

**DEVELOPMENT AND VALIDATION OF THE JOB PERFORMANCE
INVENTORY FOR MINORITY ORGANIZATIONS**

A DISSERTATION
PRESENTED TO THE FACULTY OF THE
CALIFORNIA SCHOOL OF PROFESSIONAL PSYCHOLOGY
ORGANIZATIONAL PSYCHOLOGY PROGRAM, SAN DIEGO
ALLIANT INTERNATIONAL UNIVERSITY

In Partial Fulfillment of
The Requirements for the Degree
DOCTOR OF PHILOSOPHY
IN
INDUSTRIAL/ORGANIZATIONAL PSYCHOLOGY

By

Peter A. Metofe

2012

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Dedication

This academic project is dedicated to my parents, Gregory and Esther Metofe.

Acknowledgement

I wish to acknowledge and express my sincere gratitude to my committee members, Dr. John Kantor, Dr. Lee White and Dr. Dale Glaser for their continued support throughout my graduate studies. I would like to specifically thank my major professor and chair of my dissertation committee, Dr. John Kantor for his patience, support, supervision, assistance, and encouragement, all of which have facilitated the development and completion of my dissertation, culminating in a second doctoral degree in industrial and organizational psychology. I would also like to thank Mr. Carl Jones and Mr. Donald Sowell for allowing data to be collected in their respective organizations. They were extremely gracious and supportive in this process. Finally, I wish to express my gratitude to the following individuals for assisting in data collection for this study: Joe Williams, Donald Sowell, Jr., and the supervisors who participated in completing the Job Performance Inventory.

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Abstract

Previous research has demonstrated that job performance is a multidimensional construct (Borman & Motowidlo, 1993; Campbell, Gasser, & Oswald, 1996). Two general factors have received the most attention, namely task performance and contextual performance, and measures of job performance reflecting these dimensions have been developed and validated using mostly white samples (e.g., Varela & Landis, 2010; Befort & Hattrup, 2003). This study examined the internal consistency and convergent validity of a new instrument, the Job Performance Inventory (JPI), that was designed to measure the job performance of African-American employees in a predominantly minority organization. The primary research objective in this study was to examine the underlying factor structure of the JPI. Thirty-two items of the JPI were used to perform exploratory factor analysis (EFA).

Ten supervisors from a minority organization in south-east Texas completed a JPI for 126 of their employees, consisting of 56 (44%) males and 70 (56%) females. The average age of the participants (employees) was 29.35 years of age ($M = 29.35$ years, $SD = 3.28$). Participants' self-identified race was as follows: 96% African-American, 2% White/Caucasian, and 2% Hispanic.

A series of maximum likelihood factor analyses with Varimax rotation resulted in a comparison between 7- and 2-factor solutions. Seven-factor solution accounted for 57% of the overall variance in the JPI items. Second-factor

solution accounted for 53.16% of the overall variance in the JPI items. Overall, the 2-factor model with 12 items was found to be the most interpretable. Across all factor solutions, the 2-factor model produced more consistency and strength across item-factor loadings. Rotated factor matrix coefficients ranged from .56 to .72. Intercorrelations between factors ranged from .72 to .91. Communalities ranged from .40 to .72, $M = 5.31$. These results provided good congruence with job performance as multidimensional consisting of two factors, namely task and contextual performance. Cronbach's alpha was used to examine the internal consistency for each factor. Reliability coefficients for the two factors ranged from .73 to .91. The JPI was significantly correlated with the Role Based Performance Scale (RBPS) in terms of convergent validity. The results of this study provided support for the reliability and convergent validity of the JPI for use with populations similar to the sample employed.

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CHAPTER I

Introduction

The focus of this study is the design and validation of scores on an instrument developed by the researcher to measure job performance of minority employees. Drawing from complementary job performance theories postulated by Campbell (1990), Borman and Motowidlo (1993), Viswesvaran (1993), Varela and Landis (2010), and as well as other sources (e.g., books and journal articles on the measurement of job performance and current job performance measures) and extensive research on majority-minority differences in job performance, the questionnaire was developed using those constructs shown in previous studies that correlate highly with job performance.

In the last 20 years, minority organizations have increased significantly to reflect the minority US population. Specifically, African-American and Hispanic organizations have noticed these gains and employed mostly individuals from the minority groups. Therefore, it is incumbent upon organizational researchers to develop personnel inventories (e.g., performance measures) that reflect these minority organizations because personnel measures have been mostly developed and validated using majority organizations (Roth, Bobko & Huffcutt, 2003), which confirms the situational-specific hypothesis (Schmidt & Hunter, 1986).

According to Roth, Bobko and Huffcutt (2003), the issue of majority-minority differences in job performance is very important from an academic and management perspectives. From an academic perspective, personnel researchers are interested in the prediction of job performance based on sound psychometric principles for a targeted population (Viswesvaran, 2001) and from management perspective, a validated and psychometrically sound job performance measures have utility in making important personnel decisions. A job performance measure that has flawed psychometric properties cannot be used to make important personnel decisions (e.g., promotion and termination). Measuring job performance hinges upon a well conceptualized meaning of what job performance is. And accordingly, defining and conceptualizing the performance domain in the context of majority-minority differences in job performance becomes a challenge for many industrial and organizational psychologists (Campbell, 1990) because of many conflicting definitions of job performance.

Job performance is an important construct in the industrial and organizational (I/O) psychology and human resources management (HRM) literature. Accordingly, Murphy and Cleveland (1995) have underscored the utility of job performance as an indicator of organizational effectiveness. The quality of organizational decisions, training and development, employee commitment and satisfaction, and defensible basis for personnel decisions hinge upon well develop measure of job performance (Murphy & Cleveland, 1995).

Unfortunately, conceptualizing job performance is fraught with difficulty in defining what job performance is (Campbell, 1993; Motowidlo, 2003; Murphy, 2008; Muchinsky, 2006).

The difficulty in conceptualizing and defining job performance has not prevented some organizational researchers (e.g., Green & Wing, 1988; Campbell, et al., 1993) to offer definitions, which reflect the dimensionality of job performance. For example, in a landmark study sponsored by the United States Military, Green and Wing (1988, p. 11) defined job performance as “job proficiency.” Accordingly, job proficiency can be defined as having or showing knowledge, skill, and aptitude on one’s job (Green & Wing, 1988). In contrast, Campbell et al. (1993) defined performance as behavior. It is something done by the employee or trainee. There are several key features to Campbell's conceptualization of job performance which help clarify what job performance means. These key features are listed below:

Performance versus outcomes

First, Campbell defines performance as behavior. It is something done by the employee. This concept differentiates performance from outcomes. Outcomes are the result of an individual's performance, but they are also the result of other influences. In other words, there are more factors that determine outcomes than just an employee's behaviors and actions. Second, Campbell allows for

exceptions when defining performance as behavior. For instance, he clarifies that performance does not have to be directly observable actions of an individual. It can consist of mental productions such as answers or decisions. However, performance needs to be under the individual's control, regardless of whether the performance of interest is mental or behavioral.

The difference between individual controlled action and outcomes is best conveyed through an example. On a sales job, a favorable outcome is a certain level of revenue generated through the sale of something (merchandise, some service, insurance). Revenue can be generated or not, depending on the behavior of employees. When the employee performs this sales job well, he is able to move more merchandise. However, certain factors other than employees' behavior influence revenue generated. For example, sales might slump due to economic conditions, changes in customer preferences, production bottlenecks, etc. In these conditions, employee performance can be adequate, yet sales can still be low. The first is performance and the second is the effectiveness of that performance. These two can be differentiated because performance is not the same as effectiveness (Campbell, McCloy, Oppler, & Sager, 1970).

Another closely related construct is productivity. This can be thought of as a comparison of the amount of effectiveness that results from a certain level of cost associated with that effectiveness (Campbell & Campbell, 1988). In other

words, effectiveness is the ratio of outputs to inputs—those inputs being effort, monetary costs, resources, etc.

A key feature of job performance is that it has to be goal relevant.

Performance must be directed toward organizational goals that are relevant to the job or role. Therefore, performance does not include activities where effort is expended toward achieving peripheral goals. For example, the effort put toward the goal of getting to work in the shortest amount of time is not performance (except where it is concerned with avoiding lateness).

Multidimensionality

Despite the emphasis on defining and predicting job performance, it is not a single unified construct. There are vastly many jobs each with different performance standards. Therefore, job performance is conceptualized as a multidimensional construct consisting of more than one kind of behavior.

Campbell (1990) proposed an eight factor model of performance based on factor analytic research that attempts to capture dimensions of job performance existent (to a greater or lesser extent) across all jobs.

1. The first factor is task specific behaviors which include those behaviors that an individual undertakes as part of a job. They are the core substantive tasks that delineate one job from another.
2. On the other hand, non-task specific behaviors, the second factor, are those behaviors which an individual is required to undertake which do not

pertain only to a particular job. For a sales person, an example of a task specific behavior would be showing a product to a potential customer. A non-task specific behavior of a sales person might be training new staff members.

