sup>
Quality of work life	Work environment	0.22 (6.01)	0.73
	Job requirement	0.54 (14.46)	
	Supervisory behavior	0.13 (5.17)	
	Ancillary programs	0.09 (2.32)	
Organizational commitment	Quality of work life	0.07 (14.59)	0.28
Job satisfaction	Quality of work life	0.10 (18.82)	0.39
Satisfaction in other life domains	Quality of work life	0.04 (11.20)	0.19
Life satisfaction	Job satisfaction	0.21 (7.93)	0.42
	Satisfaction in other life domains	0.75 (15.42)	

Model Fit:  $\chi^2_{,21} = 175.5$ ,  $p = 0.0$ , GFI = 0.94, NFI = 0.94, NNFI = 0.92, RMSEA = 0.12.

using LISREL provided support for the model overall (GFI = 0.94; NFI = 0.94; NNFI = 0.92; RMSEA = 0.12).

With respect to **H1** (the effects of need satisfaction through the work environment, job requirements, supervisory behavior, and ancillary programs on QWL), the LISREL estimates of the work environment, job requirements, supervisory behavior, and ancillary programs are all reported in Table IV. The pooled sample results seen highly supportive of **H1** in that the path estimates were all significant in relation to the work environment (path estimate = 0.22, t-value = 6.01), job requirements (path estimate = 0.54, t-value = 14.46), supervisory behavior (path estimate = 0.13, t-value = 5.17), as well as for ancillary programs (path estimate = 0.09, t-value = 2.32). These four variables accounted for 73 percent of the variance in QWL.

With respect to **H1a**, the results are shown in Table V. The pooled sample results pertaining to the average composite of *health and safety needs* indicate that satisfaction of health and safety needs was significantly predicted by all four organizational sources of need satisfaction – the work environment, job requirements, supervisory

TABLE V  
Testing Hypothesis 1a through a Series of Multiple Regression

Dependent variable		Independent	Independent	Independent	Independent	R-square
Need type	Need dimension	variable 1	variable 2	variable 3	variable 4	
		Work	Job	Supervisory	Ancillary	
		environment ( $\beta$ )	requirements ( $\beta$ )	behavior ( $\beta$ )	programs ( $\beta$ )	
Health & safety needs	Protection from injury at work	0.60**	0.14**	0.12**	-0.01	0.52**
	Protect. Injury outside of work	0.07**	0.03	-0.004	0.75**	0.59**
	Enhancement of good health	0.09*	0.23**	0.004	0.02	0.08**
	<i>Average composite</i>	0.14**	0.14**	0.14**	0.38**	0.34**
Economic & family needs	Pay	0.64**	0.07**	0.12**	0.03	0.53**
	Job security	0.52**	0.02	0.35**	-0.03	0.56**
	Other family needs	0.48**	0.20**	0.05	0.05	0.40**
	<i>Average composite</i>	0.56**	0.13**	0.16**	0.00	0.56**
Social needs	Collegiality at work	0.53**	-0.03	-0.04	0.04	0.26**
	Leisure time off work	0.17**	0.55**	0.09**	0.11**	0.52**
	<i>Average composite</i>	0.36**	0.30**	0.09**	0.13**	0.46**

TABLE V  
Continued

Dependent variable		Independent	Independent	Independent	Independent	R-square
Need type	Need dimension	variable 1	variable 2	variable 3	variable 4	
		Work environment ( $\beta$ )	Job requirements ( $\beta$ )	Supervisory behavior ( $\beta$ )	Ancillary programs ( $\beta$ )	
Esteem needs	Recognition the organization	0.19**	0.02	0.51**	0.22**	0.57**
	Recognition outside of the org.	0.10***	0.11**	0.38**	0.05	0.22**
	<i>Average composite</i>	0.15**	0.07**	0.52**	0.18**	0.55**
Actualization needs	Realiz. potential within org.	0.52**	0.23**	0.14**	-0.03	0.56**
	Realiz. potential as a pro.	0.19**	0.40**	0.12**	0.07	0.41**
	<i>Average composite</i>	0.36**	0.43**	0.11**	0.01	0.61**
Knowledge needs	Learning to enhance job skills	0.21**	0.46**	0.22**	-0.06	0.47**
	Learning to enhance pro. skills	0.13**	0.55**	0.15**	0.10	0.52**
	<i>Average composite</i>	0.14**	0.66**	0.16**	-0.04	0.69**
Aesthetics needs	Creativity at work	0.14**	0.33**	0.33**	0.05	0.38**
	Personal creativity/aesthetics	0.12**	0.25**	0.01	0.02	0.12**
	<i>Average composite</i>	0.14**	0.31**	0.05	0.096**	0.23***

NOTES: Pooled data (N = 557).

\*p &lt; 0.10; \*\*p &lt; 0.05

behavior, and ancillary programs. With respect to the *economic and family needs*, the average composite of three dimensions (pay, job security, and other family needs) was mostly predicted by work environment, job requirements, supervisory behavior, but not ancillary programs. With respect to the *social needs*, the average composite of the two dimensions (collegiality at work and leisure time off work) was significantly predicted by all four organizational sources of need satisfaction. With respect to the *esteem needs*, the average composite of the two dimensions (recognition and appreciation of work within the organization and recognition and appreciation of work outside of the organization) was found to be significantly predicted by all four organizational sources of need satisfaction. With respect to the *actualization needs*, the average composite of the two dimensions (realization of one's potential within the organization and realization of one's potential as a professional) was mostly predicted by the work environment, job requirements, supervisory behavior, but not ancillary programs. With respect to the *knowledge needs*, the average composite of the two dimensions (learning to enhance job skills and learning to enhance professional skills) was mostly predicted by the work environment, job requirements, supervisory behavior, but not ancillary programs. Finally, with respect to the *aesthetics needs*, the average composite of the two dimensions (creativity at work and personal creativity and general aesthetics) was mostly predicted by the work environment, job requirements, ancillary programs, but not supervisory behavior.

**H2** states that QWL positively influences organizational commitment. The pooled sample LISREL estimate of the path from QWL to organizational commitment (0.07) was significant ( $t$ -value = 14.59), accounting for 28 percent of the total variance (see Table IV). This result provides support for H2.

**H3** states that job satisfaction is a positive function of QWL. The pooled sample LISREL estimate of the path from QWL to job satisfaction (0.10) was significant ( $t$ -value = 18.82), accounting for 39 percent of the total variance (see Table IV). The pooled results also provide support for the hypothesis.

**H4** states that QWL contributes significantly to satisfaction in other life domains such as family, leisure, health, and so on. The

pooled sample LISREL estimate of the various paths from QWL to satisfaction in other life domains (.04) was significant ( $t$ -value = 11.20), accounting for 19 percent of the total variance (see Table IV). This pooled sample result was provides support for H4.

