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JOB SATISFACTION, ORGANIZATIONAL COMMITMENT, TURNOVER INTENTION, AND TURNOVER: PATH ANALYSES BASED ON META-ANALYTIC FINDINGS

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Cross-study differences in the contributions of work attitudes to the turnover process led us to (a) estimate the six relations among job satisfaction, organizational commitment, turnover intention/withdrawal cognitions, and turnover using meta-analysis; (b) assess the effects of several psychometric moderators on those relations; and (c) compare the influences of satisfaction and commitment in the turnover process by applying path analysis to the meta-analytic correlations. Based on aggregations involving a total of 178 independent samples from 155 studies, results showed that (a) satisfaction and commitment each contribute independently to the prediction of intention/cognitions; (b) intention/cognitions are predicted more strongly by satisfaction than by commitment; (c) intention/cognitions mediate nearly all of the attitudinal linkage with turnover; and (d) attitudinal contributions to the turnover process vary with the use of single- versus multi-item scales, the 9- versus 15-item version of the Organizational Commitment Questionnaire, and turnover intention versus withdrawal cognition scales.

Over the last 20 years, considerable research has been devoted to developing predictive models of voluntary turnover, with job satisfaction, organizational commitment, and intent to quit among the most commonly proposed antecedents. Individual studies have generally supported hypothesized linkages among turnover and those variables. Satisfaction and commitment, for instance, have invariably been reported to be negatively related to turnover and intent to leave (e.g., Arnold & Feldman, 1982; Bluedorn, 1982; Hollenbeck & Williams, 1986), and positively correlated with one another (e.g., Bluedorn, 1982; Clegg, 1983; Dougherty, Bluedorn, & Keon, 1985). Equally consistent is the finding that turnover intention is the strongest cognitive precursor of turnover

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(e.g., Lee & Mowday, 1987; Michaels & Spector, 1982; O'Reilly & Caldwell, 1981). Important discrepancies exist, however, concerning the relative contributions of job satisfaction and organizational commitment to the withdrawal process. Three main theoretical perspectives in this area may be identified, each having distinct conceptual and research implications.

One view is that commitment to the company develops from job satisfaction such that commitment mediates the effects of satisfaction on withdrawal variables. This *satisfaction-to-commitment mediation model* reflects Porter, Steers, Mowday, and Boulian's (1974) claim that commitment takes longer to develop and is more stable than satisfaction, and has received considerable empirical support (e.g., Marsh & Manari, 1977; Mowday, Porter, & Steers, 1982; Price & Mueller, 1986; Williams & Hazer, 1986). The model suggests that job satisfaction has only an indirect influence on the intention and/or decision to quit, and encourages study of mechanisms through which satisfied workers become committed to their organizations.

The second view holds that the direction of influence between satisfaction and commitment is the reverse of that above. The *commitment-to-satisfaction mediation model* suggests that commitment to the company engenders a positive attitude toward the job, possibly through a rationalization process (Bem, 1967; Salancik & Pfeffer, 1978), and people leave or stay based on how they feel about their jobs. That commitment to the company may develop prior to entry (O'Reilly & Caldwell, 1981; Schein, 1968) or at least may be evident at early stages of employment (Porter, Crampon, & Smith, 1976), lends support to that hypothesis (Bateman & Strasser, 1984). The model promotes the view that changes in commitment can be expected to have only indirect effects on turnover. Several studies (e.g., Bateman & Strasser, 1984; Dossett & Suszko, 1989) have provided support for the model; others (e.g., Curry, Wakefield, Price, & Mueller, 1986; Meyer & Allen, 1988), however, have not.

The third perspective holds that both satisfaction and commitment contribute uniquely to the turnover process. This *independent-effects model* follows Porter et al.'s (1974) suggestion that job satisfaction and organizational commitment, though related, are distinct constructs (Dougherty et al., 1985). It implies no particular causality between the two attitudes, but does not rule out the possibility of reciprocal influences (cf. Farkas & Tetrick, 1989). More than the first two perspectives, it calls for research into how attitudes toward the job and company combine and/or interact to influence the intent and final decision to quit.

The three models noted above are distinguished by the relative contributions of job satisfaction and organizational commitment to the turnover process. A related issue is the degree to which turnover intention mediates attitudinal effects on quitting. Consistent with theories stressing the importance of intent in predicting behavior (e.g., Ajzen & Fishbein, 1980; Locke, 1968), results of some studies (e.g., Mowday, Koberg, & McArthur, 1984) show that intent to leave completely mediates attitude-turnover relations; other findings (e.g., Waters, Roach, & Waters, 1976), however, support direct, unique attitudinal effects on turnover independent of intention. That attitudes might influence behavior independent of intention raises some concern over the importance of conscious deliberation in the turnover decision. Unique attitudinal effects on turnover (independent of intention) would suggest the need to consider non-intentional aspects of work attitudes (e.g., affect) as operating on the final decision to quit or stay.

Differences across studies in turnover findings impede understanding of the turnover process and may occlude identification of promising lines of further inquiry. Sources of those differences include a variety of statistical and methodological factors. We used meta-analysis to remove both the random effects of sampling error and the more systematic distortion owing to the use of differentially unreliable measures. Then, encouraged by reasonable non-artifact variation in findings across studies, we examined the effects of four psychometric moderators (described below) on the focal relations in identifying conditions supporting certain previous findings. Finally, we applied path analysis to the meta-analytic correlations using estimates based on all samples and those for moderator subgroups. The meta-analytic estimates provided greater power in model evaluation than in single-sample studies involving measures differing in reliability.

Conceptual Considerations

Appropriately, our investigation was guided by construct definitions reported in the collective of contributing studies. *Job satisfaction* was understood to be one's affective attachment to the job viewed either in its entirety (global satisfaction) or with regard to particular aspects (facet satisfaction; e.g., supervision). This distinction is discussed later on as a prospective moderator of satisfaction relations. Meyer and Allen (1991) articulated three forms of *organizational commitment. Affective* commitment denotes "the strength of an individual's identification with and involvement in a particular organization" (Porter et al., 1974, p. 604), *continuance* commitment (e.g., Becker, 1960) arises from the recognition that one would lose valued "side bets" (e.g., pension) upon leaving

the organization, and *normative* commitment (Wiener, 1982) denotes a willingness to remain with an organization due to a sense of moral obligation. Although it would be interesting to compare different types of commitment meta-analytically in the context of turnover, our investigation was limited to affective commitment due to the relative scarcity of studies involving the other forms.

Turnover intention was conceived to be a conscious and deliberate willfulness to leave the organization. It is often measured with reference to a specific interval (e.g., within the next 6 months), and has been described as the last in a sequence of withdrawal cognitions, a set to which thinking of quitting and intent to search for alternative employment also belong (e.g., Mobley, Horner, & Hollingsworth, 1978). The distinction between withdrawal cognition and turnover intention measures is discussed below as a possible moderator. *Turnover* was understood to be the termination of an individual's employment with a given company. Voluntariness of leaving is relevant to consider in evaluating turnover models because those models invariably apply to self-motivated (i.e., voluntary) termination. Many contributing researchers excluded known cases of involuntary turnover (e.g., firings) from their samples; but difficulty at the study level in assessing voluntariness gives grounds for caution concerning findings in aggregate. Insofar as contributing samples include undetected cases of involuntary turnover, present findings probably underestimate turnover relations and model viability. See Campion (1991) for detailed coverage of voluntariness and other issues pertinent to turnover measurement.

The above conceptualizations and some further articulation of the focal constructs and moderators (discussed below) provided a framework for hypotheses. Porter and his associates (e.g., Mowday et al., 1982) characterize affective commitment as involving a strong belief in and acceptance of the organization's goals and values, a willingness to exert effort on behalf of the organization, and a desire to stay with the company. Inclusion of the latter characteristic suggests that (Hypothesis 1) commitment should correlate more strongly (negatively) than job satisfaction with (a) turnover intention and (b) turnover (Hom & Hulin, 1981). Another reason to expect this is that turnover and intent to quit arguably reflect withdrawal from the company more than from the job (Hom & Hulin, 1981; Hom, Katerberg, & Hulin, 1979). (Hypothesis 2) With regard to turnover per se, intention/cognitions were expected to be the best predictor, in keeping with theoretical prescriptions (Ajzen & Fishbein, 1980) and previous findings (Carsten & Spector, 1987; Steel & Ovalle, 1984).