3. Written and oral communication tasks refer to activities where the incumbent is evaluated, not on the content of a message necessarily, but on the adeptness with which they deliver the communication. Employees need to make formal and informal oral and written presentations to various audiences in many different jobs in the work force.
4. An individual's performance can also be assessed in terms of effort, either day to day, or when there are extraordinary circumstances. This factor reflects the degree to which people commit themselves to job tasks.
5. The performance domain might also include an aspect of personal discipline. Individuals would be expected to be in good standing with the law, not abuse alcohol, etc.
6. In jobs where people work closely or are highly interdependent, performance may include the degree to which a person helps out the groups and his or her colleagues. This might include acting as a good role model, coaching, giving advice or helping maintain group goals.
7. Many jobs also have a supervisory or leadership component. The individual will be relied upon to undertake many of the things delineated

under the previous factor and in addition will be responsible for meting out rewards and punishments. These aspects of performance happen in a face to face manner.

8. Managerial and administrative performance entails those aspects of a job which serve the group or organization but do not involve direct supervision. A managerial task would be setting an organizational goal or responding to external stimuli to assist a group in achieving its goals. In addition a manager might be responsible for monitoring group and individual progress towards goals and monitoring organizational resources. According to Campbell (1990) these 8 factors are independent of each other. In other words, these factors are orthogonal.

Another taxonomy of job performance was proposed and developed for the US Navy by Murphy (1994). This model is significantly broader and breaks performance into only four dimensions.

1. Task-oriented behaviors are similar to task-specific behaviors in Campbell's model. This dimension includes any major tasks relevant to someone's job.
2. Interpersonally oriented behaviors are represented by any interaction the focal employee has with other employees. These can be task related or non-task related. This dimension diverges from Campbell's taxonomy

because it included behaviors (small talk, socializing, etc.) that are not targeting an organization's goal.

3. Down-time behaviors are behaviors that employees engage in during their free time either at work or off-site. Down-time behaviors that occur off-site are only considered job performance when they subsequently affect job performance (for example, outside behaviors that cause absenteeism).
4. Destructive/hazardous behaviors

Another way to divide up performance into dimensions is in terms of task and contextual (citizenship and counterproductive) behaviors (Borman & Motowidlo, 1993). Whereas task performance describes obligatory behaviors, contextual behaviors are behaviors that do not fulfill specific aspects of the job's required role. Citizenship behaviors are defined as behaviors which contribute to the goals of the organization through their effect on the social and psychological conditions (Rotundo & Sackett, 2002). Counterproductive behaviors, on the other hand, are intentional actions by employees which circumvent the aims of the organization (Sackett & DeVore, 2001).

The aforementioned conceptualizations of job performance have one striking thing in common, that job performance is a multidimensional construct (Borman & Motowidlo, 1993; Campbell, Gasser, & Oswald, 1996), and of the dimensions of performance that have been discussed above, two general factors have received the most attention, namely task performance and contextual performance (Borman

& Motowidlo, 1993; Motowidlo & Schmit, 1999; Motowidlo & Van Scotter, 1994). In developing the Job Performance Inventory (JPI), the various conceptualizations of job performance have been taken into consideration.

Statement of Purpose and Research Goals

Need for this Research

The primary proposition underlying the literature applicable to this study is that there are benefits for those employees who are ethnically similar to their supervisor. Two theoretical frameworks have primarily been used to explain this similarity; the similarity-attraction paradigm and social identity theory. The similarity-attraction paradigm first proposed by Byrne (1971) argues that the extent to which an individual perceives another individual to be similar to them, they will be seen as more attractive. Although this judgment may fluctuate over time, for subjective metrics, it influences the level of attraction between individuals and affects the job performance ratings employees receive (Avery, 2003). This theory does not hold if one has the propensity of self-loathing. According to the self-identity theory (Tajfel, 1982), people classify themselves on the basis of surface-level diversity (e.g., demographic attributes such as ethnicity and gender and these attributes influence higher ratings. Performance measures can be developed and validated in a minority organization to test the aforementioned theories.

Evidence suggests that job performance measures have not been developed and validated in minority organizations (Roth et al, 2007; Pulakos, 2008). Furthermore, measures validated in majority organizations do not necessarily have utility in minority organizations. Murphy (2009) has reminded us that instruments or measures should be developed within the context of the targeted population and setting. Unfortunately, most current measures of job performance fall short of this salient requirement for an instrument or measure of job performance.

It is important to highlight the inherent limitations of current performance inventories beside their lack of representative sample of minority groups. The samples lacked representation to the extent that they are (1), convenience sample (using mostly white employees in white organizations) (Welbourne, Johnson, & Erez, 1998, Roth et al, 2003); (2) the percentage of black employees used in studies is quite low relative to white employees (e.g., Roth et al., 2003; Pulakos, 2008; Varela & Landis, 2010). Most performance measures only capture task dimensions of the performance domain. For example, these measures are based on single models of the performance domain (Campbell, 1990; Borman & Motowidlo, 1993; Varela & Landis, 2010); therefore, requiring the development of an instrument capturing current performance models, but none of the existing measures of performance bring together all of the constructs under consideration in this study.

Many organizational researchers including Murphy (2009) have stated the importance of validating a measuring tool in the setting where it will be utilized. Therefore, the specific rationale or need for the study is the development of an instrument that can be validated in minority organizations.

Purpose of this Research

Roth et al. (2003) submits it is important to study the job performance of minorities in a minority setting and Murphy (2009) highlighted the importance of validating a measuring tool in the setting in which it will be utilized. The development of a new instrument is an essential part of a process leading to a better understanding of how African Americans perform in predominantly black organizations (Roth et al., 2003). While the purpose of this dissertation is to develop and validate the *Job Performance Inventory*, the first step in validating the results is to identify dimensions of work that would reflect a general job performance. The focus on identifying the dimensions of work in terms of job performance represents a departure from previous research and it extends the knowledge of job performance of minority groups, especially of the African American and the disparity in performance ratings between racial groups. The primary benefit of this research is the validation of a new measure of performance in a minority setting.

As previously mentioned, job performance is a criterion that is widely studied by organizational researchers, and the lack of a unifying and

comprehensive theory of job performance has hampered development of measures of generalizable job performance scales, which reflect both task and contextual performance. Accordingly, researchers such as Campbell (1993), Borman and Motowidlo (1993), Varela and Landis (2010) have encouraged organizational researchers to develop job performance measures that reflect various components of work , which in turn provides an impetus for a general structure of job performance.

Because of the dearth of literature reflecting the development and validation efforts of performance measures specifically designed for minority organizations (Varela & Landis, 2010), it is incumbent upon organizational researchers to fill the void by developing and validating measures in minority organizations that incorporate various dimensions of work. In today's increasing demand for skilled workers, current performance measures must take into account various dimensions of work that capture overall job performance.

Identifying dimensions of work is the first step in developing a generalizable measure of job performance. How does one effectively examine the adequacy of a comprehensive theory of job performance proposed by complementary theories espoused by Campbell (1993), Borman and Motowidlo (1993), Viswesvaran (1993), and Varela and Landis (2010)? A valid and reliable instrument is needed to examine the adequacy of the comprehensive theory

(general structure of job performance theory). Specifically, can a job performance inventory accurately capture various dimensions of work proposed by the general structure of job performance? And if so, can this inventory have utility in minority and majority organizations as well? The purpose of this research will be to present evidence of the validity and reliability of just such an instrument, the Job Performance Inventory, developed by the researcher for this study (see Appendix A).

Summary of Introduction

The justification for the current study is informed by the fact that previous and current measures of job performance failed to use a larger sample of minorities in minority organizations for validation efforts. The ambitious effort by the US Military to create a job performance measure with researchers Green and Wing (1988) was job specific and did not generalize across all jobs in minority organizations. In addressing the limitations of traditional performance appraisal systems, it is important to note that Motowidlo and Borman (1997) postulated a theory of individual differences which captured both task and contextual performance. Consequently, a general measure of job performance reflecting dimensions of work in minority organizations is justified (Roth et al., 2003). This justification provides the motivation in developing the Job Performance Inventory (JPI), which will have practical and theoretical relevance in the organizational literature. Other factors stimulating interest in the

development of the JPI include the following: faulty operational measures of job performance, the weak relationship between job performance and job satisfaction (Murphy, 2006) and rating errors, which are partially due to rater's motivation (Johnson & Meade, 2010). According to Johnson and Meade (2010), the purpose for instituting a performance appraisal (PA) system affects the rater's motivation, as JPI will be used as research and developmental purposes, yielding less bias in ratings. Additionally, with the reliability and validity of the JPI tested, the instrument can be used to determine with some confidence in making important personnel decisions and conducting research in minority organizations.