**H4a** states that satisfaction in a particular life domain (e.g., family life) is directly influenced by QWL because the work domain plays a direct role in satisfying needs pertaining to that life domain. Specifically, satisfaction of health and safety needs at work should contribute positively to satisfaction in two primary life domains – health and job; satisfaction of economic and family needs at work should contribute positively to satisfaction in three primary life domains – family, finances, and job; satisfaction of social needs at work should contribute positively to satisfaction in three primary life domains – leisure, friendship, and job; satisfaction of esteem needs at work should contribute positively to satisfaction in two primary life domains – social status and job; satisfaction of actualization needs should contribute positively to two primary life domains – spiritual and job; satisfaction of knowledge needs at work should contribute positively to satisfaction in two primary life domains – education and job; and satisfaction of aesthetics needs at work should contribute positively to satisfaction in four primary life domains – culture, community, the environment, and job. We tested this hypothesis by regressing all the seven need satisfaction variables against each life domain satisfaction. These results are shown in Table VI. With respect to the impact of satisfaction of health and safety needs at work on satisfaction in the health and job life domains, the regression analyses indicate that satisfaction of health and safety needs did indeed significantly predict satisfaction in the health life domain (Beta = 0.30,  $p < 0.01$ ) and satisfaction in the job life domain (Beta = 0.11,  $p < 0.05$ ). With respect to the impact of satisfaction of economic and family needs at work on satisfaction in the family, financial, and job life domains, the regression analyses indicate that satisfaction of economic and family needs did indeed significantly predict satisfaction in the financial and job life domains (Betas = 0.35 and 0.12;  $p < 0.01$ ), but failed to predict satisfaction in the family life domain (Beta = 0.03,  $p > 0.10$ ). With respect to the impact of satisfaction of social needs at work on satisfaction in leisure, friendship, and job life domains, the regression

TABLE VI  
Regression Results Related to Hypotheses 4a

Dependent variable	Independent variable 1	Independent variable 2	Independent variable 3	Independent variable 4	Independent variable 5	Independent variable 6	Independent variable 7
Satisfaction with life domain ( $R^2$ )	Health and safety needs ( $\beta$ )	Economic and family needs ( $\beta$ )	Social needs ( $\beta$ )	Esteem needs ( $\beta$ )	Actualization needs ( $\beta$ )	Knowledge needs ( $\beta$ )	Aesthetics needs ( $\beta$ )
Life overall (0.16**)	0.20**	0.07	0.15**	0.02	0.12**	-0.03	0.07*
Job (0.46**)	0.11**	0.12**	0.08**	0.18**	0.29**	0.14**	-0.01
Family (0.06**)	0.13**	0.03	0.09*	0.02	0.09*	-0.04	0.05
Leisure (0.17**)	0.10**	-0.01	0.40**	0.08	0.01	-0.01	0.06
Finance (0.25**)	0.17***	0.35***	-0.02	-0.01	0.07	0.06	0.001
Health (0.10**)	0.30**	-0.00	0.06	-0.05	-0.00	0.02	0.02
Education (0.10)	0.10*	0.03	-0.06	0.11**	0.13**	0.08	0.01
Friends (0.18**)	0.14**	-0.03	0.33**	-0.02	0.07	0.02	0.08*

TABLE VII  
Continued

Dependent variable	Independent	Independent	Independent	Independent	Independent	Independent	Independent
Satisfaction with life	variable 1	variable 2	variable 3	variable 4	variable 5	variable 6	variable 7
domain ( $R^2$ )	Health and	Economic and	Social	Esteem	Actualization	Knowledge	Aesthetics
	safety needs ( $\beta$ )	family needs ( $\beta$ )	needs ( $\beta$ )	needs ( $\beta$ )	needs ( $\beta$ )	needs ( $\beta$ )	needs ( $\beta$ )
Neighborhood (0.06**)	0.2**	0.00	0.04	-0.00	0.05	-0.07	0.06
Community (0.1)	0.18**	0.06	0.13**	-0.01	0.06	0.01	0.05
Spiritual life (0.05**)	0.08*	0.04	0.12**	-0.04	0.01	0.03	0.11**
Environment (0.11**)	0.15**	0.11**	0.01	-0.00	0.16**	0.02	-0.06
Housing (0.09**)	0.18**	0.17**	-0.01	-0.09	0.12**	-0.09*	0.08*
Cultural life (0.06**)	0.05	0.04	0.15**	0.03	0.03	0.01	0.07
Social Status (0.11**)	0.12**	0.05	0.09**	0.15**	-0.02	0.01	0.05

NOTES: Pooled data (N = 557).

\*p &lt; 0.10; \*\*p &lt; 0.05

analyses indicate that satisfaction of social needs did indeed significantly predict satisfaction in the leisure, friendship, and job life domains (Betas = 0.40, 0.33, and 0.08;  $p < 0.05$ ). With respect to the impact of satisfaction of esteem needs at work on satisfaction in the social status and job life domains, the regression analyses indicate that satisfaction of esteem needs did significantly predict satisfaction in the job and social status life domains (Betas = 0.15 and 0.15;  $p < 0.01$ ). With respect to the impact of satisfaction of actualization needs at work on satisfaction in the spiritual and job life domains, the regression analyses indicate that satisfaction of actualization needs did indeed significantly predict satisfaction in the job life domain (Beta = 0.29,  $p < 0.01$ ) and failed to significantly predict satisfaction in the spiritual life domain (Beta = 0.01,  $p > 0.10$ ). With respect to the impact of satisfaction of knowledge needs on satisfaction in the education and job life domains, the regression analyses indicate that satisfaction of knowledge needs did indeed significantly predict satisfaction in the job life domain (Beta = 0.14,  $p < 0.01$ ), but failed to predict satisfaction in the education life domain (Beta = 0.08,  $p > 0.10$ ). Finally with respect to the impact of satisfaction of aesthetics needs at work on satisfaction in culture, community, the environment, and job life domains, the regression analyses indicate that satisfaction of aesthetics needs failed to significantly predict satisfaction in the culture life domain (Beta = 0.07,  $p > 0.10$ ), satisfaction in the environment life domain (Beta = -0.06,  $p > 0.10$ ), satisfaction in the job life domain (Beta = -0.01,  $p > 0.10$ ), and satisfaction in the community life domain (Beta = 0.05,  $p > 0.10$ ). These results pertaining to the pooled sample are consistent with **H4a**.