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Prospective Moderators

Single- versus multi-item measurement. The principle of aggregation holds that use of multiple observations cancels out random error around an individual's true score, thereby providing more reliable measurement. Despite the well-known attenuating effects of low reliability on correlation size, researchers often use single-item measures so as to minimize questionnaire length. This practice has the obvious consequence of underestimating a relation of interest, and could lead to serious misjudgments in the relative contributions of two variables whose measures differ markedly in length (Cooper & Richardson, 1986). Although meta-analysis can reduce the unwanted effects of differentially unreliable measures, difficulty in estimating the reliability of single items (of a form permitting aggregation with internal consistency estimates, the type most often reported) restricts meta-analytic correction for unreliability to cases involving multi-item scales. This is important to consider in the current study as both global job satisfaction and turnover intention (but not facet satisfaction and organizational commitment) are often assessed using single items, rendering comparisons among the relations, with or without corrections, problematic. We assessed the attenuating effects of single-item measurement directly by comparing uncorrected mean correlations based on single- versus multi-item measures of global job satisfaction and turnover intention. In keeping with the principle of aggregation, we expected that (Hypothesis 3) correlations based on single-item measures would be weaker than their (uncorrected) multi-item-based counterparts.

Global versus facet job satisfaction. Concerns have been raised regarding the equivalence of global and sum-of-facet measures of overall job satisfaction. Ironson, Smith, Brannick, Gibson, and Paul (1989) listed five differences between the two types of scales. Specifically, sum-of-facet measures (a) may omit important components of overall satisfaction that are tapped implicitly by global measures (Scarpello & Campbell, 1983), (b) may elicit a more relative frame of reference which encourages shorter-term decisions (Ryan & Smith, 1954; Smith, Kendall, & Hulin, 1969), (c) may include satisfaction components that are irrelevant to the given individual, (d) may include a descriptive component that interferes with the affective evaluation of the given job, and (e) are less ecologically valid in that they entail the simple arithmetic combination of specific attitudes. Each difference leads to the expectation that (Hypothesis 4) satisfaction relations in the present context will be stronger when based on global measures. This holds especially for points (a) and (b) because intent to quit and turnover reflect a rejection of the work situation in general and denote relatively long-term decisions. We assessed

the importance of the global/facet distinction by comparing correlations based on corresponding multi-item scales.

Long versus short forms of the OCQ. The original Organizational Commitment Questionnaire contains 15 items. A 9-item version is also available which omits the negatively keyed items. Several researchers (e.g., Blau, 1989; Davy, Kinicki, & Scheck, 1991; Farkas & Tetrick, 1989) have suggested that the deleted items tap intent to quit. If the original scale contains such items, correlations with turnover intention and turnover could be biased upward, precluding fair comparisons between commitment and satisfaction as attitudinal precursors. We assessed the equivalence of the two scales by comparing them in relations with intent to leave and turnover. If the 6 noted items are especially sensitive to turnover intention, then (Hypothesis 5) the original OCQ should correlate more strongly than the 9-item version with measures of turnover intention. Weaker supportive evidence would be given by a corresponding difference regarding turnover itself.

Turnover intention versus withdrawal cognitions. Mobley (1977; Mobley et al., 1978) proposed that the job satisfaction-turnover intention linkage is mediated by thoughts of quitting and intent to search for alternative employment. Often, for the sake of parsimony, items pertaining to those variables are combined with intent to quit in forming an index of withdrawal cognitions (e.g., Blau & Boal, 1989; Mitchel, 1981). Consistent with the mediating role assigned to withdrawal cognitions, they were expected to (Hypothesis 6a) correlate more strongly than turnover intentions with satisfaction and commitment, and (Hypothesis 6b) correlate less strongly than intentions with turnover itself.

Path-Analytic Objectives

We used path-analysis to (a) test the three noted models regarding the relative contributions of job satisfaction and organizational commitment to the prediction of turnover intention/withdrawal cognitions, (b) determine the relative independent contributions of the two work attitudes and intention/cognitions to the prediction of turnover, and (c) assess the impact of the four proposed moderators by repeating the path analyses using subgroup-based estimates of rho. It is important to note that the relative simplicity of the models under investigation precludes strong tests of causal assumptions (Dossett & Suszco, 1989). Results, nonetheless, permit meaningful interpretations regarding model viability. Specifically, if commitment but not satisfaction contributes unique variance to intention, then the satisfaction-to-commitment mediation

model would be supported; if satisfaction but not commitment contributes unique variance to intention, then the commitment-to-satisfaction mediation model would be supported; and, if both attitudes contribute uniquely to intention, this would support an independent-effects model.

Comparisons with Previous Related Meta-Analyses

Seven meta-analytic reviews of relations among turnover and its antecedents predate the present effort (Carsten & Spector, 1987; Cotton & Tuttle, 1986; Hom, Prussia, & Griffeth, 1992; Mathieu & Zajac, 1990; Randall, 1990; Shikiar & Freudenberg, 1982; Steel & Ovalle, 1984). In light of these earlier reviews, it is relevant to consider the unique characteristics of the current investigation. First, the previous studies each used different inclusion criteria and meta-analytic methods. By estimating all six relations using consistently applied procedures, we avoided potential bias in comparisons among the relations. Second, we took advantage of recent refinements in meta-analytic methods (Hunter & Schmidt, 1990a), which weight study correlations not only by sample size, as per Hunter, Schmidt, and Jackson (1982), but also by scale reliability and degree of split on dichotomous variables (e.g., turnover). Third, the best previous estimates of five of the six relations, two from Carsten and Spector (1987) and three from Mathieu and Zajac (1990), were based on studies available up to 1986 and 1987, respectively. We were able to improve on those estimates by including results reported up to the middle of 1992. Our study is further unique in that it assessed the independent contributions of satisfaction and commitment to the turnover process, and examined psychometric moderators of the focal relations. Information allowing more detailed comparisons is given in Appendix A.

Method

Case Selection

Psychological abstracts from 1968 to the middle of 1992 were searched by computer (*Knowledge Index*, 1992) based on the union of each pair of variables (e.g., "job satisfaction and organizational commitment"). Synonyms were used in searching for studies of turnover intention (e.g., "behavioral intention") and turnover (e.g., "termination"). Previous reviews of turnover relations (Porter & Steers, 1973; Shikiar & Freudenberg, 1982; Steel & Ovalle, 1984) provided references to additional studies, mostly those published before 1968. Published articles meeting the following criteria were included in the aggregations: (a) reported original

empirical findings based on a civilian sample,[1] (b) reported usable statistics (i.e., zero-order correlations, *t*s, or means and standard deviations of extreme groups from which *t* could be derived), (c) used appropriate measures of focal constructs (e.g., studies using organizational satisfaction measures to assess commitment and/or including intraorganizational movement in the measurement of turnover were excluded unless contributing other useful findings), and (d) reported results at the individual as opposed to the group level (e.g., correlations between mean satisfaction and turnover rate across multiple groups were excluded). In addition to published articles, our search revealed many doctoral dissertations that appeared to meet inclusion criteria. Letters soliciting desired information were sent to 33 of the most recent dissertation authors. Out of four responses received, two provided usable information. The relatively low response rate (12%) is attributable, in part, to difficulty in tracking dissertation authors from their alma maters.

When more than one article reported results based on essentially the same data set, preference was given to the one reporting the largest sample size. Results for two or more independent samples provided in a single study (e.g., Dougherty et al., 1985) were coded separately for each sample. For relations involving job satisfaction, studies reporting results bearing on only particular facets of satisfaction (e.g., satisfaction with the work itself) were excluded except when correlations among three or more facets as well as between each facet and the other variable of interest (e.g., commitment) were provided. In those cases, it was possible to estimate the desired overall correlation (see below). For relations involving organizational commitment, studies using measures proposed by Hrebiniak and Alutto (1972) or Ritzer and Trice (1969) were omitted due to their uncertain construct validity (Meyer & Allen, 1984). Multi-item turnover intention measures assessed likelihood of quitting at different time intervals (e.g., 6 months) and/or used reverse-keyed items (i.e., intent to remain). Withdrawal cognition measures included at least one item explicitly addressing intent to stay or leave as well as items concerning thoughts of quitting, searching for alternative employment, and/or closely related content.

All told, usable results based on 178 independent samples reported in 155 studies were included in 42 aggregations. An annotated list of contributing studies showing the number of samples per study and the

[1] Results of previous meta-analyses (Hom et al., 1992; Steel & Ovalle, 1984) support the view that the turnover process differs in military versus civilian settings (e.g., Hom et al., 1979). Powerful meta-analytic comparisons were precluded here due to there being too few military studies of some of the focal relations. In order to avoid biases resulting from unbalanced moderator distributions in civilian versus military settings, all analyses were based on civilian samples only.

number of focal correlations reported per sample is provided in Appendix B. The number of samples (K) contributing findings to the current aggregations ranged from 5 to 88 (median K = 20). Reliability of sample selection in a given meta-analysis may be expressed in terms of the "fail-safe N" statistic. The fail-safe N formula for correlations (Hunter & Schmidt, 1990a, p. 513) can be used to show that, for any estimate of rho based on K samples, K additional samples (with the same mean N) reporting a mean r of 0 are required to halve the observed estimate. Based on the assumption that unpublished findings are weaker than (but as valid as) published findings (due to possible bias favoring acceptance of studies reporting stronger findings), and the fact that unpublished findings were largely excluded from the present aggregations, current estimates of rho may be inflated. Difficulty in obtaining the required information (i.e., K, mean N, mean r, and the relative validity of unpublished studies) precludes firm judgments of the degree of overestimation.