Building on the established theoretical foundation of current job performance models combined with the psychological theory of performance as a multifaceted construct, the researcher developed a new instrument that will identify those performance factors most influential in predicting overall job performance in African American organizations. Not all job functions can be evaluated using objective measure and since job performance is a multidimensional construct (Campbell, 1990; Borman & Motowidlo, 1993; Campbell, Gasser, & Oswald, 1996), it is incumbent upon organizational researchers to develop a job performance measure that reflects the multidimensionality of job performance. Exploratory factor analysis will be used to identify the dimensions or factors of the Job Performance Inventory. Following this section, the literature review provides a detailed review of the

underlying job performance models espoused in this study and prior research related to each of these models. Chapter Two describes, in detail, the proposed methodology used to design and validate the instrument. Chapter three of the dissertation reports the results of the study which are discussed in Chapter Four.

Literature Review

This section begins with a review of diversity and performance research. Diversity and performance research provides a foundation for understanding the job performance domain of minority groups and a need to develop a measure of job performance inventory for this special population.

Diversity and Performance

Diversity research in organizations has proposed that working with the same ethnicity supervisor will provide professional and personal support and motivation, bolstering a minority employee's level of efficacy and success within an organization while at the same time reducing potentially negative or neutral mixed-ethnicity-only situations (Varian, 2005; Avery, 2003; Tsui & O'Reilly, 1989). For instance, examining ethnic incongruence, Jeanquart-Barone (1993, 1996) argued that Black employees with White supervisors report less supervisor support and fewer developmental opportunities, leading to potentially lower performance ratings within an organization.

The primary proposition underlying the literature applicable to this study is that there are benefits for those employees who are ethnically similar to their

supervisor. Two theoretical frameworks have primarily been used to explain this relational demography effect; the similarity-attraction paradigm and social identity theory. The similarity-attraction paradigm first proposed by Byrne (1971) argues that the extent to which an individual perceives another individual to be similar to themselves, they will be seen as more attractive. Although this judgment may fluctuate over time, it influences the level of attraction between individuals, and hence performance ratings. Avery (2003) used this framework to describe his findings when he argued that high perceptions of (ethnic) similarity tend to elicit favorable responses such as interpersonal attraction, perceptions of procedural fairness, and increased job satisfaction.

Extending the similarity-attraction paradigm into a more explanatory framework, Tsui, Egan, and O'Reilly (1992) argued that the similarity-attraction hypothesis assumes interaction among individuals. Although interpersonal interaction is thus a necessary condition for social integration to occur, individuals can express preferences for a group even without social interaction. They concluded that the similarity-attraction paradigm may not account for all the reported demographic effects, especially when actual interaction among the participants is unlikely. Based on these suggestions, social identity theory (Tajfel, 1982) and more specifically self-categorization theory (Turner, 1982) have been proposed as a potentially more comprehensive explanatory framework.

According to self-categorization theory, people classify themselves on the basis of surface-level diversity (e.g. demographic attributes such as ethnicity and gender) to form ‘in-groups’ and ‘out-groups’. In other words, people use demographic differences, particularly those that are visible, to categorize one another (Chapman & Spataro, 2005). Brewer and Lui (1989) note an exceptionally strong tendency to classify based on visible characteristics beyond other potentially assumed characteristics, given that visible characteristics are considered to be more known than those characteristics that must be assumed (e.g. moral character). Furthermore, people subsequently bias in favor of similar in-group members and bias against out-group members (Hewstone, Rubin, & Willis, 2002). This effect is increased as individuals denigrate out-group members and perceive them to be less trustworthy, honest, cooperative, and effective than in-group members. These assertions were supported by Tajfel (1982) who conducted 30 field studies validating out-group and in-group biases. Therefore, as applied to a manager– subordinate dyad within an organizational setting, social identity theory would suggest that the extent to which the manager perceives the employee, based on visible characteristics, to be more like themselves, the employee is more likely to be classified as an ‘in-group’ member (receiving the accompanying positive bias) and less likely to be an ‘out-group’ member (receiving the accompanying denigrating bias). Given that managers are often in positions to determine employee salary and level, this positive or denigrating bias

is likely to influence performance ratings, another justification for developing and validating a job performance inventory using minority organizations and minority samples.

A key question arises with regard to whether these beliefs and assumptions are supported by actual workplace behavior and not just the theories underlying them. A meta-analysis conducted by (Kraiger & Ford, 1985) found that ethnic congruence with the manager was associated with higher performance evaluations. As previously noted and consistent with Kraiger and Ford (1985) and Jeanquart-Barone (1993, 1996), Greenhaus et al. (1990) found that minority status in organizations (measured by Black and White) was negatively related to supervisor rating of promotability and positively related to early career plateau.

Finally, Pulakos and colleagues (1989) also found that demographic similarity was associated with more supporting relationships. If this positive bias for in-group members and denigration for out-group members is occurring, it should have significant implications for job performance ratings and consequently workplace outcomes such as salary and promotion as a consequence of the supervisor–subordinate relationship.

Models of Job Performance Ratings: Examination of Rater Race

Most research on models of job performance as they relate to rater of job performance appraisals extends the work of Hunter (1983) and Borman, White, Pulakos, and Oppler (1991) on models of supervisory ratings. According to

Pulakos, Scmitt, and Chan (1996), performance rating scales are by the far the most often used criteria for measuring an individual's job performance. Thus, strong motivation exists for obtaining the most accurate ratings possible to use as criteria. Accordingly, it becomes incumbent upon organizational researchers to identify the factors that may influence performance ratings in different settings and with different raters (Roth et al., 2003).

A focus with the rating process approach to performance appraisal research has involved investigating factors that influence performance ratings. Developing and validating a performance appraisal system in a different setting with minority groups might shed some light on the performance domain (Roth et al. 2003). Illustrative of the modeling approach, Hunter (1983) conducted a path analysis using data from four civilian and ten military studies to examine relations between cognitive ability, job knowledge, task proficiency, and supervisory rating. What is interesting is the significant minority under representation in the studies. However, results indicated that job performance ratings were greatly influenced by the rater's race. Specifically, raters with the same ratees (i.e., same race or ethnicity) gave higher ratings than raters with different race, calling for additional research in this area (Roth et al., 2003). More recently, Mckay and McDaniel (2006) conducted a study, which is considered the largest meta-analysis to date of Black-White mean differences in work performance. Mckay and McDaniel examined several moderators not addressed in previous research and

findings indicated that mean racial differences in performance favor whites. The question is would a performance appraisal system validated in minority organizations results in a different outcome for Blacks? Unfortunately, no study as of date has empirically investigated different context (setting) using mostly minority organizations for validation purposes (Johnson, 2010).

More than 20 years ago, in a commentary on the initial Hunter study, Guion (1983) suggested that additional variables should be investigated as potential antecedents of performance ratings. As a result of the clarion call made by Guion (1983), Borman, White, Pulakos, and Oppler (1991) proposed and evaluated rating models that included measures of cognitive ability, job knowledge, task proficiency, two temperament constructs (achievement and dependability), awards and problem behavior, and supervisory ratings. Their results indicated that technical proficiency and rate problem behavior had substantial direct effects on supervisory ratings of job performance. It is interesting to note here again that ratings were obtained from majority organizations with majority group (i.e., White sample).

To date organizational researchers are yet to fully adhere to the clarion call made by Guion (1983) that additional avenues of research is need to fully appreciate the important construct (job performance) in I/O psychology. Helms (1992), has argued that mean differences in Black-White performance ratings can be attributable to the salient characteristics of Blacks, focusing on the type of

tasks (concrete behavioral tasks versus abstract conceptual tasks) that are performed. Helms showed that Blacks (African Americans) are good at performing concrete behavioral tasks than abstract conceptual tasks. In a job situation, this would likely be manifested as more effective performance among African Americans on work sample measures than on more abstract measures, such as traditional multiple choice cognitive ability tests. Furthermore, differences in sample size for studies investigating Black-White differences yields different conclusions about the statistical significance of individual job performance ratings (Pulakos, Schmitt, & Chan, 1996), justifying why there should be study focusing on minority organizations with mostly minority samples, and a step in the right direction is the development and validation of a Job Performance Inventory in this unique setting using mostly minority samples.

Ethnic Group Differences in Measures of Job Performance

The issue of majority–minority differences in job performance is an important issue for academics as well as for practitioners and managers (Roth et al., 2003). From an academic standpoint, one could suggest that a substantial portion of a selection researcher’s role is to predict job performance (Viswesvaran, 2001) and that majority–minority differences in performance are an important part of understanding this issue (Martocchio & Whitener, 1992). From a practitioner or managerial standpoint, it is socially and legally important to hire and maintain a diverse workforce. In addition, the issue of majority–

minority differences in performance may be important for job promotion. If performance in a given job is a partial determinate of promotion to a higher level job, differential performance on the job may result in differential promotion rates among ethnic groups. Previous work has generally suggested that measured performance of Whites is, on average, greater than the measured performance of Blacks (J. K. Ford, Kraiger, & Schechtman, 1986; Sackett & Dubois, 1991), but those objective measures of performance often show smaller differences between ethnic groups than do subjective measures (Ford et al., 1986). This is an important issue because objective measures of performance are thought to be less open to bias than are subjective measures (Schmidt & Hunter, 1981; Rotundo & Sackett, 1999). Although previous meta-analyses have aided our understanding of ethnic differences in job performance, there is much more to be learned.

