

Perspectives on Models of Job Performance

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Contemporary models of job performance are reviewed. Links between task performance, contextual performance, organizational citizenship behaviors, counterproductivity and organizational deviance are pointed out. Measurement issues in constructing generic models applicable across jobs are discussed. Implications for human resource management in general, and performance appraisal for selection and assessment in particular, are explored. It is pointed out that the different dimensions or facets of individual job performance hypothesized in the literature are positively correlated. This positive manifold suggests the presence of a general factor which represents a common variance shared across all the dimensions or facets. Although no consensus exists in the extant literature on the meaning and source of this shared variance (i.e., the general factor), rater idiosyncratic halo alone does not explain this general factor. Future research should explain the common individual differences determinants of performance dimensions.

Introduction

Job performance is a central construct in industrial/organizational psychology (Austin and Villanova 1992; Campbell 1990; Murphy and Cleveland 1995; Schmidt and Hunter 1992). Much of personnel selection is predicated on the premise of selecting from a pool of applicants those who are likely to perform better on the job (compared to those not selected). Many training programs are designed to improve job performance. Assessments of individuals are undertaken to identify their strengths and weaknesses in order to design training programs as well as for optimal placement decisions (Guion 1998). Performance appraisal, feedback and even merit pay systems make use of employee performance information. In short, job performance is a construct that is central to much of work psychology. Thus, it is important to know what that construct entails.

Many definitions of job performance have been proposed (e.g., Campbell 1990; Murphy 1989). For our purposes, job performance refers to scalable actions, behavior and outcomes that employees engage in or bring about that are linked with and contribute to organizational goals. Apart from abstract definitions, how do we know what constitutes job performance? To answer this question researchers have applied some combination of one of the following four approaches. First, researchers have reviewed job performance measures used in different contexts and attempted to synthesize what dimensions make up the construct of job performance. This

rational method of synthesizing and theory building is likely, however, to be influenced by the focus, interests and perhaps even biases of the individual researchers doing the theorizing.

Second, researchers have relied on job analytic techniques to explain the behavior and associated dimensions for job performance. In this approach, standard techniques of job analysis are used to discover what makes up job performance. For example, Campbell (1990) suggest that the multiple dimensions that constitute job performance manifest themselves in critical incidents analyses, task analyses, and other job analytic analyses. However, although there is much to be said about analyzing jobs and thus discovering behavior incumbents engage in on the job, quite often performance dimensions obtained using job analysis have differed from those obtained using other empirical methods. Factor structures of importance or criticality ratings do not mirror dimensions of actual behavior on the job. Job analysis reveals how the different tasks engaged in by incumbents cluster together whereas job performance focuses on evaluable, scalable behaviors in which individual differences exist.

Third, researchers have developed measures of hypothesized dimensions, collected data on these measures, and factor analyzed the data (e.g., Lance, Teachout, and Donnelly 1992). This is the most direct (and empirical way) of assessing the dimensionality of the performance domain. Unfortunately, this empirical approach is limited by the number and type of measures included in the data collection phase. Recently,

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Viswesvaran (1993) invoked the lexical hypothesis from personality literature (Goldberg 1995) to address this limitation. The lexical hypothesis states that practically significant individual differences in personality are encoded in the language used, and therefore, a comprehensive description of personality can be obtained by collating all the adjectives found in the dictionary. Viswesvaran, Ones and Schmidt (1996) extended this principle to job performance assessment and argued that a comprehensive specification of the content domain of the job performance construct can be obtained by collating all the measures of job performance that had been used in the extant work psychology literature of the past 80 years.

Finally, researchers (e.g., Welbourne, Johnson, and Erez 1998) have invoked organizational theories to define what the content of the job performance construct should be. Welbourne *et al.* used role theory and identity theory to explain the construct of job performance. Another example of invoking a theory of work organization to explicate the construct of job performance comes in the distinction made between task and contextual performance (Borman and Motowidlo 1993). Distinguishing between task and contextual performance parallels the social and technical systems that are postulated to make up the organization.