Statistical Conversions

Two situations required us to convert reported statistics to a usable form. First, for studies reporting group differences, t values were converted to rs using the formula provided by Hunter and Schmidt (1990a, p. 272). Second, several job satisfaction studies reported correlations for separate facets of satisfaction but not the desired correlation for the sum-of-facet scores. Where the inter-subscale correlations were also given, it was possible to estimate the desired statistic using the formula for the correlation of linear combinations (Nunnally, 1978, pp. 163–168). Three studies reporting correlations for both individual facets and the sum of facet scores permitted evaluation of the conversion procedure. In each case, the formula produced a correlation similar (±.02) to that of the summed scores, supporting our use of the procedure.

Meta-Analyses

Meta-analyses were conducted using procedures described by Hunter and Schmidt (1990a, pp. 93–157), which extend those of Hunter et al. (1982). Unlike previous meta-analyses in this area, which used artifact distributions to correct the mean and variance of observed correlations, the present study corrected study correlations individually prior to aggregation. This procedure is permitted when artifact data are missing from relatively few studies, as was judged to be the case here. The proportions of studies reporting reliabilities for multi-item scales were as follows: 83% for job satisfaction, 93% for organizational commitment,

and 89% for intention/cognitions. To assess the impact of our choice of procedure, we applied artifact distribution meta-analysis (Hunter & Schmidt, 1990a, pp. 158–198) as well as "new" procedures proposed by Raju, Burke, Normand, and Langlois (1991) to our all-sample data. No critical differences were observed between the three sets of results either in estimating rho or in detecting moderators.

All correlations underwent one or both of two statistical corrections prior to aggregation. First, using internal consistency indices (usually alpha) reported in the given study, correlations were corrected for unreliability in satisfaction, commitment, and/or intention/cognition measures. In cases where reliabilities were reported for separate satisfaction subscales but not all items combined, it was possible to estimate the desired overall reliability using a procedure described by Nunnally (1978, pp. 246–254). Missing reliabilities were estimated as the average value for the given variable based on available information. Correlations involving at least one dichotomized variable, including all those involving turnover, were corrected for discontinuity (see Hunter & Schmidt, 1990b).[2] Three studies reporting turnover correlations did not report turnover rate, precluding the latter correction. Turnover rate could not be estimated reliably based on available values because degree of turnover varies widely across studies and can have a considerable impact on correlations (cf. Hunter & Schmidt, 1990a, p. 156). Rather, these correlations were excluded from the aggregations.

Moderator Analyses

Like Hom et al. (1992), we considered three types of information in assessing the opportunity for moderator effects. The first is the proportion of observed effect-size variance (e.g., in correlations) attributable to detectable artifacts. If 75% or more of the variance is attributable to sampling error and to differences in measurement error and range restriction, moderators are considered unlikely to be present because the remaining 25% is reasonably attributable to uncorrected artifacts

[2]If the continuous variable is normally distributed, point-biserial correlations have an upper limit of around .80 (Nunnally, 1978; cf. Karabinus, 1975). This ceiling is further reduced as the dichotomized variable diverges from a 50-50 split. Williams (1990) argued against correcting turnover correlations for discontinuity insofar as (a) turnover may be considered a natural dichotomy, and (b) differences across studies in turnover rate may reflect substantive sources of variation. Correction for turnover rate was applied here notwithstanding Williams' arguments primarily because it permits interpretation of the three turnover correlations along the same metric (i.e., −1.0 to +1.0) as that governing the three remaining correlations. In addition, differences across studies in the size of turnover correlations due to differences in turnover rate, regardless of their possible substantive origins, is, for present purposes, noise and therefore justifiably subject to control.

(Schmidt & Hunter, 1977). If only sampling error is considered, a 50% criterion may be used. Study correlations included in the present analyses were corrected for measurement error and attenuation due to dichotomization prior to aggregation. Accordingly, a 50% criterion based on just sampling error was adopted. The second source of information was the 95% credibility interval, which uses the mean and standard deviation of corrected correlations. A sufficiently wide interval and/or one that includes zero suggests the presence of moderators (Whitener, 1990). Third, we used Hunter and Schmidt's (1990a, p. 151) Q statistic which has a chi-square distribution with $df = K-1$. A significant Q would support a search for moderators. Specific moderator effects (e.g., single- vs. multi-item measurement) were tested by comparing subgroup-based mean correlations. A z test was used (Hunter & Schmidt, 1990a, p. 438) which takes into account second-order sampling error (i.e., random error in the sampling of studies). Because directional hypotheses were offered for all four moderators, the critical z value of 1.64 was adopted in each case.

Path Analyses

Maximum likelihood estimates of path coefficients, R^2s of endogenous variables, and chi-squares were obtained using LISREL VI (Jöreskog & Sörbom, 1986).[3] Several meta-analytic correlation matrices were used as input in testing five models. The first matrix was derived from all samples meeting inclusion criteria. The others were based on moderator subgroups as per significant moderator effects. Model 1 represents the independent-effects perspective, Models 2 and 3 represent the satisfaction-to-commitment and commitment-to-satisfaction mediation models, respectively, and Models 4 and 5 are identical to Model 1 except that direct commitment-turnover and satisfaction-turnover paths, respectively, are postulated.

Model testing was conducted using Tucker and Lewis' (1973) goodness-of-fit index (TLI) and McDonald and Marsh's (1990) Relative Noncentrality Index (RNI), each of which compares a given target model to its null counterpart (i.e., where all paths are assumed to be

[3]Cudeck (1989) pointed out that LISREL is intended for use with covariance matrices and that applications to correlation matrices, such as ours, are warranted only under certain conditions. The present application appeared to meet Cudeck's criteria. To test this interpretation, we recomputed parameter estimates and fit indices using estimates of variance and covariance based on two arbitrary sets of standard deviations (where $cov = r s_x s_y$). In all cases, the LISREL output (standardized solution) was the same as that generated with the original correlation matrix.

zero). Both permit direct comparisons among competing target models, and indicate better fit with higher values. The TLI differs from the RNI in two ways. First, the TLI is not normed within samples and can, therefore, exceed 1.00. This feature impedes interpretations of absolute fit. Bentler and Bonett (1980) proposed a normed index (the BBI) which corrects the problem. Marsh, Balla, and McDonald (1988), however, showed that the BBI is dependent on sample size. McDonald and Marsh (1990) proposed the RNI as an unbiased alternative to the BBI. We computed both the BBI and the RNI for all models under all moderator conditions and found the results to be highly similar (maximum difference = .001). The second difference is that the TLI has a built-in parsimony factor that penalizes goodness-of-fit as the number of estimated parameters increases. McDonald and Marsh (1990) question the value of parsimony-based indices on grounds that they arbitrarily weight parsimony equal to goodness-of-fit, whereas degree of model complexity is more appropriately a matter of interpretability. Recognizing that this is a debatable issue, we included both indices in the present investigation. The TLI was chosen over other parsimony measures (e.g., Jöreskog & Sörbom's, 1986, Adjusted Goodness of Fit Index) due to its greater stability over diverse sample sizes (Marsh et al., 1988).

Following Premack and Hunter (1988), a total sample size (i.e., the sum of all samples included in a given aggregation) was used to test the significance of the path coefficients. Of the six total sample sizes involved in any given path analysis, the smallest was used in testing the significance of all paths in that analysis. The range of (minimum) sample sizes across all path analyses was 1,034 to 4,562.

Results

Meta-Analyses

Meta-analytic results based on all correlations meeting initial inclusion criteria are presented in Table 1. Contrary to expectations, commitment does not correlate more strongly than satisfaction does with intention/cognitions. The results suggest the opposite, although the difference is not large (i.e., −.58 for satisfaction vs. −.54 for commitment). Consistent with previous meta-analyses based on fewer samples and different procedures (Carsten & Spector, 1987; Steel & Ovalle, 1984), turnover intention/withdrawal cognitions is the strongest predictor of turnover (.45) followed by organizational commitment (−.33) and job satisfaction (−.25). Because none of the 95% confidence intervals includes zero, the fact that each estimate of rho is in its theoretically prescribed direction cannot readily be attributed to chance. A search for

TABLE 1

Meta-Analysis Results for All Samples[a]

	1	2	3	4	5	6	7	8	9 95% Credibility int.		10 95% Confidence int.		11
Relation	K	Total N	N-wt'd r	WMC r	WMC var(r)	WMC var(e)	Resid. var.	% var(r) due to var(e)	lower	upper	lower	upper	Q
JS-OC	68	35,282	.586	.698	.0118	.0012	.0106	10	.496	.900	.565	.607	667.69*
JS-TOI/WC	88	35,494	−.479	−.581	.0341	.0023	.0318	7	−.931	−.231	−.508	−.451	1,314.08*
JS-TO	49	13,722	−.141	−.245	.0162	.0095	.0066	59	−.404	−.086	−.164	−.117	83.20*
OC-TOI/WC	51	13,829	−.463	−.538	.0234	.0030	.0204	13	−.818	−.258	−.498	−.428	397.77*
OC-TO	25	5,021	−.198	−.333	.0153	.0123	.0030	80	−.440	−.226	−.232	−.165	31.14
TOI/WC-TO	39	10,307	.280	.453	.0305	.0081	.0224	27	.160	.746	.246	.314	147.02*

[a] JS = job satisfaction, OC = organizational commitment, TOI/WC = turnover intention/withdrawal cognitions, TO = turnover.