Studies Focusing on Rating Criteria

Several major studies have focused on ratings as a measure of performance. The first major meta-analysis to move this area beyond narrative reviews reported a d of .39 (corrected for interrater reliability) for White versus Black performance for field studies (Kraiger & Ford, 1985). The d statistic or standardized ethnic group difference is defined as the difference in the White mean minus the Black mean divided by the sample-weighted average standard deviation of the two groups. For example, a d of .33 means that Whites, on average, perform or are rated approximately one third of an averaged standard

deviation greater than Blacks. The value of $d = .33$ can be considered a medium effect. Kraiger and Ford (1985) noted that subjective ratings are a function of actual performance, but such ratings may also contain biases in observation and recall of the performance. Kraiger and Ford further noted that one such set of biases could include stereotypes of Blacks held by Whites that could increase standardized ethnic group differences above true score differences in some cases. One research implication of this set of beliefs is that Black– White differences on subjective performance ratings might be larger than Black–White differences on objective performance measures. There are other potential pressures that might influence ratings of job performance in the opposite manner. Researchers have noted that ethnicity is a highly salient and subjective consideration in the evaluation of performance in organizations (Kraiger & Ford, 1985; Mobley, 1982). For example, the *Uniform Guidelines on Employee Selection Procedures* (Equal Employment Opportunity Commission, 1978) noted that performance ratings should be scrutinized for possible race and gender effects because these ratings may serve as criteria in validation studies. Furthermore, these devices might be used as selection devices in their own right when ratings are used in promotion decisions (Mobley, 1982). There may also be pressures to maintain and promote a diverse organization. The result of these pressures might be to motivate the rater to either intentionally or unintentionally minimize the influence of ethnicity (Mobley, 1982). This set of pressures may, or may not be, powerful

enough to offset any biases inherent in subjective ratings. One implication of these pressures to minimize group differences is that average levels of standardized ethnic group differences for objective measures of performance might be similar to standardized differences for subjective measures of performance.

Limitations of Job Performance Models

Models of job performance have made important contributions to industrial and organizational psychology, but theoretical and empirical limitations have impeded growth and knowledge of the performance appraisal process in minority organizations for minority samples. First, most of the models presented were developed in the context of a psychological and organizational zeitgeist (Mckay & McDaniel, 2006). In other words, these models were developed on the basis of political expediency (e.g., the civil rights movement). Though these experiences are important in the histories of these groups, the models are based on factors which are transient in nature versus a more comprehensive process independent of a historical period and setting.

Second, the literature reflects a dearth of empirical investigation conducted to validate these performance models in minority organization. Most of the models presented in the literature lack follow-up investigation of the model's validity for minority organizations. While there are exceptions, most notably the work of Roth et al. (2003) and McKay and McDaniel (2006), who

have conducted research on Black-White differences in job performance, albeit with fewer samples. Additionally, few psychometrically sound instruments have been developed to operationalize these models as they relate to minority groups, especially the African-Americans. Some researchers have taken existing job performance instruments and altered the items to fit other populations of interest (e.g., Asian or Hispanic populations) (Varela & Landis, 2010), but they still have not validated these instruments using African-American population.

The General Structure of Job Performance

In responding to these limitations and in recognizing the centrality of the job performance construct in industrial and organizational psychology, Varela & Landis (2010) conceptualized a job performance model which reflects the general structure of job performance. According to Varela and Landis (2010), this model provides a general framework of job performance domain that is applicable across jobs and industries. This model based on complementary job performance models (i.e., Borman & Motowidlo, 1993; Campbell, 1990) has been validated with a South American organization, but not with African-American organizations and samples. The model was shown to accurately capture different dimensions of work such as helping behavior (contextual performance) and task proficiency.

This general structure of job performance model (Varela & Landis, 2010) addresses limitations with previous models. First, the integration of many performance models as a spring board for assessing job performance is a step in

the right direction, echoing calls about additional variables in the investigation of job performance ratings made by Guion (1983). Second, the general structure of the job performance model focuses on different dimensions of work such as helping behavior and task proficiency. Third, the general structure of the performance model incorporates and describes concrete hypothesis and predictions in its articulation of the job performance domain that permit the model to be tested empirically. Specifically, the dimensionality of the general structure of the performance model was tested empirically by developing a measure with different items purported to capture job performance.

Theoretical Frameworks for Development of JPI

The development of any measure of the job performance domain must be based on existing theories of job performance that underpins performance in an organizational setting. Such measures of the performance domain must reflect actual behaviors of work, which have been reflected and conceptualized using job analysis. According to some organizational researchers (e.g., Campbell, 1990), these theories must be translated into testable hypotheses, which lead themselves to the collection of empirical data that captures the performance domain.

In developing the JPI, complementary theories have been identified as a guidepost for generating an item pool. These theories reflect the idea that a comprehensive theory of job performance (Campbell, 1990) is needed in order to

develop a job performance measure that has utility in minority and majority organizations. Specifically, Campbell (1990) proposed a general model of individual differences in performance which became very influential (cf. also Campbell et al., 1993). In his model, Campbell differentiates performance components (e.g., job specific task proficiency), determinants of job performance components and predictors of these determinants. Campbell describes the performance components as a function of three determinants (1) declarative knowledge, (2) procedural knowledge and skills, and (3) motivation. Declarative knowledge includes knowledge about facts, principles, interests, education, training, experience, and aptitude-treatment interactions. Procedural knowledge and skills include cognitive and psychomotor skills, physical skill, self-management skill, and interpersonal skill. Predictors of procedural knowledge and skills are again abilities, personality, interests, education, training, experience, and aptitude-treatment interactions. Motivation comprises choice to perform, level of effort, and persistence of effort.

In addition to the Campbell's model of job performance, four major complementary theories of job performance have been identified for this study. First, Borman and Motowidlo's theory (1993) focuses on task and contextual performance. For example, volunteering to carry out task activities that are not formally part of the job would capture the contextual performance dimension. Most existing measures of job performance either capture task activities or

contextual performance, but not both. Other organizational researchers (e.g., Coleman & Borman, 2000; Hoffman, Blair, Meriac, & Woehr, 2007) have shed light on expanding the performance criterion domain in terms of contextual performance.

Second, Campbell's theory (1990) focuses on the latent structure of job performance using eight general factors, three of which are components of every job: core task proficiency, demonstrating effort, and the maintenance of personnel discipline. Third, Viswesvaran's theory (1993) focuses on the existence of a strong general performance factor, which reflected 25 conceptually distinct categories (e.g., quality of performance, communication skills, compliance and acceptance of authority). Viswesvaran (1993) further identified five themes as part of the 25 conceptually distinct categories, which includes productivity, conscientiousness, interpersonal skills, withdrawal, and measures of overall job performance. Fourth, Varela and Landis (2010) model of the general structure of job performance is the most comprehensive of the models in that it incorporates all the existing models into one.

Since Campbell (1990) offered his conceptualization of performance, researchers have sought to test structures identifying the behavioral dimensions within the performance domain (e.g., Burke et al. 2002; Hunt 1996; Motowidlo 2003; Viswesvaran 2001). These structures have included tests of Campbell's

(1990) original eight-factor model, Borman and Motowidlo's (1993) distinction between task and contextual performance, as well as notions of a single general factor (Viswesvaran et al. 2005) without a clear consensus, yet, regarding a comprehensive behavioral model of performance. Additionally, the relatively recent emergence of additional behavioral dimensions (e.g., adaptive performance; Pulakos et al. 2000) has triggered substantial modeling of focal categories while neglecting further explorations of the elusive structure of job performance. The current research attempted to address this shortcoming by testing alternative behaviorally based models of job performance. In order to accomplish this goal, a review of the literature on performance modeling emphasizing the mechanisms involved in defining components was carried out in the present study. This review also serves to provide the theoretical foundations for defining the performance domain.

A model of job performance espoused by Borman and Motowidlo (1997) is presented in Figure 1. The empirical evidence from this dissertation may lend credence to Borman and Motowidlo's model of job performance. The conceptual model, depicted in Figure 1, reflects the empirical findings from Borman and Motowidlo (1997), which states that job performance has two major sets of dimensions, which include both task and contextual performance, which in turn leads to organizational effectiveness. However, there are organizational constraints and antecedents (e.g., machine breakdown and ambiguous

supervisor's instructions) which might impact both task and contextual performance (Borman & Motowidlo, 1997).

