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The Job Satisfaction–Job Performance Relationship: A Qualitative and Quantitative Review

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A qualitative and quantitative review of the relationship between job satisfaction and job performance is provided. The qualitative review is organized around 7 models that characterize past research on the relationship between job satisfaction and job performance. Although some models have received more support than have others, research has not provided conclusive confirmation or disconfirmation of any model, partly because of a lack of assimilation and integration in the literature. Research devoted to testing these models waned following 2 meta-analyses of the job satisfaction–job performance relationship. Because of limitations in these prior analyses and the misinterpretation of their findings, a new meta-analysis was conducted on 312 samples with a combined N of 54,417. The mean true correlation between overall job satisfaction and job performance was estimated to be .30. In light of these results and the qualitative review, an agenda for future research on the satisfaction–performance relationship is provided.

The study of the relationship between job satisfaction and job performance is one of the most venerable research traditions in industrial–organizational psychology. This relationship has been described as the "Holy Grail" of industrial psychologists (Landy, 1989). Indeed, interest in the link between workplace attitudes and productivity goes back at least as far as the Hawthorne studies (Roethlisberger & Dickson, 1939), and the topic continues to be written about to this day. Although the area has not lacked for qualitative (Brayfield & Crockett, 1955; Herzberg, Mausner, Peterson, & Capwell, 1957; Locke, 1970; Schwab & Cummings, 1970) or quantitative (Iaffaldano & Muchinsky, 1985; Petty, McGee, & Cavender, 1984) reviews, these reviews deserve some scrutiny. Moreover, there have been many developments in the past several years that merit renewed discussion and integration of this literature.

Accordingly, the purpose of the present article is to reexamine the state of the literature concerning the relationship between job satisfaction and job performance. Given the breadth and complexity of the literature, as well as the nature of some of the issues that have arisen, we provide both a qualitative and a quantitative review of the literature. Thus, the article is organized into three major sections. First, we qualitatively review past research on the job satisfaction–job performance relationship. In this section, we briefly summarize previous reviews of the literature and then consider various conceptualizations of the satisfaction–performance relationship. Second, we report on the results of a meta-analysis that remedies limitations in past meta-analytic reviews and provides the most comprehensive evidence to date on the magnitude of the relationship between job satisfaction and job performance. Finally, in light of our qualitative and quantitative reviews, we provide suggestions for future research that could further understanding of the nature of the satisfaction–performance relationship.

Past Research on the Job Satisfaction–Job Performance Relationship

The potential linkage between employee attitudes and performance was considered in earnest in the 1930s, coinciding with (and as a result of) the Hawthorne studies and the ensuing human relations movement. Although the Hawthorne studies are commonly credited with emphasizing a linkage between employee attitudes and performance, researchers were more circumspect in their conclusions than most assume (e.g., Roethlisberger, 1941). It is clear, however, that the human relations movement stimulated interest in the relationship. Following the human relations movement, the most influential narrative review of the job satisfaction–job performance relationship was published by Brayfield and Crockett (1955). In this article, the authors reviewed studies relating job satisfaction to job performance as well as to a number of other behavioral outcomes (accidents, absence, and turnover).

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Brayfield and Crockett concluded that there was not much of a relationship between job satisfaction and performance, labeling it as "minimal or no relationship" (p. 405). The Brayfield and Crockett review was limited by the very small number of published studies available for review at that time (only nine studies were reviewed that reported a correlation between individual job satisfaction and job performance) and the general subjectivity of qualitative reviews. In spite of these shortcomings, Brayfield and Crockett's article was perhaps the most frequently cited review in this area of research prior to 1985.

Since the Brayfield and Crockett (1955) review, several other influential narrative reviews have been published (Herzberg et al., 1957; Locke, 1970; Schwab & Cummings, 1970; Vroom, 1964). These reviews differed greatly in their orientation and, to some degree, in the optimism they expressed regarding the satisfaction–performance relationship, with Herzberg et al. being the most optimistic. The main gist of two of these reviews (Locke, 1970; Schwab & Cummings, 1970) was to issue a strong call for theory-driven investigations of the satisfaction–performance relationship. In response to these reviews, researchers began to consider more closely the nature of the relationship, giving particular consideration to factors that might moderate or mediate the relationship. Accordingly, in the next section of the article, we group these investigations into seven models of the satisfaction–performance relationship and review research that has been conducted on these functional forms.

Nature of the Job Satisfaction–Job Performance Relationship

There are at least seven different ways in which the satisfaction–performance relationship has been specified. A graphical depiction of the different functional forms is provided in Figure 1. These theoretical perspectives previously have not been reviewed together; accordingly, below we provide a review of each of these perspectives. Before each of these models is discussed, however, a brief discussion of the typical means through which studies investigating the satisfaction–performance relationship have been conducted is warranted. By far, the most dominant methodology has involved the concurrent investigation of these two variables. (However, as we note in discussing Model 6, the correlation between satisfaction and performance is not the focus of the vast majority of studies that have shown a correlation between the constructs.) In such studies, employees are asked about current satisfaction levels, and these responses are correlated with supervisory assessments of job performance, organizational performance records (e.g., sales, productivity), and the like. Some studies have made use of longitudinal, panel, or cross-lagged designs to investigate the satisfaction–performance relationship (e.g., Bagozzi, 1980; Sheridan & Slocum, 1975; Siegel & Bowen, 1971; Wanous, 1974), but such studies have been rare. Causal inferences based on cross-sectional data represent a contentious issue in nearly all areas of psychology (James, Mulaik, & Brett, 1982), and the legitimacy of drawing causal conclusions based on hypothesized models with cross-sectional data is directly dependent on the theoretical appropriateness of the model in question. Likewise, the use of longitudinal or panel designs does not ensure legitimate causal interpretations—one must control for (or at least rule out on logical grounds) any unmeasured variables that could spuriously influence the hypothesized relationship (Cook & Campbell, 1979). Thus, though the studies in Models 1–3 (reviewed below) are purportedly causal, rarely are the assumptions necessary to draw causal inferences satisfied.

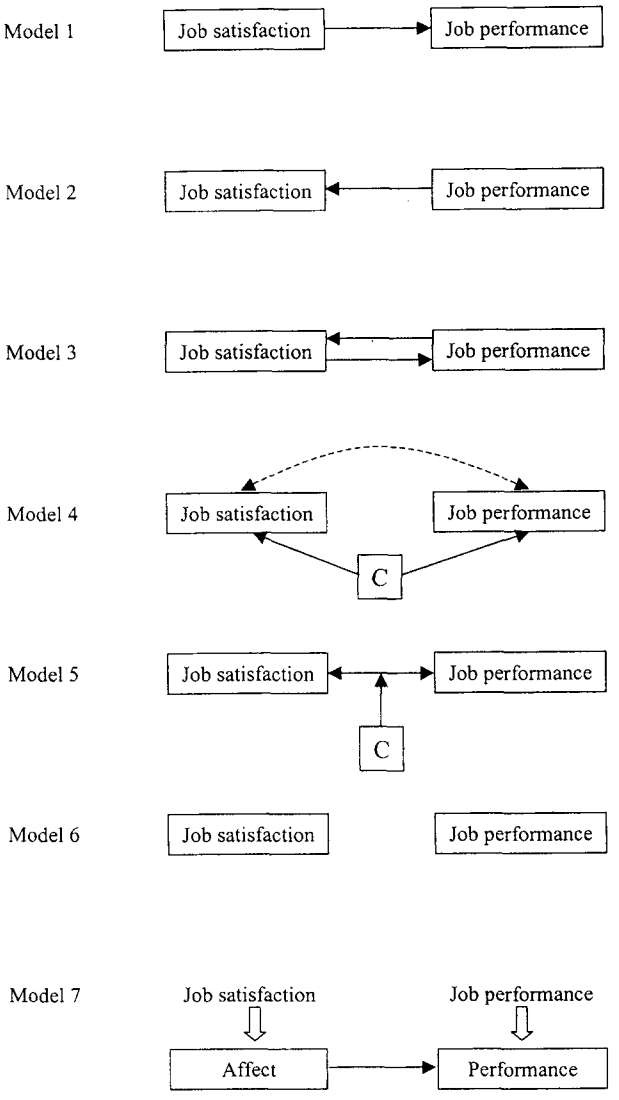

Figure 1. Models of the relationship between job satisfaction and job performance. (Note that in Models 4 and 5, C denotes a third variable.)

Perhaps because of the logistical difficulties associated with conducting such studies in field settings, there also have been only a handful of quasi-experimental studies in the satisfaction–performance literature. Some of these studies have attempted to increase the satisfaction–performance correlation in a "real" work setting through some theoretically justified intervention, such as the use of contingent versus noncontingent reward schedules for performance (e.g., Orpen, 1981, 1982a). Other studies have investigated the effectiveness of organizational interventions on raising levels of both satisfaction and performance, although the magnitude of the relationship between these two variables was not the focus of

these studies. For example, Oldham, Cummings, Mischel, Schmidtke, and Zhou (1995) examined the effects of having employees listen to music using personal stereo headsets on productivity, satisfaction, and a host of other work responses. It is unclear from these studies whether or not there were unmeasured factors that could have affected the selection of employees into experimental versus control groups (Cook & Campbell, 1979).

Model 1: Job Satisfaction Causes Job Performance

This model posits a causal effect of job satisfaction on job performance. This is probably the oldest specification of the relationship and is often attributed to the human relations movement. As G. Strauss (1968) commented, "Early human relationists viewed the morale–productivity relationship quite simply: higher morale would lead to improved productivity" (p. 264). This model is implicitly grounded in the broader attitudes literature in social psychology. The premise that attitudes lead to behavior is a prominent theme in the literature, and most attitude researchers assume that attitudes carry with them behavioral implications. Fishbein and Ajzen (1975), for example, defined an *attitude* as a "learned predisposition to respond in a consistently favorable or unfavorable manner with respect to a given object" (p. 6). Fishbein (1973) also noted that attitude measures "should be consistently related to the pattern of behaviors that the individual engages in with respect to the attitude object" (p. 22). More recently, Eagly and Chaiken (1993) concluded, "In general, people who evaluate an attitude object favorably tend to engage in behaviors that foster or support it, and people who evaluate an attitude object unfavorably tend to engage in behaviors that hinder or oppose it" (p. 12). Following this logic, attitudes toward the job should be related to behaviors on the job, the most central of which is performance on the job.

Surprisingly, however, outside of the causal studies that have investigated a reciprocal relationship between satisfaction and performance (Model 3—see below), we are aware of only two studies that have specifically stipulated a unidirectional causal effect of job satisfaction on job performance. Keaveney and Nelson (1993), in testing a complex model of the interrelationship among numerous attitudes (intrinsic motivation orientation, role conflict, role ambiguity, psychological withdrawal), found a job satisfaction → job performance path coefficient of .12 (*ns*) in a relatively saturated model involving these attitudes; a simpler model provided a much stronger (.29) but still nonsignificant coefficient. Shore and Martin (1989) found that when regressing supervisory ratings of job performance on job satisfaction and organizational commitment, job satisfaction explained more incremental variance in the performance of professionals ($\Delta R^2 = .07$, $p < .05$) and clerical workers ($\Delta R^2 = .06$, $p < .05$) than did commitment ($\Delta R^2 = .01$ in both samples, *ns*). Thus, few studies have posited a unidirectional effect of job satisfaction on job performance, and the findings of those studies are inconclusive.[1]

Model 2: Job Performance Causes Job Satisfaction

Though most attitude–behavior research in psychology has assumed that the link is from attitudes to behavior, this view has not gone unchallenged. Olson and Zanna (1993) reviewed several theories in social psychology that argue attitudes follow behavior; these theories tend to be completely independent of the planned behavior models that dominate attitude → behavior research. Perhaps not surprisingly, then, the theoretical rationale for the performance → satisfaction relationship also is quite different from the basis for the opposite link. Although there are differences in these explanations, broadly construed the performance → satisfaction model is derived from the assumption that performance leads to valued outcomes that are satisfying to individuals.

Expectancy-based theories of motivation generally stipulate that satisfaction follows from the rewards produced by performance (Naylor, Pritchard, & Ilgen, 1980; Vroom, 1964). Lawler and Porter (1967), expectancy theorists themselves, argued that performance would lead to job satisfaction through the provision of intrinsic and extrinsic rewards. As these authors noted, "Briefly stated, good performance may lead to rewards, which in turn lead to satisfaction" (p. 23). Like expectancy theorists, Locke (1970) viewed satisfaction as resulting from performance, but in this case satisfaction was viewed as a function of goal-directed behavior and value attainment. Even advocates of intrinsic motivation would implicitly stipulate an effect of performance on satisfaction. Deci and Ryan's (1985) self-determination theory, for example, argues that satisfaction follows from the rewards that result from behavior (though they also argued that the motivations for the behavior are important to this process).

Compared with research stipulating a unidirectional effect of job satisfaction on job performance, more studies have posited a unidirectional effect of job performance on job satisfaction. We are aware of 10 studies that have investigated such a link. In 4 of the studies (S. P. Brown, Cron, & Leigh, 1993; Darden, Hampton, & Howell, 1989; MacKenzie, Podsakoff, & Ahearne, 1998; Stumpf & Hartman, 1984), job performance had a significant causal effect on job satisfaction. In 6 of the studies (Behrman & Perreault, 1984; Birnbaum & Somers, 1993; S. P. Brown & Peterson, 1994; Dubinsky & Hartley, 1986; Dubinsky & Skinner, 1984; Hampton, Dubinsky, & Skinner, 1986), there was no significant effect. Thus, as in the job satisfaction → job performance studies, results of studies testing the job performance → job satisfaction relationship are inconsistent. Several caveats are in order when interpreting these results. First, as before, though these studies are ostensibly causal, this does not mean that the associations are proven to be causally valid. Second, in the cases in which job performance did not have a unique effect on job satisfaction, one cannot conclude that no association exists. In fact, in many of these studies, there was a significant correlation between the two constructs, but the effect was reduced by the relative influence of other variables, or the effect was mediated through other constructs (e.g., in S. P. Brown & Peterson, 1994, a .31, $p < .01$, correlation became a .04, *ns*, performance → satisfaction path coefficient when effort and role conflict also were modeled to influence job satisfaction).

[1] As noted by a reviewer, studies that measure performance subsequent to satisfaction implicitly assume Model 1, and studies that measure satisfaction after performance implicitly assume Model 2. However, as Siegel and Bowen (1971) documented 30 years ago and we reaffirm below, very few satisfaction–performance studies are longitudinal, and most of these do not explicitly model a causal relationship between satisfaction and performance.

Finally, and somewhat curiously, most (8 of 10) of these studies were published in marketing journals. Thus, the generalizability of the results is unclear.

Model 3: Job Satisfaction and Job Performance Are Reciprocally Related

Models of the reciprocal relationship between job satisfaction and job performance have no distinct theoretical foundation. Rather, they are hybrid models of the previous two approaches, ostensibly accepted by those who believe that both theoretical explanations are plausible, that performance can be both satisfying and, in turn, caused by satisfaction. Although reciprocal models may well find unique justification in each literature, further theoretical grounding seems important. For example, if the relationship is reciprocal, how does the reciprocation work? A dynamic model seems necessary to firmly ground such an approach, yet we are aware of no dynamic models in the literature. Perhaps Schwab and Cummings (1970) came the closest to an elucidation of a dynamic model in their attempt to adapt March and Simon's (1958) model to the satisfaction–performance relationship.

Five studies have investigated the possibility of a reciprocal relationship between job satisfaction and job performance. In these studies, job satisfaction and job performance are related either in a cross-sectional nonrecursive causal model, or in a cross-lagged correlational model, where Time 2 job satisfaction is regressed on Time 1 job satisfaction and Time 1 job performance, and Time 2 job performance is regressed on Time 1 job performance and Time 1 job satisfaction. Two of these studies (Bagozzi, 1980; Siegel & Bowen, 1971) have suggested that job performance leads to job satisfaction but not the reverse. Two other studies provided some support for a reciprocal relationship (mutual causal effects between job satisfaction and job performance). Specifically, Sheridan and Slocum's (1975) study yielded partial support for a reciprocal relationship; Wanous (1974) found support for a reciprocal relationship, but it depended on the type of satisfaction—for extrinsic satisfaction, satisfaction → performance, whereas for intrinsic satisfaction, performance → satisfaction. Finally, Prestwich (1980) found no significant causal effect in either direction. Some of these studies were cross-sectional (e.g., Bagozzi, 1980), and some were longitudinal (e.g., Sheridan & Slocum, 1975; Siegel & Bowen, 1971). Although the results of these studies are somewhat inconsistent, four of the five studies suggest a causal effect of job performance on job satisfaction, and two of the five suggest a causal effect of job satisfaction on job performance.

