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Reliability and Validity of a Single-Item Measure of Job Satisfaction

Christyn L. Dolbier, PhD; Judith A. Webster, MSN; Katherine T. McCalister, EdD; Mark W. Mallon, MS; Mary A. Steinhardt, EdD, LPC

Abstract

**Purpose.** To investigate the reliability and validity of a single-item overall job satisfaction measure.

**Methods.** Public agency employees (n = 745) were surveyed regarding job satisfaction, work, personality, and health variables. The single-item measure underwent the following analyses: correction for attenuation formula to estimate minimum reliability; correlations with multiple-item job satisfaction, work-related, personality, and health measures to determine concurrent validity, construct validity, and specific relevance to health promotion; and logistic regression to determine the predictability of turnover intention.

**Results.** For the single-item measure the minimum reliability estimate was high, all correlational tests for validity were significant, logistic regression indicated substantial predictability of turnover intention, and correlations with the health measures were significant.

**Discussion.** These results are consistent with other studies and support the psychometric properties of this single-item overall job satisfaction measure. Limitations of the study and its implications for worksite health promotion are discussed. (Am J Health Promot 2005; 0[0]:000±000.)

**Key Words:** Research, Instrument Development, Nonexperimental, Cognitive, Workplace, Self-Reported Health, Measurement, Adults, Job Satisfaction Measure, Prevention Research

INTRODUCTION

The inherent desirability of job satisfaction and its influence on employee well-being and organizational outcomes such as turnover make measurement of this construct of practical importance to health promotion practitioners. Assessing job satisfaction by using single-item measures is effective and more favorable in some respects than by using multiple-item measures.\(^1\)\(^2\) For instance, single-item measures are easier to understand by management, are completed more quickly, and change scores are more interpretable.\(^1\)\(^3\) From a psychometric perspective, single-item measures compare favorably with multiple-item measures regarding validity and in some cases suggest greater face validity.\(^1\)\(^3\) Statistical techniques to address the major limitation of single-item measures (i.e., the inability to determine internal consistency reliability) demonstrate promising results.\(^1\)\(^3\)

A psychometrically sound single-item job satisfaction measure is an attractive alternative to a multiple-item measure in today’s cost-conscious work environment.\(^3\) A single-item measure that relates to organizational outcomes and employee well-being would underscore the importance of job satisfaction and could be used to evaluate health promotion programs targeting job satisfaction. The purpose of this study was to provide support for the reliability and validity of a single-item overall job satisfaction measure for use in worksite health promotion settings.

METHODS

**Design**

In this cross-sectional research design, e-mail invitations to take a paper survey on work and life balance were sent to 1500 employees at the Texas Department of Human Services (DHS). Employees (n = 745) completed the survey during a 1-week period in the lobby of their workplace, resulting in a 49.7% response rate. The University of Texas at Austin Institutional Review Board approved the study, and all participants were informed that their responses were voluntary, confidential, and would have no bearing on their relationship with their employer.
Sample
Participants consisted of a convenience sample of employees (n = 745) from the DHS. The demographic information reported here was based on a smaller sample of 658 participants for whom this demographic information was available. Those participants whose demographic information was not available (n = 87) were assumed to be similar to the larger group. The sample was 26% men and 74% women with a mean age of 44.2 ± 9.4 years. The sample consisted of 63.5% Caucasian, 20.4% Hispanic, 13.8% African-American, 2.1% Asian or Pacific Islander, and .20% Native-American respondents. The majority of the sample was full time (98.5%), with the remainder employed at least half time, with an average length of service of 13.24 ± 9.2 years. Their jobs were categorized under the following Equal Employment Opportunity Commission job descriptions: 13.4% administration officials, 62.9% professionals, 6.4% technicians, .30% protective service workers, 1.2% paraprofessionals, 15.2% administrative support, and .60% skilled craft workers.

Measures
The survey contained the following measures (see Table 1 for conceptual definitions of these constructs).

Job Satisfaction. Two measures of job satisfaction were derived from the 16-item Job Satisfaction Scale (JSS). An overall measure of job satisfaction was obtained from the commonly used single-item “Taking everything into consideration, how do you feel about your job as a whole?” rated on a seven-point Likert scale (1 = extremely dissatisfied, 7 = extremely satisfied). A multiple-item overall job satisfaction measure was obtained by summing the remaining 15 items from the JSS, which tap satisfaction with various job facets (e.g., job security, rate of pay, amount of responsibility).1

Supervisor and Coworker Support. Perceptions of supervisor and coworker support were assessed with the four-item Supervisor Support Scale and the five-item Coworker Support Scale, respectively.5

Work Stress. Overall perceptions of stress at work were measured with the seven-item Perceived Work Stress Scale.6

Positive and Negative Affectivity. Trait positive affectivity and negative affectivity were measured with the 20-item Positive and Negative Affect Schedule.7

Turnover Intention. Turnover intention was assessed with the following yes-or-no question created by DHS: “Are you considering leaving DHS employment?”