In this article, we review some of the models that have been proposed to explicate the construct of job performance. According to Binning and Barrett (1989) models of performance that aim to uncover dimensions can be at different levels of breadth or generality.

The developmental context of job performance dimensions can be characterized as either (1) stand-alone, specific, or (2) part of a larger set of dimensions. After reviewing some dimensions that have been developed in a stand-alone manner (e.g., prosocial behavior), we review models that take a more comprehensive view of job performance.

In addition to this dichotomy, one can also classify the models of job performance as those that are developed for specific occupations (e.g., managers, entry-level jobs) as against models of job performance that are applicable across all jobs. That is, the occupational focus of job performance models can either be (1) limited to specific occupations/job families, or (2) applicable across jobs. These two dichotomous classifications (i.e., based on occupational focus and based on developmental context) can be combined to result in four types of models of job performance. Table 1 depicts this framework.

However, in this article, we do not discuss stand-alone, specific dimensions developed for specific jobs. This category contains too numerous dimensions and has only limited value for general theories of work behavior. Thus we discuss (1) stand-alone, specific dimensions developed to apply across jobs; (2) dimensions developed as a set that are applicable to specific occupations; and (3) dimensions developed as a set that are applicable across jobs. Following this, we discuss some of the measurement issues involved in the explication of job performance constructs. We close this article with a review of some models of work behavior that postulate job performance antecedents (i.e., how different

Table 1: A framework for reviewing models of job performance

Developmental context of dimensions	Occupational Focus	
	Limited to specific occupations/ job families	Applicable across jobs
Stand-alone dimensions	Stand-alone, specific dimensions developed to apply to specific occupations	Stand-alone, specific dimensions developed to apply across jobs.
	Too numerous and diverse to be covered in a review	Example models include those proposed by Borman & Motowidlo (1993); Brief & Motowidlo (1986); Organ (1994)
Dimensions developed as part of a set of dimensions	Dimensions developed as a set that are to apply to specific occupations	Dimensions developed as a set that are to apply across jobs
	Example models include those proposed by Borman & Brush (1993); Conway (1999); Hunt (1996)	Example models include those proposed by Campbell (1990); Viswesvaran (1993)

individual differences variables are linked to different aspects of performance).

Models of Job Performance

Models of job performance postulating specific, stand alone dimensions developed to apply across jobs can be grouped around primarily three broad dimensions: task performance, organizational citizenship behavior and counterproductive behaviors. We take up each in turn.

Task Performance

Early attempts at exploring the job performance construct focused heavily on task requirements. Fleishman (1967) attempted to develop a taxonomy of human performance based on learning theories and training techniques (an earlier, similar attempt was made by Guilford 1954). The objective was to develop homogeneous task clusters applicable across jobs. Although Fleishman's objective was to develop a *comprehensive* taxonomy of job performance dimensions, given the exclusive focus on ability requirements, we classify his model as one postulating specific stand-alone dimensions across jobs. Fleishman (1975) noted four approaches to identify dimensions of job performance (limited to what we now refer to as task performance). The four were: behavior description approach, behavior requirements approach, abilities approach, and task characteristics approach.

In the current work psychology literature, task performance is defined as 'the proficiency with which incumbents perform activities that are formally recognized as part of their jobs; activities that contribute to the organization's technical core either directly by implementing a part of its technological process, or indirectly by providing it with needed materials or services' (Borman and Motowidlo 1993: 73). According to Murphy (1989) task performance entails the accomplishment of duties and tasks that are specified in a job description. However, as Schmidt (1993) points out with changing jobs, job descriptions may not provide solid grounds for defining task performance.