Model 4: The Relationship Between Job Satisfaction and Job Performance Is Spurious

A spurious correlation is observed when the relationship between two variables is due to the relation of these variables to a third, unmeasured variable (Cohen & Cohen, 1983). Although few studies have formally tested the hypothesis that the job satisfaction–job performance relationship is spurious, several studies support such an inference. S. P. Brown and Peterson (1993) found that a nonzero relationship between job satisfaction and job performance became nonsignificant when role ambiguity was allowed to influence both. Several studies have suggested that self-esteem might explain the association between job satisfaction and job performance. Pierce, Gardner, Cummings, and Dunham (1989) found that self-esteem was related to both job satisfaction and job performance. Further, Gardner and Pierce (1998) found that job satisfaction and job performance were significantly related ($r = .27$, $p < .01$), but once organization-based self-esteem was allowed to influence both, there was no significant relation between satisfaction and performance. Keller (1997) found that a significant satisfaction–performance correlation became nonsignificant once job involvement and organizational commitment were controlled. A significant satisfaction–performance correlation also has been rendered nonsignificant when controlling for trust in management (Rich, 1997) and participation in decision-making (Abdel-Halim, 1983).

Several caveats must be kept in mind when interpreting these results. First, the purpose of most of these studies was not to investigate the spuriousness of the job satisfaction–job performance relationship. Accordingly, other—more theoretically salient—variables not measured in the aforementioned studies may lend additional insight into the satisfaction–performance relationship. Second, the purported causal effects found in these studies may not be valid (i.e., failure to satisfy the assumptions required to make causal inferences may have rendered the conclusions invalid). Finally, a nonsignificant direct relationship between job satisfaction and job performance does not mean that there is not a meaningful relationship between job satisfaction and job performance—it might simply mean the relationship is mediated by other variables (we address this issue later in the article).

Model 5: The Relationship Between Job Satisfaction and Job Performance Is Moderated by Other Variables

By far the most common means of investigating the job satisfaction–job performance relationship has involved the use of moderator variables. Perhaps the most frequently investigated moderator is reward contingency. Numerous studies have hypothesized that job performance should affect job satisfaction only to the extent that people are compensated based on their performance. The logic of this argument is that, assuming pay is valued by employees, high performance should be satisfying (or low performance dissatisfying) to the extent that pay is linked to performance. Although this proposal generally was couched in terms of operant conditioning (Cherrington, Reitz, & Scott, 1971; Orpen, 1981, 1982a), this need not (and perhaps should not) be the case. Locke (1970) hypothesized that value attainment would moderate the performance–satisfaction relationship, such that performance is satisfying to the extent that it leads to important work values. Thus, a strong pay–performance contingency would make those who value pay satisfied because performance leads to valued rewards. Locke's (1970) hypothesis exposes another limitation of the pay-for-performance contingency hypothesis. Pay is only one of many job rewards, and research indicates a weak correlation between pay and job satisfaction (Spector, 1997). Employees report that they value intrinsic rewards such as the nature of the work itself more than pay (Jurgensen, 1978). Furthermore, tests of the reward contingency hypothesis have ignored the possibility that performance itself may be intrinsically satisfying to individuals. Despite

these limitations, in a review of this literature, Podsakoff and Williams (1986) found that the general satisfaction–job performance relationship was somewhat stronger in studies in which rewards were linked to performance (mean $r = .27$) than in studies where there was no performance–pay contingency (mean $r = .17$).

Another potential moderator of the job satisfaction–job performance relationship is job complexity or intrinsic job characteristics. This moderator is similar to the pay–performance contingency moderator in that both deal with work rewards. The distinction is that job complexity is intrinsic whereas pay is extrinsic; however, the direction of the effect should be the same. Namely, performing well in an interesting or stimulating job should be intrinsically satisfying, whereas performing well in a repetitive or boring job should be less rewarding (Baird, 1976). Only three studies have tested this proposition, and substantial differences in the nature of the studies make the results difficult to assimilate. One of the difficulties is that two of the studies (Ivancevich, 1978, 1979), in addition to testing the moderating role of job complexity, also investigated the causal directionality of the relationship. A study that posits joint causal effects, in the presence of a moderator variable, is a complicated proposition. Advances in causal modeling in the last 20 years might facilitate future tests of the relationship.

Beyond the pay–performance contingency, the most commonly investigated moderator of the satisfaction–performance relationship is self-esteem. Korman's (1970) self-consistency theory predicts that individuals will be most satisfied when engaging in those behaviors that are consistent with their self-image. Thus, the relationship between satisfaction and performance should depend on self-esteem, such that only for an individual with high self-esteem is performance satisfying (high performance would not necessarily be satisfying to individuals with low self-esteem because it is inconsistent with their self-perceived adequacy). Korman's theory has been reviewed by Dipboye (1977), who suggested that evidence provided "very weak" (p. 115) support for this aspect of the theory. Our reading of the literature since Dipboye's review suggests mixed support for the theory. Some studies appear to be supportive (Inkson, 1978; Jacobs & Solomon, 1977), others unsupportive (Kaldenberg & Becker, 1991; Tharenou & Harker, 1984), and still others partially supportive (Dipboye, Zultowski, Dewhirst, & Arvey, 1979; E. M. Lopez, 1982). It would not be fair to conclude that the theory is without support, nor would it be accurate to maintain that Korman's theory is wholly supported.

Myriad other moderators of the satisfaction–performance relationship have been proposed and/or tested, including attributions and organizational tenure (Norris & Niebuhr, 1984), cognitive ability (Varca & James-Valutis, 1993), need for achievement (Steers, 1975), career stage (Stumpf & Rabinowitz, 1981), pressure for performance (Ewen, 1973), time pressure (Bhagat, 1982), job fit (Carlson, 1969), occupational group (R. E. Doll & Gunderson, 1969), dyadic duration (Mossholder, Bedeian, Niebuhr, & Wesolowski, 1994), similarity in problem-solving styles (Goldsmith, McNeilly, & Ross, 1989), perceived appropriateness of supervisory task allocation decisions (Jabri, 1992), affective disposition (Hochwarter, Perrewé, Ferris, & Brymer, 1999), and situational constraints (Herman, 1973). A problem is that very few of these moderators have been tested in more than one study. This makes it difficult to assess their validity. Thus, though the large number of studies attests to the popularity of the moderator perspective, little assimilation has occurred.

Model 6: There Is No Relationship Between Job Satisfaction and Job Performance

Of all of the studies that report a correlation between job satisfaction and job performance, only a minority fall into the five models reviewed above (i.e., only a few posit any kind of a relationship between satisfaction and performance). Thus, most studies that include job satisfaction and job performance treat them as separate variables that have no direct relationship to one another. For example, Greenberger, Strasser, Cummings, and Dunham (1989) investigated the causal relationship between personal control and job satisfaction, and between personal control and job performance, but did not investigate the relationship between job satisfaction and job performance. Authors might ignore the satisfaction–performance relationship, while including the two constructs in their study, for different reasons. For example, authors might be convinced there is no relationship between job satisfaction and job performance, and/or they might believe that investigating the relationship between the constructs is beyond the scope of their study. Although either of these assumptions might be valid (we address the first assumption—no relationship between satisfaction and performance—shortly), studies operating from either of these assumptions are limited in what they can tell us about the nature of the relationship between job satisfaction and job performance.

Model 7: Alternative Conceptualizations of Job Satisfaction and/or Job Performance

The next three models of the relationship between job satisfaction and job performance are similar in that they argue that it makes little sense to consider job satisfaction as related to job performance in the traditional way. Rather, they argue that the general concept that attitudes lead to performance has merit, but only when attitudes and/or performance are reconceptualized. Collectively, these models are depicted as Model 7 in Figure 1.

Reconceptualizing attitudes. In response to the apparently low satisfaction–performance relationship, some researchers have recast the satisfaction–performance hypothesis in terms of the relationship between emotions and performance (George & Brief, 1996; Staw, Sutton, & Pelled, 1994). For example, Staw et al. demonstrated that positive emotions on the job led to favorable job outcomes. Why would positive emotions at work predict job performance where job satisfaction would not? Both theory (George & Brief, 1996) and empirical evidence (Isen & Baron, 1991) indicate that positive affect is related to employee motivation and other positive aspects of organizational membership. As reviewed by Wright and Staw (1999), employees with positive affect may be more motivated according to several theories of motivation, including expectancy theory, goal setting theory, and attribution theory. Research operationalizing positive emotions through a variety of methods and measures has demonstrated that positive emotions are related to job performance (Cropanzano, James, & Konovsky, 1993; George & Bettenhausen, 1990; Staw &

Barsade, 1993; Staw et al., 1994; Wright, Bonett, & Sweeney, 1993; Wright & Staw, 1999).

Several researchers have gone so far as to argue that job satisfaction fails to predict job performance because extant job satisfaction measures reflect more cognitive evaluation than affective tone (Brief & Roberson, 1989; Organ & Near, 1985). Brief and Roberson concluded that three of the most widely used job satisfaction measures differed dramatically in the degree to which they captured affect. In support of this argument, Brief (1998) used this study to demonstrate that cognitions correlate more strongly (average r = .70) with job satisfaction than does affect (average r = .43). However, it seems likely that job beliefs (cognitions) are as influenced by affect as job satisfaction itself. Indeed, Brief and Roberson's results, as well as those of another study (Weiss, Nicholas, & Daus, 1999), demonstrate that both cognition and affect contribute to job satisfaction. Nevertheless, the hypothesis that positive emotions relate to performance has garnered considerable support in recent research (see Wright & Staw, 1999).

Reconceptualizing performance. Organ (1988) suggested that the failure to find a relationship between job satisfaction and performance is due to the narrow means often used to define job performance. Typically, researchers have equated job performance with performance of specific job tasks. However, some researchers (see Borman & Motowidlo, 1993) have broadened the performance domain to include citizenship behaviors. Borman, Motowidlo, Organ, and colleagues have argued that these behaviors, which include helping others with their jobs, volunteering for additional work, and supporting organizational objectives, shape the social and psychological context in which task performance takes place. Hence, Organ argued that when performance is conceptualized more broadly—to include both task performance and organizational citizenship behaviors—its correlation with job satisfaction will increase. Organ based his hypothesis on the argument that job satisfaction measures assess perceived fairness and, based on equity theory, fairness cognitions should correlate more strongly with citizenship behaviors than with typical measures of performance. Although support for the assumptions underlying Organ's proposition has not been directly examined, a recent meta-analysis supports the link between job satisfaction and citizenship, finding nonzero correlations between job satisfaction and the two major dimensions of organizational citizenship behaviors—altruism (ρ = .28, k = 28, where ρ is the estimated population true-score correlation, corrected for unreliability, and k is the number of correlations) and compliance (ρ = .28, k = 22; Organ & Ryan, 1995).

Organizational level of analysis. Ostroff (1992) noted that one possible reason that the satisfaction–performance relationship has not been substantiated is that researchers have considered the relationship solely at the individual level of analysis. The individual level of analysis, Ostroff argued, may be too restrictive in the way that performance is measured because it fails to take into account the wide range of behaviors individuals may enact in response to (dis)satisfaction. This argument is similar to Organ's, though we are not aware of any studies that have related job satisfaction to organizational citizenship behaviors at the organizational level of analysis. Ostroff found significant correlations between average teacher job satisfaction in a school district and numerous indicators of school district effectiveness (student test scores, drop-out rate, vandalism costs, student satisfaction, teacher turnover). In several other studies, all of which were completed in the same educational context, Ostroff and colleagues have revealed reliable relations between job satisfaction and performance at the organizational level (Ostroff, 1993; Ostroff & Schmitt, 1993). Recently, Harter and Creglow (1998) linked overall satisfaction to various indicators (customer satisfaction, profitability, productivity, turnover) of the performance of a variety of business units.

Summary

Among the seven general models of the job satisfaction–job performance relationship that have been reviewed herein, the results are inconsistent. Part of the confusion may be due to the piecemeal nature of the research—many models have been proposed, but, with a few exceptions, most have not been thoroughly or systematically tested. This has made assimilation and integration difficult. Some of the disarray can be attributed to disagreement over the nature of the satisfaction–performance relationship. If there is little relationship between job satisfaction and job performance, then there can be no direct causal effect of satisfaction on performance or performance on satisfaction (Models 1 and 2), nor can there be a reciprocal relationship (Model 3), nor would there be a correlation that could be spurious (Model 4). Thus, if there is an inconsequential relationship between satisfaction and performance, there is little to be gained by testing the validity of Models 1–4. On the other hand, Models 5–7 could be valid in the context of a zero or very weak correlation between individual satisfaction and performance. Thus, an important first step in determining the merits of models of the satisfaction–performance relationship is to determine the magnitude of the bivariate relationship. Accordingly, in the next section of the article, we review meta-analytic evidence of this relationship.

Meta-Analytic Reviews of the Job Satisfaction–Job Performance Relationship

There have been two meta-analyses of the job satisfaction–job performance relationship. Petty et al. (1984) provided a limited meta-analysis of the job satisfaction–job performance relationship. These authors confined their analyses to 16 studies that were published in five journals from 1964 to 1983 and that included a measure of overall job satisfaction. Correcting the correlations for unreliability in job satisfaction and job performance, Petty et al. reported a mean corrected correlation of .31 between the constructs. In interpreting their results, Petty et al. concluded, "The results of the present study indicate that the relationship between individual, overall job satisfaction and individual job performance is stronger and more consistent than that reported in previous reviews" (p. 719). Despite the fact that the results of this study reveal a stronger satisfaction–performance relationship than had been suggested by qualitative reviews, and perhaps because of the limited scope of the meta-analysis, this correlation is rarely cited by those currently investigating the satisfaction–performance relationship.

At about the same time as the Petty et al. (1984) review, Iaffaldano and Muchinsky (1985) conducted a more comprehensive meta-analysis of the job satisfaction–job performance litera-

ture. Meta-analyzing 217 correlations from 74 studies, they found a substantial range in satisfaction–performance correlations across the job satisfaction facets, ranging from a mean "true score" correlation of .06 for pay satisfaction to .29 for overall job satisfaction. For their primary analysis, Iaffaldano and Muchinsky averaged the facet-performance correlations and reported an average true score correlation of .17 between job satisfaction and job performance. In discussing their findings, the authors only made reference to the .17 correlation, concluding that job satisfaction and job performance were "only slightly related to each other" (p. 269).

Iaffaldano and Muchinsky (1985) also examined nine moderators of the satisfaction–performance relationship. With one exception (white-collar vs. blue-collar occupational type), the moderators pertained to the measures of job satisfaction (e.g., composite of satisfaction, global, unknown–unspecified) and job performance (e.g., quality vs. quantity, objective vs. subjective). The moderator analysis was not particularly successful—none of the moderators correlated .20 or greater with the satisfaction–performance correlation. However, when the moderators were broken down by satisfaction facet, some significant correlations were observed. Because all the moderators were dichotomous variables and many of their distributions were highly skewed, the lack of significant findings may have been due to the distributional problems with the moderators rather than truly insignificant moderator effects. Iaffaldano and Muchinsky concluded that the moderators were "of little consequence" (p. 267).

The Iaffaldano and Muchinsky (1985) study provided many advances. Most important, their quantitative review avoided the imprecision and subjectivity of earlier qualitative reviews and was more comprehensive than the Petty et al. (1984) meta-analysis. Despite these contributions, in retrospect several limitations of the study are apparent. Whereas some of these limitations may be of minor practical significance, others substantially impact the accuracy and interpretation of the results. First, the authors excluded unpublished studies (doctoral dissertations, working papers, unpublished data, and technical reports), leaving their results vulnerable to the possibility of publication bias (Rosenthal, 1995).