*$p < .05$

Key to numbered columns:

1. Number of samples contributing to the aggregation
2. Sum of all sample sizes contributing to the aggregations
3. N-weighted mean correlation uncorrected for measurement error
4. Mean corrected correlation weighted by N and artifacts
5. Mean corrected variance weighted by N and artifacts
6. Mean corrected sampling error variance weighted by N and artifacts
7. Residual variance = (5 − 6)
8. Proportion of observed var(r) due to sampling var(e) = (6 / 5) × 100
9. 95% credibility interval around 4
10. 95% confidence interval around 3 (heterogeneous formula)
11. Chi-square test for heterogeneity, with $df = K - 1$

TABLE 2

Main Meta-Analysis Results for Multi- and Single-Item Global Job Satisfaction and Turnover Intention Measures[a]

Relation	1 K	2 Total N	3 N-wt'd r	4 WMC r	7 Resid. var.	z diff.
Global job satisfaction						
JS-OC						
multi-item	20	7,087	.616	.723	.0168	
single-item	5	1,485	.450	.527	.0151	2.49*
JS-TOI/WC						
multi-item	31	18,219	−.529	−.663	.0271	
single-item	11	2,806	−.372	−.449	.0251	−2.62*
JS-TO						
multi-item	14	3,430	−.159	−.275	.0024	
single-item	8	3,734	−.085	−.161	.0119	−1.30
Turnover intention						
JS-TOI						
multi-item	17	3,901	−.415	−.506	.0179	
single-item	35	13,274	−.374	−.443	.0079	−1.03
OC-TOI						
multi-item	9	2,392	−.431	−.520	.0189	
single-item	23	7,631	−.454	−.526	.0107	.41
TOI-TO						
multi-item	6	1,034	.386	.653	.0000	
single-item	15	4,562	.243	.398	.0240	2.56*

[a]See Table 1 for notes to column headings and variable abbreviations.
*$p<.05$, one-tailed test

moderators is strongly supported in five out of the six cases (all but OC-TO) by (a) more than 50% variance in the corrected correlations remaining unexplained by sampling error, (b) relatively broad credibility intervals, and (c) significant Q values. We included the commitment-turnover relation in testing the 9- versus 15-item OCQ comparison, notwithstanding the modest evidence for moderators, in order to test the proposed moderator more completely.

Moderator Analyses

Table 2 presents results showing the effects of single- versus multi-item measurement. In studies using global satisfaction scales, correlations based on single-item measures are significantly weaker than their multi-item counterparts in relations with both commitment and intention/cognitions. A similar but non-significant difference was obtained for the satisfaction-turnover relation. For the satisfaction-commitment relation, multi-item global satisfaction measures share 18% more variance with commitment than do single-item measures (based on uncorrected

TABLE 3

Main Meta-Analysis Results for Multi-Item Global and Facet Job Satisfaction Measures[a]

Relation	1 K	2 Total N	3 N-wt'd r	4 WMC r	7 Resid. var.	z diff.
JS-OC						
global	20	7,087	.616	.723	.0168	
facet	36	25,340	.583	.700	.0071	.97
JS-TOI/WC[b]						
global	23	13,801	−.564	−.719	.0190	
facet	19	5,359	−.547	−.655	.0155	−.39
JS-TO						
global	14	3,430	−.159	−.275	.0024	
facet	23	4,349	−.164	−.287	.0011	.13

[a]See Table 1 for notes to column headings and variable abbreviations.

[b]TOI/WC excludes single-item TOI measures.

values in both cases).[4] For satisfaction-intention/cognitions, multi-item global scales account for twice as much variance (i.e., 28%) as do single-item scales (14%). The effect on turnover intention relations is somewhat weaker, with only the intention-turnover comparison reaching statistical significance. Overall, five out of the six comparisons are in the predicted direction, with three being significant. These results show an appreciable impact of single-item measurement on correlation size. In order to avoid possible confounds arising from an unbalanced distribution of single-item-based correlations, those correlations were excluded from all remaining aggregations.

Table 3 presents comparisons between (multi-item) global and facet satisfaction scales. Counter to prediction, global measures do not correlate more strongly than facet measures do with intention/cognitions and turnover. A non-significant difference also obtained in the case of satisfaction-commitment.

Table 4 contains the results of the subgroup analyses comparing the long and short forms of the OCQ. As shown, the 15-item version correlates significantly stronger with turnover than does the 9-item version. A similar but non-significant difference obtained in the case of

[4]Because single-item measures do not permit estimates of internal consistency reliability, single-item-based correlations require multi-item estimates of reliability for correction. Single-item measures are likely to be less reliable than their multi-item counterparts, however, and so corrections to single-item-based correlations are probably underestimated. Accordingly, we report differences in shared variances based on uncorrected values in comparing single- versus multi-item measures. Differences based on corrected values are reported in subsequent comparisons, which involve only multi-item scales.

TABLE 4

Main Meta-Analysis Results for the 9- and 15-Item OCQ[a]

Relation	1 *K*	2 Total *N*	3 *N*-wt'd *r*	4 WMC *r*	7 Resid. var.	*z* diff.
JS-OC[b]						
9-item	10	2,139	.592	.696	.0056	
15-item	37	12,458	.604	.681	.0153	−.32
OC-TOI/WC[b]						
9-item	9	2,112	−.405	−.457	.0250	
15-item	15	3,291	−.487	−.580	.0258	−1.14
OC-TO						
9-item	7	1,372	−.133	−.236	.0000	
15-item	15	2,973	−.244	−.393	.0000	−2.31*

[a]See Table 1 for notes to column headings and variable abbreviations.

[b]Excludes single-item measures.

*$p<.05$, one-tailed test

TABLE 5

Main Meta-Analysis Results for Multi-Item Turnover Intention and Withdrawal Cognition Measures[a]

Relation	1 *K*	2 Total *N*	3 *N*-wt'd *r*	4 WMC *r*	7 Resid. var.	*z* diff.
JS-TOI/WC[b]						
TOI	16	3,602	−.436	−.531	.0115	
WC	26	15,237	−.585	−.739	.0119	−3.87*
OC-TOI/WC						
TOI	9	2,392	−.431	−.520	.0189	
WC	19	3,806	−.501	−.573	.0389	−1.01
TOI/WC-TO						
TOI	6	1,034	.386	.653	.0000	
WC	16	2,836	.284	.467	.0022	2.33*

[a]See Table 1 for notes to column headings and variable abbreviations.

[b]Excludes single-item global measures.

*$p<.05$, one-tailed test

commitment-intention/cognitions, and virtually no difference obtained in the case of satisfaction-commitment.

Table 5 shows the results of comparisons between turnover intention and withdrawal cognition measures. Consistent with expectations, withdrawal cognition measures correlate more strongly with job satisfaction, whereas turnover intention measures correlate more strongly with turnover. The difference in the case of commitment was not significant.

Path Analyses

Estimates of the five relations involving single-item measures (all except OC-TO) were recomputed based only on samples using multi-item measures. The new estimates are shown in Table 6. All path analyses used mean corrected correlations. The first analysis (a) used values from Table 6. Subgroup path analyses were conducted separately for (b) single- versus multi-item global satisfaction measures, (c) single- versus multi-item turnover intention measures, (d) the 9- versus the 15-item OCQ, and (e) turnover intention versus withdrawal cognitions. For the four pairs of subgroup analyses, input correlations not involved in the given comparison were taken from Table 6 and used in both analyses.

Table 7 shows the path coefficients, R^2 values for intention/cognitions and turnover, and fit indices for all models under the all-samples and eight subgroup conditions (two conditions per moderator). The issue of unique attitudinal contributions to intention/cognitions is addressed by comparing Models 1, 2, and 3 (i.e., independent-effects, satisfaction-commitment mediation, and commitment-satisfaction mediation models, respectively). RNI values are highest for Model 1 in all nine conditions, suggesting that, regardless of individual measurement characteristics (and ignoring parsimony), both satisfaction and commitment contribute uniquely to the prediction of intention/cognitions. Taking parsimony into account (i.e., using the TLI), Model 1 is supported in six of the nine conditions, with three of those six showing only marginal support (e.g., a difference of .002 favoring Model 1 over Model 3 for single-item turnover intention). Model 3 is supported by the TLI in the remaining cases, namely, for all samples (using multi-item measures), and when the 9-item OCQ and/or withdrawal cognition measures are used. Also, based on Model 1 results, satisfaction contributes more than commitment does to intention/cognitions except with the use of single-item global satisfaction measures.