**H5** states that QWL affects life satisfaction through the mediation of job satisfaction and satisfaction from other life domains. The pooled sample LISREL estimates of the path from QWL to job satisfaction is 0.10 ( $t$ -value = 18.82), accounting for 39 percent of the variance in job satisfaction scores. QWL also was successful in predicting a composite (average) of satisfaction scores from other life domains (path estimate = 0.04,  $t$ -value = 11.20), accounting for 19 percent of the variance in the satisfaction scores. Job satisfaction was successful in predicting life satisfaction (path estimate = 0.21,  $t$ -value = 7.93) as well as satisfaction from other life domains (path



TABLE VIII  
Two Stage Least Square (2SLS) Regression Results [with Individual Life Domains]

IV	DV	
	QWL OC JS FAM LEI FIN HLT EDU FRI NGR COM SPR ENV HOU CUL STS LS	
WE	0.24**	
JR	0.46**	
SB	0.17**	
AP	0.08**	
QWL	0.53** 0.63** 0.22** 0.25** 0.41** 0.18** 0.28** 0.33** 0.16** 0.28** 0.19** 0.26** 0.21** 0.23** 0.29**	
JS		0.26**
FAM		0.36**
LEI		0.14**
FIN		0.06*
HLT		0.12**
EDU		0.02
FRI		0.09**
NGR		−0.02

TABLE VII  
Continued

IV	DV																
	QWL	OC	JS	FAM	LEI	FIN	HLT	EDU	FRI	NGR	COM	SPR	ENV	HOU	CUL	STS	LS
COM																	0.04
SPR																	0.07*
ENV																	-0.00
HOU																	0.05
CUL																	-0.04
STS																	-0.00
R <sup>2</sup>	0.73	0.28	0.40	0.05	0.07	0.16	0.03	0.08	0.11	0.03	0.08	0.04	0.07	0.04	0.05	0.09	0.53

Note: \*p < 0.10; \*\*p < 0.05

*WE* = work environment; *JR* = job requirement; *SB* = supervisory behavior; *AP* = ancillary programs; *QWL* = quality of work life; *JS* = job satisfaction; *OC* = organizational commitment; *FAM* = satisfaction with family life domain; *LEI* = satisfaction with leisure life domain; *FIN* = satisfaction with financial life domain; *HLT* = satisfaction with health life domain; *EDU* = satisfaction with education; *FRI* = satisfaction with friends; *NGR* = satisfaction with neighborhood; *COM* = satisfaction with community; *SPR* = satisfaction with spiritual life; *ENV* = satisfaction with environment; *HOU* = satisfaction with house situation; *CUL* = satisfaction with cultural situation; *STS* = satisfaction with social status; *LS* = life satisfaction.

estimate = 0.75, *t*-value = 15.42), both accounting for 42 percent of the variance in life satisfaction scores (see Table IV). A two-stage least regression analysis revealed (see Table VII) that 53 percent of the variance in life satisfaction scores was predicted by satisfaction from the various life domains. Satisfaction in the various life domains was successfully predicted by need satisfaction (QWL) – the range of prediction was 3–40 percent (multiple *R*-square). Need satisfaction was successfully predicted by needs satisfaction related to the work environment, job requirements, supervisory behavior, and ancillary programs (73 percent of the variance accounted for). These results combined provide good support for H5.

## DISCUSSION

The results of the pooled sample provide construct and nomological validation support for our QWL measure. With respect to construct validity, the results of a second-order confirmatory factor analysis have demonstrated that the QWL measure has 7 major first-order dimensions reflecting the 7 needs, and each need has the corresponding subdimensions reflecting the 16 factors.

With respect to the nomological validity of the QWL measure, the LISREL goodness-of-fit indices were all supportive of the theoretical model. As hypothesized, employees' need satisfaction (QWL) was predicted by employees' need satisfaction stemming from the work environment, job requirements, supervisory behavior, and ancillary programs. Need satisfaction was successful in predicting organizational commitment, job satisfaction, and satisfaction in other life domains (e.g., family, leisure, financial, health education, and friends). Furthermore, job satisfaction together with satisfaction in other non-work life domains were significant predictors of life satisfaction.

With respect to **H1** (employee need satisfaction is mostly determined by the employee's perceptions of four organizational sources of need satisfaction, namely the work environment, job requirements, supervisory behavior, and ancillary programs), the LISREL estimates pertaining to the pooled sample provide good support for this hypothesis and thus providing nomological validity to the QWL measure. These results are consistent with Loscocco and Roschelle's

(1990) observation that these four dimensions of organizational sources of need satisfaction seem to account for most of the studies on work and emotional well being.

**H1a** states that satisfaction of a particular need is directly related to perception aspects of the work environment, job requirements, supervisory behavior, and ancillary programs that address that need. The results from the pooled sample provided good support to **H1a**. Specifically, the average composite scores of *health and safety needs*, *social needs*, and *esteem needs* were significantly predicted by all four organizational sources of need satisfaction – the work environment, job requirements, supervisory behavior, and ancillary programs. The remaining needs (economic/family needs, actualization needs, knowledge needs, and aesthetics needs) were significantly predicted by three of the four organizational sources of need satisfaction. *Economic/family needs*, *actualization needs*, and *knowledge needs* were predicted by work environment, job requirements, supervisory behavior, but not ancillary programs. In contrast, aesthetics needs were predicted by the work environment, job requirements, and ancillary programs, but not supervisory behavior. Perhaps the reason for failing to provide complete support for **H1a** may be related to lack of variance and normal score distribution of the variables involved. Research involving a wider range of organizations may provide complete support of the effects of the organizational sources of need satisfaction in question.

**H2** states that QWL positively influences organizational commitment. The LISREL estimates of the path from QWL to organizational commitment of the pooled sample were significant. This overall pattern of findings provides support for H2, thus providing nomological validity to the QWL measure. These results are consistent with many studies that have demonstrated a link between organizational commitment and QWL (e.g., Aranya and Ferris, 1984; Lachman and Aranya, 1986),

**H3** states that job satisfaction is a positive function of QWL. The LISREL estimates of the path from QWL to job satisfaction of the pooled sample were significant. This overall pattern of findings provides support for **H3**, thus providing nomological validity to the QWL measure. These results are also consistent with past research (e.g., Hall et al., 1970; Porter, 1961).

**H4** states that QWL contributes significantly to satisfaction/dissatisfaction in other life domains such as family, leisure, health, and so on. The LISREL estimates of the paths from QWL to satisfaction in other life domains across all three studies were significant. This overall pattern of findings provides support for **H4** and thus providing nomological validity to the QWL measure.

**H4a** states that satisfaction in a particular life domain (e.g., family life) is directly influenced by QWL because the work domain plays a direct role in satisfying needs pertaining to that life domain. The statistical results of the pooled sample show some support for **H4a**. The only anomaly focused on satisfaction with aesthetic needs and the prediction that this variable should account for a significant portion of the variance in satisfaction in community life, cultural life, the environment, as well as job life. In general, these relationships were not supported by the data. Based on these results, we argue that future developments of the QWL measure may drop the aesthetics need dimensions from the overall measure. This deletion is not likely to affect the integrity of the measure.

**H5** states that QWL affects life satisfaction through the mediation of job satisfaction and satisfaction from other life domains. The LISREL results from the pooled sample show that QWL does indeed significantly predict job satisfaction and satisfaction scores from other life domains. Job satisfaction and satisfaction from other life domains were successful in predicting life satisfaction. The results of the two-stage least square reinforced the LISREL observations. In sum, the total pattern of results pertaining to the effect of QWL on life satisfaction through the mediation effect of job satisfaction and satisfaction from other life domains was supportive of **H5**. This support of **H5** provides additional nomological support to the QWL measure. The findings pertaining to **H4**, **H4a**, and **H5** are all consistent with the rich literature on spillover (e.g., Kabanoff, 1980; Kornhauser, 1965; Liou et al., 1990; Rain et al., 1991; Rice et al., 1980; Schmitt and Bedeian, 1982; Schmitt and Mellon, 1980; Tait et al., 1989).