Second, because Iaffaldano and Muchinsky (1985) included in their study correlations between each satisfaction facet and job performance, they cumulated 217 correlations across only 74 studies. Their use of multiple correlations from a single study violates the independence assumption of meta-analysis and, thus, biases the results (Hunter & Schmidt, 1990). It is rare for contemporary meta-analyses to violate the independence assumption (include multiple correlations from the same sample). This is probably due to the fact that meta-analysis experts (Hunter & Schmidt, 1990; Rosenthal, 1995) have cautioned meta-analysts against including multiple correlations from the same sample in their analyses. In fairness, Iaffaldano and Muchinsky were aware of this problem. They noted, "The inclusion of several correlations from a single study does suggest a lack of independence in the data" (p. 255). They did so to avoid losing "considerable amounts of information" (p. 255). However, this does not make violation of the assumption any less serious of a problem. The violation is particularly problematic when the sources of the different correlations are related to each other (Hunter & Schmidt, 1990). Because the correlations among different facets of job satisfaction are so high that they represent a common construct (Parsons & Hulin, 1982), "there can be considerable distortion" (Hunter & Schmidt, 1990, p. 452).

Third, Iaffaldano and Muchinsky (1985) corrected for unreliability in ratings of job performance using internal consistency estimates of reliability. It is commonly accepted that internal consistency reliability overestimates the reliability of supervisory ratings of performance because it consigns variance idiosyncratic to raters to the true variance component of job performance ratings, resulting in downwardly biased corrected correlations (Schmidt & Hunter, 1996). For this reason, Viswesvaran, Ones, and Schmidt (1996) argued that researchers should use interrater reliability to correct job performance for measurement error. Indeed, all recent meta-analyses involving job performance have used this method (e.g., Ones, Viswesvaran, & Reiss, 1996; Roth, BeVier, Switzer, & Schippmann, 1996; Vinchur, Schippmann, Switzer, & Roth, 1998).

Fourth, and most important, in arriving at an overall estimate of the average correlation between job satisfaction and job performance, Iaffaldano and Muchinsky (1985) combined results from each specific facet measure of job satisfaction. In other words, the .17 correlation between satisfaction and performance reported by Iaffaldano and Muchinsky is actually the average of the correlation between pay satisfaction and job performance, coworker satisfaction and job performance, promotion satisfaction and job performance, and so forth. This approach is not an appropriate estimate of the relationship between overall job satisfaction and job performance. The average relationship involving job satisfaction facets is not the same as the relationship involving the overall construct any more than the validity of intelligence as a predictor of job performance can be estimated by the average correlation between responses to each item on an intelligence test and job performance. Job satisfaction facets define the construct of overall job satisfaction, so one must treat the facets as manifestations of the overall construct (i.e., one must create a composite of the facets or capture the shared variance among the facets, as opposed to correlating each facet with performance and then averaging these facet correlations). This point has been made specifically with reference to job satisfaction measurement (Hunter & Schmidt, 1990, p. 460). The averaging approach used by Iaffaldano and Muchinsky downwardly biases the mean correlation estimate. As Wanous, Sullivan, and Malinak (1989) concluded, "Facet satisfaction correlations will always be lower then [*sic*] overall satisfaction correlations, so combining them (as done by Iaffaldano & Muchinsky) lowers the effect size" (p. 261). Thus, the method Iaffaldano and Muchinsky used to combine the information from facet measures cannot be interpreted as an accurate estimate of the relationship between overall job satisfaction and job performance. In sum, there are a number of reasons to believe that .17 is not the best estimate of the true relationship between overall job satisfaction and job performance.

Though a number of reviews throughout the past 50 years have shaped researchers' views about the nature of the relationship between job satisfaction and performance, Iaffaldano and Muchinsky's (1985) review has had the most impact, as evidenced by the large number of citations the study has generated in the 15 years since it was published (a Social Sciences Citation Index search, conducted October 4, 2000, yielded 168 citations). Because Iaffaldano and Muchinsky concluded that there was no appreciable

relationship between job satisfaction and job performance, researchers have accepted this conclusion, as evidenced by the following statements: "The seminal research on job satisfaction and job performance suggests that there exists only a modest correlation between these two constructs" (Côté, 1999, p. 65); "It is accepted among most researchers that there is not a substantial relationship between job satisfaction and productivity" (Judge, Hanisch, & Drankoski, 1995, p. 584); "Much evidence indicates that individual job satisfaction generally is not significantly related to individual task performance" (Brief, 1998, p. 3); and "The magnitude of correlation between job performance and job satisfaction is unexpectedly low" (Spector, 1997, p. 56).

In light of these conclusions, it is probably safe to conclude that Models 1–4 are seen as archaic by most researchers. If there is little relationship between job satisfaction and job performance, researchers have concluded that either Model 5 (relationship is moderated by other variables) or Model 7 (alternative forms of the relationship) is valid. However, because of the limitations of previous reviews, it is also possible that we have erroneously accepted conclusions about the magnitude of the job satisfaction and job performance relationship. At the very least, given the importance of the topic, it seems appropriate to reexamine this relationship. Accordingly, in the next section of the article, we provide an updated, and more comprehensive, meta-analysis of the relationship between job satisfaction and job performance.

In the following meta-analysis, we focus on the relationship between overall job satisfaction and overall job performance. Theoretically, there are compelling reasons to focus on overall job satisfaction. As noted by Fishbein (1979), in order for attitudes to predict behaviors properly, the attitudes and behaviors must be congruent in terms of their generality or specificity. Because overall job performance is a general construct composed of more specific factors (Campbell, McCloy, Oppler, & Sager, 1993), in order to achieve construct correspondence with respect to the satisfaction–performance relationship, one must consider overall job satisfaction. As Hulin (1991) noted, failure to match constructs in terms of their generality leads to downwardly biased correlations when relating job satisfaction to other constructs. Fisher (1980) made this point specifically with reference to the satisfaction–performance relationship, noting, "Researchers interested in the job satisfaction/job performance relationship . . . should be aware of the need to have an appropriate 'fit' between attitude measure specificity and behavioral criteria to obtain maximum predictability" (p. 611). Indeed, the limited empirical evidence that exists suggests that when job satisfaction is treated as a general construct, a stronger correlation with job performance emerges than suggested by Iaffaldano and Muchinsky's (1985) results. Accordingly, our focus here is on the relationship between overall job satisfaction and overall job performance.

Quantitative Review of the Job Satisfaction–Job Performance Relationship

Rules for Inclusion in the Meta-Analysis

Consistent with the recommendations of meta-analytic researchers (Matt & Cook, 1994), we defined the population to which we wished to generalize a priori as consisting of the general population of employed adults. Hence, satisfaction and performance in original studies had to be measured at the individual (as opposed to group) level, and performance had to occur in a natural job setting (studies involving performance on laboratory tasks were excluded). Satisfaction was measured globally (general perceptions of one's job) or with reference to specific facets of the job situation (supervision, coworkers, opportunity for advancement, etc.), although in many cases the measure was not described in sufficient detail to determine its nature. Studies focusing on a single satisfaction facet were excluded in the overall analysis. However, we did include studies measuring at least two facets in the overall analysis as these facets could be combined to form a measure of overall job satisfaction. In addition, we were interested in analyzing studies focusing on job performance per se. Thus, we excluded studies correlating job satisfaction with absenteeism, turnover, job withdrawal, and the like.

Identification of Studies

In order to locate studies containing relationships between individual job satisfaction and job performance, we first searched the PsycINFO electronic database (1967–1999).[2] Our primary focus was on locating published studies, unpublished doctoral dissertations, and cited but unpublished manuscripts and research reports from government agencies. We also reviewed the bibliographies from previous qualitative and quantitative reviews. Finally, in order to locate studies that might not have been referenced in these sources, we manually searched the 21 journals in which most of the satisfaction–performance correlations appeared from 1983 to the present.

Results of Searches

From the computer-assisted searches, we were able to identify 1,008 references to studies concerning job satisfaction and performance. The abstracts of each of these studies were read to determine whether the study met the inclusion criteria. Although most of these references were to published reports, a significant number of unpublished studies were revealed by the search. To obtain the unpublished studies that met our inclusion criteria, we contacted libraries where doctoral dissertations and unpublished government reports were held in order to have access to these documents and were able to obtain 73 unpublished studies and dissertations (containing 88 independent samples) meeting the criteria for our meta-analysis. We do not specifically recall identifying any studies that simply reported a "nonsignificant" finding in our search. If such studies exist, failing to impute a value for these studies could be argued to lead to an upwardly biased estimate of the relationship (Rosenthal, 1995). However, imputation does introduce an element of subjectivity and imprecision into the analysis (Hunter & Schmidt, 1990). In any event, a sensitivity analysis revealed that even if there were 10 studies that simply

[2] We also partially searched Dissertation Abstracts International (DAI). However, early in our search, we discovered that all of the dissertations uncovered in DAI were also indexed in PsycINFO (PsycINFO, unlike PsycLIT, includes dissertations). Thus, we subsequently confined our search to PsycINFO.

reported a nonsignificant correlation, following Rosenthal (1995), assuming a correlation of .00 for these studies, it would change the overall results by only a trivial degree (.008 difference).

All told, 312 samples met our inclusion criteria. Our search resulted in a substantially larger sample of studies than that obtained by Iaffaldano and Muchinsky (1985) and Petty et al. (1984), who included only 24% and 4% of the independent samples included in this study, respectively. Our overall analysis of the relationships between satisfaction and performance was estimated from 312 independent samples contained in 254 studies (total $N = 54{,}417$). A summary of studies included in the meta-analysis is given in the Appendix.

Meta-Analytic Procedures

We used the meta-analytic procedures of Hunter and Schmidt (1990) to correct observed correlations for sampling error and unreliability in measures of job satisfaction and job performance. Correlations were corrected individually. In terms of correcting job satisfaction measures for unreliability, when authors of original studies reported an overall internal consistency reliability for job satisfaction, we used this value to correct the observed correlation for attenuation. If correlations between multiple measures of job satisfaction were reported in original studies, we used these values to compute the reliability of an equally weighted composite of overall satisfaction using the Spearman–Brown prophecy formula (Hunter & Schmidt, 1990). Finally, for single-item measures of job satisfaction, we used meta-analytically derived estimates of the reliability of single-item measures of job satisfaction (Wanous, Reichers, & Hudy, 1997).

As is typical in meta-analyses involving supervisory ratings of job performance (e.g., Barrick & Mount, 1991), only a handful of studies in our database ($k = 4$) reported correlations among raters, making it impossible to form an accurate estimate of the reliability of performance ratings based on information contained in the articles. Accordingly, we took meta-analytic estimates of the reliability of various sources of performance information from the job performance literature. The most frequently used source of performance information in our sample of studies involved supervisory ratings of job performance. In fact, more than 80% of the total samples used supervisory ratings as the performance criterion. When supervisory or peer ratings of performance were used in original studies, we used Viswesvaran et al.'s (1996) estimate of the reliability of supervisory and peer performance ratings. In a number of studies, authors used objective measures (such as quality and quantity of output) to evaluate performance. When multiple objective measures were used, we estimated the composite reliability of these measures. In cases in which the reliability of objective indices of performance was not provided by authors, we estimated reliability of these measures with the mean reliability of all the studies in the given analysis. In a handful of studies (six samples in total), other sources of performance information were used for which meta-analytic reliability estimates were unavailable (ratings from subordinates, students, clients, customers). When these rating types were used, we estimated the reliability of these ratings with the distribution that was deemed most similar (e.g., Viswesvaran et al.'s estimate of the reliability of peer ratings was used as a reliability estimate in the one study using solely subordinate ratings).[3]

Often, studies reported performance information from multiple sources (e.g., peer and supervisory ratings, objective measures and supervisory ratings). In these samples, we estimated reliability using meta-analytic findings from the job performance literature pertaining to correlations between these sources (Bommer, Johnson, Rich, Podsakoff, & MacKenzie, 1995; Harris & Schaubroeck, 1988; Viswesvaran et al., 1996) and computed equally weighted composite correlations between satisfaction and performance. When sources for which no reliability information was available (listed previously) were used in conjunction with supervisory ratings of performance, we treated the former as peer ratings (Viswesvaran et al., 1996).

In cases in which multiple supervisors or multiple peers were used to generate ratings (and these ratings were not merely averaged), we substituted the meta-analytic reliability values into the Spearman–Brown prophecy formula to obtain an estimate of performance reliability for the given sample. Finally, a number of studies reported peer or supervisory ratings that had been averaged across multiple raters. Scullen (1997) demonstrated that this averaging process causes resulting correlations between these ratings and other variables of interest to be upwardly biased and provided a correction to eliminate this bias when the number of raters is known. Thus, we applied Scullen's correction to observed correlations to original studies in which ratings had been averaged and the number of raters was provided in the study. Across all samples, the average reliability of job satisfaction measures was .74 (square root = .86) and the average reliability for job performance was .52 (square root = .72).

We report several statistics that are used to explain heterogeneity in the correlations. First, we report the percentage of the variance in the correlations that is explained by statistical artifacts. We also report the Q statistic (Hunter & Schmidt, 1990, p. 151), which tests for homogeneity in the true correlations across studies. The Q statistic was recommended by Sagie and Koslowsky (1993), though it has all the limitations of a significance test (see Hunter & Schmidt, 1990, pp. 483–484). A low percentage of variance explained and a significant Q statistic (which is approximately distributed as a chi-square) indicate the likelihood of moderators that explain variability in the correlations across studies.

Because it seemed unlikely that statistical artifacts would explain all of the variability in the correlations across studies, we

[3] Murphy and DeShon (2000) argued against the practice of correcting correlations based on current estimates of interrater reliability. They did so on the grounds that raters may disagree for reasons other than random error (e.g., rater effects—some of which may be shared and some of which may be idiosyncratic). Thus, according to Murphy and DeShon, treating correlations among raters as a measure of reliability is inappropriate because it assumes that all lack of agreement is due to random error. Schmidt, Viswesvaran, and Ones (2000), although not disagreeing that there are many potential influences on performance ratings, argued that such influences are an issue not of the reliability of the ratings but rather of the theoretical nature (construct validity) of the ratings. Although a full airing of this debate is beyond the scope of this article, we note that our practice is consistent with all contemporary (post-1990) meta-analyses involving job performance.

investigated several study characteristics that may moderate the magnitude of the satisfaction–performance correlations. First, because meta-analyses are commonly criticized on the grounds that the correlations reported in the study are not representative of those in the population (see Rosenthal, 1998, pp. 377–378, for a review of this issue), we tested for differences in the satisfaction–performance correlation as a function of publication source. Second and third, because a heterogeneous set of measures was cumulated, we report the satisfaction correlations by measure of job performance (e.g., supervisory ratings of performance, "objective" measures) and by measure of job satisfaction (e.g., whether the measure of job satisfaction was a composite of the facets or a global measure). Fourth, because it might be expected that the satisfaction–performance correlation would vary according to the basic research design of the study, we investigated whether the correlation varies by longitudinal versus cross-sectional design. The fifth substantive moderator we examined was job complexity; it is frequently argued that the satisfaction–performance relationship should be higher in more complex, stimulating jobs (e.g., Baird, 1976; Ivancevich, 1979). Finally, it was of interest to determine the magnitude of the satisfaction–performance association in various occupational groups. Thus, we report estimates of the satisfaction–performance relationship for eight different occupational categories. To test for statistically significant differences as a function of dichotomous moderating conditions, we conducted pairwise comparisons using the Z test provided by Quiñones, Ford, and Teachout (1995). For this test, a significant test statistic indicates the presence of a moderator effect for this variable.

Coding of the moderator variables was straightforward as most of the moderators (measure of satisfaction and performance, research design, occupation) were clearly indicated in the studies. In two cases, however, coding of the study characteristics was more involved. We classified journal articles as top tier by quantitatively combining journal quality ratings from seven published articles rating journals in the areas of psychology, organizational behavior, and marketing (e.g., Starbuck & Mezias, 1996). We computed the reliability of ratings for these journals across these seven articles and found a substantial amount of agreement (standardized α = .97). The journals ranked in the upper 20% of the distribution were designated top tier, the remaining 24 rated journals were categorized as other ranked, and the 23 journals for which no ratings were available were labeled unranked. Job complexity for studies that contained a single occupation was coded by matching job titles to substantive complexity scores using the ratings provided by Roos and Treiman (1980). Three of the authors independently assigned a complexity code to each job. There was a high level of agreement among the codes (α = .98). Disagreements were resolved by consensus between two of the authors. After obtaining complexity scores where possible, we then split the sample of studies into a high-job-complexity group (more than 1 standard deviation above the mean complexity score), a medium-complexity group (± 1 standard deviation around the mean complexity score), and a low-complexity group (1 or more standard deviations below the mean complexity score). Trichotomizing job complexity in this way was necessary as we noted a nonlinear relationship between complexity and the satisfaction–performance relationship in our data.