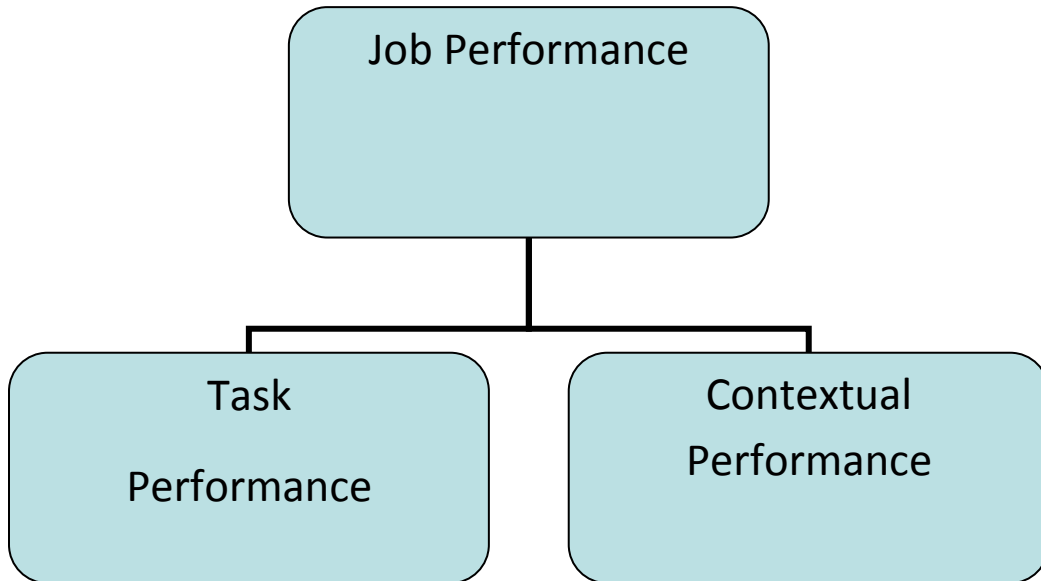


Figure 1 Job Performance Model

Studies Using Specific Theories as a Foundation for Developing Job Performance Measures

In the last ten years, researchers have been paying attention to the need for looking beyond task performance in measuring job performance (e.g., Welbourne, Johnson, & Erez, 1998). The role-based theory was used as theoretical

underpinnings for the development of measures that captured dimensions of work performance. Welbourne et al. (1998) identified five roles, which reflected job, innovator, career, team, and organization that employees have in any organizational setting. One of the limitations addressed in the study was the inadequacy of the five roles as a reflection of organizational roles. Welbourne et al. did acknowledge that they are more than five roles in any organization. The findings from the Welbourne et al. study would only generalize to those particular roles mentioned in their study.

The big five factor of personality has also been used as a trait approach to the measure of job performance. Specifically, Barrick and Mount (1991) posited in their study that conscientiousness and emotional stability were better predictors of job performance ratings. Trait approach as backdrop of studying personality and job performance has been criticized on several grounds. For example, there could be other traits not captured by the big factor theory of personality, which could contribute to our understanding of the link between personality and job performance. In light of the inherent limitations of personality link to job performance, organizational researchers do agreed that personality is related to the domain of contextual performance (e.g., Hertz, & Donovan, 2000; Barrick, Mount, & Judge, 2001).

Similarly, Borman and Motowidlo (1997) in distinguishing between task performance and contextual performance provided empirical support for the importance of personality as links to contextual performance. Specifically, they provided compelling empirical evidence that personality which is part of contextual performance significantly predicted overall job performance and contextual performance. While task performance was significantly correlated with overall performance ($r = .43$), contextual performance was also correlated with overall job performance as well ($r = .43$) (Borman & Motowidlo, 1997). Borman and Motowidlo (1997) also asserted that current trends in performance appraisal system reflect dimensions of work, which includes task performance and contextual performance, though in some cases, the boundaries that exist between these types of performance might be clearly blurred.

Review of the literature on existing instruments to measure job performance revealed a relatively large number of behavioral observation Likert-type scales (Goffin, et al, 1996). They measured job performance in terms of specific job tasks, which are based on job analysis, and do not generalize across all jobs and organizations. And often, they are cumbersome, lengthy, and because raters are required to make absolute judgments, they are prone to leniency errors (Goffin et al, 1996). In contrast, performance measures that are more global, which requires one item per performance dimension appear to have few leniency errors or they are entirely removed (Goffin, et al, 1996). Specifically, none of the

existing measures is based on a comprehensive job theory (general structure of job performance theory) as basis for scale development and validation.

More recently, Varela and Landis (2010), conceptualized job performance as a reflection of a 10 factor model or domains (working with data, designing, working with things, mechanical office work, working with people, communication, demonstrating effort, leadership/supervision and administration), categorized into three distinct dimensions (working with data, WD; working with things, WT; working with people, WP). Although fraught with limitations (e.g., generalizability of the findings) just like any other study, Varela and Landis (2010) provide the most comprehensive view of how job performance should be conceptualized. It is interesting to note that Varela and Landis (2010) cautiously state that their recent study is the closest model of a general model of job performance, challenging organizational researchers to engage in cross-validation efforts of their 10-factor model of job performance.

Much of the research involving job performance measures are those where supervisors asked predetermined questions set up by the researcher beforehand. Literature on the relation of work attitudes and job performance has remained inconclusive or reflect very low correlations (Murphy, 2009). However, because of the lack of information obtained from such studies there is a real need for a

method of research which will lend itself to a thorough examination of a measure of job performance that has utility across jobs in minority organizations.

The Current Study and Research Questions

The consistent findings in ethnic differences in job performance have made the study of job performance for minority groups an important area of study for organizational researchers. These findings in ethnic differences have been consistent to the extent that minority groups always scored lower in performance ratings relative to white samples. Some organizational researchers (e.g., Roth et al., 2003) have called for increased research in the racial differences in job performance. One avenue for understanding racial differences in job performance is through the development of a job performance inventory that can be validated in minority organizations using mostly minority employees and supervisors.

In most studies evaluating the performance domain as captured by job performance ratings, the samples usually have a high proportion of white participants and Blacks are a tiny percentage of such samples, making generalization to the Black population almost impossible and problematic (Johnson, 2001). Since most performance measures have been validated with white samples (Roth et. al., 2003, it is important for organizational researchers to develop and validate performance measures in minority organizations. Therefore, the rationale for developing and validating the Job Performance Inventory (JPI),

which captures both task and contextual performance as an index for overall job performance for minority organizations with minority groups, is twofold:

First, studies that shed light on majority-minority differences in job performance (e.g., Roth et al., 2008; Doe, 2010) deserve continued empirical investigation by organizational researchers in order for us to fully understand the construct of job performance. An exhaustive search in the organizational psychology and human resource literature and data base did not show any job performance instrument that has been validated in minority organizations. The dearth of studies in this context warrants a fresh approach in studying the performance domain, specifically for minority organizations and members. The starting point for understanding the performance domain for minority members is by developing an instrument validated in minority organization.

Second, there is a plethora of personnel selection studies conducted in majority organizations using general mental ability (GMA) and other cognitive factors as predictors of job performance for both Whites and Blacks. However, current studies (e.g., McKay & McDaniel, 2006) have shown that the performance domain can reflect non-cognitive factors as well. It is interesting to note that the big-five factor of personality, specifically, conscientiousness captures contextual performance. Accordingly, current performance appraisals reflect both task and contextual performance. Again, these performance appraisals cannot be generalized to minority groups because of the setting in

which they were validated, and hence the researcher of this study developed and tested the reliability and validity of the JPI.

Research Questions and Hypotheses

Taking into consideration the rationale for this study, it is important to develop a Job Performance Inventory (JPI) for minority organizations by examining the following research questions and hypotheses:

1. What are the underlying dimensions of the JPI? Specifically, is the JPI composed of a single factor or multi-dimensional as proposed by the Job Performance models (general structure of job performance)? In addressing this question the following hypothesis is proposed:

Hypothesis 1: The JPI scales are multi-dimensional as proposed by the Job performance Model.

2. Does the JPI provide evidence of adequate reliability and validity? The following hypotheses have been proposed to answer this question:

Hypothesis 2: The JPI items will be homogeneous. Measures of internal consistency (Cronbach's alpha) will be above .70. An alpha of .70 is normally considered a reliable set of items (de Vaus, 2002). The widely-accepted social science cut-off is that alpha should be .70 or higher for a set of items to be considered a scale, but some use .75 or .80 while others are as lenient as .60 (DeVellis, 1991; de Vaus, 2002; George and Mallery, 2003).

Hypothesis 3: The JPI will show good content validity based on judgments about “the adequacy with which the test content represents the content domain” (Aera et al., 1999, p. 11). In the present study, job performance is the domain of interest and the items of the JPI represent the test content; ratings of the items by subject matter experts (SMEs) will be used to evaluate content validity. An instrument is content valid to the degree that it captures the important aspects of job performance (Principles, 2003).