Organizational Citizenship Behavior

Several researchers over the years have argued that job performance entails more than just task performance (Borman and Motowidlo 1993; Brief and Motowidlo 1986; Clark and Hollinger 1983; Hogan and Hogan 1989; Organ 1988; Smith, Organ and Near 1983). Although studied for a long time under different names (e.g., cooperation [Roethlisberger and Dickinson

1939]), Smith *et al.* popularized the concept of 'Organizational Citizenship Behavior' (OCB) in the job performance literature. OCB was defined as individual behavior that is discretionary/extra-role, not directly or explicitly recognized by the formal reward system, and that in the aggregate promotes the effective functioning of the organization (Organ 1988). Distinct sub-dimensions of OCB have been identified as: altruism, courtesy, cheerleading, sportsmanship, civic virtue, and conscientiousness (Organ 1988). Note that in his current conceptualization of OCB, Organ (1997) has dropped the requirement for these behaviors to be extra-role, and not to be directly rewarded. The only requirement is that they are discretionary and contribute to organizational effectiveness.

Over the years several concepts related and overlapping with OCB have been proposed. George and Brief (1992) introduced the concept of 'organizational spontaneity'. George and Brief (1992) defined organizational spontaneity as voluntarily performed extra-role behaviors that contribute to organizational effectiveness. Five dimensions were postulated to comprise organizational spontaneity: helping co-workers, protecting the organization, making constructive suggestions, developing oneself, and spreading goodwill. Organizational spontaneity is distinguished from OCB partly on account of reward systems being designed to recognize organizational spontaneity.

Van Dyne, Cummings and Parks (1995) argued for the use of 'Extra-Role Behavior' (ERB). Based on role theory concepts developed by Katz (1964), ERB has been hypothesized to contribute to organizational effectiveness. Brief and Motowidlo (1986) introduced the related concept of Prosocial Organizational Behavior (POB). POB has been defined as behavior performed with the intention of promoting the welfare of individuals or groups to whom the behavior has been directed. POB can be either role-prescribed or extra-role, and it can be negative towards organizations although positive towards individuals.

Counterproductive Behaviors

Behaviors that have negative value for organizational effectiveness have also been proposed as constituting distinct dimensions of job performance. Organizationally deviant behavior has become a topic of research interest. Robinson and Bennett define deviant behavior as 'voluntary behavior that violates significant organizational norms and in so doing threatens the well being of an organization, its members, or both' (1995: 556).

In a multidimensional scaling study, Robinson and Bennett (1995) found that deviant behavior

in organizations vary along two continua: (1) organizational/interpersonal and (2) serious/minor. The resulting typology that crosses these two dimensions produced the following four categories: (1) property deviance (serious deviance directed at the organization); (2) production deviance (minor deviance directed at the organization); (3) personal aggression (serious deviance directed at other individuals); and (4) political deviance (minor deviance directed at other individuals).

Our work on integrity testing (Ones, Viswesvaran and Schmidt 1993) as well as the works of Paul Sackett and colleagues (cf. Sackett and Wanek 1996) have identified the different forms of counterproductive behaviors such as property damage, substance abuse, violence on the job. Withdrawal behaviors have long been studied by work psychologists in terms of lateness or tardiness, absenteeism, and turnover. Work psychologists and social psychologists have explored the antecedents and consequences of social loafing, shirking or the propensity to withhold effort (Kidwell and Bennett 1993).

A striking feature in empirical studies that have explored these specific dimensions developed independently and hypothesized to apply across jobs is the positive correlation found across them (Viswesvaran 1993). Orr, Sackett and Mercer (1989) report that supervisors take into account all these dimensions in their assessments of job performance. Thus, a positive manifold of correlations exist across the various hypothesized dimensions. We will return to this positive manifold and its implications after we discuss (1) specific dimensions developed as a set that are to apply to specific occupations; and (2) specific dimensions developed as a set that are to apply across jobs.

Models of Job Performance: Dimensions Developed as a Set for Specific Occupations

Although models of performance have been developed for many occupational groups, due to space constraints, here we focus on three: entry level jobs in the service industry, managers, and military personnel.