Results

Overall Analysis

Results of the overall meta-analysis of the relationship between job satisfaction and job performance are provided in Table 1. The sample size weighted mean correlation between overall job satisfaction and job performance, uncorrected for study artifacts or unreliability, was .18. The estimated population value of the correlation between overall job satisfaction and general job performance was .30 when the correlations were corrected for unreliability in satisfaction and performance measures. For this estimate, the 95% confidence interval excluded zero, indicating that we can be confident that the average true correlation is nonzero and relatively invariable (.27 to .33). The 80% credibility interval also excluded zero, indicating that more than 90% of the individual corrected true score correlations are greater than zero (the other 10% of the correlations lie above the upper end of the interval, .57). Thus, these results indicate that the mean true correlation between job satisfaction and job performance is moderate in magnitude (.30) and distinguishable from zero.

Comparison of Present Study Findings to Iaffaldano and Muchinsky's (1985)

Because the results reported above stand in contrast to those of Iaffaldano and Muchinsky (1985), it is important to more directly compare our results to theirs and account for the differences. As

Table 1
Meta-Analysis of Relationship Between Job Satisfaction and Job Performance

k	N	Mean r	SD_r	Mean ρ	SD_ρ	80% CV	95% CI	% variance	Q
312	54,471	.18	.12	.30	.21	.03–.57	.27–.33	25.15	1,240.51*

Note. k = number of correlations; N = total sample size for all studies combined; mean r = average uncorrected correlation; SD_r = standard deviation of uncorrected correlation; mean ρ = average corrected correlation; SD_ρ = standard deviation of corrected (true score) correlation; 80% CV = lower and upper limits of 80% credibility interval; 95% CI = lower and upper limits of 95% confidence interval; % variance = percentage of the variance in correlations explained by statistical artifacts; Q = statistic used to test for homogeneity in the true correlations across studies.
* $p < .01$.

Table 2
Direct Comparison of Present Findings With Those of Iaffaldano and Muchinsky (1985)

Source	Mean r	Mean ρ	80% CV	95% CI
Comparisons including only those studies in Iaffaldano and Muchinsky (1985)				
Original Iaffaldano and Muchinsky results	.15	.17	—	—
Job satisfaction facets combined with composite correlations and job performance corrections based on internal consistency reliability	.20	.25	.07–.43	.21–.29
Job satisfaction facets combined with composite correlations and job performance corrections based on interrater reliability	.20	.33	.09–.57	.28–.38
Comparisons including all studies				
Job satisfaction facets combined with composite correlations and job performance corrections based on internal consistency reliability	.18	.25	.01–.48	.23–.27
Job satisfaction facets combined with composite correlations and job performance corrections based on interrater reliability	.18	.30	.03–.57	.27–.33

Note. Results in row 1 are taken from Iaffaldano and Muchinsky (1985) and include average correlations between single job satisfaction facets and job performance, where performance is corrected for unreliability based on internal consistency. Except for row 1, results for Iaffaldano and Muchinsky (rows 2 and 3) are based on the independent correlations that met our inclusion criteria (k = 68, where k is the number of correlations, and N = 9,397). Calculations for all studies (rows 4 and 5) are based on k = 312 and N = 54,471. A dash indicates that data were not reported. Mean r = average uncorrected correlation; mean ρ = average corrected correlation; 80% CV = lower and upper limits of 80% credibility interval; 95% CI = lower and upper limits of 95% confidence interval.

was noted earlier, Iaffaldano and Muchinsky based their corrections on internal consistency estimates of reliability of performance ratings, as opposed to the corrections based on interrater reliability as used in this article. Because internal consistency estimates of reliability are generally higher than interrater estimates, this is one likely source of differences in the correlations. A second difference between our results and those of Iaffaldano and Muchinsky is based on how facets of job satisfaction are treated to arrive at an overall estimate of the satisfaction–performance relationship. Rather than treating each single facet as a measure of the overall job satisfaction construct, as Iaffaldano and Muchinsky implicitly did in their overall analysis, we created a composite measure of overall job satisfaction from the facet correlations reported in each study (in studies in which multiple facets were included). Accordingly, we reanalyzed both their and our data sets using measures of overall satisfaction and composite measures computed from job satisfaction facets. In our first comparative analysis, we used internal consistency estimates of reliability, relying on Viswesvaran et al.'s (1996) meta-analytic estimate of the internal consistency of performance ratings (.86). In reanalyzing their data, we excluded several studies that did not meet our inclusion criteria (self-reports of performance, task performance in laboratory studies, studies that included only a single facet of job satisfaction).

The results of this comparative analysis are presented in Table 2. The first row simply provides Iaffaldano and Muchinsky's (1985) original estimates. The second row provides the results of our reanalysis of their data; as in their study, the estimates in row 2 correct performance measures for unreliability based on internal consistency reliability. Unlike Iaffaldano and Muchinsky, however, where a study reported correlations involving multiple job satisfaction facets, we combined these facets into a composite measure of overall job satisfaction. The uncorrected (.20) and corrected (.25) correlations are significantly higher than those originally reported by Iaffaldano and Muchinsky. This is due to the fact that row 2 represents an estimate of the relationship between overall job satisfaction (a composite of several facets) and job performance, as compared with Iaffaldano and Muchinsky's estimate of the relationship between job performance and an average of single facet measures. The third row provides results based on interrater estimates of reliability. The corrected correlation is higher still (.33).[4] Thus, results in row 2 demonstrate the effects of using a composite measure of job satisfaction and results in row 3 demonstrate the effects of correcting for interrater reliability. Finally, the fourth and fifth rows provide estimates from our data. Row 5, based on corrections due to interrater reliability, shows the results presented in Table 1. Row 4 is a reanalysis of those results using internal consistency estimates of reliability. This correlation (.25) is lower than estimates based on interrater reliability (.30), though still higher than Iaffaldano and Muchinsky's estimate.

Cumulatively, these results reveal two primary reasons why results of the present study differ from those of Iaffaldano and Muchinsky (1985). First, the difference of .08 between the corrected correlations in row 2 (.25) and row 3 (.33) reveals that a substantial reason for the difference is the way in which facet measures of job satisfaction were combined to form a measure of overall job satisfaction. We explain reasons for this difference in the Discussion and Future Research section. Second, the differences in the corrected correlations between estimates based on internal consistency versus interrater reliability estimates (row 2 vs. 3, and row 4 vs. 5), .08 and .05, respectively, reveal that much of the difference also is due to using interrater reliability (as

[4] The reestimated correlation of .33 based on the Iaffaldano and Muchinsky (1985) studies is somewhat higher than the .30 estimate for all studies combined for several reasons. Compared with all studies in the analysis (k = 312), Iaffaldano and Muchinsky's studies were more likely to be based on jobs of high complexity and to appear in top-tier journals.

opposed to internal consistency) estimates in correcting the correlations.

Moderator Analyses

Though the mean satisfaction–performance correlation in our study can be concluded to be nonzero, the credibility interval is relatively wide (from .03 to .57), indicating that there is substantial variation in the individual correlations across the 312 studies. Furthermore, the Q statistic was significant, and sampling error and measurement error accounted for only 25% of this variability. This evidence suggests that there are moderators of the relationship at the study level. Results of the moderator analyses are provided in Table 3.

First, the satisfaction–performance correlation was stronger (ρ = .33) in top-tier journals (those ranked 1–6 in our analysis). The satisfaction–performance correlation was significantly smaller in other journals, including those ranked 7–30 in our analysis (ρ = .26), as well as unranked journals (ρ = .25). However, there did not appear to be a publication bias because the average satisfaction–performance correlation in unpublished studies or dissertations (ρ = .31) was quite similar to the overall estimate.

Second, the true score correlations did not vary significantly according to the measure of performance, although it should be noted that the vast majority of the studies measured job performance with supervisory ratings. Third, global measures had somewhat higher correlations with job performance than did composite facet measures, or unknown or unspecified measures (measures that were not described in sufficient detail in the studies to determine their nature). However, none of these differences were significant. We should note that in the relatively small number of studies (k = 13) in which 2–4 facets were used to assess job satisfaction, the average correlation (ρ = .28) was not significantly smaller than in those studies based on five or more job satisfaction facets (ρ = .30). Fourth, as might be expected, cross-sectional designs yielded significantly stronger satisfaction–performance correlations (ρ = .31) than did longitudinal designs (ρ = .23).

Fifth, consistent with research suggesting that job complexity moderates the satisfaction–performance relationship (Baird, 1976;

Table 3
Results of Moderator Analyses

Moderator	k	N	Mean r	Mean ρ	SD_ρ	Q	Significant difference
Source of correlation							
a. Top-tier journal article	103	21,052	.19	.33[a,b]	.24	518.01*	b, c
b. Other ranked journal article	76	11,653	.17	.26[a,b]	.20	269.67*	a
c. Unranked journal article	41	5,953	.16	.25[a,b]	.18	113.76*	a
d. Unpublished study–dissertation	92	15,813	.19	.31[a,b]	.18	299.65*	—
Measure of job performance							
a. Supervisory ratings	242	44,518	.18	.30[a,b]	.19	913.52*	—
b. Objective records	34	5,216	.16	.26[a,b]	.19	108.74*	—
c. Peer–subordinate ratings or other	36	4,737	.18	.36[a]	.34	186.68*	—
Measure of job satisfaction							
a. Global measure	44	5,561	.22	.35[a,b]	.27	214.01*	—
b. Facet composite	176	34,707	.18	.30[a,b]	.22	786.42*	—
c. Unknown–not specified	92	14,203	.18	.28[a,b]	.15	221.04*	—
Research design							
a. Cross-sectional	291	51,484	.18	.31[a,b]	.21	1,201.04*	a
b. Longitudinal	21	2,987	.14	.23[a,b]	.12	36.72	b
Job complexity							
a. Low	38	4,372	.18	.29[a]	.27	159.77*	c
b. Medium	148	22,841	.18	.29[a,b]	.16	378.02*	c
c. High	24	3,349	.26	.52[a,b]	.38	152.52*	a, b
Occupation							
a. Scientists–engineers	18	2,344	.19	.45[a,b]	.34	80.98*	h
b. Salespersons	22	4,384	.19	.28[a,b]	.10	39.82	h
c. Teachers	8	2,019	.20	.33[a,b]	.10	16.36	h
d. Managers and supervisors	34	4,422	.21	.34[a,b]	.19	97.67*	h
e. Accountants	7	1,240	.17	.26[a,b]	.12	15.10	—
f. Clerical workers–secretaries	18	3,019	.19	.34[a,b]	.23	80.01*	h
g. Laborers (unskilled–semiskilled)	27	3,389	.16	.26[a]	.29	140.81*	—
h. Nurses	13	2,129	.12	.19[a,b]	.10	21.17	a, b, c, d, f
i. Miscellaneous–mixed	165	31,525	.18	.29[a,b]	.21	694.49*	—

Note. k = number of correlations; N = total sample size for all studies combined; mean r = average uncorrected correlation; mean ρ = average corrected correlation; SD_ρ = standard deviation of corrected (true score) correlation; Q = statistic used to test for homogeneity in the true correlations across studies. Letters in the significant difference column correspond to row letters and denote means that are significantly different from one another at the .01 level (two-tailed). Dashes indicate no significant difference.

[a] The 95% confidence interval excluded zero. [b] The 80% credibility interval excluded zero.

* $p < .01$.

Ivancevich, 1978, 1979), results indicate that the satisfaction–performance correlation is substantially stronger in high-complexity jobs than low-complexity jobs. Though job satisfaction and job performance were correlated for jobs with medium and low complexity (ρ = .29), these values were significantly lower than the average correlation for high complexity jobs (ρ = .52). Some differences in the satisfaction–performance relationship were observed across occupations. Although some of these differences appear to be due to job complexity (the strongest correlation was observed for scientists–engineers and one of the weakest for laborers), this is an incomplete explanation (the correlation was weaker for nurses and accountants than for clerical workers). A few of these differences were significant, all such that the correlation for nurses was significantly lower than for the comparison groups (scientists–engineers, salespersons, teachers, managers–supervisors, and clerical workers–secretaries).

We should note that for almost all of the moderator meta-analyses reported in Table 3, the Q statistic was statistically significant at the .01 level. There were a few exceptions, namely, correlations involving longitudinal designs (Q_{21} = 36.72, p = .02) and a number of the occupation correlations—salespersons (Q_{22} = 39.82, p = .011), teachers (Q_8 = 16.36, p = .04), accountants (Q_7 = 15.10, p = .03), and nurses (Q_{13} = 21.17, p = .07). Thus, with the possible exception of within occupation, the within-moderator analyses failed to reduce the heterogeneity of the estimates to a nonsignificant level.

Discussion and Future Research

Few topics in the history of industrial–organizational psychology have captured the attention of researchers more than the relationship between job satisfaction and job performance. Researchers have investigated the relationship operating from different assumptions and with different goals. We have grouped these investigations under the rubric of seven models. These models, positing different forms of relations between job satisfaction and job performance, have received differential support in the literature. In particular, the performance → satisfaction model, the moderator model with respect to pay-for-performance, and models with alternative conceptualizations of job satisfaction and job performance all have received considerable support. However, it is also safe to conclude that there are many inconsistencies in the results testing these models (and in the ways the models have been tested) and a lack of consensus regarding the validity of the models. It is our contention that one reason for the lack of assimilation and consensus is that many researchers have dismissed the relationship between employee satisfaction and job performance.

Indeed, beginning in 1955 and culminating in 1985, reviews of the literature suggested that the satisfaction–performance relationship was, as a general rule, not valid. In the most influential review, Iaffaldano and Muchinsky (1985) went so far as to describe the relationship as an "illusory correlation" (p. 270) that represented a "management fad" (p. 269), and, indeed, their results appeared to support this view. We have argued in this article that .17 is not an accurate estimate of the true relationship between overall job satisfaction and job performance. This is an important point, as researchers have used the .17 value to characterize the satisfaction–performance relationship. For example, Ostroff (1992) noted, "A recent meta-analytic study (Iaffaldano & Muchinsky, 1985) estimated the true population correlation between satisfaction and performance to be .17" (p. 963). Also relying on Iaffaldano and Muchinsky's estimate, the satisfaction–performance relationship has been described as "meager" (Brief, 1998, p. 42), "weak" (Côté, 1999, p. 65), "unexpectedly low" (Spector, 1997, p. 56), "modest . . . at best" (Katzell, Thompson, & Guzzo, 1992, p. 210), "disappointing" (Wiley, 1996, p. 355), "negligible" (Weiss & Cropanzano, 1996, p. 51), and "bordering on the trivial" (Landy, 1989, p. 481). Recently, Ellingson, Gruys, and Sackett (1998) reported an uncorrected satisfaction–performance correlation of .30 (.32 if corrected for internal consistency or .44 if corrected for interrater reliability). Ellingson et al., relying on Iaffaldano and Muchinsky's .17 estimate (and their conclusions), were sufficiently skeptical about their .30 correlation that they collected additional performance data and then reestimated the satisfaction–performance correlation with the new data. Thus, the Iaffaldano and Muchinsky result, and its misinterpretation, continues to have a profound impact on researchers' beliefs about the satisfaction–performance relationship.

It is striking to note that Iaffaldano and Muchinsky's (1985) estimate of the correlation between job satisfaction and job performance, as well as their overall pessimism for the relationship, is remarkably similar to Wicker's (1969) influential characterization of the attitude–behavior relationship, a pessimism that subsequently has been concluded to be unfounded (see Eagly & Chaiken, 1993). Yet, although most social psychologists would argue that attitudes do predict corresponding behaviors, industrial–organizational psychologists continue to hold the view that the most focal attitude about the job (job satisfaction) is unrelated to the most focal behavior on the job (job performance). Eagly (1992) commented, "Understanding of attitudes both as causes and predictors of behavior has advanced very considerably since the 1960's claim that attitudes are unimportant causes and weak predictors" (p. 697).