Hypothesis 4: The JPI will be significantly correlated with the Role Based Performance Scale (RBPS). This correlation will be used to assess the convergent validity of the JPI.

Supervisor experience. Research findings regarding supervisor experience have been mixed, with some studies reporting that supervisors with more experience tend to be more lenient, and others finding no effect (Landy & Farr, 1980).

3. Does supervisor experience (time in current position) positively influence overall performance ratings?

Hypothesis 5: Supervisors’ experience will be positively correlated with overall job performance ratings.

CHAPTER II

Method

The purpose of this research was to develop and provide evidence of the reliability and validity of scores for the *Job Performance Inventory* for minority organizations. In this chapter, the participants, measures, procedure and proposed analysis of data are discussed.

Participants

Participants included 126 employees. They were 56 (44%) males and 70 (56%) females who were selected from a large minority organization (African-American organization) in south east Texas. The participants ranged from 25 to 55 years of age with a mean of 29.35 (SD = 3.28). The ethnic breakdown of the sample was 96% Black, 2% White, and 2% Hispanic/Latino. Fifty-three percent of the employees have been with the organization for more than one year, 15% for 1 year, and 31% for less than 1 year. Data were obtained from supervisors' evaluations of employees in their respective divisions. The employees held jobs in various areas of their organization, including management, sales, customer service, marketing, and manufacturing.

For the administration of the JPI, ten supervisors in a minority organization in south-east Texas were sent letters electronically asking for their participation in a study of the revised JPI based on expert review of the items.

The requests included an introductory letter explaining the rationale behind the study as well as the importance of it with a list of dates and times. Given agreement on the part of the supervisors, the supervisors used the JPI to obtain performance ratings of their employees during work hours. The supervisors were required to complete demographic information as well. The minority organization allowed 250 participants for the study; therefore, the expected sample size was 250 participants, 10 supervisors and 240 employees. However, 126 questionnaires were completed, resulting in a response rate of 52.50%. The target population consisted of African-American employees in a selected minority organization in south-east Texas. The results of this study will provide support for the reliability and convergent validity of the JPI for use with populations similar to the sample employed.

The question of sample size required for EFA varies among researchers. Gorsuch (1983) maintains that the sample size for an EFA should be at least 100. Comrey and Lee (1992) suggest that an N of 100 is “poor,” 200 is “fair,” 300 is “good,” 500 is “very good,” and 1,000 or more “excellent.” In a related vein, Everitt (1975) argued that the ratio of the sample size to the number of items (p) should be at least 10. These recommendations are however, ill-directed, according to MacCallum et al. (1999). Those authors suggest that the appropriate sample size for a given measurement analysis is actually a function of several aspects of the data, such as how closely items are related to the target construct; if

the items actually capture the construct, then the expected sample size would be small, whereas a greater N would be needed if the correlations between items and the construct were small. According to MacCallum et al., if there are a good number of items per latent factor (i.e., preferably five or more items are closely related to the factor in question, a sample size of 100-200 may be sufficient for to perform exploratory factor analysis. Currently there is no estimation for sample size for factor analysis that is based on any statistical theory (Mundfrom, Shaw, & Tian, 2005). Recommendations from different sources vary greatly. Other examples of sample size are 3 to 20 times the number of variables used, or absolute numbers of 100 to 1000 (Costello & Osborne, 2005). Consequently, the sample size of 126 is justified and falls under the recommendations. For the present study, a small sample size is justified to the extent that there were uniformly high communalities (i.e., communalities greater than .50), plus several variables loading strongly on each factor (Mulaik, 1990; Widaman, 1993; Costello & Osborne, 2005). According to Mundfrom, Shaw, and Tian (2005), the minimum sample size for factor analysis should be at least 100.

Development of the Job Performance Inventory (JPI)

Item Pool Creation. The items of the JPI were derived from a number of previously discussed job performance theories (Campbell, 1990; Bordman & Motilwidlo, 1993; Varela & Landis, 2010). After an exhaustive review of the aforementioned theories, including the review of existing measures of job

performance, the researcher created 50 items. The final JPI items were based on the results of expert review and the results of exploratory factor analysis.

Expert Review. According to DeVellis (2003) one should enlist between 6 and 10 experts on the measure content to review items for a newly constructed test. The expert panel was asked to complete a survey rating of the quality of each item, appropriateness for the domain, and the perceived level of agreeability for that item using an ordinal scale (Appendix C). The goal was that each item was of high quality and content valid and that the items within each domain followed an ordinal scale in terms of agreeability. The six experts enlisted for this study included three professors at Alliant International University, who have expertise in performance measurement and three performance measurement practitioners. Performance measurement practitioners have been conducting performance appraisals for at least 5 years or more.

Item Selection. Once the results of the expert review were obtained, the researcher began the process of item clarification and elimination. Each item was rated for clarity and validity of statement using a Likert scale (Appendix C). The scores for clarity of statement for each item ranged from 1 to 3 ($M = 2.00$, $SD = .25$). Items with mean ratings lower than two were assessed for possible improvement or dropped from the JPI. A score of two or more reflected that the item was worded clearly and was a valid item as well.

Experts were asked to rate the JPI 50 items in terms of clarity and validity of each item (statement). After items were rated, items were removed if the score was less than 2.00 on clarity and validity of the statement and this process resulted in 32 items with an overall average quality rating of 2.00 and average item quality ratings ranging from 2.00 to 2.85, using a 3 point rating scale where 1 = The wording of the statement is not clear at all and 3 = The statement is worded clearly. In terms of the content of the JPI, experts' ratings ranged from 1 = Not a valid statement-delete this statement completely to 3 = Valid-definitely keep this statement. All subscales averaged item quality ratings greater than 2.

Measures

According to Borman and Motowildo (1993) and most recently by Varela and Landis (2010) job performance is a multi-dimensional construct. One of the major obstacles to obtaining job performance ratings for minority population lies in the setting in which the performance measure was validated. Performance measures validated in majority organizations are not necessary valid in minority organizations (Murphy, 2009). Therefore, as stated previously, one part of addressing the job performance ratings of minority population is developing a measure that can be validated in a minority organization.

There are a number of job performance theories. However, the focus thus far has been to differentiate them as opposed to uniting them. In the current study, the Job Performance Inventory (JPI) aimed to make a comprehensive

construct that incorporated all of the theories found, thus relating Job Performance to different dimensions of work identified by empirical evidence. The JPI assists in identifying dimensions of work that have been postulated by previous research (e.g., Borman & Motowidlo, 1993). Accordingly, the present study united the literature thus far by creating items in work domains that fully covered the previous theories regarding job performance.

The JPI is intended to measure subscales (dimensions) of job performance which makes the Job Performance Inventory. The JPI includes a demographic section, and will be analyzed at the individual level. There were two purposes of including demographics in the measure: (1) to assess whether job performance ratings differed among supervisors, and (2) to assess how representative the sample was of the actual minority organization.

Two measures were used to answer the proposed research questions: the Job Performance Inventory (JPI) developed by the researcher and the Role-Based Performance Scale (Welbourne et al., 1998). The JPI (Appendix B) is proposed to measure job performance of minority employees in a minority organization, and more specifically, to measure the dimensionality of job performance and consists of 50 items with a five-point rating scale, from 1 = “needs much improvement” to 5 = “Excellent.”

The Role-Based Performance Scale (RBPS) is chosen due to the demonstrated reliability and validity as a multidimensional measure of job

performance. The Role-Based Performance Scale (Welbourne, Johnson, & Erez, 1998) consists of 20 items, with a five-point scale, measuring different dimensions of work, and alpha values ranged from .86 to .96 among the different samples used in their study. The strength of these reliability estimates suggests a high homogeneity among the scale items. Welbourne et al. (1998) provided evidence of construct validity and the presence of deficiency error of the RBPS by analyzing the ability of the RBPS to provide information on organizational outcomes that goes beyond what traditional performance appraisal measures provide. Welbourne et al.'s (1998) study found the following:

Multiple analyses showed that the RBPS explained a number of components of performance at work better than traditional performance measures. This pattern of evidence provided initial support for the predictive ability of the RBPS. In addition, these initial findings suggest that the RBPS reduces some of the deficiency error found in typical performance measures. (p. 553)

The RBPS (see Appendix D) is comprised of four subscales: career, organization, value, and quality of work. For validation of the JPI, the researcher asked

supervisors to obtain performance ratings using the RBPS in its entirety and scores were correlated with the JPI.

Procedures

Using a sample of 126 participants, the researcher distributed the JPI and the RBPS in person to ten departments in a minority organization. Supervisors provided performance ratings of their employees. Supervisors also provided demographic information about themselves using the form provided by the researcher. All data were considered anonymous.