The issue of unique attitudinal contributions to turnover is addressed by comparing Models 1, 4, and 5 (i.e., the independent-effects model and its variants proposing, respectively, direct commitment-turnover and satisfaction-turnover paths). Based on the RNI, Model 5 is supported in all cases except the single-item intention condition where Model 4 is supported. Note, however, that in the eight conditions supporting Model 5 the direct satisfaction-turnover path is positive, permitting no obvious substantive interpretation. Considering parsimony, Model 1 is supported in five of the nine comparisons. Although Model 4 is supported by the TLI only with the use of single-item intention measures, commitment makes a significant unique contribution to turnover in six of the nine cases.

TABLE 6

Meta-Analysis Results for Relations Excluding Single-Item Measures[a]

	1	2	3	4	5	6	7	8	9		10		11
								% var(r)	95%		95%		
		Total	N-wt'd	WMC	WMC	WMC	Resid.	due to	Credibility int.		Confidence int.		
Relation	K	N	r	r	var(r)	var(e)	var.	var(e)	lower	upper	lower	upper	Q
JS-OC	63	33,797	.592	.706	.0101	.0011	.0090	11	.520	.892	.571	.612	562.54*
JS-TOI/WC	42	18,839	−.557	−.697	.0207	.0020	.0188	9	−.966	−.428	−.587	−.526	442.53*
JS-TO	41	9,988	−.161	−.273	.0124	.0107	.0017	86	−.354	−.192	−.184	−.139	47.59*
OC-TOI/WC	28	6,198	−.474	−.554	.0358	.0035	.0322	10	−.906	−.202	−.530	−.418	284.06*
OC-TO	25	5,021	−.198	−.333	.0153	.0123	.0030	80	−.440	−.226	−.232	−.165	31.14
TOI/WC-TO	22	3,870	.311	.515	.0190	.0120	.0069	63	.352	.678	.269	.354	34.69*

[a] For use as default values in path analyses.

*$p<.05$

Key to numbered columns:

1. Number of samples contributing to the aggregation
2. Sum of all sample sizes contributing to the aggregations
3. N-weighted mean correlation uncorrected for measurement error
4. Mean corrected correlation weighted by N and artifacts
5. Mean corrected variance weighted by N and artifacts
6. Mean corrected sampling error variance weighted by N and artifacts
7. Residual variance = (5 − 6)
8. Proportion of observed var(r) due to sampling var(e) = (6 / 5) × 100
9. 95% credibility interval around 49
10. 95% confidence interval around 3 (heterogeneous formula)
11. Chi-square test for heterogeneity, with $df = K - 1$

TABLE 7

Path Estimates and Fit Indices for All Samples and Moderator Subgroups[a]

a) All samples[b] (χ^2_{null} = 6,682.81 N = 3,870)

	Model 1	Model 2	Model 3	Model 4	Model 5
JS-OC	.706	.706	.706	.706	.706
JS-TOI/WC	−.610	—	−.697	−.610	−.610
JS-TO	—	—	—	—	.167
OC-TOI/WC	−.123	−.554	—	−.123	−.123
OC-TO	—	—	—	−.069	—
TOI/WC-TO	.515	.515	.515	.477	.632
$R^2_{TOI/WC}$	.493	.307	.486	.493	.493
R^2_{TO}	.265	.265	.265	.269	.280
χ^2	189.3	1,402.3	247.2	172.0	112.9
df	2	3	3	1	1
TLI	.916	.581	.927	.846	.899
RNI	.972	.790	.963	.974	.983

b) Single-item global job satisfaction (A) vs. multi-item global job satisfaction (B) ($\chi^2_{null\ A}$ = 1,589.6 N_A = 1,485; $\chi^2_{null\ B}$ = 5,770.3 N_B = 3,430)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A	B	A	B	A	B	A	B	A	B
JS-OC	.527	.723	.527	.723	.527	.723	.527	.723	.527	.723
JS-TOI/WC	−.217	−.550	—	—	−.449	−.663	−.217	−.550	−.217	−.550
JS-TO	—	—	—	—	—	—	—	—	.088	.119
OC-TOI/WC	−.439	−.156	−.554	−.554	—	—	−.439	−.156	−.439	−.156
OC-TO	—	—	—	—	—	—	−.069	−.069	—	—
TOI/WC-TO	.515	.515	.515	.515	.515	.515	.477	.477	.554	.594
$R^2_{TOI/WC}$	.341	.451	.307	.307	.202	.440	.341	.451	.341	.451
R^2_{TO}	.265	.265	.265	.265	.265	.265	.269	.269	.271	.273
χ^2	30.4	119.5	105.4	920.1	315.3	191.7	23.8	104.1	17.9	82.5
df	2	2	3	3	3	3	1	1	1	1
TLI	.946	.939	.871	.682	.606	.935	.914	.893	.936	.915
RNI	.982	.980	.935	.841	.803	.967	.986	.982	.989	.986

c) Single-item turnover intention (A) vs. multi-item turnover intention (B) ($\chi^2_{null\ A}$ = 5,594.9 N_A = 4,562; $\chi^2_{null\ B}$ = 1,679.6 N_B = 1,034)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A	B	A	B	A	B	A	B	A	B
JS-OC	.706	.706	.706	.706	.706	.706	.706	.706	.706	.706
JS-TOI/WC	−.143	−.277	—	—	−.443	−.506	−.143	−.277	−.143	−.277
JS-TO	—	—	—	—	—	—	—	—	−.120	.077
OC-TOI/WC	−.425	−.325	−.526	−.520	—	—	−.425	−.325	−.425	−.325
OC-TO	—	—	—	—	—	—	−.171	.009*	—	—
TOI/WC-TO	.398	.653	.398	.653	.398	.653	.308	.658	.345	.692
$R^2_{TOI/WC}$	.287	.309	.277	.270	.196	.256	.287	.309	.287	.309
R^2_{TO}	.158	.426	.158	.426	.158	.426	.180	.426	.170	.431
χ^2	118.84	11.0	183.8	66.9	664.7	87.1	2.8	10.9	55.4	3.0
df	2	2	3	3	3	3	1	1	1	1
TLI	.937	.984	.935	.924	.763	.900	.998	.965	.942	.993
RNI	.979	.995	.968	.962	.882	.950	1.00	.994	.990	.999

TABLE 7 (continued)

d) 9-item OCQ (A) vs. 15-item OCQ (B)
($\chi^2_{\text{null A}}$ = 2,289.0 N_A = 1,372; $\chi^2_{\text{null B}}$ = 5,088.4 N_B = 2,973)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A	B	A	B	A	B	A	B	A	B
JS-OC	.696	.681	.696	.681	.696	.681	.696	.681	.696	.681
JS-TOI/WC	−.735	−.563	—	—	−.697	−.697	−.735	−.563	−.735	−.563
JS-TO	—	—	—	—	—	—	—	—	.167	.167
OC-TOI/WC	.055	−.196	−.457	−.580	—	—	.055	−.196	.055	−.196
OC-TO	—	—	—	—	—	—	−.001*	−.142	—	—
TOI/WC-TO	.515	.515	.515	.515	.515	.515	.515	.433	.632	.632
$R^2_{\text{TOI/WC}}$	.487	.507	.209	.336	.486	.486	.487	.507	.487	.507
R^2_{TO}	.265	.265	.265	.265	.265	.265	.265	.279	.280	.280
χ^2	42.2	221.4	637.1	1,101.6	46.3	343.5	42.2	166.7	15.1	162.8
df	2	2	3	3	3	3	1	1	1	1
TLI	.947	.870	.445	.568	.962	.866	.892	.804	.963	.809
RNI	.982	.957	.722	.784	.981	.933	.982	.967	.994	.968

e) Multi-item turnover intention (A) vs. withdrawal cognitions (B)
($\chi^2_{\text{null A}}$ = 1,710.6 N_A = 1,034; $\chi^2_{\text{null B}}$ = 5,059.6 N_B = 2,836)

	Model 1		Model 2		Model 3		Model 4		Model 5	
	A	B	A	B	A	B	A	B	A	B
JS-OC	.706	.706	.706	.706	.706	.706	.706	.706	.706	.706
JS-TOI/WC	−.327	−.667	—	—	−.531	−.739	−.327	−.667	−.327	−.667
JS-TO	—	—	—	—	—	—	—	—	.103	.159
OC-TOI/WC	−.289	−.102	−.520	−.573	—	—	−.289	−.102	−.289	−.102
OC-TO	—	—	—	—	—	—	.009*	−.097	—	—
TOI/WC-TO	.653	.467	.653	.467	.653	.467	.658	.411	.708	.584
$R^2_{\text{TOI/WC}}$	.324	.551	.270	.328	.282	.546	.324	.551	.324	.551
R^2_{TO}	.426	.218	.426	.218	.426	.218	.426	.224	.434	.230
χ^2	19.2	133.6	97.9	1,277.7	81.4	166.5	19.1	110.4	5.5	91.8
df	2	2	3	3	3	3	1	1	1	1
TLI	.970	.922	.889	.496	.908	.935	.936	.870	.984	.892
RNI	.990	.974	.944	.748	.954	.968	.989	.978	.997	.982

[a] Model 1 = (JS & OC) → TOI/WC → TO;
Model 2 = JS → OC → TOI/WC → TO mediation model;
Model 3 = OC → JS → TOI/WC → TO mediation model;
Model 4 = (JS & OC) → TOI/WC → TO, with direct OC → TO path;
Model 5 = (JS & OC) → TOI/WC → TO, with direct JS → TO path;
TLI = Tucker-Lewis Index (Tucker & Lewis, 1973);
RNI = Relative Noncentrality Index (McDonald & Marsh, 1990).