Just as attitude researchers have reexamined the literature in light of Wicker's (1969) qualitative review, we believe Iaffaldano and Muchinsky's (1985) quantitative review deserves reexamination. As Wanous et al. (1989) noted with respect to meta-analysis, "The lure of a quantitative result and the potential for finding unequivocal conclusions may contribute to a less critical acceptance of the results produced" (p. 259). Indeed, when we critically examined the Iaffaldano and Muchinsky meta-analysis and sought to remedy the limitations, the results presented here suggest different conclusions about the true magnitude of the satisfaction–performance relationship. Although the estimated true correlation of .30 is considerably different from the oft-cited Iaffaldano and Muchinsky finding of .17, the overall correlation is not strong—a correlation of .30 would qualify as a "moderate" effect size using Cohen and Cohen's (1983) rule of thumb. However, it is important to evaluate the satisfaction–performance correlation in the context of other correlates of job performance. For example, the magnitude of the relationship between job satisfaction and performance found in the current study is similar to (within .07 of) four of the strongest and most consistent correlates of job performance: measures of Conscientiousness (ρ = .23; Barrick & Mount, 1991), biodata inventories (ρ = .37; Hunter & Hunter, 1984), structured interviews (ρ = .31 without range restriction corrections; Mc-

Daniel, Whetzel, Schmidt, & Maurer, 1994), and assessment centers (ρ = .37; Gaugler, Rosenthal, Thornton, & Bentson, 1987). Thus, the satisfaction–performance correlation compares favorably with other correlates of job performance. It does not appear to be a correlation that should be generally dismissed.

Although we can be confident that the true correlation is close to .30 and that the great majority (more than 90%) of the individual corrected correlations are greater than zero, most of the variability in the correlations was not explained by study artifacts. Though, consistent with Model 5, we found that the size of the satisfaction–performance correlation was related to job complexity (the satisfaction–performance correlation was stronger in high-complexity jobs), we were not able to explain most of the variability in the correlations across studies. One potential explanation for the moderating role of job complexity is that complex, autonomous jobs represent "weak situations." Research has shown that when there are fewer situational constraints and demands on behavior, correlations between individual characteristics and attitudes (e.g., job satisfaction) have a stronger potential to affect behaviors (e.g., job performance), resulting in higher attitude–behavior correlations (Barrick & Mount, 1993; Herman, 1973). Because incumbents in complex jobs are relatively free of such situational constraints on behaviors, these results provide some support for the situational constraints argument.

Why is the average correlation substantially higher in our reanalysis? The average uncorrected correlation is higher because Iaffaldano and Muchinsky (1985) analyzed correlations at the single satisfaction facet (vs. the overall job satisfaction construct) level (nearly all of the correlations in their overall estimate involved averaging correlations between a single job satisfaction facet and job performance).[5] This lack of correspondence in terms of generality—using a specific attitude to predict a general behavior—should result in a lower correlation (Wanous et al., 1989). We believe that the proper estimate of the overall relationship is between overall job satisfaction and overall job performance, which is why we took a composite average of the specific facets to arrive at a measure of overall job satisfaction. Hence, in the case of this study, composite correlations simply estimate the correlation between job satisfaction and job performance as if the facet satisfactions had been added together. As Hunter and Schmidt (1990) noted, if one wants an accurate estimate of the relationship of a variable to the job satisfaction construct, composite correlations must be used.[6]

The average corrected correlation also is higher because we used interrater reliability to correct the estimates. Here again, we believe the use of interrater reliability is the most appropriate correction, and all contemporary meta-analyses involving job performance use this estimate. As Schmidt and Hunter (1996) noted,

> The problem with intrarater reliability is that it assigns specific error (unique to the individual rater) to true (construct) variance. . . . Use of intrarater reliabilities to correct criterion-related validity coefficients for criterion reliability produces substantial downward biases in estimates of actual validity. (p. 209)

Furthermore, generalizability theory (Cronbach, Gleser, Nanda, & Rajaratnam, 1972) would suggest that corrections based on interrater reliability are more likely to reflect the context to which one seeks to generalize the relationship. Specifically, if one is generalizing to one supervisor's performance rating at one point in time, then one should only correct for unreliability in that one supervisor's rating (correction based on internal consistency). However, if one seeks to generalize across situations (i.e., if a different but equally knowledgeable rater evaluated the same employee), then one should correct for lack of reliability across raters (correction based on interrater reliability). Because in most circumstances one is interested in generalized performance across situations, corrections based on interrater reliability are more appropriate.

On average, global job satisfaction measures correlated somewhat more highly with job performance than did composite measures of job satisfaction facets, but the difference in the average correlations was not significant. The issue of whether global and faceted measures of job satisfaction are equivalent has been debated in the literature. Scarpello and Campbell (1983) went so far as to conclude, "The results of the present study argue against the common practice of using the sum of facet satisfaction as the measure of overall job satisfaction" (p. 595). Although our results cannot address this issue, at least as far as the satisfaction–performance relationship is concerned, it appears that global measures display somewhat higher correlations with job performance than do measures formed from a composite of job satisfaction facets. Future research should compare the predictive validity of these alternative measurement strategies.

Future Research

In light of the estimated job satisfaction–job performance correlation, it appears premature to dismiss the relationship. Thus, the model that assumes no relationship between the constructs (Model 6) can be ruled out, but what about the other models? In an effort to integrate the qualitative and quantitative portions of our review, we provide a model in Figure 2 that integrates Models 1–5. (We discuss Model 7 shortly.) We propose this integrative model because it is plausible that several of the models coexist and thus are best considered in a unified framework. For example, job satisfaction could exert a causal effect on job performance (Model 1 or 3),

[5] We conducted a meta-analysis by the five facets in the Job Descriptive Index (Smith, Kendall, & Hulin, 1969) and found that the average corrected correlation was .18—a figure identical to Iaffaldano and Muchinsky's (1985) overall estimate. Thus, even with our updated meta-analysis, the facets substantially underestimate the relationship of overall job satisfaction to job performance.

[6] Meta-analysis has been criticized on various fronts, which include general criticisms of the technique (see Rosenthal, 1998, for a review), as well as criticisms of the specific procedures (e.g., Hunter & Schmidt, 1990; Rosenthal, 1998). Many of the criticisms directed at the Hunter and Schmidt (1990) technique are on statistical grounds (e.g., Erez, Bloom, & Wells, 1996; James, Demaree, Mulaik, & Ladd, 1992; Johnson, Mullen, & Salas, 1995), and, of course, our results are only as valid as this technique. However, many of these criticisms have been addressed by Hunter, Schmidt, and colleagues (e.g., Schmidt & Hunter, 1999). More generally, meta-analysis requires judgment calls that can affect the results. Wanous et al. (1989) advised authors to think carefully about the decisions they make and to conduct a narrative review in addition to a quantitative review. We have tried to follow these recommendations and to be explicit about the decisions that we have made and the implications of these decisions (as in the case of corrections for unreliability).

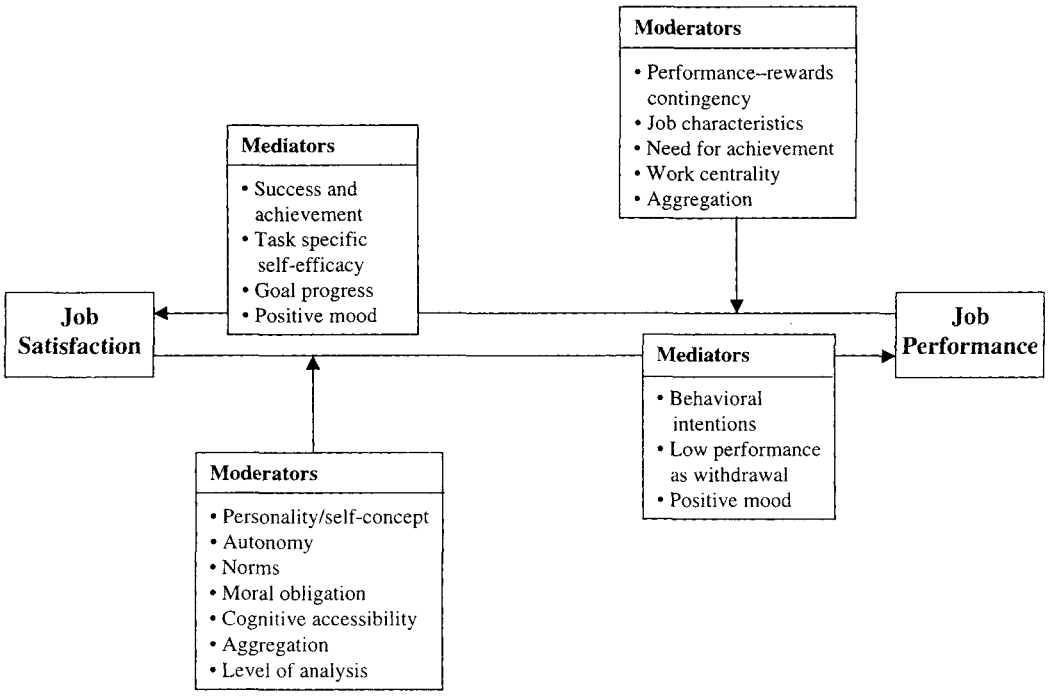

Figure 2. Integrative model of the relationship between job satisfaction and job performance.

or performance on satisfaction (Model 2 or 3), and yet the relationship could be moderated by other variables (i.e., be stronger in some situations than others; Model 5). Similarly, there may be causal effects between satisfaction and performance (Models 1, 2, or 3) that are explained by psychological processes (Model 4). The integrative model posits a bidirectional relationship between job satisfaction and job performance and thus incorporates Models 1–3. However, by including both mediating and moderating effects in both directions, it also incorporates Models 4 and 5. Below we discuss the linkages contained in the model and future research that is needed to test the various components of the model.

Tests of the causal nature of the satisfaction–performance relationship are fragmented and dated. Although there is some support for the performance → satisfaction relationship and the satisfaction → performance relationship, as well as for reciprocal relations, this literature is somewhat archaic; causal satisfaction–performance studies appeared only in the 1970s. If the relationship is an important one, as our results suggest, studies of causal influence should resume. Even if job satisfaction and job performance mutually influence each other, it appears quite possible that the relationship between satisfaction and performance is indirect, mediated by other variables. Though some research has indirectly supported mediating influences, direct tests are lacking. Such causal studies are particularly appropriate in light of advances in causal modeling techniques in the past 20 years. Further research also is needed in terms of moderators of the satisfaction–performance relationship. We are aware of 17 specific moderators of the satisfaction–performance relationship that have been proposed, yet few of these have been investigated in more than one study. Given the large variability in correlations across studies, future investigation into the conditions under which job satisfaction and performance are related is needed.

Within the general framework presented in Figure 2, there are many specific topics that are worthy of investigation. Table 4 provides a brief summary of areas for future research that we view as most promising, grouped according to the seven performance–satisfaction models discussed earlier. We discuss these areas in more detail below. In terms of moderating influences, various personality traits may affect the satisfaction → performance relationship. Mount, Harter, Barrick, and Colbert (2000) argued that job satisfaction would be more strongly related to job performance for less conscientious employees because conscientious employees would be less willing to respond to dissatisfaction with reduced performance levels. Mount et al. found support for this hypothesis across three independent samples. Other personality traits may exhibit moderating effects, such as a doer self-concept, which has been found to moderate attitude–behavior relationships in general (see Eagly, 1992), or affective disposition, which has been found to moderate job satisfaction–turnover relations in particular (Judge, 1993). Though not a trait, self-identity has been shown to be relevant in attitude–behavior relationships such that attitudes are more likely to lead to behaviors when the behavior is central to one's self-concept (Charng, Piliavin, & Callero, 1988). In this context, job satisfaction would be expected to lead to job performance when performing well on the job is central to an employee's identity. Finally, we encourage further research on the validity of self-esteem as a moderator. Dipboye (1977) proposed many refinements to Korman's (1970) theory that might advance research in this area, yet few of the propositions and suggestions in Dipboye's review have been investigated.

Table 4
Topics for Future Research on the Job Satisfaction–Job Performance Relationship

Model	Topic
3	Is the satisfaction–performance relationship reciprocal when tested using contemporary causal modeling techniques?
5	Does personality moderate the job satisfaction–job performance relationship?
1, 5	Is job satisfaction more likely to result in performance when job performance is central to one's self-concept?
1, 5	Does autonomy moderate the satisfaction → performance relationship such that the effect of job satisfaction on performance is stronger for jobs high in autonomy?
1, 5	Do subjective norms moderate the satisfaction → performance relationship?
1, 5	Does moral obligation moderate the satisfaction → performance relationship such that the relationship is weaker for employees who feel an obligation to perform a job well irrespective of their attitudes toward it?
1, 5	Is the satisfaction → performance relationship stronger for individuals whose job attitudes are easily accessed?
1, 5	How does temporal and behavioral aggregation affect the satisfaction–performance relationship?
7	Is the satisfaction–performance relationship stronger at the group or organization (vs. individual) level of analysis?
1	What role do intentions play? Is the Fishbein–Ajzen model relevant to the satisfaction–performance relationship?
1	Do dissatisfied employees tend to use poor performance as a withdrawal or adaptive response?
2, 5	Does the performance–rewards contingency moderate the performance → satisfaction relationship?
2, 5	Is Locke's value model relevant to the job performance → job satisfaction relationship?
2, 5	Are high levels of job performance more satisfying to individuals high in need for achievement (achievement motivation)?
2, 5	Is the effect of performance on satisfaction stronger for individuals whose work is a central life interest?
2, 4	To what degree do success and achievement explain the job performance → job satisfaction relationship?
2, 4	Does task specific self-efficacy mediate the effect of job performance on job satisfaction?
2, 4	Does progression toward important goals explain the effect of performance on satisfaction?
2, 4	Does positive mood mediate the effect of performance on job satisfaction?

Another potential moderating variable is autonomy. Because jobs with a high degree of autonomy provide greater opportunity for attitudes and motives to affect behavior, the satisfaction–performance relationship should be stronger in high-autonomy jobs. This is consistent with our results with respect to job complexity, as well as related arguments with respect to personality (Barrick & Mount, 1993). However, direct tests of this hypothesis are lacking. In addition, norms would be expected to influence the magnitude of the satisfaction → performance relationship. In Fishbein and Ajzen's (1975) theory of reasoned action, *subjective norms* are relevant others' attitudes about whether one should engage in an act. In the context of the satisfaction → performance relationship, subjective norms could be interpreted to represent a performance orientation. Where the norms indicate high performance standards, then dissatisfaction is less likely to result in reduced levels of performance because to respond in such a manner would violate the norms. A similar view with specific reference to the satisfaction–performance relationship lies in Triandis' (1959) conception of pressure for production. According to Triandis, job satisfaction should be less related to job performance when there is pressure for production because such pressure provides motivation to perform. Absent this pressure, motivation must come from elsewhere, in this case, from an intrinsic satisfaction with the job and the desire to perform it well. A similar standard might affect the satisfaction–performance relationship, but in this case a personal standard—moral obligation (Schwartz & Tessler, 1972). Just as others' views of acceptable responses to dissatisfaction may shape performance, one's personal views (the obligation to perform up to one's capabilities) may exhibit the same moderating effect.

Research by Fazio (e.g., Fazio, 1986) has shown that cognitive accessibility of an attitude affects its relationship with behavior, such that the attitude–behavior relationship is stronger for individuals whose attitudes about an object are easily accessed (measured in terms of response latency). Thus, one might hypothesize that individuals whose job satisfaction is accessible (fresh in their minds) are more likely to perform in ways consistent with their satisfaction (or dissatisfaction). Other potential moderating variables from the attitude literature are perceived relevance of the attitude (Snyder, 1982) and introspection about the attitude (see Eagly & Chaiken, 1993, pp. 212–215). Another potential moderating influence on the satisfaction → performance relationship is the degree to which satisfaction and/or performance are aggregated. Weigel and Newman (1976) showed that though general attitudes typically predicted specific behaviors (mean $r = .32$), their validity increased when the specific behaviors were grouped into categories of behaviors (mean $r = .42$) and became quite strong and significant when the behavioral categories were used to form a single behavioral index ($r = .62$). Finally, a prominent theme in alternative conceptualizations of the job satisfaction–job performance relationship is that the relationship will be stronger at the organizational level of analysis. However, the theoretical rationale for such an argument is somewhat murky, nor is it clear that the empirical data are consistent with this hypothesis. For example, the Ostroff (1992) and Harter and Creglow (1998) satisfaction–performance correlations at the organizational level of analysis are comparable to the individual-level correlations reported in this article. Thus, comparing the relative predictive power of job satisfaction at various levels (individual, group, organization) of analysis would be a worthwhile topic for future research, as would further theoretical development underlying expected differences.