Entry Level Jobs in the Service Industry

Hunt (1996) developed a model of generic work behavior applicable to entry-level jobs especially in the service industry. Using performance ratings data for over 18,000 employees primarily from the retail sector, Hunt (1996) identified nine dimensions of job performance that do not depend on job-specific knowledge. The nine dimensions were: adherence to confrontational

rules, industriousness, thoroughness, schedule flexibility, attendance, off-task behavior, unruliness, theft, and drug misuse. Adherence to confrontational rules reflected an employee's willingness to follow rules that might result in a confrontation between the employee and a customer (e.g., checking for shoplifting). Industriousness captured the constant effort and attention towards work while on the job. Thoroughness was related to the quality of work whereas schedule flexibility reflected the employees' willingness to change their schedule to accommodate demands at work. Attendance captured the employee's presence at work when scheduled to work and punctuality. Off-task behavior involved the use of company time to engage in non-job activities. Unruliness referred to minor deviant tendencies as well as abrasive and inflammatory attitude towards co-workers, supervisors, and work itself. Finally, theft involved taking money or company property or helping friends steal property whereas drug misuse referred to inappropriate use of drugs and alcohol.

Managers

Specific models of job performance have also been developed for managerial jobs. Brumback and Vincent (1970) factor-analyzed work performance data and identified 26 dimensions of job performance. Kassem and Moursi (1971) examined the models of managerial effectiveness. Komaki, Zlotnick, and Jensen (1986) presented an operant-based taxonomy and index of supervisory behavior. Several commercial instruments have been developed to assess managerial performance. Personnel Decisions Inc. has developed the PROFILOR[®] which is a 135-item feedback instrument designed specifically for managers. This instrument assesses performance in 24 dimensions identified as relevant for managerial performance. Supervisors provide ratings on the PROFILOR[®] which are used to provide feedback on different dimensions of performance. The items pertain to specific, job-related skills, rather than managerial style or other abstract concepts that are difficult to translate into on-the-job behaviors. Another taxonomy of managerial behavior was examined by Conway (1999) who meta-analytically accumulated data across studies to develop a three-level hierarchy of managerial performance. In his investigation, Conway relied heavily on an earlier taxonomy of managerial performance presented by Borman and Brush (1993). Borman and Brush (1993) presented 18 dimensions of performance which were derived using 187 behaviors found in the literature. These 18 dimensions can further be grouped into four broad managerial performance dimensions:

(1) leadership and supervision; (2) interpersonal relations and communication; (3) technical behaviors and mechanics of management (e.g., administration); and (4) useful behaviors and skills (e.g., handling crises).

Military Jobs

Our third example is for military jobs. Both Campbell, McHenry and Wise (1990) and Borman, Motowidlo, Rose and Hansen (1985) developed models of soldier effectiveness based on data collected for Project A. Project A is a multi-year effort undertaken by the US Army to develop a comprehensive model of work effectiveness. As part of that landmark project, Campbell *et al.* (1990) found five performance dimensions across 19 entry-level Army jobs: (1) core technical proficiency; (2) general soldiering proficiency; (3) effort and leadership; (4) personal discipline; and (5) physical fitness and military bearing. Borman *et al.* (1985) developed a model of job performance for first-tour soldiers that are important for unit effectiveness. Borman *et al.* noted that in addition to task performance, there are three performance dimensions. Organizational commitment and socialization combined to define the 'allegiance' of the individual; socialization and morale combined to define 'teamwork'; and morale and commitment combined to define 'determination'. Each of these three dimensions could be further subdivided. Thus, allegiance involved following orders, following regulations, respect for authority, military bearing, and commitment. Teamwork comprised of cooperation, camaraderie, concern for unit morale, boosting unit morale, and leadership. Determination involved perseverance, endurance, conscientiousness, initiative, and discipline.

Models of Job Performance: Dimensions Applicable Across Occupations

Campbell (1990) describes the general latent structure of job performance in terms of eight distinct dimensions. The eight factors are: job-specific task proficiency, non-job-specific task proficiency, written and oral communication, demonstrating effort, maintaining personal discipline, facilitating peer and team performance, supervision, and management or administration.