Symptoms of Illness. Psychosomatic symptoms of illness were measured with the 20-item Symptoms Checklist.8

Health Perceptions. Health perceptions were measured with five items from the Medical Outcomes Study 36-item Short-Form Health Status Survey.9

Analysis
All statistical analyses (except the correction for attenuation formula, which was calculated by hand) were conducted with the Statistical Package for the Social Sciences software program, with an a priori level of significance of .05. Means and standard deviations (SDs) were calculated for all variables.

Internal consistencies (Cronbach α) were calculated for all variables except the single-item job satisfaction measure, for which internal consistency cannot be computed. As Wansink and colleagues3 noted, the correction for attenuation formula described by Nunnally and Bernstein10 can be used to solve for minimum reliability of a single-item measure. Thus, the minimum reliability of the single-item job satisfaction measure was estimated using the formula

\[
\hat{\rho}_{xy} = \frac{r_{xy}}{\sqrt{r_{xx} r_{yy}}}
\]

where \(\hat{\rho}_{xy}\) is the assumed true underlying correlation between x and y if both were measured perfectly, \(r_{xy}\) is the correlation between x and y, \(r_{xx}\) is the reliability of x, and \(r_{yy}\) is the reliability of y.10 In this study x and y represent the single- and multiple-item job satisfaction measures, respectively. Knowing \(r_{xx}\), \(r_{yy}\), and assuming \(r_{xy} = 1.0\) and more conservatively .90 enables one to solve for \(\hat{\rho}_{xy}\) or the minimum reliability of x. The more conservative the true underlying cor-

### Table 1

<table>
<thead>
<tr>
<th>Variable</th>
<th>Conceptual Definition</th>
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<tbody>
<tr>
<td>1-item job satisfaction</td>
<td>Reported satisfaction with one’s job as a whole*</td>
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<tr>
<td>15-item job satisfaction</td>
<td>Sum of reported satisfaction with various facets of one’s job*</td>
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<tr>
<td>Supervisor support</td>
<td>Perception of the amount of instrumental and emotional support provided by one’s supervisor*</td>
</tr>
<tr>
<td>Coworker support</td>
<td>Perception of the amount of instrumental and emotional support provided by coworkers at work*</td>
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<tr>
<td>Work stress</td>
<td>Employee’s overall perceptions of stress at work during the previous month with respect to irritating hassles, stressful events, and ongoing problems*</td>
</tr>
<tr>
<td>Positive affectivity</td>
<td>The tendency to experience positive feelings and emotions that reflect general levels of energy and enthusiasm*</td>
</tr>
<tr>
<td>Negative affectivity</td>
<td>The tendency to experience a broad range of aversive feelings and emotions*</td>
</tr>
<tr>
<td>Turnover intention</td>
<td>Whether or not employee is considering leaving his or her current job</td>
</tr>
<tr>
<td>Symptoms of illness</td>
<td>The frequency of physical and psychological symptoms in recent weeks*</td>
</tr>
<tr>
<td>Health perceptions</td>
<td>View of how good one’s personal health is and how good it is expected to be*</td>
</tr>
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</table>
relation between $x$ and $y$ is assumed to be, the higher the minimum reliability estimate.

Concurrent validity of the single-item overall job satisfaction measure was assessed by correlating it with a commonly used measure for assessment of overall job satisfaction, that is, the sum of multiple-items tapping satisfaction with various job facets. Correlations of the job satisfaction measures with supervisor support, coworker support, and positive affectivity were used to assess convergent construct validity, and correlations with work stress and negative affectivity were used to assess divergent construct validity.

Separate logistic regressions were calculated to determine the predictive abilities of the single- and multiple-item job satisfaction measures by using a dichotomous outcome measure of turnover intention. To determine the amount of variance in turnover intention predicted by each job satisfaction measure, individual Nagelkerke $R^2$ values (an analog of the ordinary least squares $R^2$, which can vary from 0 to 1) were computed for each measure.

To relate job satisfaction to constructs of particular interest to health promotion practitioners, correlations between the job satisfaction measures and the symptoms of illness and health perceptions were calculated.

### RESULTS

Means, SDs, the possible range of scores, and reliabilities of the study variables are detailed in Table 2. All measures were found to be internally consistent ($\alpha$ ranging from .81 to .92), with the exception of the single-item job satisfaction measure, for which the internal consistency cannot be computed (see Table 2).

#### Reliability

The correction for attenuation formula estimated a minimum reliability of .73 for the single-item job satisfaction measure when the underlying construct correlation between the single- and the multiple-item job satisfaction measures was assumed to be a perfect relationship, and it estimated .90 when the correlation was assumed to be more conservative (see Table 2). The actual reliability cannot be lower than .73 because these estimates represent minimums, and more conservative assumptions only increase the estimate, thus establishing adequate reliability of the single-item job satisfaction measure.

The more conservative minimum reliability estimate of .90 is comparable with the internal consistency of the multiple-item job satisfaction measure ($\alpha = .92$).