In terms of mediators, both affective and cognitive processes underlie the satisfaction → performance relationship, yet there is a dearth of understanding of any such processes. In Fishbein and Ajzen's (1975) model of reasoned action, intentions mediate the effect of attitudes on behaviors. Does this general process, which has been shown across a wide array of behaviors, generalize to job performance? Specifically, do individuals use attitudes about their

jobs in forming intentions regarding their prospective behaviors on the job (many of which are presumably performance related)? Hulin (1991) suggested that job dissatisfaction leads to a general withdrawal construct that is manifested in various behaviors such as absence, turnover, and the like. For some employees, reduced performance of job duties may be a manifestation of withdrawal. Finally, research has suggested that mood in the form of positive affect is related to both satisfaction (Brief, Butcher, & Roberson, 1995) and performance (Staw & Barsade, 1993). Thus, one reason why job satisfaction might lead to job performance is because individuals who like their jobs are more likely to be in good moods at work, which in turn facilitates job performance in various ways, including creative problem solving, motivation, and other processes (Isen & Baron, 1991).

Turning to the performance → satisfaction linkage, research has suggested that the contingency between pay and performance (Podsakoff & Williams, 1986) and intrinsic rewards (e.g., Ivancevich, 1979) moderate the performance–satisfaction relationship, such that jobs in which rewards are contingent on performance are more satisfying than jobs with a weaker performance–rewards contingency. It strikes us that many of these reward-oriented moderator variables proposed in past research would fruitfully be investigated under Locke's (1970) value theory. For example, job complexity may moderate the job performance–job satisfaction correlation because effective performance in complex jobs may satisfy many individuals' values for intrinsic fulfillment in their work. Locke's (1970) theory would further advance this hypothesis by proposing that the rewards that are produced will differentially satisfy individuals depending on their values. Thus, in addition to the positive general effect of the performance–rewards link on satisfaction, those rewards valued most by an individual will have the greatest potential to satisfy. Although direct tests of Locke's (1970) theory are lacking, it has enjoyed support in the studies that have tested it (Hochwarter et al., 1999; Nathanson & Becker, 1973). Research testing the validity of these moderators under Locke's (1970) theory would hold the promise of providing some needed integration to this area.

Research on achievement motivation reveals that individuals with high need for achievement (Nach) prefer moderately challenging tasks because tasks that are too challenging carry with them a higher risk for failure, which is unacceptable to high-Nach individuals (McClelland, 1985). It would then stand to reason that performing a job well is likely to be more satisfying (and performing a job poorly more dissatisfying) to high-Nach individuals because success is their primary motivation (McClelland & Franz, 1992). Indeed, some initial evidence supports this proposition (Steers, 1975). Similarly, for individuals for whom work is a central life interest (high scores on work centrality), performance should be more satisfying because their jobs are an important part of their identity. Finally, as with the satisfaction → performance relationship, aggregation is an important moderating influence. Job performance would be expected to best predict job satisfaction when the constructs correspond in terms of their generality and, beyond this, when both constructs are measured broadly. These issues of construct generality and correspondence have fundamental effects on the nature and magnitude of the relationships between attitudes and behaviors (see Eagly & Chaiken, 1993, for a review) but have rarely been considered in the satisfaction–performance literature (see Fisher, 1980).

In terms of mediators of the performance → satisfaction relationship, perhaps the most logical explanation of the effect of performance on satisfaction is that of success—performance is satisfying because it brings success in the form of valued rewards. Success and achievement are primary causes of life satisfaction (Argyle & Martin, 1991), and so should they be of job satisfaction. These rewards can be extrinsic (pay, recognition from others) as well as intrinsic (satisfaction with a job well done) but would have to be measured broadly. Despite the logic of this hypothesis, we are aware of only one empirical test (S. P. Brown et al., 1993). Within the realm of success, there are numerous ways success on the job (resulting from job performance) can affect job satisfaction. One of the sources of self-efficacy is past accomplishments. Bandura (1997) noted that "successes build a robust belief in one's personal efficacy" (p. 80). It seems plausible that individuals who believe in their abilities and competence to perform a job will be more satisfied in it. Under this explanation, self-efficacy should mediate the performance–satisfaction relationship.

Diener, Suh, Lucas, and Smith's (1999) review shows that progress toward one's goals is predictive of subjective well-being (though the type of goal and the reasons for pursuing it also matter). Thus, if effective job performance promotes achievement of major goals in work and life, individuals should be more satisfied with their jobs as a result. This explanation is related to, but distinct from, the success and achievement explanation as the latter may be satisfying irrespective of the explicit or conscious goals of the individual. In reality, achievement and goal progression are likely to be intertwined in that success will be most satisfying when it is tied to progress toward important personal goals (Locke, 1997).

Finally, although there is a great deal of research on the effect of mood on performance, it surprises us that research on the effects of performance on mood is lacking. Most individuals would rather do something well than poorly, and thus doing something well is likely to elevate mood. Mood, in turn, is related to job satisfaction (Weiss et al., 1999). Thus, in addition to mediating the satisfaction → performance relationship, positive mood also might mediate the performance → satisfaction relationship.

Although it was not possible to include Model 7 in the integrative model in Figure 2, this is not to suggest that the model is undeserving of future research. Research in the past decade has provided strong indications that investigations into the attitude–behavior relationship need not be confined to the satisfaction–performance relationship. It has been suggested that replacing job satisfaction with affect and performance with organizational citizenship behaviors will lead to stronger relationships (see George & Brief, 1992), though the relationship, noted earlier, of job satisfaction with citizenship behaviors (ρ = .28; Organ & Ryan, 1995) appears to be no stronger than the relationship with job performance reported here (ρ = .30). Despite the promise of this literature, more construct validity evidence is needed for both the affective constructs and the performance constructs. Specifically, a plethora of affective concepts have been proposed, including positive mood at work (George & Brief, 1992), positive and negative affectivity (Cropanzano et al., 1993), positive affect (Isen & Baron, 1991), well-being (Wright & Bonett, 1997), positive emo-

tion (Staw & Barsade, 1993), and mental health (Wright et al., 1993). Similarly, within the broad realm of performance, various constructs have been promulgated, including prosocial organizational behaviors (Brief & Motowidlo, 1986), organizational citizenship behaviors (Organ, 1988), contextual performance (Motowidlo & Van Scotter, 1994), and organizational spontaneity (George & Brief, 1992). If some or all of these constructs are surrogates for one another, then collectively these investigations manifest the jangle fallacy (Block, 1995)—constructs carrying different labels but indicating the same core construct are investigated separately. Thus, further construct validity evidence is needed.

Conclusion

The present study provided a review and reexamination of the relationship between job satisfaction and job performance. Though the potential linkage between satisfaction and performance is nearly as old as the field of industrial–organizational psychology, the relationship between employee satisfaction and job performance is no longer considered an important area of research. As Roznowski and Hulin (1992) commented,

> Job satisfaction . . . has been around in scientific psychology for so long that it gets treated by some researchers as a comfortable "old shoe," one that is unfashionable and unworthy of continued research. Many organizational researchers seem to assume that we know all there is to know about job satisfaction; we lose sight of its usefulness because of its familiarity and past popularity. (p. 124)

Though Roznowski and Hulin were writing with reference to the whole body of job satisfaction research, this commentary may be particularly descriptive of the satisfaction–performance relationship. Of the number of studies that include job satisfaction and job performance in their key words, 25% fewer such studies were published in the 1990s compared with the 1980s. Thus, the rate of studies investigating the relationship appears to be declining. Given the substantial impact of the Iaffaldano and Muchinsky (1985) study, it seems plausible that the meta-analysis had a "chilling effect" on subsequent research. Although we endorse continued research involving recent reconceptualizations of both job satisfaction and job performance, we do not believe that research on the satisfaction–performance relationship should be abandoned. As Eagly and Wood (1994) noted,

> Although research synthesis can facilitate the development of understanding in a research area by channeling subsequent research to resolve the uncertainties that emerge, the impact of synthesis has not been uniformly beneficial. [Research syntheses] have sometimes distorted understanding of a phenomenon and discouraged further research. (p. 487)

Given the scope of the current review and the consistency of results across studies, we believe the time has come for researchers to reconsider the satisfaction–performance relationship. According to Rosenthal (1995), the overall goal of the discussion of a meta-analysis is to answer the question, "Where are we now that this meta-analysis has been conducted?" (p. 190). In light of the results presented herein, we believe we are at a quite different place, regarding the magnitude of the satisfaction–performance relationship, than most researchers believe.

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Appendix

Summary of Studies Included in Meta-Analysis

Study	N	r	r_{jp}	r_{js}	ρ	Source	Measure JP	Measure JS	Design	Complexity	Occupation
Abdel-Halim (1980)	123	.22	.52[a]	.75[b]	.35	TT	SR	FC	CS	M	S
Abramis (1985)	112	.13	.42[c]	.74[d]	.23	U-D	P-S-O	U	CS		M-M
Abramis (1994)	281	.10	.52[e]	.74[d]	.16	OR	P-S-O	U	L		M-M
Adkins (1995)	171	.00	.52[a]	.55	.00	TT	SR	FC	CS		M-M
Adkins et al. (1996)	89	.10	.52[a]	.56[b,f]	.19	UR	SR	FC	L	L	L
Alexander et al. (1989)	130	.23	.47[g]	.75	.39	OR	OR	FC	CS	H	M-M
Allen (1992)	81	.33	.52[e]	.52[b]	.63	U-D	OR	FC	CS	M	M-M
Anand & Sohal (1981)	22	.28	.52[e]	.74[d]	.45	UR	SR	U	CS	M	S-E
Anand & Sohal (1981)	24	.25	.52[e]	.74[d]	.40	UR	SR	U	CS	M	S-E
Anand & Sohal (1981)	116	.26	.52[e]	.74[d]	.42	UR	OR	U	CS	M	S-E
Anderson & O'Reilly (1981)	66	.11	.52[e]	.56	.20	OR	OR	FC	CS	M	M-M
Apasu-Gbotsu (1982)	135	.26	.52[a]	.63[b]	.45	U-D	SR	U	CS	M	C
Araghi (1981)	156	.00	.73[g]	.88	.00	U-D	OR	U	CS	H	M-M
Ayman (1983)	81	.28	.52[a]	.74[b]	.45	U-D	SR	FC	CS	M	M-S
Bagozzi (1978)	38	.45	.52[e]	.78	.71	OR	OR	U	CS	M	S
Bagozzi (1978)	123	.30	.52[e]	.77	.47	OR	OR	U	CS	M	S
Baird (1976)	51	.22	.52[a]	.75[b]	.35	TT	SR	FC	CS	M	M-M
Baird (1976)	116	.24	.52[a]	.75[b]	.38	TT	SR	FC	CS	M	M-M
Baklien (1980)	336	.14	.52[a]	.74[d]	.23	U-D	SR	U	CS		M-M
Bateman (1980)	74	.41	.52[a]	.74[d]	.66	U-D	SR	FC	CS		M-M
Bauer & Green (1998)	205	.53	.52[a]	.92	.77	TT	SR	FC	CS		M-M
Bedeian et al. (1983)	193	.05	.52[a]	.68	.08	OR	SR	U	CS	M	N
Berger-Gross & Kraut (1984)	887	.22	.52[a]	.75	.35	TT	SR	U	CS	M	M-S
Bernardin (1979)	53	.29	.62[h]	.58[b]	.48	TT	SR, P-S-O	FC	CS	M	M-M
Bhagat (1982)	104	.35	.52[a]	.94	.50	TT	SR	FC	CS	M	M-S
Bhagat & Allie (1989)	137	−.06	.52[a]	.67[b]	−.10	OR	SR	FC	CS	M	M-M
Birnbaum & Somers (1993)	142	−.03	.52[a]	.85	−.05	OR	SR	G	CS	M	N
Bittle (1991)	138	.19	.52[a]	.79[b]	.30	U-D	SR	FC	CS		M-M
Bizot & Goldman (1993)	65	.13	.52[a]	.58[b]	.24	OR	SR	FC	CS		M-M
Blanchard (1991)	349	.20	.52[a]	.93	.29	U-D	SR	FC	CS		M-M
Bluen et al. (1990)	110	.20	.52[e]	.88	.30	TT	OR	U	CS	M	S
Boyles (1968)	168	.04	.39[i]	.74[d]	.07	U-D	SR, OR	U	CS	M	M-M
Brass (1981)	140	.40	.52[a]	.72[b]	.65	TT	SR	FC	CS		M-M
Brayfield & Marsh (1957)	50	.12	.52[a]	.60	.21	TT	SR	G	CS	M	M-M
Breaugh (1981)	112	.16	.52[a]	.72[b]	.26	TT	SR	FC	CS	M	S-E
Brief & Aldag (1976)	77	.01	.52[a]	.37[b]	.02	TT	SR	FC	CS	L	M-M
Brody (1945)	40	.68	.52[e]	.74[d]	1.10[j]	U-D	OR	U	CS	L	L
N. J. Brown (1989)	272	.17	.52[a]	.70[b]	.28	U-D	SR	FC	CS	M	N
S. P. Brown et al. (1993)	466	.13	.52[a]	.91[b]	.19	UR	SR	FC	CS	M	S
S. P. Brown & Peterson (1994)	380	.31	.52[a]	.68	.52	TT	SR	U	CS	M	S
Burns (1977)	30	.09	.52[a]	.74[d]	.15	U-D	SR	FC	CS	L	L
Burns (1977)	181	−.07	.52[a]	.74[d]	−.11	U-D	SR	FC	CS	L	L
Carlson (1969)	252	.13	.52[a]	.74[d]	.21	TT	SR	G	CS		M-M
Carlson (1969)	254	.17	.52[a]	.74[d]	.27	TT	SR	G	CS	L	L
Clayton (1981)	222	.14	.52[a]	.79[b]	.22	U-D	SR	FC	CS		M-M
Cleveland & Shore (1992)	410	.12	.52[a]	.68	.20	TT	SR	U	CS		M-M
Colarelli et al. (1987)	280	.18	.52[a]	.75	.29	TT	SR	FC	CS	M	A
Crisera (1965)	57	−.03	.52[a]	.75[b]	−.05	U-D	SR	FC	CS		M-S
Crisera (1965)	160	.06	.52[a]	.75[b]	.10	U-D	SR	FC	CS	L	L
Cropanzano et al. (1993)	198	.18	.52[a]	.85	.27	OR	SR	FC	CS		M-M
Dawis & Ace (1973)	90	−.12	.52[a]	.74[d]	−.19	OR	SR	U	CS		M-M
Dawis & Ace (1973)	183	.01	.52[a]	.74[d]	.02	OR	SR	U	CS		M-M
Day & Bedeian (1995)	171	.08	.52[a]	.75	.13	OR	SR	U	CS	M	N
De Frain (1979)	131	.34	.52[a]	.74[d]	.55	U-D	SR	U	CS	H	M-M
Deis (1982)	470	.16	.52[a]	.60[b]	.29	U-D	SR	FC	CS		M-M
Denton (1976)	73	−.01	.52[a]	.74[d]	−.02	U-D	SR	FC	CS		M-M
Dipboye et al. (1979)	73	.30	.52[a]	.74[d]	.48	OR	SR	FC	CS	M	M-M
Dipboye et al. (1979)	264	.32	.52[a]	.74[d]	.52	OR	SR	FC	CS	M	C
L. D. Doll (1973)	16	.36	.52[a]	.74[d]	.58	U-D	SR	G	CS	M	M-S
L. D. Doll (1973)	70	.39	.52[a]	.74[d]	.63	U-D	SR	G	CS	L	L
R. E. Doll & Gunderson (1969)	66	.44	.62[h]	.74[d]	.65	TT	SR, P-S-O	U	CS	H	S-E
R. E. Doll & Gunderson (1969)	129	.04	.62[h]	.74[d]	.06	TT	SR, P-S-O	U	CS		M-M
Dorfman et al. (1986)	121	.41	.52[a]	.83	.62	TT	SR	U	CS		M-M
Dougherty (1981)	85	.48	.52[a]	.95	.68	U-D	SR	FC	CS	H	M-M
Dreher (1981)	692	.19	.52[a]	.72	.31	TT	SR	U	CS		M-M
Dubinski & Hartley (1986)	120	.17	.52[e]	.73	.28	UR	OR	FC	CS	M	S
Dubinski & Skinner (1984)	116	.00	.52[e]	.74[d]	.00	UR	OR	FC	CS	M	S