[b] except those using single-item scales (i.e., input correlations are from Table 6).

* n.s.

The RNI and TLI permit arithmetically precise comparisons between alternative models. The *practical* significance of model differences is revealed by comparing explained proportions of criterion variance. Comparisons between Models 1 and 2 in the R^2 values for intention/cognitions show that job satisfaction accounts for between 1%

(single-item intention condition) and 28% (9-item OCQ condition) additional variance in intention/cognitions over that explained by commitment alone. Comparisons between Models 1 and 3 show that commitment contributes between .1% (9-item OCQ condition) and 14% (single-item global satisfaction condition) more variance in intention/cognitions over that predicted by satisfaction alone. Small differences are evident in comparing Model 1 to Models 4 and 5 regarding R^2 for turnover. Given the uninterpretability of the positive direct satisfaction-turnover paths, comparisons involving Model 5 may be ignored. Results for Models 1 and 4 show that commitment contributes between no unique variance (multi-item intention and 9-item OCQ conditions) and 2.2% unique variance (single-item intention condition) to turnover beyond that contributed by intention/cognitions.

In keeping with previous reviews (e.g., Steel & Ovalle, 1984), satisfaction, commitment, and intention/cognitions account for a relatively small proportion of turnover variance. The largest amount of explained variance (43%) occurs with the use of multi-item intention measures, and the smallest amount (16%) with the use of single-item intention measures. In general, a larger proportion of intention/cognitions variance is explained by satisfaction and commitment (based on Model 1), the largest amount (55%) obtaining when withdrawal cognition scales are used, and the smallest amount (29%) when single-item intention scales are used.

Discussion

Our primary aims were to compare job satisfaction and organizational commitment as unique precursors of employee withdrawal by applying path analysis to meta-analytic correlations among the four focal variables, and to assess the effects of four psychometric moderators on those comparisons. Overall, results support the view that satisfaction and commitment each contribute uniquely to the turnover process. Those contributions, however, are largely limited to intention/cognitions, and depend on the choice of measures.

Attitudinal Contributions to Employee Withdrawal

Excluding single-item scales and correcting for measurement error, job satisfaction and organizational commitment correlated .71, which amounts to 50% shared variance. This, together with the observation that the two variables each contributed uniquely to the turnover process, supports their conceptualization as distinguishable, albeit related, work attitudes (e.g., Brooke, Russell, & Price, 1988; Porter et al., 1974). Counter to Hypothesis 1a, satisfaction correlated more strongly than commitment did with intention/cognitions (−.70 vs. −.55, respectively).

As shown in Table 5, some of the difference owes to the use of withdrawal cognitions versus turnover intention scales. For cognitions, satisfaction correlated −.74 compared to commitment's −.57, whereas, for intention, the correlations were −.53 and −.52, respectively. Moderator effects are discussed below. For now, it is noteworthy that, contrary to expectations based on the view that withdrawal entails a rejection of the organization more than the job (Hom & Hulin, 1981; Hom et al., 1979) and on the explicit characterization of the most popular measure of affective commitment, the OCQ, as involving "a strong desire to maintain organizational membership" (Mowday et al., 1982), results suggest that commitment is not more important than satisfaction in predicting intention/cognitions.

With regard to turnover, however, satisfaction did correlate less strongly than commitment (−.27 vs. −.33, respectively). Although the difference is not large, the direction is consistent with Hypothesis 1b. The reversal in the direction of the difference, as well as the fact that (multi-item) intention/cognitions accounted for only 27% of turnover variance (i.e., $.515^2$), call into question the use of intention/cognition measures as surrogates of actual turnover. Results of studies using intent to leave as the sole withdrawal criterion (e.g., Shore, Newton, & Thornton, 1990), may not generalize well to situations involving actual turnover.

In sum, direct comparisons between satisfaction and commitment in relations with employee withdrawal variables provide limited support for expectations arising from conceptualizations of the two work attitudes in the context of turnover. Discussion of moderator effects, presented below, sheds further light on the comparisons.

Moderators of the Focal Relations

Single- versus multi-item measurement. In support of Hypothesis 3, correlations involving single-item measures of global job satisfaction tended to be weaker than those involving their multi-item counterparts (e.g., .45 vs. .62 for JS-OC). Although only three studies in our sample (Jenner, 1984; O'Reilly, Chatman & Caldwell, 1991; Shore & Martin, 1989) reported both attitude-intention/cognition correlations where satisfaction was measured using just 1 item, several others reporting those correlations (e.g., Bluedorn, 1982; Dougherty et al., 1985; Farkas & Tetrick, 1989) used 2-item scales which, though less problematic, are still likely to underestimate corresponding relations. Notably, of the 11 pairs of attitude-intention/cognitions correlations reported in the eight studies using 1- or 2-item global satisfaction scales, 9 supported commitment

as the stronger precursor. In the seven studies reporting both correlations where global satisfaction was measured using more than 2 items, results supported commitment over satisfaction in only two cases. Consistent with those observations, path analytic results differed markedly with regard to attitudinal effects on intention/cognitions using single- versus multi-item global satisfaction scales, commitment contributing most in the single-item case and satisfaction contributing most in the multi-item case. This reinforces Cooper and Richardson's (1986) concern over procedural biases in comparing alternative theories. In the present context, comparing attitudinal influences in turnover models using single-item measures warrants caution.

Single- versus multi-item measurement of turnover intention had a significant impact only on the relation with turnover, 15% of turnover variance being explained with multi-item scales versus 6% with single-item scales. The lesser impact of turnover intention scale length relative to that of global satisfaction may be due to the greater explicitness of intent-to-quit items. Aggregation increases reliability more on heterogeneous than on homogeneous scales. Typically, intent-to-quit items ask respondents to indicate the likelihood of leaving the company within a specified interval (e.g., 6 months). Additional items either specify different intervals or reverse the direction of keying (i.e., in terms of remaining). Such items are probably substantially intercorrelated. Thus, increases in reliability and correlations with other variables due to aggregation may be less for turnover intention scales than for scales measuring more heterogeneous constructs.

Global versus facet job satisfaction measures. Based on several putative differences between global and sum-of-facet measures of overall job satisfaction noted by Ironson et al. (1989), correlations between satisfaction and the two withdrawal variables were expected to be weaker for facet-based than for global measures. None of the comparisons supported Hypothesis 4, suggesting that the assessment of overall satisfaction is not unduly compromised by the use of facet-based scales. Because facet measures offer diagnostic opportunities (e.g., pay vs. the work itself) precluded by global items, present findings support their use even in cases where relations with overall satisfaction are desired.

15- versus 9-item OCQ. Hypothesis 5 received only partial support. Consistent with the popular claim that the negatively keyed items on the 15-item OCQ tap desire or intent to remain (e.g., Blau, 1989; Carsten & Spector, 1987; Farkas & Tetrick, 1989; Ferris & Aranya, 1983; Griffin & Bateman, 1986; Hom & Hulin, 1981; Hom et al., 1979; Michaels & Spector, 1982; Mowday et al., 1984; Reichers, 1985; Stumpf & Hartman, 1984; Williams & Hazer, 1986), this scale correlated more strongly with turnover (−.39) than did the shorter version which excludes those items (−.24). Also consistent with expectations, only the 15-item scale

contributed uniquely to intention/cognitions independent of satisfaction. The difference between the scales in correlations with intention/cognitions (−.58 vs. −.45), however, although in the expected direction, was non-significant. Moreover, the original scale contributed to the prediction of turnover *independently* of variance shared with intention/cognitions. The latter findings give some basis for doubting the proposed difference between the two measures. Review of the items in question further encourages reevaluation of the issue.