#### Validity

The concurrent validity of the single-item job satisfaction measure was established by its significant positive correlation with the multiple-item job satisfaction measure, which was the highest of all the correlations observed ($r = .82$, see Table 2). As shown in Table 2, the correlations of the single-item measure with the work and personality variables were smaller but within a comparable range with those of the multiple-item job satisfaction measure (the only exception was positive affectivity, for which the single-item measure had a larger correlation). Convergent construct validity of the single-item measure was established by its significant positive correlations with supervisor support, coworker support, and positive affectivity. Divergent construct validity was established via significant negative correlations with work stress and negative affectivity (see Table 2).

#### Predicting Turnover Intention

Thirty percent of the participants indicated they were considering leav-
The single-item job satisfaction measure was .25 \((Wald = 102.77, \ p < .001)\) and for the multiple-item job satisfaction measure was .26 \((Wald = 101.42, \ p < .001)\). These significant \(R^2\) values indicate that each job satisfaction measure independently accounted for a similar amount of variance in turnover intention, with the single-item measure accounting for slightly more than the multiple-item measure.

**Relation to Health Measures**

As displayed in Table 2, the correlations of the single-item job satisfaction measure with measures of health were significant and in the expected direction, being inversely related to symptoms of illness and positively related to health perceptions. Although these correlations were smaller than those of the multiple-item measure, they were within a comparable range (see Table 2).

**DISCUSSION**

**Summary**

The purpose of this study was to test the psychometric properties of a single-item overall job satisfaction measure. A public agency employee sample was surveyed regarding job satisfaction, work, personality, and health variables. Findings are consistent with previous studies using the single-item job satisfaction measures\(^3\) and extend their use to topics of interest to worksite health promotion practitioners.

Reliability estimates for the single-item measure were adequate and represent minimums such that the actual reliability cannot be lower. The estimates reported here are higher than those reported in a meta-analysis,\(^3\) perhaps because of the more diverse sampling inherent in meta-analyses. Concurrent and construct validities of the single-item measure were supported by significant correlations with the multiple-item job satisfaction, work, and personality measures. The single-item measure accounted for a substantial amount of variance in turnover intention and significantly correlated with health measures. The single-item job satisfaction measure performed comparably with the multiple-item measure in all statistical analyses. These findings provide support for this single-item overall job satisfaction measure as an acceptable instrument for measuring job satisfaction.

**Limitations**

These results should be interpreted within the context of certain limitations. First, possible bias exists because of the nature of self-report data and collection of work-related information at the worksite. Second, using a convenience sample of public agency employees limits the generalizability of the findings to other work settings.\(^2\) Third, the cross-sectional design prevents determination of causation and does not address other variables that may account for the relationships observed. Fourth, the positioning of the single-item job satisfaction measure after the multiple-item job satisfaction measure on the survey may have contributed to the high correlation between these two measures, as well as a more restricted assessment of global satisfaction on the part of the respondents. Fifth, the use of the word *considering* rather than *planning* or *intending* and the lack of a specified time frame (e.g., in the next 3 months) in the turnover-intention question may have contributed to the greater percentage of employees endorsing this item than is reflected in the actual turnover rates of this government agency. Last, internal consistency cannot be computed for a single-item measure. Although a correction for attenuation formula was used to estimate minimum reliability, the use of assumptions in this formula affects the estimates.\(^3\)

**Implications**

This study supports the acceptability of this single-item overall job satisfaction metric as a psychometrically sound instrument. The measure is an acceptable option under two circumstances noted by Wanous and colleagues.\(^3\) First is when situational constraints warrant the use of a short measure. Single-item measures take less space on company surveys; have fewer survey administration costs; are completed easily by respondents of varying education levels; do not contain redundant items that can contribute to survey fatigue; and require a shorter time commitment, thereby leading to less time away from work, lower refusal rates, and decreases in missing data attributed to skipped items.\(^1,3,4\) However, if the research or assessment situation is not prohibitive, then choosing a psychometrically sound multiple-item measure of overall job satisfaction makes sense, for this methodology has worked well in previous research.\(^3\)

The second circumstance under which it is acceptable to use this single-item overall job satisfaction measure is when the research question or assessment goal implies the use of an overall measure. This study used two common methods for assessing overall job satisfaction: asking about global satisfaction and summing across various job facet satisfactions.\(^2\) A measure that assesses global satisfaction is preferable to a measure that sums across various job facets because it allows for individual preferences and is more inclusive of overall job satisfaction, suggesting greater content validity.\(^2\) However, there are certainly research questions that call for measures of specific facets (e.g., specific facets may relate differently to other variables of interest), and their measurement is essential when evaluating programs targeting satisfaction with a specific job facet.

The ability of a single-item measure of job satisfaction to predict turnover intention is of value to organizations seeking to reduce the high cost of recruiting and training individuals to replace employees who leave. Relating the single-item measure of job satisfaction to indicators of employee health further highlights the importance of job satisfaction and its relevance to outcomes of interest to health promotion practitioners. Using these data gives health promotion practitioners the ability to be proactive in implementing worksite programs targeting enhanced job satisfaction, as it can be a contributing factor in employee health and retention.
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