Job-specific task proficiency is defined as the degree to which the individual can perform the core substantive or technical tasks that are central to a job and distinguish one job from another. Non-job-specific task proficiency, on the other hand, is used to refer to tasks not specific to a particular job, but is expected of all

members of the organization. Demonstrating effort captures the consistency or perseverance and intensity of the individuals to complete the task, whereas maintenance of personal discipline refers to the eschewment of negative behaviors (such as rule infractions) at work. Management or administration differs from supervision in that the former includes performance behaviors directed at managing the organization that are distinct from supervisory or leadership roles. Written and oral communications reflects that component of the job performance that refers to the proficiency of an incumbent to communicate (written or oral) independent of the correctness of the subject matter. The descriptions of these eight dimensions are further elaborated in Campbell (1990) and Campbell, McCloy, Oppler, and Sager (1993). According to Campbell and colleagues, these eight dimensions are sufficient to describe the latent structure of performance at a general level. Campbell *et al.* (1990), however, point out that the salience or importance of these eight dimensions differs across occupational groups. Further, each of the eight factors are proposed to have sub-factors that will also vary in their degree of salience across occupations. Finally, according to Campbell (1990) as well as Campbell *et al.* (1993), the true score correlations between these eight dimensions can be assumed to be small enough to consider them distinct. According to Campbell and colleagues, each dimension is likely to produce rank ordering of employees that is different.

Viswesvaran (1993) proposed a hierarchical latent structure for the construct of job performance. To ensure a comprehensive specification of the content domain of the job performance construct, Viswesvaran (1993) invoked the lexical hypothesis which was first introduced in the personality assessment literature (see also Viswesvaran *et al.* 1996). A central thesis of this lexical approach is that the entire domain of job performance can be captured by culling all job performance measures used in the vast work psychology and human resource management literature. This parallels the lexical hypothesis used in the personality literature which, as first enunciated by Goldberg, holds that a comprehensive description of the personality of an individual can be obtained by examining the adjectives used in the lexicon (e.g., all English language words that could be obtained/culled from a dictionary).

Viswesvaran (1993) listed job performance measures (486 of them) used in published articles over the years. Two raters working independently then derived ten dimensions by grouping conceptually similar measures. The ten dimensions were: overall job performance, job performance or productivity, effort, job knowledge, interpersonal

competence, administrative competence, quality, communication competence, leadership, and compliance with rules. Overall job performance captured overall effectiveness, overall work reputation, or was the sum of all individual dimensions rated. Job performance or productivity included ratings of quantity or ratings of volume of work produced. Ratings of effort were statements about the amount of work an individual expends in striving to do a good job. Interpersonal competence was assessments of how well an individual gets along with others whereas administrative competence was a rating measure of the proficiency exhibited by the individual in handling the coordination of the different roles in an organization. Quality was an assessment of how well the job was done and job knowledge was a measure of the expertise demonstrated by the individual. Communication competence reflected how well an individual communicated regardless of the content. Leadership was a measure of the ability to successfully bring out extra performance from others, and compliance with or acceptance of authority assessed the perspective the individual has about rules and regulations. Illustrative examples as well as more elaborate explanations of these dimensions are provided in Viswesvaran *et al.* (1996).

Although the lexical approach is promising, it should be noted that there are two potential concerns here. First, it can be argued that just as the technical nuances of personality may not be reflected in the lexicon, some technical but important aspects of job performance have never been used in the literature – thus, not covered in the ten dimensions identified. Second, it should be noted that generating ten dimensions from a list of all job performance measures used in the extant literature involved the judgmental task of grouping conceptually similar measures, although the intercoder agreement in grouping the conceptually similar measures into the ten dimensions was reported in the 90% (cf. Viswesvaran 1993).

Of these two concerns, the first is mitigated to the extent that the job performance measures found in the extant literature were identified by industrial-organizational psychologists and other professionals (in consultation with managers in organizations). As such, the list of measures can be construed as a comprehensive specification of the entire domain of the construct of job performance. However, the second concern, the judgmental basis on which the job performance measures were grouped into ten conceptual dimensions, remains a concern, albeit alleviated by high interrater agreement.