Positive responses to some items (e.g., "It would take very little change in my present circumstances to cause me to leave this organization"), though consistent with an intent to quit, do not actually specify that intent. Positive responses to other items (e.g., "I feel very little loyalty to this organization" and "Deciding to work for this organization was a definite mistake on my part") are even less indicative of intent to leave. Interestingly, Vancouver and Schmidt (1991) identified only 3 "intention to quit items" (p. 344) on the original scale, not 6. Also, 1 of 2 original OCQ items identified by Reichers (1985) as tapping intent to remain ("I would accept almost any type of job assignment in order to keep working for this organization") is 1 of the 9 items included on the shorter scale. Such disagreements suggest that substantive differences between the long and short forms of the OCQ may be less obvious than has generally been accepted.

The 6 items may tap something other than intent to quit that is, nonetheless, important in predicting withdrawal. Using factor analysis, both Angle and Perry (1981) and Tetrick and Farkas (1988) found that the positively and negatively keyed items from the original OCQ loaded on distinct factors suggesting value commitment and calculative involvement (Etzioni, 1975), respectively. The latter is often considered a unique form of commitment that develops from cumulating investments (e.g., pension). This or some similar construct may be responsible for the higher commitment-turnover correlation involving the original OCQ. In addition, the 6 items may facilitate attitude-withdrawal linkages due to their being keyed in the direction of withdrawal. Present results confound possible content and method effects. To shed further light on the issues, it would be useful to examine the dimensionality of the OCQ and/or its relations with other variables controlling for the direction of item keying (see Kelloway & Barling, 1990).

Turnover intention versus withdrawal cognitions. Given the proposed conceptual proximity of withdrawal cognitions to work attitudes (Mobley, 1977; Mobley et al., 1978), measures tapping those variables were expected (Hypothesis 6a) to share more variance with the work attitudes than were measures of turnover intention per se. Results supported that expectation in the case of job satisfaction. In particular, satisfaction shared 26% more variance with withdrawal cognitions than with

turnover intentions. Also as expected (Hypothesis 6b), the opposite effect was observed in the case of turnover, cognitions accounting for 21% less variance than intentions. This finding demonstrates the importance of intent in predicting behavior (e.g., Ajzen & Fishbein, 1980). The observed differences are especially noteworthy because all withdrawal cognition measures included an item tapping intent to quit or remain. If the intention items were excluded from those measures, larger differences likely would have obtained. In keeping with their conceptual origins, then, withdrawal cognitions appear to be broader than intent to leave, more closely related to work attitudes, and more distally related to turnover. Researchers are cautioned that combining intent to quit with conceptually antecedent constructs (e.g., for the sake of parsimony) could substantially alter conclusions concerning the role of behavioral intent per se in the turnover process.

Interestingly, commitment was not significantly more related to withdrawal cognitions than to intentions per se. Although models proposing cognitive precursors of intent to leave (e.g., Mobley, 1977; Mobley et al., 1978) specify job satisfaction as the main attitudinal antecedent, it is reasonable to expect commitment to dominate that role due to its explicit characterization as involving desire to remain (e.g., Mowday et al., 1982). That satisfaction proved the stronger attitudinal precursor of withdrawal cognitions led us to question the content of satisfaction measures on grounds similar to those underlying concerns with the OCQ, namely, possible contamination by items pertaining to withdrawal cognitions.

Review of a lengthy compendium of satisfaction scales (Cook, Hepworth, Wall, & Warr, 1981) did, in fact, suggest some degree of contamination in global (but not facet) measures. One of 4 items on Hoppock's (1935/1977) scale, for example, asks how the respondent would feel about changing jobs. Hackman and Oldham's (1975) 5-item instrument contains 2 items explicitly pertaining to withdrawal cognitions: "I frequently think of quitting this job" and "People on this job often think of quitting." In Quinn and Staines' (1979) "facet-free" index, 2 out of 5 items suggest concerns with quitting (e.g., "Knowing what you know now, if you had to decide all over again whether to take the job you now have, what would you decide?"). Each of these scales was used in our sample of studies. Thus, the relatively strong correlation between satisfaction and withdrawal cognitions may be at least partly attributable to conceptually related items contained in some satisfaction scales. Researchers comparing the relative importance of work attitudes in turnover models are advised to use scales free of confounding items.

Considerations of the Turnover Process

Present findings permit several conclusions regarding the role of work attitudes in predicting withdrawal intention/cognitions. First, results generally supported the view that attitudes toward both the job and the organization are uniquely relevant in predicting cognitive precursors of turnover. Attitudinal contributions to intention/cognitions, however, were not balanced. Contrary to expectation, satisfaction contributed more than commitment did in all cases involving only multi-item satisfaction measures. In addition to multi-item measurement of satisfaction, conditions favoring satisfaction over commitment included the use of the 9-item OCQ and/or withdrawal cognition measures. Our findings underscore the importance of multi-item measurement, the need to determine what exactly the difference is between the long and short versions of the OCQ, and the need for caution in operationalizing cognitive precursors of turnover as general versus specific constructs.

That the satisfaction-to-commitment mediation model received no support in the present study runs counter to certain single-sample investigations (e.g., Price & Mueller, 1986; Williams & Hazer, 1986). The exact bases for the discrepancy are unclear. It may partly owe to statistical artifacts, which were controlled in the present but not the previous studies. Methodological factors may also have played a role. Williams and Hazer (1986), for instance, reanalyzed data (Bluedorn, 1982) derived using a 2-item global satisfaction scale. Present results suggest that, had a longer (and, hence, more reliable) scale been used, path analytic results may have been different. (Dossett and Suszko, 1989, noted, in addition, that Williams and Hazer's test of the commitment-to-satisfaction hypothesis was flawed.) No firm solutions to the noted discrepancy are permitted here. Present findings do, however, raise doubts in the assertion that commitment completely mediates the relation between satisfaction and intention/cognitions.

Several conclusions are also warranted regarding attitudinal contributions to the prediction of turnover. On the basis of parsimony, Model 4, which includes a direct commitment-turnover path, was the best-fitting model when single-item intention measures were used but not when multi-item intention measures were used. Thus, when assessed more reliably, behavioral intent was found to more completely mediate the effects of commitment on turnover decisions. Commitment did contribute uniquely to turnover when the 15-item OCQ was used (excluding single-item intention measures), suggesting, in keeping with earlier discussion, that whatever is unique to the 15-item OCQ contributes to turnover independently of intention/cognitions. In considering the practical significance of the above findings, it is relevant to note that the gain in explained turnover variance owing to the inclusion of a direct commitment-turnover path did not exceed 1.4% when multi-item intention/cognition

measures are used. (It reached 2.2% when only single-item intention measures were considered.) Thus, although statistically significant, the unique impact of commitment on the turnover decision, even under optimal conditions (i.e., using the 15-item OCQ), is quite small in practical terms.

Limitations

Interpretations of present findings warrant guidance along the following lines, some of which were noted earlier but bear repeating here. First, path analysis permits only weak evaluation of causal hypotheses based on correlational data, especially within cross-sectional versus longitudinal designs. Present findings, based on accumulated cross-sectional data, do not allow strong causal interpretations. Second, in keeping with "fail-safe N" concerns, current estimates of rho based on relatively few correlations may be unstable, warranting some caution in interpretation. Moreover, that unpublished studies, many of which were excluded from the present aggregations, may, on average, report weaker (but valid) correlations owing to publication bias suggests that current estimates may be inflated. Third, overestimation may also have occurred in relations among satisfaction, commitment, and intention/cognitions due to shared method variance. Reliable separation of method and content components of variance, although difficult to achieve, would improve the evaluation of turnover models. Finally, only the most often-cited relations among turnover and its antecedents were investigated here, precluding more powerful and complex investigation of the turnover process. Repeated investigation of linkages among a broader set of variables would permit richer meta-analytic examination in future studies.

Summary and Conclusions

Discrepancies in results across studies of the turnover process impede understanding of why people quit their jobs. Following previous researchers (e.g., Carsten & Spector, 1987; Mathieu & Zajak, 1990), the current study sought to clarify certain key issues by way of meta-analysis. The main findings and directions for continued research are highlighted below.

1. In keeping with an independent-effects model and the view that satisfaction and commitment are distinguishable though moderately related constructs (e.g., Porter et al., 1974), satisfaction and commitment each contribute uniquely to turnover intention/withdrawal cognitions.
2. Counter to expectation, commitment does not correlate more strongly than satisfaction does with intention/cognitions, although the expected difference does emerge in relations with turnover per se.