Supervisors were asked to use the JPI and RBPS to obtain performance ratings of their employees during the work week. Once permission was obtained from the management of the organization, the researcher distributed the measure in each department to the appropriate supervisor, in person, with a cover sheet that clearly explained that participation was completely voluntary and that the participant was volunteering to participate by completing the given questionnaires (Appendix B and Appendix C). The cover letter contained contact information for the Institutional Review Board and the researcher. Administrations of the questionnaires was planned to occur in the time ranges of 9:00 A.M. to 4:45 P.M. January 15-31, 2012. Completed questionnaires were collected by the researcher.

Analyses of Data

The Statistical Package for the Social Sciences, Version 20 (SPSS) was used to store and analyze data. Prior to conducting the analyses, data were inspected for normality, excessive missing cases, and outliers. Unrestricted and restricted (i.e., forced solution) principal-axis factor analyses (PAF) and maximum likelihood factor analysis (ML) were conducted using several criteria to determine factor extraction: Kaiser's criterion of eigenvalues greater than 1 (Kaiser, 1974), Cattell's scree test (Cattell, 1966), Horn's parallel analysis (Horn, 1965), and Velicer's MAP test (Velicer, 1976).

Exploratory factor analysis (EFA) was chosen in order to examine the factor structure of the JPI for several reasons. First, the goal of EFA is to reduce "the dimensionality of the original space and to give an interpretation to the new space, spanned by a reduced number of new dimensions which are suppose to underlie the old ones" (Rietveld & Van Hout, 1993, p. 93). Specifically, the goal of EFA is to reduce the numerous measured variables (items) to a few more reliable latent constructs (factors). Second, theoretical and empirical evidence suggests that the measures under investigation may be measuring similar latent factor(s) thereby calling into question construct validity. Third, although confirmatory factor analysis (CFA) can show *what* items are loading on the same factor, it does not show if the factor is measuring the intended construct. The goal of CFA is to test a theory when the analyst has an adequate rationale

regarding the structure of the data (Henson & Roberts, 2006). Furthermore, when the data correspond to assumptions of the common factor model, EFA produces more accurate results than PCA (Snook & Gorsuch, 1989; Widaman, 1990, 1993). Finally, Fabrigar et al. (1999) concluded that EFA is superior to confirmatory factor analysis (CFA) if there is uncertainty in the evidence for the number of common factors and for the relations between measured variables and latent structure. Byrne (1994) also indicate that EFA is designed for the situation where links between the observed and latent variables are unknown or uncertain.

Maximum likelihood (ML) factor analysis was chosen, as opposed to principal axis factoring, to determine the least number of factors that can account for common variance while taking into account the covariation among the variables. Fabrigar et al. (1999) argue that if data are relatively normally distributed, ML is the best choice because “it allows for the computation of wide range of indexes of the goodness of fit of the model and permits statistical significance testing of factor loadings and correlation among factors and the computation of confidence intervals” (p. 277). However, if the assumption of multivariate normality is “severely violated,” then principal axis factoring is recommended. In general, ML or PAF will give the best results, depending on whether the data are generally normally distributed or significantly non-normal, respectively (Costello & Osborne, 2005). Since ML generally provides indices of goodness of fit statistic, ML was chosen as the primary extraction method.

However, because a major shortcoming of PAF is factor indeterminacy (Velicer & Jackson, 1990) which may cause substantially different factor interpretations to be obtained from the same original data, a maximum likelihood factor analysis was also conducted during initial factor extraction as comparison. In this study, the solutions found through principal axis factoring are similar in form to those found by maximum likelihood factor analysis, thus factor indeterminacy is not likely to be a problem in this study. In PAF, the analysis of data structure is focused on shared variance and not on sources of error that are unique to individual measurements. The objective of ML is to exhibit the factor structure that maximizes (in terms of best fit) the likelihood of the observed correlational matrix by finding the underlying population parameters that are expressed in common factors.

After extraction, the number of factors to retain for rotation was determined. According to Costello and Osborne (2005), both overextraction and underextraction of factors retained for rotation can have deleterious effects on the results. Over-extraction means that many factors are being extracted. Over-extraction diffuses variables across a large factor space, potentially resulting in factor splitting, in factors with few high loadings, and in researchers' attributing excessive substantive importance to trivial factors (O'Connor, 2000). Under-extraction means that few factors are being extracted. Under-extraction compresses variables into a smaller factor space, resulting in a loss of important

information, a neglect of potentially important factors, a distorted fusing of two or more factors, and an increase in error in the loadings (O'Connor, 2000). The default in most statistical software packages is to retain all factors with eigenvalues greater than 1.0., which is called the Kaiser Criterion. There is a broad consensus in the literature that this is among the least accurate methods for selecting the number of factors to retain (Velicer & Jackson, 1990). Alternative tests for factor retention include the scree test, Velicer's MAP criteria, and parallel analysis (Velicer & Jackson, 1990).

Criteria for factor extraction was determined by assessing Kaiser's criterion of eigenvalues greater than 1 (Kaiser, 1974), Cattell's scree test (Cattell, 1966), parallel analysis (Horn, 1965), and Velicer's MAP test (Velicer, 1976). Parallel analyses provide an independent analysis of the correct number of higher order dimensions or factors in a dataset. Parallel analysis is based on a comparison of eigenvalues obtained from sample data to expected eigenvalues from completely random data (i.e., the predicted means of eigenvalues produced by repeated sets of random data). In the present study, the procedure was repeated 1000 times to ensure a stable result. Gorsuch (1983) suggests that if there is doubt concerning the correct number of factors, the researcher should err on the side of selecting too many rather than too few factors. Hair et al. (1995) suggest a cut-off point where the last factor accounts for only a small portion of the shared variance (less than 5%). However, when strong common factors are present in

data, studies indicate that the scree test functions reasonably well (Cattell & Vogelmann, 1977; Hakstian et al., 1982).

To simplify and clarify the data structure, an orthogonal rotation method was chosen. This rotation derives factor loadings based on the assumption that the factors are independent and the results of orthogonal rotation are replicable (Rennie, 1997). Orthogonal rotations are recommended because “There is no denying that orthogonal rotations have the advantage of simplicity” (Pedhazur & Schmelkin, 1991, p. 615). In order to determine the best choice of rotation, Costello and Osborne (2005) argue that if factors are independent (i.e., not correlated), there is enough evidence to warrant orthogonal rotations. In the present study, none of the factor scores are related, which suggests the factors themselves are not related - - which indicates that the use of orthogonal rotation can be used. It is suggested that regardless of the magnitude of the correlation among the factors that is unnecessary to do oblique rotation in addition to orthogonal rotation (Rennie, 1997). The correlation among the factors yields results that are more difficult to interpret than results of an orthogonal rotation (Rennie, 1997; Costello & Osborne, 2005). Furthermore, the slight difference between results of an oblique rotation and orthogonal rotation is virtually insignificant (Rennie, 1997; Costello & Osborne, 2005). For the present study, Varimax rotation was used. Varimax focuses on cleaning up the factors. Varimax rotation produces factors that have high correlations with one smaller set

of variables and little or no correlation with another set of variables (Stevens, 1996; Abdi, 2003).

Finally, empirical and conceptual considerations guided factor interpretation. Factor structure, goodness-of-fit test, and inter-item correlations from EFA were used for guidance in item and factor elimination. Items with loadings below .40 and items that are cross loaded were removed to complete the revised JPI. According to Matsunaga (2010), setting the cutoff at .40 (i.e., items with a factor loading of .40 or greater is retained) is perhaps the lowest acceptable threshold. Crossloading items with values greater than or equal to .32 on at least two factors are generally candidates for deletion, and especially if there are other items with factor loadings of .50 or greater (Costello & Osborne, 2005; Henson & Roberts, 2006). Item loadings above .30 and with no or few crossloadings have the best fit to the data and noted as the one with the “cleanest” factor structure (Costello & Osborne, 2005). Furthermore, Tabachnick and Fidell, (2001) argue that only variables with a loading of .32 and above should be interpreted. In this study, coefficients exceeding .40 were considered meaningful because it indicated that at least 16% of an item’s variance is due to the underlying factor (Matsunaga, 2010). Reliability was assessed for the internal consistency of JPI items based on the emergent scales. Convergent validity was assessed by correlating the JPI with the RBS. The researcher expected the JPI to correlate highly with the RBPS.

CHAPTER III

Results

This study developed and presented preliminary validity data for the Job Performance Inventory (JPI) for minority organizations; this chapter will present and summarize the results from the data analyses of the research questions and hypotheses. There are three sections: (a) results from the factor analysis; (b) analysis of the JPI's reliability, evaluated by the internal consistency of the scales (Cronbach's alpha); (c) analysis of the JPI's content validity, evaluated by subject Matter Experts (SME); (d) analysis of the JPI's convergent validity, evaluated through the correlation with the Role Based Performance Scale (RBPS).