Viswesvaran (1993) accumulated results from over 300 studies that reported correlations across the ten dimensions. Both interrater and intrarater correlations, as well as non-ratings-

based measures were analyzed. The ten dimensions showed a positive manifold of correlations, suggesting the presence of a general factor across the different dimensions. We return to the substantive meaning of this general factor in the section on measurement issues.

Murphy (1990) describes the construct of job performance as comprising of four dimensions: downtime behaviors, task performance, interpersonal, and destructive behaviors. Task performance focuses on performing role-prescribed activities whereas downtime behaviors refer to lateness, tardiness, absences, or broadly, to the negative pole of time on task (i.e., effort exerted by an individual on the job). Interpersonal behaviors refer to helping others, teamwork ratings, and prosocial behaviors. Finally, destructive behaviors correspond to compliance with rules (or lack of it), violence on the job, theft, and other behaviors counterproductive to the goals of the organization. According to Murphy (1990), each of these dimensions can be related to inputs and outputs in organizational units.

Borman and Motowidlo (1993) describe the construct of job performance as comprising task and contextual performance. Briefly, task performance focuses on performing role-prescribed activities whereas contextual performance accounts for all other helping and productive behaviors (Borman and Motowidlo 1993). Contextual performance encompasses: '(1) persisting with enthusiasm and extra effort as necessary to complete own task activities successfully, (2) volunteering to carry out task activities that are not formally part of own job, (3) helping and cooperating with others, (4) following organizational rules and procedures, (5) endorsing, supporting, and defending organizational objectives.' (*ibid.*: 82)

Researchers have attempted to develop a theory of individual differences in task and contextual performance (Motowidlo, Borman, and Schmit 1997). Modeling job performance as the aggregated value of episodic, evaluative behaviors, attempts have been made to distinguish the underlying dimensions of the episodes evaluated. Researchers (e.g., Van Scotter and Motowidlo 1996) have argued that individual differences in personality variables are linked more strongly than individual differences in (cognitive) abilities to individual differences in contextual performance. Cognitive ability was hypothesized to be more predictive of task performance than contextual performance. Although persuasive from a theoretical perspective, empirical support for this argument has been mixed. Conscientiousness, a personality variable, has been linked as strongly as cognitive ability to task performance in some studies (cf. Van Scotter and Motowidlo 1996).

Bernardin and Beatty (1984) define performance as the record of outcomes produced on a specified job function or activity during a specified time period. Although a person's job performance depends on some combination of ability, motivation and situational constraints, it can be measured only in terms of some outcomes. This definition contrasts with the stand of Campbell and colleagues that individual job performance should not be defined in terms of outcomes, but rather behaviors. Bernardin and Beatty (1984) then consider the issue of dimensions of job performance. Every job function could be assessed in terms of six dimensions (Kane 1986). The six dimensions are: quality, quantity, timeliness, cost-effectiveness, need for supervision, and interpersonal impact. Some of these dimensions may not be relevant to all job activities. Bernardin and Russell (1998) emphasize the need to understand the interrelationships among the six dimensions of performance. For example, a work activity performed in sufficient quantity and quality but not in time may not be useful to the organization.

Measurement Issues

Work psychologists have stressed the need to conduct a thorough job analysis to define the content domain of the construct 'job performance'. This emphasis should not be taken to mean that the construct of job performance is an amorphous construct that changes from job to job. If that were the case, theories of work behavior would simply be impossible to develop. No science of work behavior (for that matter, any science of behavior) is possible if performance in each task is unique. What should be kept in mind is the fact that job performance is an abstract construct. An abstract construct implies two characteristics. First, one cannot point to something physical and concrete and state that 'it' is job performance. One can only point out the manifestations of this construct. Second, there are many manifestations that could indicate job performance. Thus, the specific manifestations may change from job to job, but the dimension of the construct may generalize across jobs. For example, interpersonal competence as a dimension of job performance generalizes across jobs, but the actual manifestation of it may change from job to job with the specific behaviors identified perhaps via a job analysis. This is analogous to domain sampling in measurement where, however comprehensive, no single measure can capture the entire domain of what is being measured.