In conclusion, we believe that the pooled data reported in this paper provide support for the construct and nomological validity of our QWL measure. The measure is based on the simple notion that the organization provides resources to employees – finan-

cial and non-financial resources, and these resources serve to satisfy employees' many needs (economic, health and safety, social, esteem, etc.). Need satisfaction results in satisfaction with the job as well as other life domains, thus satisfaction with life in general.

Our concept of QWL has some resemblance to Hackman and Oldham's (1980) well-known model of job satisfaction. The model shows that job satisfaction is determined by five facets of satisfaction – four extrinsic rewards (pay, security, social relations at work, and supervision) and one intrinsic reward (opportunities for growth). The most widely used facet-specific measure is the Job Descriptive Index (JDI; Smith et al., 1969), which for the most part is consistent with Hackman and Oldham's model of job satisfaction. Our QWL model builds on Hackman and Oldham's model by modifying and further expanding the list of extrinsic and intrinsic rewards a la Maslow. We modified the Hackman and Oldham's model by making the distinction between type of rewards and sources of rewards. We view supervision as a source of reward, whereas pay, security, social relations at work, and opportunities for growth as types of rewards – a la Maslow. Based on Maslow's need hierarchy theory, we expanded these types of rewards related to a variety of extrinsic and intrinsic needs, i.e., health and safety needs, economic and family needs, social needs, esteem needs, actualization needs, knowledge needs, and aesthetics needs. We then established a taxonomy of sources of rewards, namely the work environment, job requirements, supervisory behavior, and ancillary programs. However, it should be noted that Hackman and Oldham's model is designed to explain the determinants of job satisfaction, those job characteristics that contribute directly to global feelings of satisfaction/dissatisfaction with the job. Our QWL model is designed to explain the determinants of satisfaction in the job life domain, satisfaction in other life domains, as well as overall satisfaction with life (perceived quality of life).

With respect to the *managerial implications* of our QWL measure, it should be noted that the measure does not only capture need satisfaction *per se* but also employees' perceptions of organizational sources of need satisfaction stemming from the work environment, job requirements, supervisory behavior, and ancillary programs. In other words, the measure is very useful for diagnostic

purposes. Managers are advised to administer the QWL measure to their employees (through a confidential and anonymous survey), and the survey results should reveal strategic gaps in the organization's work environment, job requirements, supervisory behavior, and ancillary programs. Hence, the QWL measure helps management identify strategic gaps in the organization and take action to enhance the QWL of the employees. Doing so should go a long way in enhancing job performance and organizational commitment and reducing turnover, absenteeism, costs related to claim compensation and insurance, and medical costs.

With respect to *future research*, we recommend researchers to do the following: First, future research should replicate this study in the context of other organizations to ensure greater variance in the variables pertaining to organizational sources of need satisfaction. Doing so would provide better data to test H1a in its entirety.

Second, the QWL measure may be modified somewhat as a direct function of the study findings pertaining to **H4a**. Specifically, the results of this study failed to support the notion that satisfaction with aesthetic needs contributes to satisfaction in community life, cultural life, the environment, as well as job life. Perhaps, a more-nomologically valid measure of QWL may preclude the aesthetic need dimension. Future research may test this notion.

Third, future research using our QWL measure should focus on external validity considerations. We need to be able to establish norms for QWL standards in relation to different types of organizations, e.g., universities, banks, hospitals, and on. In so doing, researchers have to demonstrate generalizability, i.e., ensure that the sample is representative of the employee of the organization, ensure that the organization is representative of the population of organizations in question, etc.

Finally, other forms of validation are encouraged. For example, other QWL and non-QWL measures can be administered together with our QWL measure and tests of convergence and discriminant validity can be conducted. Multitrait-multimethods type of construct validation can be attempted and are highly welcomed.

APPENDIX I  
The QWL (Need Satisfaction) Measure

Need type	Need dimension	QWL-need satisfaction indicator/measure	M (SD)
Health & safety needs	Protection from ill health and injury at work	I feel physically safe at work.	6.14 (1.12)
	Protection from ill health and injury outside of work	My job provides good health benefits.	5.78 (1.21)
	Enhancement of good health	I do my best to stay healthy and fit.	5.59 (1.14)
Economic & family needs	Pay	I am satisfied with what I'm getting paid for my work.	3.58 (2.01)
	Job security	I feel that my job at (name of the organization) is secure for life.	3.96 (1.88)
	Other family needs	My job does well for my family.	4.70 (1.59)



## APPENDIX I

## Continued

Need type	Need dimension	QWL-need satisfaction indicator/measure	M (SD)
Social needs	Collegiality at work	I have good friends at work.	5.63 (1.25)
	Leisure time off work	I have enough time away from work to enjoy other things in life.	4.68 (1.72)
Esteem needs	Recognition./appreciation of work within the organization	I feel appreciated at work at (name of the organization).	4.46 (1.86)
	Recognition/appreciation of work outside of the org.	People at (name of the organization) and/or within my profession respect me as a professional and an expert in my field of work.	5.06 (1.51)
Actualization needs	Realization of one's potential within the organization	I feel that my job allows me to realize my full potential.	4.68 (1.74)
	Realization of one's potential as a professional	I feel that I am realizing my potential as an expert in my line of work.	4.82 (1.60)

## APPENDIX I

Continued

Need type	Need dimension	QWL-need satisfaction indicator/measure	M (SD)
Knowledge needs	Learning to enhance job skills	I feel that I'm always learning new things that help do my job better.	5.56 (1.22)
	Learning to enhance professional skills	This job allows me to sharpen my professional skills.	5.35 (1.39)
Aesthetics needs	Creativity at work	There is a lot of creativity involved in my job.	5.26 (1.50)
	Personal creativity and general aesthetics	My job helps me develop my creativity outside of work.	3.97 (1.55)

## APPENDIX II

## The Need-Satisfaction-from-Work-Environment Measure

Need type	Need dimension	QWL-work environment indicator/measure	M (SD)
Health & safety needs	Protection from ill health and injury at work	My place of work is safe and sanitary.	5.96 (1.26)
	Protection from ill health and injury outside of work	Many of my co-workers talk a lot about how to reduce the risks to live long and healthy lives.	3.82 (1.62)
	Enhancement of good health	Everyone at work seems to talk about fitness, health, and eating right.	5.59 (1.14)
Economic & family needs	Pay	I don't hear much griping from my fellow co-workers about their pay.	3.25 (1.90)
	Job security	(Name of the organization) has a long history of treating employees like family. Once you're in, your job is secure for life.	3.35 (1.66)
	Other family needs	(Name of the organization) cares for its employees and their families.	4.21 (1.61)