Appendix (*continued*)

Study	N	r	r_{jp}	r_{js}	ρ	Source	Measure JP	Measure JS	Design	Complexity	Occupation
Efraty & Sirgy (1990)	219	.09	.52[a]	.78	.14	UR	SR	FC	CS		M-M
Efraty & Wolfe (1988)	215	−.09	.52[a]	.78[b]	−.14	UR	SR	FC	CS		M-M
Ellingson et al. (1998)	163	.30	.52[a]	.91	.44	TT	SR	U	CS	M	M-M
El-Safy (1985)	100	.17	.52[a]	.74[d]	.27	U-D	SR	FC	CS	M	M-S
Ettington (1998)	373	.16	.52[a]	.82	.25	OR	SR	U	CS		M-M
Fiedler (1993)	213	.07	.52[a]	.69	.12	U-D	SR	FC	CS	L	M-M
Fox et al. (1993)	136	.06	.52[a]	.66	.10	TT	SR	G	CS	M	N
Frey (1977)	113	.19	.52[a]	.74[d]	.31	U-D	SR	FC	CS		M-M
Funk (1968)	486	.19	.52[a]	.74[d]	.31	U-D	SR	U	CS	M	M-M
Futrell & Parasuraman (1984)	263	.13	.52[a]	.77[b]	.21	TT	SR	FC	CS	M	S
Gadel & Kriedt (1952)	193	.08	.52[a]	.74[d]	.13	TT	SR	U	CS	L	M-M
Gardner et al. (1987)	430	.14	.52[a]	.85	.21	OR	SR	FC	CS		M-M
Gardner et al. (1987)	476	.15	.52[a]	.91	.22	OR	SR	FC	CS	M	M-M
Gardner et al. (1987)	492	.07	.52[a]	.83	.11	OR	SR	FC	CS		C
Gardner & Pierce (1998)	145	.21	.52[a]	.88	.31	UR	SR	FC	CS	M	M-M
Gavin & Ewen (1974)	81	.28	.52[a]	.75	.45	TT	SR	FC	CS		M-M
Gavin & Ewen (1974)	390	.30	.52[a]	.75	.48	TT	SR	FC	CS		M-M
Gellatly et al. (1991)	59	.06	.52[a]	.89	.09	UR	SR	FC	CS	M	M-S
Giovannini (1974)	145	.34	.52[a]	.85[b]	.51	U-D	SR	FC	CS	M	M-M
Giovannini (1974)	152	.27	.52[a]	.86[b]	.40	U-D	SR	FC	CS	H	S-E
Goldsmith et al. (1989)	34	.43	.52[a]	.70[b]	.71	OR	SR	FC	CS	M	S
Grady (1984)	49	.25	.52[a]	.74[d]	.40	U-D	SR	FC	CS	M	T
Graham (1983)	136	−.17	.42[c]	.74[d]	−.30	U-D	P-S-O	U	CS	H	M-M
Greenberger et al. (1989)	196	.40	.52[a]	.85	.60	TT	SR	FC	CS		M-M
Greenberger et al. (1989)	272	.16	.52[a]	.90	.23	TT	SR	FC	CS	M	C
Greene (1972)	62	.27	.59[k]	.74[d]	.41	TT	P-S-O	U	L	M	M-S
Greene (1973)	142	.58	.52[a]	.74[d]	.93	TT	SR	FC	CS	M	M-S
Gregson (1987)	311	.24	.52[a]	.78	.38	U-D	SR	U	CS	M	A
Griffin (1980)	107	−.18	.52[e]	.72[b]	−.29	TT	OR	U	CS	L	L
Griffin (1991)	526	.06	.52[a]	.85[b]	.09	TT	SR	FC	L	M	M-M
Griffiths (1975)	22	.11	.52[a]	.86	.16	OR	SR	G	CS		M-M
Gross (1978)	65	.24	.39[i]	.74[d]	.45	U-D	SR, OR, P-S-O	FC	CS	M	M-M
Gustafson & Mumford (1995)	367	.16	.52[a]	.90	.23	OR	SR	FC	CS		M-M
Hackman & Lawler (1971)	272	.16	.52[a]	.76	.25	TT	SR	U	CS		M-M
Hamid Ud-Din (1953)	552	.28	.39[i]	.45[b]	.67	U-D	SR, OR	FC	CS	M	C
Harding & Bottenberg (1961)	376	.26	.52[a]	.74[d]	.42	TT	SR	U	CS	M	M-M
Haywood (1980)	292	.35	.52[a]	.63[b]	.61	U-D	SR	FC	CS	M	T
Heneman et al. (1988)	104	.26	.52[a]	.91	.38	TT	SR	FC	CS		M-M
Heron (1954)	144	.35	.52[a]	.74[d]	.56	OR	SR	U	CS	L	M-M
Hesketh et al. (1992)	159	.31	.52[a]	.82	.47	OR	SR	U	CS		M-M
Hester (1981)	22	.37	.52[a]	.74[d]	.60	U-D	SR	FC	CS	M	C
Hester (1981)	61	.28	.52[a]	.74[d]	.45	U-D	SR	FC	CS	M	C
Holley et al. (1978)	119	−.12	.52[a]	.74[d]	−.19	UR	SR	FC	CS	M	M-M
Holley et al. (1978)	121	.08	.52[a]	.74[d]	.13	UR	SR	FC	CS	M	M-M
Im (1991)	117	.68	.52[a]	.74[d]	1.10[j]	U-D	SR	FC	CS	M	M-S
Inkson (1978)	93	.38	.52[a]	.75[b]	.61	TT	SR	FC	CS	L	L
Ivancevich (1974)	104	.20	.52[a]	.74[d]	.32	TT	SR	U	L		L
Ivancevich (1974)	106	.08	.52[a]	.74[d]	.13	TT	SR	U	L		L
Ivancevich (1978)	62	.33	.39[i]	.70[b]	.63	TT	SR, OR	FC	L	M	M-M
Ivancevich (1978)	108	.39	.39[i]	.70[b]	.75	TT	SR, OR	FC	L	M	M-M
Ivancevich (1979)	42	.32	.39[i]	.77[b]	.58	TT	SR, OR	FC	L	H	S-E
Ivancevich (1979)	48	.32	.39[i]	.77[b]	.58	TT	SR, OR	FC	L	H	S-E
Ivancevich (1980)	249	.24	.23[g]	.39[b]	.80	TT	OR	FC	CS	H	S-E
Ivancevich & Donnelly (1975)	77	.21	.52[e]	.74[d]	.34	TT	OR	U	CS	M	S
Ivancevich & Donnelly (1975)	100	.16	.52[e]	.74[d]	.26	TT	OR	U	CS	M	S
Ivancevich & Donnelly (1975)	118	.10	.52[e]	.74[d]	.16	TT	OR	U	CS	M	S
Ivancevich & McMahon (1982)	209	.38	.39[i]	.18[b]	1.43[j]	TT	SR, P-S-O	FC	CS	H	S-E
Ivancevich & Smith (1981)	150	.15	.17[g]	.29[b]	.68	TT	SR, OR	FC	CS	H	S-E
Jabri (1992)	98	.28	.52[a]	.67[b]	.47	OR	SR	FC	CS	M	S-E
Jacobs & Solomon (1977)	251	.16	.52[a]	.72[b]	.26	TT	SR	FC	CS		M-M
Jenkins (1990)	120	.14	.52[a]	.75[b]	.22	U-D	SR	FC	CS		M-M
Jenkins (1990)	233	.25	.52[a]	.75[b]	.40	U-D	SR	FC	CS		M-M
Johnston et al. (1988)	102	.18	.52[a]	.70[b]	.30	OR	SR	FC	CS	M	S
Joyce et al. (1982)	193	.08	.52[a]	.87	.12	OR	SR	FC	CS	M	M-S
Judge & Bono (2000)	246	.31	.52[a]	.82	.47	U-D	SR	G	CS		M-M
Judge & Thoresen (1996)	500	.36	.52[a]	.88	.53	U-D	SR	FC	CS		M-M
Judge et al. (1999)	31	−.13	.42[c]	.60[b]	−.26	U-D	P-S-O	G	CS	M	M-S
Judge et al. (1999)	91	.18	.42[c]	.89[b]	.29	U-D	P-S-O	G	CS	M	M-S
Judge et al. (1999)	392	.13	.52[a]	.75[b]	.21	U-D	SR	G	CS	M	M-S

Appendix (*continued*)

Study	N	r	r_{jp}	r_{js}	ρ	Source	Measure JP	Measure JS	Design	Complexity	Occupation
Kaldenberg & Becker (1991)	147	.16	.52[e]	.82	.25	OR	OR	U	CS	H	M-M
Kaldenberg & Becker (1991)	166	.16	.52[e]	.82	.25	OR	OR	U	CS	H	M-M
Kantak (1998)	516	.19	.52[e]	.93	.27	U-D	OR	FC	CS	M	S
Keller (1984)	532	.07	.39[i]	.88	.12	TT	SR, OR	FC	CS		S-E
Keller (1997)	190	.08	.52[a]	.87	.12	TT	SR	FC	CS		M-M
Kesselman et al. (1974)	76	.54	.52[a]	.75[b]	.86	TT	SR	FC	CS		M-M
Khaleque et al. (1992)	100	.59	.52[a]	.74[d]	.95	UR	SR	G	CS	L	L
Kinicki et al. (1990)	312	.12	.52[a]	.94	.17	TT	SR	U	CS	M	N
Kirchner (1965)	72	.67	.92[g]	.83[b]	.77	TT	OR	U	CS	M	S
Kittrell (1980)	212	.14	.52[a]	.74[d]	.23	U-D	SR	G	CS	M	M-M
Konovsky & Cropanzano (1991)	195	.18	.52[a]	.85	.27	TT	SR	FC	CS	M	M-M
Kuhn et al. (1971)	184	.11	.52[e]	.74[d]	.18	OR	OR	U	CS	L	L
La Follette (1973)	768	.27	.52[a]	.75[b]	.43	U-D	SR	FC	CS		M-M
Lawler & Porter (1967)	148	.31	.62[b]	.74[d]	.46	OR	SR, P-S-O	U	CS	M	M-M
Leana (1986)	198	−.02	.39[i]	.68[b]	−.04	TT	SR, OR	FC	CS	M	M-M
C. Lee et al. (1990)	91	−.15	.52[a]	.81	−.23	TT	SR	U	CS		M-M
T. W. Lee & Mowday (1987)	445	−.11	.52[a]	.74[d]	−.18	TT	SR	FC	CS		M-M
Leveto (1974)	43	.00	.52[a]	.74[d]	.00	U-D	SR	U	CS	M	A
Levy & Williams (1998)	46	−.06	.52[a]	.72	−.10	OR	SR	FC	CS		M-M
Lichtman (1970)	95	.21	.52[a]	.74[d]	.34	TT	SR	U	CS		M-M
Livingstone et al. (1997)	143	.31	.52[a]	.78	.49	OR	SR	U	CS		M-M
Livingstone et al. (1997)	143	.31	.52[a]	.78	.49	OR	SR	FC	CS		M-M
London & Klimoski (1975)	34	−.07	.62[b]	.60[b]	−.11	OR	SR, P-S-O	FC	CS	M	N
London & Klimoski (1975)	40	.51	.62[b]	.60[b]	.84	OR	SR, P-S-O	FC	CS	M	N
London & Klimoski (1975)	79	−.05	.62[b]	.60[b]	−.08	OR	SR, P-S-O	FC	CS	M	N
E. M. Lopez (1982)	579	.60	.52[a]	.75[b]	.96	TT	SR	FC	CS		M-M
F. M. Lopez (1962)	124	.11	.52[a]	.86[b]	.16	U-D	SR	U	CS		M-M
Lucas (1985)	213	.13	.52[a]	.37[b]	.30	UR	SR	FC	CS	M	M-S
Lucas et al. (1990)	213	.16	.52[a]	.56[b,f]	.30	UR	SR	U	L	M	M-S
Lusch & Serpkenci (1990)	182	.06	.52[a]	.81[b]	.09	TT	SR	FC	CS	M	M-S
Macan (1994)	353	.13	.52[a]	.57	.24	TT	SR	FC	CS		M-M
MacKenzie et al. (1998)	672	.19	.52[e]	.87	.28	TT	OR	FC	CS	M	S
Magee (1976)	190	.30	.52[a]	.74[d]	.48	U-D	SR	FC	CS		M-M
Marr (1965)	82	.21	.52[e]	.66[b]	.35	U-D	SR	U	CS	M	T
Marshall & Stohl (1993)	143	.10	.52[a]	.72[b]	.16	UR	SR	FC	CS	L	L
Mathieu & Farr (1991)	311	.08	.52[a]	.91[b]	.12	TT	SR	FC	CS	H	S-E
Matteson et al. (1984)	355	.18	.90[g]	.85	.21	OR	OR	FC	CS	M	S
McNeilly & Goldsmith (1991)	138	.13	.52[a]	.75[b]	.21	OR	SR	FC	CS	M	S
McPherson (1974)	1,272	.18	.52[a]	.75[b]	.29	U-D	SR	FC	CS	M	T
Mekky (1973)	213	−.05	.52[a]	.74[d]	−.08	U-D	SR	FC	CS		M-M
Meyer et al. (1989)	61	−.07	.52[a]	.89	−.10	TT	SR	FC	CS	M	M-S
Miller (1984)	183	.13	.52[a]	.74[d]	.21	U-D	SR	FC	CS		M-M
Misshauk (1968)	24	.77	.52[a]	.73[b]	1.25[j]	U-D	SR	FC	CS	L	L
Misshauk (1968)	24	.63	.52[a]	.97[b]	.89	U-D	SR	FC	CS	M	M-M
Misshauk (1968)	24	.49	.52[a]	.77[b]	.77	U-D	SR	FC	CS	H	S-E
Misshauk (1970)	37	−.02	.52[a]	.69[b]	−.03	U-D	SR	FC	CS		S-E
Mossholder et al. (1981)	161	.11	.52[a]	.73	.18	TT	SR	U	CS	M	N
Mossholder et al. (1984)	102	.02	.52[a]	.70[b]	.03	OR	SR	FC	CS		M-M
Mossholder et al. (1988)	220	.05	.52[a]	.83[b]	.08	OR	SR	FC	CS		L
Mossholder et al. (1988)	365	.05	.52[a]	.88	.07	OR	SR	FC	CS		M-M
Mossin (1949)	94	−.03	.52[a]	.74[d]	−.05	U-D	SR	U	CS	M	S
Munoz (1973)	120	−.02	.52[a]	.74[d]	−.03	U-D	SR	FC	CS	M	M-M
Nathan et al. (1991)	360	.12	.52[e]	.74[b]	.19	TT	OR	FC	L		M-M
Nathanson & Becker (1973)	21	.44	.42[e]	.72	.80	TT	P-S-O	U	CS	H	M-M
Nathanson & Becker (1973)	36	.23	.42[e]	.72	.42	TT	SR	U	CS	H	M-M
Nhundu (1992)	80	.23	.52[e]	.74[d]	.37	UR	P-S-O	FC	CS	M	T
Nice et al. (1988)	356	.20	.52[a]	.78[b]	.31	UR	SR	FC	CS	H	M-M
Norris & Niebuhr (1984)	116	.09	.52[a]	.70[b]	.15	OR	SR	FC	CS	M	M-M
O'Connor et al. (1984)	1,450	.22	.52[a]	.29[b]	.57	TT	SR	FC	CS		M-M
Oldham et al. (1995)	298	.14	.52[a]	.88	.21	TT	SR	FC	CS		M-M
Oldham et al. (1976)	256	.08	.77[i]	.79	.10	TT	SR	FC	L	M	C
Oldham et al. (1986)	201	−.09	.52[e]	.74[b]	−.15	TT	OR	FC	CS	M	C
Oldham et al. (1991)	207	.12	.52[a]	.69[b]	.20	TT	SR	FC	CS		M-M
Oppenheimer (1981)	231	.20	.52[a]	.62[b]	.35	U-D	SR	G	CS		M-M
O'Reilly & Roberts (1978)	301	.16	.52[a]	.63[b]	.28	TT	SR	FC	CS		M-M
Orpen (1974)	75	.69	.52[a]	.74[d]	1.11[j]	OR	SR	G	CS	L	L
Orpen (1974)	75	.30	.52[a]	.74[d]	.48	OR	SR	G	CS	L	L
Orpen (1974)	75	.02	.52[a]	.74[d]	.03	OR	SR	G	CS	L	L
Orpen (1978)	47	.45	.52[a]	.68	.76	TT	SR	G	CS	M	M-S