The assessment of job performance dimensions has primarily relied either on objective counts of specified acts or output

maintained in organizational records or on subjective judgments from raters. Although raters have been primarily supervisors (Cascio 1991), recent efforts have used raters from different levels of the organization (e.g., peers, subordinates, etc.). Hunter and Hirsh (1987) argue that organizational records suffer from criterion contamination and deficiency to a greater extent than judgemental assessments. Indeed, judgemental assessments from knowledgeable and motivated raters are likely to have greater criterion relevance. Judgemental assessments of job performance can be either norm-referenced (i.e., rankings) or criterion-referenced (i.e., ratings). Several scale formats have been developed and cumulative research suggests (Landy and Farr 1980) that scale formats do not substantially influence assessments. Scales have been developed that could be used across situations (Welbourne *et al.* 1998).

Although judgemental assessments have been hypothesized to have adequate criterion relevance, factors such as opportunity to observe (Rothstein 1990) do influence judgemental assessments. Some researchers have argued that job performance is partially a socially constructed phenomenon and that rater disagreements do not constitute error (Murphy and Cleveland 1995). Such an argument assumes that interrater reliability should be construed merely as an index of interrater agreement and that a lack of agreement is a non sequitur. This view is seriously flawed since the basis for any science is interrater (interobserver) or intersource reliability. Reliability refers to consistency of measurement. When ratings are used to measure performance, interrater correlations provide an index of reliability of job performance ratings. While job performance constructs may be a measured using more than just ratings (e.g., organizational records of productivity, discipline problems), without consistency of measurement, the science behind industrial-organizational psychology would disappear. For example, there can be no valid selection. There would no basis for developing training programs, evaluating any human resource intervention, awarding merit pay, etc., because the concept of validation would collapse to a futile exercise if the criterion measures were idiosyncratic to particular raters or specific alternate indices of performance. This in effect would amount to a rejection of the science of organizational and occupational psychology.

Incorporating time into the assessment of job performance has been another measurement issue. Dynamic criteria has been presented to mean one of the following: (1) the mean performance of individuals change over time; (2) the rank order of individuals on performance

change over time; and (3) the correlations of performance indicators with external variable change. Barrett, Caldwell, and Alexander (1989) accumulated the existing literature on this issue and found scant evidence for rank order and correlational changes. Researchers (e.g., DuBois, Sackett, Zedeck and Fogli 1993) have distinguished between typical performance that is determined by ability as well as personality characteristics from maximal performance where personality variables such as motivation and drive play only a limited role. It may be important to consider whether different dimensions of job performance have different weights for assessing overall performance over time. Further, although arguments can be made that some of the 'performance dimensions' that have been proposed could be causally related (e.g., job knowledge and effort result in productivity), it should be noted that most models of job performance treat them as performance dimensions. By definition, different dimensions of performance (task, citizenship, etc.) explain variation in overall job performance (Viswesvaran 1993).

In reviewing the various models of job performance, we summarized many dimensions of job performance. Empirical research shows positive correlation across the different dimensions. Viswesvaran (1993) cumulated results across more than 300 studies and found that over 50% of the variance is shared across the different dimensions. There is a general factor in job performance assessments. In our work, we also found that much of this general factor is substantively meaningful and not just a manifestation of halo error. This magnitude of shared variance is similar to that found in factor analyses of cognitive abilities (cf. Jensen 1986). However, stating that there is a general factor in job performance assessments is not the same as saying that the different dimensions are redundant. The specific variance associated with each dimension may be useful in certain circumstances and for certain purposes (e.g., designing training interventions). What is clear is that the structure of job performance can be conceptualized as a hierarchy with the general factor at the apex and various dimensions at the lower levels and each dimension in turn can be divided into further subdimensions. The appropriate level of specificity depends on the purpose of the assessor (Wallace 1965). For example, to construct a theory of work motivation it may be reasonable to focus on the overall general factor of job performance, but to develop a theory of customer orientation we may have to focus not on the general factor of job performance but on interpersonal competence with customers.