## APPENDIX II

## Continued

Need type	Need dimension	QWL-work environment indicator/measure	M (SD)
Social needs	Collegiality at work	My place of work is collegial.	5.37 (1.42)
	Leisure time off work	People at work seem to enjoy life outside of work.	5.24 (1.33)
Esteem needs	Recognition/appreciation of work within the org.	Almost everyone at (name of organization) is rewarded based on performance.	3.23 (1.87)
	Recognition/appreciation of work outside of org.	Almost everyone at (name of the organization) is a recognized expert in his or her field.	3.67 (2.38)
Actualization needs	Realization of one's potential within the org.	(Name of the organization) helps its employees realize their potential.	4.24 (1.66)
	Realization of one's potential as a professional	(Name of the organization) tries hard to help its employees be the best they can be professionally.	4.14 (1.69)

## APPENDIX II

Continued

Need type	Need dimension	QWL-work environment indicator/measure	M (SD)
Knowledge needs	Learning to enhance job skills	(Name of the organization) helps its employees learn the need job skills.	4.73 (1.55)
	Learning to enhance professional skills	(Name of the organization) tries hard to educate its employees to become better professionals.	4.29 (1.70)
Aesthetics needs	Creativity at work	At (name of the organization) everyone is encouraged to express his or her creativity.	4.23 (1.78)
	Personal creativity and general aesthetics	The culture of (name of the organization) encourages employees to express creativity on the job and outside of their job.	3.97 (1.55)

## APPENDIX III

## The Need-Satisfaction-from-Job-Requirements Measure

Need type	Need dimension	QWL-job requirement indicator/measure	M (SD)
Health & safety needs	Protection from ill health and injury at work	The physical demands of my job are not hazardous for my health and safety.	5.81 (1.42)
	Protection from ill health and injury outside of work	My job is not too stressful.	3.67 (1.80)
	Enhancement of good health	My job helps me stay both physically and mentally fit.	3.72 (1.53)
Economic & family needs	Pay	My job is designed with certain flexibility so that I can choose to produce more for extra money.	2.64 (1.79)
	Job security	The skill requirements of my job are such that (name of the organization) cannot easily replace me.	3.60 (1.78)
	Other family needs	I can easily manage my job and also attend to the needs of my family.	4.63 (1.58)

# APPENDIX III

Continued

Need type	Need dimension	QWL-job requirement indicator/measure	M (SD)
Social needs	Collegiality at work	My job requires me to be part of one or more teams or committees that meet regularly during work hours to discuss job-related matters.	4.52 (1.91)
	Leisure time off work	My job does not interfere with my leisure life.	4.10 (1.85)
Esteem needs	Recognition and appreciation of work within the organization	My job calls for certain kinds of skills that I surely have.	6.16 (0.84)
	Recognition and appreciation of work outside of the organization	I feel like I have mastered (or making good progress toward mastering) the skills of my profession.	5.76 (2.81)
Actualization needs	Realization of one's potential within the organization	My job requires me to make challenging decisions affecting my deportment.	4.74 (1.80)
	Realization of one's potential as a professional	My job allows me to exercise many of my talents and/or special skills.	5.22 (1.51)

## APPENDIX III

## Continued

Need type	Need dimension	QWL-job requirement indicator/measure	M (SD)
Knowledge needs	Learning to enhance job skills	My job requires me to learn new things.	5.91 (1.05)
	Learning to enhance professional skills	My job requires me to think about things that can help me grow as a person and as a professional.	5.18 (1.50)
Aesthetics needs	Creativity at work	My job requires me to express a certain degree of creativity.	5.44 (1.56)
	Personal creativity and general aesthetics	My job helps me develop a better appreciation of creativity, art, and aesthetics.	3.81 (1.66)



## APPENDIX IV

## The Need-Satisfaction-from-Supervisory-Behavior Measure

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Health & safety needs	Protection from ill health and injury at work	My supervisor does his or her best to protect me and others from job injuries and related health hazards at the work place.	5.80 (1.36)
	Protection from ill health and injury outside of work	I don't hesitate approaching my supervisor to ask for time off to take care of a health problem.	5.49 (1.61)
	Enhancement of good health	My supervisor comes across as caring for my personal health.	4.91 (1.63)
Economic & family needs	Pay	I feel that my supervisor cares about my economic well being.	4.26 (1.83)
	Job security	I can't imagine that my supervisor would lay me off.	4.49 (1.89)
	Other family needs	I don't hesitate approaching my supervisor to ask for time off to deal with family problems.	5.04 (1.72)

## APPENDIX IV

## Continued

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Social needs	Collegiality at work	I feel that management cares about making the work place collegial, warm, and friendly.	4.40 (1.76)
	Leisure time off work	My supervisor cares that I have a life outside of work.	4.47 (1.72)
Esteem needs	Recognition and appreciation of work within the organization	I feel that my supervisors appreciate the work I do.	5.23 (1.64)
	Recognition and appreciation of work outside of the organization	My supervisor will do anything he or she can so that my work will be recognized and acknowledged outside (name of the organization).	3.87 (1.76)
Actualization needs	Realization of one's potential within the organization	I feel that my supervisor cares about helping me realize my potential to help (name of the organization).	4.68 (1.78)
	Realization of one's potential as a professional	My supervisor cares about who I am and what I want to become professionally.	4.71 (1.80)

## APPENDIX IV

## Continued

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Knowledge needs	Learning to enhance job skills	My supervisor provides me with opportunities to learn new things that can help me do a better job.	5.09 (1.56)
	Learning to enhance professional skills	I feel that my boss cares about helping me enhance my professional skills.	4.87 (1.76)
Aesthetics needs	Creativity at work	My supervisor encourages me to express creative thinking on the job.	4.89 (1.65)
	Personal creativity and general aesthetics	My supervisor thinks highly of creative people.	4.53 (1.99)

## APPENDIX V

## The Need-Satisfaction-from-Ancillary-Programs Measure

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Health & safety needs	Protection from ill health and injury at work	The janitors and maintenance people we have at work do a good job keeping the place clean and sanitary.	5.56 (1.41)
	Protection from ill health and injury outside of work	(Name of organization) offers a good health benefits package.	5.67 (1.26)
	Enhancement of good health	(Name of organization) offers its employees health benefits that include the use of fitness facilities and programs.	5.11 (1.79)
Economic & family needs	Pay	(Name of organization) offers a program to help employees invest and manage their finances effectively.	4.53 (2.39)
	Job security	If layoffs are needed, (name of org.) has an early retirement program that encourages employees to retire early, thus avoiding forced layoffs.	3.90 (1.69)
	Other family needs	We have a child care center at work.	2.09 (1.53)