3. Satisfaction correlates more strongly with withdrawal cognitions than does commitment, possibly owing, in part, to the inclusion of withdrawal cognition items on some global satisfaction scales.
4. In keeping with previous meta-analyses (e.g., Steel & Ovalle, 1984), turnover intention is the strongest predictor of turnover; but the modest strength of the relation (i.e., rho = around .65), suggests limits in intent to quit as a surrogate of turnover.
5. The original (15-item) OCQ correlates more strongly with turnover but not with intention/cognitions than does the 9-item version. Further research is needed concerning the scale's dimensionality independent of item keying.
6. Based on the 15-item OCQ, commitment contributes significant unique variance to turnover independently of satisfaction and intention/cognitions. The practical significance of the contribution (1.4% additional explained variance), however, is limited.
7. Comparisons between satisfaction and commitment in studies of the turnover process are sensitive to several measurement options. In particular, the use of (a) single- versus multi-item global satisfaction and/or turnover intention scales, (b) the 9- versus 15-item OCQ, and (c) withdrawal cognition versus (multi-item) turnover intention measures will tend to favor satisfaction over commitment in contributions to intention/cognitions. Researchers are urged to consider these potential sources of variability in undertaking studies of the turnover process.

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APPENDIX A

Summary of Previous Related Meta-Analyses and the Number of Samples (K) Overlapping With the Current Study, Presented in Order of Publication

Study	Relation					
	JS-OC	JS-TOI	JS-TO	OC-TOI	OC-TO	TOI-TO
Shikiar & Freudenberg (1982)[a]						
mean r			−.29			
K			30			
K overlap			5			
Steel & Ovalle (1984)						
corrected mean r			−.28		−.38	.50
K			28		10	40
total N			9,732		2,517	83,552
K overlap			17		6	17
Cotton & Tuttle (1986)[b]						
K			28		16	16
K overlap			16		9	15
Carsten & Spector (1987)						
corrected mean r			−.24			.32
K			39			29
total N			12,045			13,711
K overlap			14			11
Mathieu & Zajac (1990)						
corrected mean r	.53			−.46	−.28	
K	43			36	26	
total N	15,531			14,080	8,197	
K overlap	20			14	11	
Randall (1990)						
corrected mean r					−.23	
K					22	
total N					5,773	
K overlap					15	
Hom et al. (1992)						
corrected mean r		−.49	−.18			.36
K		14	14			14
total N		5,013	5,013			5,013
K overlap		1	1			3
Current study[c]						
corrected mean r	.70	−.58	−.25	−.54	−.33	.45
K	68	88	49	51	25	39
total N	35,282	35,494	13,722	13,829	5,021	10,307

[a] mean r uncorrected for attenuation; included only significant findings; total N not reported.

[b] performed counting and z-aggregation meta-analyses, results of which are not directly comparable to those obtained in the other studies; total N not reported.

[c] based on all samples meeting initial inclusion criteria (see pp. 7–8); turnover relations corrected for attenuation due to dichotomization.

APPENDIX B

List of Contributing Studies, the Number of Samples Per Study, and Number of rs Per Sample

Author(s) (year)	*N* of samples	*N* of *r*s	Author(s) (year)	*N* of samples	*N* of *r*s
Abelson (1983)	1	3	Jenner (1981)	1	3
Angle & Perry (1983)	1	1	Johnston et al. (1988)	1	1
Aranya & Ferris (1983)	2	1	Katz (1978)	1	1
Aranya & Kushnir (1986)	1	1	Kemery et al. (1987)	1	1
Arnold & Feldman (1982)	1	6	Kemp et al. (1983)	1	1
Aryee & Heng (1990)	2	1	Kerber & Campbell (1986)	1	3
Aryee & Leong (1991)	1	1	Koch & Steers (1978)	1	1
Aryee & Tan (1992)	1	1	Konovsky & Cropanzano (1991)	1	1
Aryee et al. (1991)	1	3	Kraut (1975)	1	1
Bateman & Strasser (1984)	1	1	Lachman & Aranya (1986)	1	3
Batlis (1980)	1	1	Lance (1988)	6	1
Becker (1992)	1	1	Lance (1991)	1	1
Bedeian et al. (1983)	1	1	Landau & Hammer (1986)	2	1
Bedeian et al. (1991)	1	1	Lee & Graham (1986)	1	1
Beehr & Gupta (1978)	1	1	Lee & Mowday (1987)	1	6
Blau (1987)	1	3	Leigh et al. (1988)	1	1
Blau (1989)	1	3	Lobonc (1987)	1	1
Blau & Boal (1989)	1	3	Lownsbury & Hoopes (1986)	1	3
Bluedorn (1982)	1	6	Lucas (1985)	1	1
Chacko (1982)	1	1	Marsh & Manari (1977)	1	2
Chalykoff & Kochan (1989)	1	1	Martelli et al. (1989)	1	1
Clegg (1983)	1	3	Martin (1979)	1	1
Colarelli et al. (1987)	1	3	Martin (1980)	1	2
Cook & Wall (1980)	1	1	Mathieu & Hamel (1989)	2	1
Cordery et al. (1991)	1	1	Mayer & Ganster (1988)	1	3
Curry et al. (1986)	1	1	McNeilly & Goldsmith (1991)	1	1
Dailey & Kirk (1992)	1	3	Meglino et al. (1989)	1	1
Davy et al. (1991)	1	3	Meyer & Allen (1987)	1	2
DeCotiis & Summers (1987)	1	1	Meyer & Allen (1988)	1	1
Dougherty et al. (1985)	3	3	Meyer et al. (1989)	1	1
Ferris & Aranya (1983)	1	2	Michaels & Spector (1982)	1	6
Futrell & Parasuraman (1984)	1	1	Mikes & Hulin (1968)	1	1
Gerhart (1990)	1	3	Miller et al. (1990)	1	6
Geyer (1985)	1	6	Mitchel (1981)	2	1
Glisson & Durick (1988)	1	1	Mobley et al. (1978)	1	3
Good et al. (1988)	1	1	Morris & Snyder (1979)	1	1
Green et al. (1983)	1	1	Morrow & McElroy (1987)	1	3
Griffeth & Hom (1988a)	1	3	Mossholder et al. (1988)	2	1
Griffeth & Hom (1988b)	1	3	Motowidlo (1983)	1	3
Hanisch & Hulin (1990)	2	1	Mowday et al. (1984)	2	3
Helwig (1979)	1	1	Murphy & Gardner (1979)	1	1
Hill (1986)	1	1	Newman (1974)	1	3
Hollenbeck & Williams (1986)	1	6	Nicholson et al. (1977)	1	1
Hollenbeck (1989)	1	3	O'Connor et al. (1984)	1	1
Howell & Dorfman (1986)	2	1	O'Reilly & Caldwell (1981)	1	6
Hui (1989)	1	3	O'Reilly et al. (1991)	1	6
Hulin (1966)	1	1	Parasuraman (1982)	1	2
Hulin (1968)	1	1	Parasuraman (1989)	1	6
Hunt et al. (1985)	1	1	Parasuraman & Alutto (1984)	1	1
Huselid & Day (1991)	1	1	Parasuraman & Nachman (1987)	1	1
Ivancevich (1985)	1	1	Paul (1975)	2	1
Jackofsky & Peters (1983)	1	1	Pazy & Zin (1987)	1	1
Jackofsky & Slocum (1987)	1	1	Peters et al. (1981)	1	1
Jackson (1983)	1	1	Pierce & Dunham (1987)	1	3
Jamal (1981)	1	3	Pierce & Geyer (1991)	1	1
Jamal (1990)	1	3	Porter et al. (1974)	1	2

APPENDIX B (continued)

Author(s) (year)	*N* of samples	*N* of *r*s	Author(s) (year)	*N* of samples	*N* of *r*s
Porter et al. (1976)	1	1	Steers (1977)	2	1
Price & Mueller (1981)	1	3	Stepina et al. (1991)	1	1
Reed & Kratchman (1987)	1	1	Stone & Porter (1975)	1	1
Reyes (1989)	1	1	Stremmel (1991)	1	3
Robertson et al. (1991)	1	1	Stumpf & Hartman (1984)	1	3
Rosin & Korabik (1991)	1	3	Suszko & Breaugh (1986)	1	1
Rosse (1982)	1	1	Thompson & Powers (1983)	1	1
Rousseau (1978)	1	1	Touliatos et al. (1984)	1	1
Rusbult & Lowery (1985)	1	1	Vancouver& Schmitt (1991)	1	1
Sager (1991)	1	3	Vandenberg & Scarpello (1990)	2	3
Schultz et al. (1987)	1	1	Van Tilburg & Miller (1987)	1	1
Schweiger & Denisi (1991)	1	3	Vecchio et al. (1986)	1	1
Seybolt (1983)	1	1	Walsh et al. (1985)	1	1
Shore & Martin (1989)	2	3	Ward (1988)	1	1
Shore et al. (1990)	1	1	Waters & Roach (1973)	2	1
Smits (1972)	3	1	Waters & Roach (1979)	1	3
Spector & Jex (1991)	1	1	Waters et al. (1976)	1	2
Spector & Michaels (1986)	1	3	Werbel & Gould (1984)	1	1
Spencer & Steers (1981)	1	1	Wild (1979)	1	1
Spencer et al. (1983)	1	1	Zaccaro & Stone (1988)	1	1
Spillane (1973)	1	1	Zedeck et al. (1983)	1	1
Steel et al. (1990)	1	3			