Antecedents of Job Performance Dimensions

We close this article with a brief review of models of work behavior that postulate how different individual differences variables are causally linked to different aspects of performance. Hunter (1983) developed and tested a causal model where cognitive ability was a direct causal antecedent to both job knowledge and job performance (also see Schmidt, Hunter and Outerbridge 1986). Job knowledge was an antecedent to job performance. Both job knowledge and job performance contributed to supervisory ratings. These findings suggest that cognitive ability contributes to overall job performance through its effects on learning job knowledge and mastery of required skills. Borman, Hanson, Oppler, Pulakos and White (1993) extend these findings to the role of early experience in supervisory job performance.

McCloy, Campbell and Cudeck (1994) argued for and found empirical evidence for the perspective that all individual differences variables affect the performance dimension by their effects on either procedural knowledge or declarative knowledge or motivation. Barrick, Mount, and Strauss (1993) tested and found support for a model where overall performance was predicted by conscientiousness which exerted its influence through goal setting. Ones and Viswesvaran (1996) argued that conscientiousness has multiple pathways by which it affects overall performance. First, conscientious individuals are likely to spend more time on the task and less time daydreaming (Schmidt and Hunter 1992). This investment of time will result in greater acquisition of job knowledge, which in turn will result in greater productivity and which in turn will result in positive ratings. Further, conscientious individuals are likely to engage in organizational citizenship behaviors which in turn might enhance productivity and ratings. Finally, conscientious individuals are expected to pay more attention to detail and profit more via vicarious learning (Bandura 1977) which would result in higher job knowledge and productivity. Note that supporting the idea of multiple pathways for conscientiousness, Organ and Ryan (1995) found a sizable relationship between organizational citizenship behaviors and conscientiousness.

Borman and Motowidlo (1993) postulated that ability will predict task performance more strongly than individual differences in personality. On the other hand, individual differences in personality were hypothesized to predict contextual performance better than ability. Motowidlo *et al.* (1997) developed a

more nuanced model where contextual performance was modeled as dependent on contextual habits, contextual skills, and contextual knowledge. Although habits and skills were predicated on personality, contextual knowledge was influenced both by personality and cognitive ability. Similarly, task performance is influenced by task habits, task skill and task knowledge. Whereas task skill and task knowledge are influenced solely by cognitive ability, task habits are affected by both cognitive ability and personality variables. Thus, this more nuanced model implies that both ability and personality have a role in explaining task and contextual performance. However, research to date suggests that ability and conscientiousness predict both task and contextual performance.

Most recently, Hunter, Schmidt, Rauschenberger and Jayne (2000) tested a causal model of job performance using correlation matrices reported by Project A researchers. In this research, cognitive ability predicted objectively measured job performance which in turn predicted the overall evaluation by raters. On the other hand, conscientiousness directly predicted not only objectively measured job performance, but also physical condition, and overall evaluation by raters.

The bottom line from the existing research in this area appears to be that each performance dimension is complexly determined (jointly by ability and personality) and that it is impossible to specify a sole cause or antecedent of a particular dimension of job performance. However, we should note that the general factor obtained in our model of job performance implies that there are some common determinants across different job performance dimensions. That is, different performance dimensions are likely to have common individual differences antecedents. Given a large body of research in work psychology, two individual differences variables that would fit the bill are: cognitive ability and conscientiousness (Salgado, Viswesvaran and Ones, in press).

Conclusion

Job performance is perhaps the most central construct in work psychology. Explanation of this construct is important for many functions that we engage in in our profession. Explaining the content domain of the construct of job performance is a critical component of our job performance as industrial and organizational psychologists. For many years, industrial-organizational psychologists have concentrated on the predictor side of the equation. This emphasis on predictor space is explainable as attempts by a nascent science to establish its

utility (Schmidt and Kaplan 1971). As our profession becomes more mature and secure among the pantheon of scientific disciplines, more attention will be diverted from prediction towards understanding and explanation of phenomena. Under such circumstances, great strides are likely to be made in our understanding of the construct of individual job performance. This article by summarizing the existing models of job performance, sketching some measurement issues, and providing an overview of the determinants of performance, is hopefully one step in that direction.

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