# APPENDIX V

Continued

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Social needs	Collegiality at work	We have a lounge where employees come together, rest, and socialize for coffee breaks and lunches.	3.81 (2.12)
	Leisure time off work	We have flextime at work.	4.23 (1.95)
Esteem needs	Recognition and appreciation of work within the organization	At (name of org.) every employee stands a good chance of being publicly recognized by the (name of organization) for outstanding performance.	3.60 (1.83)
	Recognition and appreciation of work outside of the organization	(Name of org.) distributes information about professional conf/seminars leading to professional certifications, recognition, and awards.	4.76 (1.74)
Actualization needs	Realization of one's potential within the organization	(Name of organization) has a program that ensures that employees are routinely and periodically evaluated for possible promotions.	4.45 (1.94)

## APPENDIX V

## Continued

Need type	Need dimension	QWL-supervisory behavior indicator/measure	M (SD)
Knowledge needs	Realization of one's potential as a professional	(Name of organization) has a program that allows employees to take on increasingly challenging tasks and greater responsibility.	4.03 (1.74)
	Learning to enhance job skills	(Name of org.) has an educational program that continuously exposes employees to new standards/technologies to improve job performance.	4.52 (1.68)
	Learning to enhance professional skills	(Name of organization) has a program that subsidizes an employee's educational program of professional development.	4.41 (1.81)
Aesthetics needs	Creativity at work	The design of my work facilities is beautiful.	3.53 (1.75)
	Personal creativity and general aesthetics	Administration instituted a program that trains and encourages employees to be creative at work and in their personal lives.	3.18 (1.51)

## APPENDIX VI

## The Organizational-Commitment Measure

Item	M (SD)
1. I am willing to put in a great deal of effort beyond that normally expected in order to help (name of organization) be successful.	5.71 (1.30)
2. I talk up (name of organization) to my friends as a great organization to work for.	5.25 (1.53)
3. I feel very little loyalty to (name of organization). (reverse coded)	3.22 (1.94)
4. I would accept almost any type of job assignment in order to keep working for (name of organization).	3.44 (2.20)
5. I find that my values and the (name of organization) values are very similar.	4.25 (1.71)
6. I am proud to tell others that I am part of (name of organization).	5.51 (1.31)
7. I could just as well be working for a different organization as long as the type of work was similar. (reverse coded)	4.55 (1.68)
8. (Name of organization) really inspires the very best in me in the way of job performance.	4.26 (1.71)
9. It would take very little change in my present circumstances to cause me to leave (name of organization).	3.28 (1.74)
10. I am extremely glad that I chose (name of organization) to work for over other organizations I was considering at the time I joined.	5.22 (1.41)
11. There's not too much to be gained by sticking with (name of organization) indefinitely. (reverse coded)	3.73 (1.80)
12. Often, I find it difficult to agree with (name of organization) policies on important matters relating to its employees. (reverse coded)	4.18 (1.63)
13. I really care about the fate of (name of organization).	5.75 (1.14)
14. For me this is the best of all possible organizations for which to work.	4.37 (1.61)
15. Deciding to work for (name of organization) was a definite mistake on my part. (reverse coded)	2.12 (1.31)

NOTES: Items 9, 11, and 15 were deleted as a function of reliability analyses. The resultant Cronbach Alphas was 0.78 (pooled).

APPENDIX VII  
The Life-Domain-Satisfaction Measures

Item	M (SD)
1. How satisfied are you with your life as a whole?	4.14 (0.77)
2. How do you feel about your present job in general?	3.70 (0.98)
3. How do you feel about your family situation in general?	4.17 (0.86)
4. How do you feel about your leisure life in general?	3.59 (1.05)
5. How do you feel about your financial situation in general?	3.04 (1.19)
6. How do you feel about your health in general?	3.73 (0.94)
7. How do you feel about your education in general?	3.92 (0.93)
8. How do you feel about your friends and associates in general?	4.05 (0.65)
9. How do you feel about your neighborhood in general?	3.99 (0.82)
10. How do you feel about your community in general?	3.94 (0.82)
11. How do you feel about your spiritual life in general?	3.95 (0.83)
12. How do you feel about your environment in general?	3.77 (0.80)
13. How do you feel about your housing situation in general?	3.93 (0.98)
14. How do you feel about your cultural life in general?	3.86 (0.85)
15. How do you feel about your social status in general?	3.92 (0.80)



## NOTE

<sup>1</sup> Russell Ackoff, emeritus professor of the Wharton School at University of Pennsylvania, argues that QWL is the answer to America's corporate world (Ackoff, 1994). If corporate management were to focus its efforts to enhance QWL, the result will be significantly higher profits. Ackoff conceptualizes QWL in terms of work as challenging and enjoyable. Doing so would increase workers commitment to the organization and the motivation to excel and achieve excellence.

## REFERENCES

- Ackoff, R.L.: 1994, *The democratic Organization: A Radical Prescription for Recreating Corporate America and Rediscovering Success* (Oxford University Press, New York).
- Adelmann, P.K.: 1987, 'Occupational complexity, control, and personal income: Their relation to psychological well-being in men and women', *Journal of Applied Psychology* 72, pp. 529–537.
- Alderfer, C.P.: 1972, *Existence, Relatedness, and Growth: Human Needs in Organizational Settings* (Free Press, New York).
- Andrews, F.M. and S.B. Withey: 1976, *Social Indicators of Well-being* (Plenum Press, New York).
- Andrisani, P. and M. Shapiro: 1978, 'Women's attitudes towards their jobs: Some longitudinal data on a national sample', *Personnel Psychology* 31, pp. 15–34.
- Aranya, N. and K.R. Ferris: 1984, 'A reexamination of accountants' organizational-professional conflict', *The Accounting Review* 59(1), pp. 1–15.
- Bacharach, S.B., P. Bamberger and S.C. Conley: 1990, 'Work processes, role conflict and role overload: The case of nurses and engineers in the public sector', *Work and Occupations* 17, pp. 199–228.
- Breger-Gross, V.: 1982, 'Difference score measures of social perceptions revisited: A comparison of alternatives', *Organizational Behavior and Human Performance* 29, pp. 279–285.
- Bromet, E.J., A. Dew and D.K. Parkinson: 1990, 'Spillover between work and family: A study of blue-collar working wives', in J. Eckenrode and S. Gore (eds.), *Stress between Work and Family* (Plenum, New York/London), pp. 133–151.
- Caplan, R.D., S. Cobb, J.R. French, R. Van Harrison and S.R. Pinneau: 1980, *Job Demands and Worker Health: Main Effects and Occupational Differences* (Survey Research Center, Institute for Social Research, Ann Arbor, MI).
- Carter, C.G., D.G. Ponder, F.G. Lawrence and P.J. Wozniak: 1990, 'Factors related to organizational turnover intentions of Louisiana extension service agents', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 170–181.