Appendix (*continued*)

Study	N	r	r_{jp}	r_{js}	ρ	Source	Measure JP	Measure JS	Design	Complexity	Occupation
Orpen (1978)	54	.02	.52[a]	.71	.03	TT	SR	G	CS	M	M-M
Orpen (1982a)	21	.70	.52[e]	.74[d]	1.13[j]	OR	OR	G	CS	L	L
Orpen (1982a)	21	.39	.52[e]	.74[d]	.63	OR	OR	G	CS	L	L
Orpen (1982a)	21	.01	.52[e]	.74[d]	.02	OR	OR	G	CS	L	L
Orpen (1982b)	90	.24	.52[a]	.74[d]	.39	OR	SR	G	CS	M	C
Orpen (1982b)	93	.25	.52[a]	.74[d]	.40	OR	SR	G	CS	M	C
Orpen (1984)	18	.16	.52[a]	.74[d]	.26	UR	SR	U	CS	M	M-S
Orpen (1984)	18	.12	.52[a]	.74[d]	.19	UR	SR	U	CS	M	M-S
Orpen (1985)	346	.23	.52[a]	.74[d]	.37	UR	SR	FC	CS	M	M-S
Orpen (1986)	98	.13	.52[a]	.74[d]	.21	OR	SR	U	CS		M-M
Orpen & Bernath (1987)	80	.03	.52[a]	.74	.05	UR	SR	U	CS	M	M-S
Packard & Motowidlo (1987)	206	.24	.52[e]	.86	.35	UR	P-S-O	U	CS	M	N
Papper (1983)	217	.13	.52[a]	.91	.19	TT	SR	FC	CS		M-M
Parasuraman & Alutto (1984)	102	.24	.52[a]	.74	.39	U-D	SR	FC	CS	M	M-S
Pavia (1985)	72	.20	.52[a]	.86	.30	U-D	SR	U	CS		M-M
Pavia (1985)	148	−.01	.52[a]	.85	−.02	U-D	SR	U	CS		M-M
Pearson (1981)	64	.23	.52[a]	.74[d]	.37	U-D	SR	G	CS		M-M
Penley & Hawkins (1980)	264	.00	.52[a]	.96[b]	.01	OR	SR	FC	CS		M-M
Peris (1984)	92	.12	.52[a]	.68	.20	U-D	SR	U	CS	M	M-M
Peters et al. (1988)	720	.12	.52[a]	.78[b]	.19	UR	SR	FC	CS		M-M
Pierce et al. (1979)	398	.14	.52[a]	.74[d]	.23	TT	SR	FC	CS		M-M
Pierce et al. (1989)	96	.06	.52[a]	.83	.09	TT	SR	FC	CS		M-M
Pierce et al. (1989)	116	.07	.52[e]	.83	.11	TT	OR	FC	CS	M	C
Podsakoff et al. (1993)	612	.28	.52[a]	.90[b]	.41	TT	SR	FC	CS		M-M
Podsakoff et al. (1982)	72	.18	.52[a]	.68	.30	TT	SR	FC	CS		M-M
Prestwich (1980)	33	−.02	.52[a]	.71[b]	−.03	U-D	SR	FC	L	M	M-M
Prestwich (1980)	36	.61	.52[a]	.86[b]	.91	U-D	SR	FC	L	M	M-M
Ramser (1972)	54	.41	.52[a]	.74[d]	.66	OR	SR	U	CS	M	M-S
Ramser (1972)	104	.04	.52[a]	.74[d]	.06	OR	SR	U	CS		M-M
Randall et al. (1999)	128	.21	.52[a]	.74[d]	.34	OR	SR	FC	CS		M-M
Randall & Scott (1988)	99	.14	.52[a]	.72	.23	UR	SR	U	CS	L	C
Randall & Scott (1988)	163	.25	.52[a]	.72	.41	UR	SR	U	CS	M	N
Randklev (1984)	85	−.04	.52[a]	.75[b]	−.06	U-D	SR	FC	CS	M	T
Renn & Prien (1995)	33	.24	.52[e]	.71	.39	UR	OR	FC	CS	M	M-M
Rentsch & Steel (1992)	119	.00	.52[a]	.74[d]	.00	OR	SR	G	CS		M-M
Rentsch & Steel (1992)	557	.12	.52[a]	.74[d]	.19	OR	SR	G	CS		L
Rich (1997)	183	.10	.52[a]	.82	.15	UR	SR	G	CS	M	S
Riggio & Cole (1992)	71	.25	.62[h]	.75[b]	.37	OR	SR, P-S-O	FC	CS	M	M-M
Riggio & Cole (1992)	173	.22	.62[h]	.75[b]	.32	OR	SR, P-S-O	FC	CS		M-M
Roberts & Foti (1998)	76	.42	.52[a]	.88	.62	UR	SR	FC	CS		M-M
Ross (1991)	172	.00	.71[g]	.92	.00	U-D	OR	U	CS	M	A
Ross (1991)	205	.09	.71[g]	.92	.11	U-D	OR	U	CS	M	A
Rossano (1985)	218	.10	.52[a]	.65[b]	.17	U-D	SR	FC	CS	M	M-M
Saks (1995)	76	.29	.52[a]	.72	.47	TT	SR	U	CS	M	A
Saks & Ashforth (1996)	153	.28	.52[a]	.72	.46	OR	SR	U	CS	M	A
Sales (1977)	380	.10	.52[a]	.74	.16	U-D	SR	FC	CS		M-M
Sargent & Terry (1998)	62	.28	.52[a]	.90[b]	.41	OR	SR	U	L	M	M-M
Schatz (1980)	50	.49	.52[a]	.74[d]	.79	U-D	SR	FC	CS	M	C
Schatz (1980)	50	.45	.52[a]	.74[d]	.73	U-D	SR	FC	CS	L	C
Schau (1974)	27	.07	.52[a]	.61[b]	.12	U-D	SR	FC	CS	M	M-M
Schaubroeck & Fink (1998)	184	.19	.52[a]	.61[b]	.34	OR	SR	FC	CS	M	S
Schriesheim et al. (1995)	48	−.08	.52[a]	.74[d]	−.13	UR	SR	FC	CS	M	M-S
Schriesheim & Murphy (1976)	54	−.09	.52[a]	.74[d]	−.15	TT	SR	FC	CS	M	M-M
Schriesheim et al. (1992)	115	.39	.52[a]	.74[d]	.63	OR	SR	FC	CS	L	M-M
Schuster (1979)	136	.35	.52[e]	.74[d]	.56	U-D	SR	G	CS	L	L
Schwoerer & May (1996)	311	−.05	.42[c]	.73	−.09	OR	P-S-O	FC	CS	L	L
Secrist (1975)	123	.23	.62[h]	.74[d]	.34	U-D	SR, P-S-O	U	CS		S-E
Seers (1989)	123	.46	.52[a]	.75[b]	.74	TT	SR	U	CS	L	L
Seers & Graen (1984)	101	.21	.52[a]	.76[b]	.33	TT	SR	U	CS	L	M-M
Sheridan & Slocum (1975)	35	.31	.52[a]	.68[b,f]	.52	TT	SR	FC	L	M	M-S
Sheridan & Slocum (1975)	59	−.04	.52[a]	.45[b,f]	−.08	TT	SR	FC	L	L	M-M
Shore & Martin (1989)	71	.24	.52[a]	.68	.40	OR	SR	U	CS		M-M
Shore & Martin (1989)	72	.26	.52[a]	.68	.44	OR	SR	U	CS		M-M
Simmons (1986)	51	.19	.52[a]	.74[d]	.31	U-D	SR	FC	CS	M	C
Sirota (1958)	377	.11	.52[a]	.74[d]	.18	U-D	SR	U	CS		M-M
Skotdal (1971)	167	.34	.52[a]	.79[b]	.53	U-D	SR	FC	CS	L	M-M
Skotdal (1971)	199	.14	.52[a]	.76[b]	.22	U-D	SR	FC	CS	L	M-M
Slocum (1971)	87	.19	.52[a]	.74[d]	.31	TT	SR	U	CS	M	M-S
Slocum (1971)	132	.26	.52[a]	.74[d]	.42	TT	SR	U	CS	M	M-S

Appendix (*continued*)

Study	N	r	r_{jp}	r_{js}	ρ	Source	Measure JP	Measure JS	Design	Complexity	Occupation
Slocum et al. (1970)	62	.54	.52[a]	.74[d]	.87	OR	SR	U	CS	M	M-S
Smith (1989)	69	.22	.52[a]	.74[d]	.35	U-D	SR	FC	CS		L
Smith-Fraser (1984)	60	.18	.52[a]	.74[d]	.29	U-D	SR	G	CS	L	M-M
Spector et al. (1988)	148	.42	.52[a]	.90	.61	TT	SR	G	CS	M	C
Spencer & Steers (1981)	295	.17	.52[a]	.71	.28	TT	SR	FC	CS		M-M
Steel & Lloyd (1988)	225	.14	.52[a]	.74[d]	.23	OR	SR	G	L	L	M-M
Steers (1975)	133	.26	.52[a]	.74[d]	.42	TT	SR	FC	CS	M	M-S
Stepina et al. (1991)	81	.15	.52[a]	.84[b]	.23	UR	SR	FC	CS		M-M
P. S. Strauss (1966)	20	.36	.62[h]	.74[d]	.53	OR	SR, P-S-O	G	CS	M	M-S
P. S. Strauss (1966)	29	.09	.62[h]	.74[d]	.13	OR	SR, P-S-O	G	CS	H	S-E
Stumpf & Rabinowitz (1981)	102	.19	.39[i]	.52[b]	.42	OR	SR, OR	FC	CS	H	M-M
Summers & Hendrix (1991)	143	.14	.52[c]	.80	.22	UR	OR	FC	CS	M	M-S
Sundstrom et al. (1980)	67	.12	.52[a]	.68	.20	TT	SR	G	CS	M	C
Sundstrom et al. (1994)	96	.10	.52[a]	.61	.18	UR	SR	G	CS		M-M
Sundstrom et al. (1994)	132	.23	.52[a]	.87	.34	UR	SR	G	CS		M-M
Sundstrom et al. (1994)	137	−.12	.52[a]	.88	−.18	UR	SR	G	CS		M-M
Sward (1974)	47	−.24	.52[a]	.74[d]	−.39	U-D	SR	U	CS	M	M-M
Tharenou (1993)	200	.13	.52[a]	.65[b,f]	.22	OR	SR	FC	L	M	M-M
Tharenou & Harker (1984)	166	.11	.52[a]	.74	.18	TT	SR	FC	CS	M	M-M
Thoresen (1999)	119	.34	.52[a]	.81	.52	U-D	SR	G	CS		M-M
Toner (1980)	193	.15	.52[a]	.72	.25	U-D	SR	U	CS	L	M-M
Tseng (1975)	49	.17	.52[a]	.74[d]	.27	UR	SR	G	CS		M-M
Turban & Jones (1988)	155	.22	.52[a]	.74	.35	TT	SR	U	CS		M-M
Varca & James-Valutis (1993)	95	.14	.52[a]	.74[d]	.23	OR	SR	FC	CS	M	M-M
Vecchio & Gobdel (1984)	45	.05	.39[i]	.51[b]	.11	TT	SR, OR	FC	CS	M	M-M
Vosburgh (1979)	220	.13	.52[a]	.74[d]	.21	U-D	SR	FC	CS	M	N
Vroom (1960)	96	.21	.52[a]	.74[d]	.34	UR	SR	U	CS	M	M-S
Wanous (1974)	80	.18	.52[a]	.84[b]	.27	TT	SR	FC	L	L	M-M
Weintraub (1981)	64	.08	.52[c]	.75[b]	.13	UR	OR	FC	CS	L	M-M
Weintraub (1981)	69	.38	.52[a]	.74[d]	.61	UR	SR	FC	CS	M	M-M
Weslander (1981)	57	.22	.52[a]	.74[d]	.35	U-D	SR	U	CS	M	T
Wexley et al. (1980)	194	.13	.52[a]	.86[b]	.19	TT	SR	FC	CS		M-M
Wiggins & Moody (1983)	160	.65	.62[h]	.74[d]	.96	UR	SR, P-S-O	G	CS	H	M-M
Wiggins & Weslander (1979)	123	.86	.52[a]	.74[d]	1.39[j]	OR	SR	G	CS	H	M-M
Wiggins & Weslander (1986)	320	.39	.52[a]	.74[d]	.63	OR	SR	G	CS	H	M-M
Wilcox (1979)	102	.13	.52[a]	.79	.20	U-D	SR	U	CS	M	T
Wilson (1990)	138	.10	.52[a]	.72[b]	.16	U-D	SR	FC	CS		M-M
Wright & Cropanzano (1998)	52	.11	.52[a]	.75	.18	TT	SR	U	CS	M	M-M

Note. N = sample size; r = uncorrected correlation (includes composites of multiple measures); r_{jp} = reliability of job performance (includes composite reliability estimates); r_{js} = reliability of job satisfaction (includes composite reliability measures); ρ = corrected correlation; Source = source of correlation (TT = top-tier journal, OR = other ranked journal, UR = unranked journal, U-D = unpublished study–dissertation); Measure JP = measure of job performance (SR = supervisory ratings, OR = objective records, P-S-O = peer–subordinate ratings or other); Measure JS = measure of job satisfaction (G = global measure, FC = facet composite measure, U = unknown–not specified); Design = research design (CS = cross-sectional, L = longitudinal); Complexity = job complexity (L = low, M = medium, H = high; blank in case of multiple jobs); Occupation = occupation of sample (S-E = scientists–engineers, S = sales, T = teachers, M-S = managers and supervisors, A = accountants, C = clerical workers–secretaries, L = unskilled and semiskilled laborers, N = nurses, M-M = miscellaneous–mixed).
[a] Meta-analytic estimate for the reliability of ratings from one supervisor taken from Viswesvaran et al. (1996). [b] A composite reliability estimate for job satisfaction involving multiple measures or multiple facets computed for the given study. [c] Meta-analytic estimate for the reliability of ratings from one peer taken from Viswesvaran et al. (1996). [d] A substituted reliability value for job satisfaction based on all other studies providing this information in the meta-analysis. [e] A substituted reliability value for job performance based on all other studies providing this information in the meta-analysis. [f] A longitudinal composite reliability estimate for job satisfaction. [g] A composite reliability estimate for objective measures of job performance involving multiple measures computed for the given study. [h] An estimate of composite reliability for studies involving both supervisory and peer ratings of job performance based on the meta-analyzed correlation of these measures taken from Harris and Schaubroeck (1988). [i] An estimate of composite reliability for studies involving both supervisory ratings of job performance and objective records of performance based on the meta-analyzed correlation of these measures taken from Bommer et al. (1995). [j] For a discussion of individually corrected estimates of $\rho \geq 1$ in meta-analysis, see Hunter and Schmidt (1990). [k] A meta-analyzed Spearman–Brown reliability estimate for ratings of two peers taken from Viswesvaran et al. (1996). [l] A meta-analyzed Spearman–Brown reliability estimate for ratings of two supervisors taken from Viswesvaran et al. (1996).

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