- Champoux, J.E.: 1981, 'A sociological perspective on work involvement', *International Review of Applied Psychology* 30, pp. 65-86.
- Cohen, S.G., L. Chang and G.E. Ledford, Jr.: 1997, 'A hierarchical construct of self-management leadership and its relationship to quality of work life and perceived work group effectiveness', *Personnel Psychology* 50, pp. 275-308.
- Cooper, J. and G. Davis: 1997, 'Improving management-labor relations and employee and patient well being through quality-of-work- life programs', in H.L. Meadow (ed.), *Developments in Quality-of-Life Studies* vol. 1 (International Society for Quality-of-Life Studies, Blacksburg, Virginia), p. 15.
- Crohan, S.E., T.C. Antonucci, P.K. Adelman and L.M. Coleman: 1989, 'Job characteristics and well being at midlife: Ethnic and gender comparisons', *Psychology of Women Quarterly* 13, pp. 223-235.
- Cronbach, L.J. and L. Furby: 1970, 'How we should measure 'change' - or should we?' *Psychological Bulletin* 74(1), pp. 68-80.
- Crouter, A.C.: 1984, 'Spillover from family to work: The neglected side of the work-family interface', *Human Relations* 37, pp. 425-442.
- Cummings, T.G. and E.S. Malloy: 1977, *Improving Productivity and the Quality of Work Life* (Praeger, New York).
- Danna, K. and R.W. Griffin: 1999, 'Health and well-being in the workplace: A review and synthesis of the literature', *Journal of Management* 25(3), pp. 357-384.
- Davis, L.E. and A.B. Cherns: 1975, *The Quality of Working Life: Problems, Prospects, and the State of the Art* (Free Press, New York).
- Duxbury, L. and G. Haines Jr.: 1990, 'Predicting alternative work arrangements from salient attitudes: A study of decision makers in the public sector', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-Life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 583-596.
- Duxbury, L. and G. Haines Jr.: 1991, 'Predicting alternative work arrangements from salient attitudes: A study of decision makers in the public sector', *Journal of Business Research* 23, pp. 83-97.
- Efraty, D. and M.J. Sirgy: 1990, 'The effects of quality of working life (QWL) on employee behavioral responses', *Social Indicators Research* 22(1), pp. 31-47.
- Efraty, D. and M.J. Sirgy: 1990, 'Job satisfaction and life satisfaction among professionals and paraprofessionals', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-Life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 157-169.
- Efraty, D. and M.J. Sirgy: 1992, 'Occupational prestige and bureaucratization effects on the spillover between job satisfaction and life satisfaction', in M.J. Sirgy, H.L. Meadow, D. Ratz and A.C. Samli (eds.), *Developments in Quality-of-Life Studies in marketing*, vol. 4 (Academy of Marketing Science and International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 115-119.

- Efraty, D., M.J. Sirgy and C.B. Claiborne: 1991, 'The effects of personal alienation on organizational identification: A quality-of-work life model', *Journal of Business and Psychology* 6 (Fall), pp. 57–78.
- Efraty, D., M.J. Sirgy and P.H. Siegel: 1997, 'The job satisfaction/life satisfaction relationship for professional accountants: The moderating effect of organizational commitment', in H.L. Meadow (eds.), *Developments in Quality-of-Life Studies*, vol. 1 (International Society for Quality-of-Life Studies, Blacksburg, Virginia), p. 25.
- George, J.M. and A.P. Brief: 1990, 'The economic instrumentality of work: An examination of the moderating effects of financial requirements and sex on the pay-life satisfaction relationship', *Journal of Vocational Behavior* 37, pp. 357–368.
- Golembiewski, R.T. and B.C. Sun: 1988, 'QWL, one more time', *Healthcare Human Resource Forum* 1, pp. 1–2.
- Golembiewski, R.T. and B.C. Sun: 1989, 'QWL improves worksite quality', *Human Resource Development Quarterly* 1, pp. 35–44.
- Golembiewski, R.T. and B.C. Sun: 1990, 'Positive-findings bias in QWL studies: Rigor and outcomes in a large sample', *Journal of Management* 16(3), pp. 665–674.
- Greenhaus, J.H., A.G. Bedian and K.W. Mossholder: 1987, 'Work experiences, job performances, and feelings of personal and family well being', *Journal of Vocational Behavior* 31, pp. 200–215.
- Hackman, J.R. and G. Oldham: 1980, *Work Redesign* (Addison-Wesley, Reading, MA).
- Hackman, J.R. and J.L. Suttle: 1977, *Improving Life at Work* (Scott, Foresman, Glenview, IL).
- Hall, D.H., B. Schneider and H.T. Nygren: 1970, 'Personal factors in organizational identification', *Administrative Science Quarterly* 15, pp. 176–190.
- Herzberg, F.: 1966, *Work and the Nature of Man* (World, Cleveland).
- House, J.S., A.J. McMichael, J.A. Wells, B.H. Kaplan and L.R. Landerman: 1979, 'Occupational stress and health among factory workers', *Journal of Health and Social Behavior* 20, pp. 139–160.
- Johns, G.: 1981, 'Difference score measures of organizational behavior variables: A critique', *Organizational Behavior and Human Performance* 27, pp. 443–463.
- Kabanoff, B.: 1980, 'Work and nonwork: A review of models, methods, and findings', *Psychological Bulletin* 88, pp. 60–77.
- Kahn, R.: 1981, *Work and Health* (Wiley, New York).
- Kavanagh, M.J. and M. Halpern: 1977, 'The impact of job level sex differences on the relationship between life and job satisfaction', *Academy of Management Journal* 20, pp. 66–73.
- Lawler, E.E., III: 1982, 'Strategies for improving the quality of work life', *American Psychologist* 37, pp. 486–493.
- Leiter, M.P. and M.J. Durup: 1996, 'Work, home, and in-between: A longitudinal study of spillover', *Journal of Applied Behavioral Science* 32(1), pp. 29–47.

- Levitin, T.E. and R.P. Quinn: 1974, 'Changes in sex roles and attitude toward work. Paper presented at the 1974 Conference of the American Association for Public Research.
- Lewellyn, P.A. and E.A. Wilber: 1990, 'Significance of quality of life on turnover intentions of certified public accountants', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-Life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 182-193.
- Liu, K.T., R.D. Sylvia and D. Brunk: 1990, 'Non-work factors and job-satisfaction revisited', *Human Relations* 43(1), pp. 77-86.
- Loscocco, K.A.: 1989, 'The interplay of personal and job characteristics in determining work commitment', *Social Science Research* 18, pp. 370-394.
- Loscocco, K.A. and A.R. Roschelle: 1991, 'Influences on the quality of work and nonwork life: Two decades in review', *Journal of Vocational Behavior* 39, pp. 182-225.
- Loscocco, K.A. and G. Spitz: 1990, 'Working-conditions, social support, and the well-being of female and male factory-workers', *Journal of Health and Social Behavior* 31(4), pp. 313-327.
- Loscocco, K.A. and G. Spitz: 1991, 'The organizational context of women's pay satisfaction', *Social Science Quarterly* 72, pp. 3-19.
- Lowe, G.S. and H.C. Northcott: 1988, 'The impact of working conditions, social roles, and personal characteristics on gender differences in distress', *Work and Occupations* 15, pp. 55-77.
- Maslow, A.H.: 1954, *Motivation and Personality* (Harper, New York).
- McClelland, D.C.: 1961, *The Achieving Society* (The Free Press, New York).
- McFarlin, D.B. and R.W. Rice: 1991, 'Determinants of satisfaction with specific job facets: A test of Locke's model', *Journal of Business and Psychology* 6 (Fall), pp. 25-38.
- Menaghan, E.G. and E.S. Merves: 1984, 'Coping with occupational problems: The limits of individual efforts', *Journal of Health and Social Behavior* 25, pp. 406-423.
- Mowday, R.T., L.W. Porter and R.M. Steers: 1982, *Employee-Organization Linkages: The Psychology of Commitment, Absenteeism, and Turnover* (Academic Press, New York).
- Mowday, R.T., L.W. Porter and R. Dubin: 1974, 'Unit performance, situation factors, and employee attitudes in spatially separated work units', *Organizational Behavior and Human Performance* 12, pp. 231-248.
- Mowday, R.T., R.M. Steers and L.W. Porter: 1979, 'The measurement of organizational commitment', *Journal of Vocational Behavior* 14, pp. 224-247.
- Nandan, S. and M. Nandan: 1995, 'Improving quality of care and quality of work life through interdisciplinary health care teams', in *Developments in quality-of-life studies in marketing*, vol. 5 (Academy of Marketing Science and the International Society for Quality-of-Life Studies, DeKalb, Illinois), pp. 80-86.
- Near, J.P., R.W. Rice and R.G. Hunt: 1980, 'The relationship between work and nonwork domains: A review of empirical research', *Academy of Management Review* 5, pp. 415-429.

- O'Brien, G.E.: 1986, *Psychology of Work and Unemployment* (Wiley, New York).
- Orpen, C.: 1978, 'Work and nonwork satisfaction: A causal correlational analysis', *Journal of Applied Psychology* 63, pp. 530–532.
- Peter, J.P., G.A. Churchill Jr. and T.J. Brown: 1993, 'Caution in the use of difference scores in consumer research', *Journal of Consumer Research* 19 (March), pp. 655–662.
- Porter, L.W.: 1961, 'A study of perceived need satisfaction in bottom and middle management jobs', *Journal of Applied Psychology* 45, pp. 1–10.
- Porter, L.W., R.M. Steers, R.T. Mowday and P.V. Boulian: 1974, 'Organizational commitment, job satisfaction, and turnover among psychiatric technicians', *Journal of Applied Psychology* 59, pp. 603–609.
- Qvale, T.U. and J. Hanssen-Bauer: 1990, 'Implementing QWL in large scale project organizations: 'Blue Water' site design in the Norwegian offshore oil industry', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-Life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia, pp. 529–535).
- Quinn, R.P. and L.G. Shephard: 1974, *The 1972–1973 Quality of Employment Survey* (Institute for Social Research, University of Michigan, Ann Arbor).
- Quinn, R.P. and G.L. Staines: 1979, *The 1977 Quality of Employment Survey* (Institute for Social Research, The University of Michigan, Ann Arbor, MI).
- Rain, J.S., I.M. Lane and D.D. Steiner: 1991, 'A current look at the job satisfaction/life satisfaction relationship: Review and future considerations', *Human Relations* 44 (March), pp. 287–307.
- Rice, R.W., P.N. Janet and R.G. Hunt: 1980, 'The job-satisfaction/life-satisfaction relationship: A review of empirical research', *Basic and Applied Social Psychology* 1, pp. 37–64.
- Rice, R.W., R.S. Pierce, R.P. Moyer and D.B. McFarlin: 1991, 'Using discrepancies to predict the perceived quality of work life', *Journal of Business and Psychology* 6 (Fall), pp. 39–56.
- Roberts, K.H. and W. Glick: 1981, 'The job characteristics approach to task design: A critical review', *Journal of Applied Psychology* 66, pp. 193–217.
- Ronen, S.: 1981, *Flexible Working Hours: An Innovation in the Quality of Work Life* (McGraw-Hill, New York).
- Salancik, G.R. and J. Pfeffer: 1977, 'An examination of need-satisfaction models of job attitudes', *Administrative Science Quarterly* 23, pp. 224–253.
- Salancik, G.R. and J. Pfeffer: 1978, 'A social information processing approach to job attitudes and task design', *Administrative Science Quarterly* 23, pp. 224–253.
- Schmitt, N. and A.G. Bedian: 1982, 'A comparison of LISREL and two-stage least squares analysis of a hypothesized life-job satisfaction reciprocal relationship', *Journal of Applied Psychology* 67, pp. 806–817.
- Schmitt, N. and P.A. Mellon: 1980, 'Life and job satisfaction: Is the job central?' *Journal of Vocational Behavior* 16, pp. 51–58.

- Sheppard, H.L. and N.O. Herrick: 1972, *Where Have All the Robots Gone? Worker Dissatisfaction in the 70's* (The Free Press, New York).
- Simmmons, J. and W. Mares: 1985, *Working together: Employee Participation in Action* (New York University Press, New York).
- Smith, P.C., L.M. Kendall and C.L. Hulin: 1969, *The Measurement of Satisfaction in Work and Retirement* (Rand-McNally, Chicago).
- Staines, G.: 1980, 'Spillover versus compensation: A review of the literature on the relationship between work and nonwork', *Human Relations* 33, pp. 111–129.
- Steers, R.M.: 1977, 'Antecedents and outcomes of organizational commitment', *Administrative Science Quarterly* 22, pp. 46–56.
- Steiner, D.D. and D.M. Truxillo: 1989, 'An improved test of the disaggregation hypothesis of job and life satisfaction', *Journal of Occupational Psychology* 62, pp. 33–39.
- Susman, G.I.: 1976, *Autonomy at Work: A Socio-Technical Analysis of Participative Management* (Praeger, New York).
- Tait, M., M.Y. Padgett and T.T. Baldwin: 1989, 'Job and life satisfaction: A reevaluation of the strength of the relationship and gender effects as a function of the date of the study', *Journal of Applied Psychology* 74 (June), pp. 502–507.
- Teas, R.K., J.G. Wacker and E. Hughes: 1979, 'A path analysis of causes and consequences of salespeople's perception of role clarity', *Journal of Marketing Research* 16 (August), pp. 355–369.
- Tse, E.C. and G.A. Jackson: 1990, 'Alcohol abuse in the workplace: Challenges and strategic implications for the hospitality industry', in H.L. Meadow and M.J. Sirgy (eds.), *Quality-of-Life Studies in Marketing and Management* (International Society for Quality-of-Life Studies, Blacksburg, Virginia), pp. 215–226.
- Wall, T.D. and R. Payne: 1973, 'Are deficiency scores deficient?' *Journal of Applied Psychology* 58(3), pp. 322–326.
- Wilensky, H.: 1960, 'Work, careers, and social integration', *International Social Science* 12, pp. 543–560.

*Department of Marketing*  
*Virginia Polytechnic Institute and State University*  
*Pamplin College of Business*  
*Blacksburg, VA 24061-0236*  
*USA*  
*E-mail: sirgy@vt.edu*