Exploratory Factor Analysis

Data Screening

Initially, suitability of data for factor analysis was assessed. The data were examined with regard to item skewness and kurtosis. According to Fabrigar, Wegener, and MacCallum (1999) univariate variables were suspect when skewness exceeded 2.0 and kurtosis exceeded 7.0. Table 1 shows the mean scores, standard deviations, skewness, and kurtosis for each of the 32 JPI items. The JPI item skews ranged from -.29 to -1.84, $M = -1.09$ while, kurtosis values ranged from -.12 to 5.61, $M = 1.91$. All skews and kurtosis were within a tolerable range for assuming a normal distribution (Fabrigar et al., 1999).

Table 1

Means, Standard Deviations, Skewness, and Kurtosis for 32 JPI Items

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Getting Information	4.03	.75	-.52	.18
Processing information	4.07	.94	-1.73	4.96
Judging the qualities of objects, services, or people	4.14	.72	-.35	-.582
Analyzing data or information	3.86	.94	-1.20	3.16
Inspecting equipment, structures, or materials	3.48	1.16	-1.02	1.44
Operating vehicles, mechanical devices, or equipment	3.24	1.61	-.84	-.32
Repairing and maintaining electronic equipment	2.52	1.62	-.28	-1.12
Handling and moving objects	3.88	1.26	-1.80	3.41
Communicating with supervisors, peers, or subordinates	4.28	.92	-1.63	3.39

Table 1 *continued*

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Establishing and maintaining interpersonal relationships	4.08	.88	-.79	.36
Guiding, directing, and motivating subordinates	4.13	.91	-.83	-.12
Resolving conflicts and negotiating with others	4.09	.96	-1.30	2.37
Developing objectives and strategies	3.96	.86	-.95	2.49
Developing and building teams	3.83	1.11	-1.29	2.42
Providing consultation and advice to others	4.04	1.07	-1.59	3.46
Evaluating information to determine compliance with standards	3.90	.91	-.86	1.64
Coordinating the work and activities of others	3.92	1.12	-1.50	3.02
Performing administrative activities	3.69	1.26	-1.51	2.40
Scheduling work and activities	3.77	1.24	-1.34	1.92

Table 1 *continued*

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Organizing, planning, and prioritizing	4.00	.95	-.95	1.35
Assisting and caring for others	4.38	.88	-1.58	2.57
Coaching and developing others	4.03	.92	-.91	.48
Updating and using relevant knowledge	4.22	.72	-.49	-.50
Thinking creatively	4.13	.94	-1.21	2.06
Productivity of work output	4.19	.92	-1.84	5.61
Demonstrating effort	4.29	.84	-1.58	4.57
Facilitating peer and team performance	4.13	.84	-.66	-.27
Volunteering to carry out task activities that are not formally part of the job	3.99	1.18	-1.49	2.41
Endorsing, supporting, and defending organizational objectives	3.89	1.07	-1.50	3.42
Persisting with extra enthusiasm when necessary	4.18	.84	-1.01	1.07
Job-specific task proficiency	4.13	.78	-.43	-.63

Examination of the correlation matrix revealed the presence of many coefficients of .3 and above. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was .89, exceeding the recommended value of .6 (Kaiser, 1974), and Bartlett's Test of Sphericity (Bartlett, 1954) was significant ($\chi^2 = 2359.69$, $df = 496$, $p < .001$) supporting the factorability of the correlation matrix. Generally, small values of the KMO statistic (less than 0.5) indicate that the correlations between pairs of variables cannot be explained by other variables and that factor analysis may not be appropriate. Bartlett's test of Sphericity tests the null hypothesis that in the population the correlation matrix for the outcome variables is an identity matrix (where each variable correlates perfectly with itself ($r = 1$) but has no correlation with the other variables ($r = 0$)). Values from the KMO and Bartlett's Test of Sphericity indicate that factor analysis is appropriate.

The diagonals of the anti-image correlation matrix were all over .5, supporting the inclusion of each item in the factor analysis. In a good model, most of the off-diagonal elements will be small. The off-diagonal elements are used for determining the suitability of the correlation matrix for factor analysis. "If the variables share common factors, the anti-image correlation (i.e., the negative of the partial correlation coefficient) between pairs of variables should be small or close to zero, because the linear effects of the other variables have been eliminated" (Zillmer & Vuz, 1995, p. 276). Thus, the count of off-diagonal elements in the anti-image covariance should be less than 30% (Zillmer & Vuz,

1995) in order to consider the data set suitable for factor analysis. If the number of anti-image correlations greater than .09 (in absolute value) is greater than 30%, then factor analysis should be reconsidered because a large number of correlation remain (Zillmer & Vuz)..

Finally, the JPI item communalities (h^2) ranged from .40 to .53, $M = 50$. The communalities are the sum of the squared factor loadings and represent the amount of variance in that variable accounted for by all the factors. For example, in the present study, all seven extracted factors accounted for 43.8% of the variance in the variable “Getting Information” ($h^2 = .438$). More common magnitudes of communalities in the social sciences are low to moderate communalities of .40 to .70 (Costello & Osborne, 2005). Given these overall indicators, factor analysis was conducted with all 32 items.

Factor Analyses

The unrestricted factor analysis in both the ML and PAF produced a 7-factor solution with eigenvalues greater than one, which accounted for 57.52% of the variance in the JPI items. However, examination of eigenvalues and the Cattell’s scree test (Cattell, 1966) revealed a marked gap between the first two factors and the remaining factors (Factor 1 eigenvalue = 7.88; Factor 2 eigenvalue = 5.00; the first two factors aligned with 40.26% of the total variation across factors). As these results could be connected with the eigenvalue ≥ 1 rule and the scree plot, additional analyses using Velicer’s MAP test and Parallel analysis

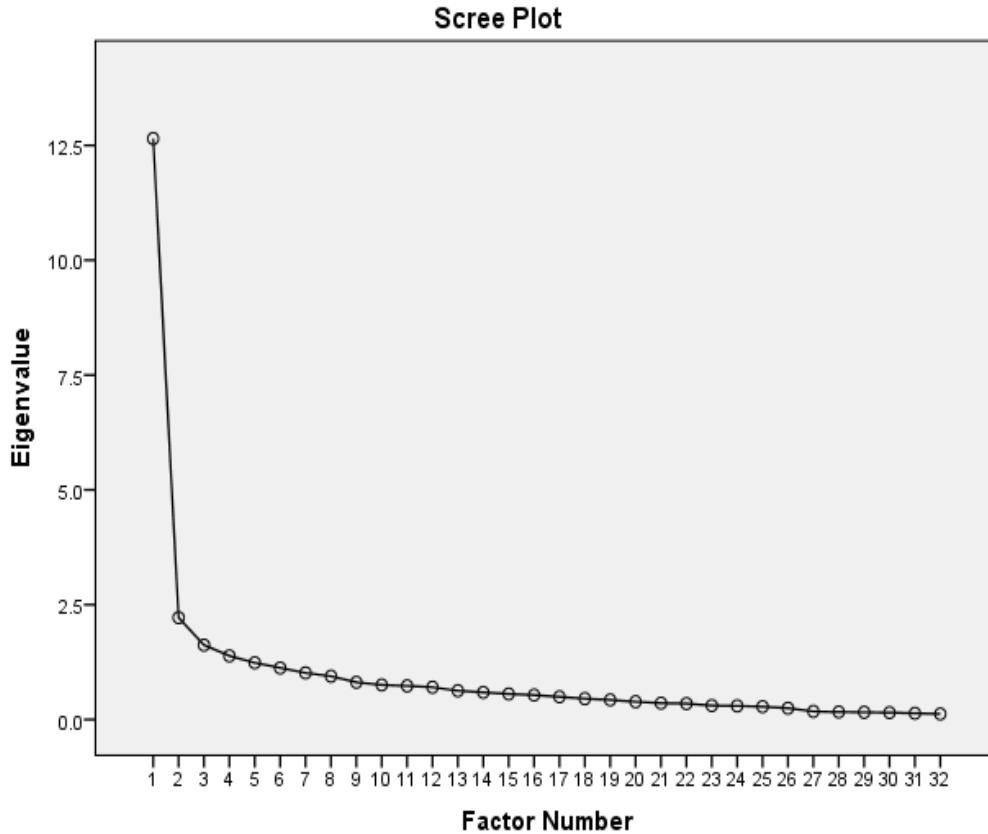


Figure 2 Scree Plot

were carried out. Complicating interpretation, Velicer’s MAP test (1976) and parallel analysis (Horn, 1965) did not correspond with Kaiser’s criterion regarding the number of factors to be extracted. In the present study, Velicer’s MAP test (see Appendix F) and parallel analysis (see Appendix E) suggest that two factors should be extracted. A number of studies and reviews have argued that the best empirical method for factor retention in FA is parallel analysis (Patil, Singh, Mishra, & Todd Donovan, 2008; Pallant, 2007; Hayton, Allen, &

Scarpello, 2004; Velicer, Eaton, & Fava, 2000). Based on these initial results, it was decided that several maximum likelihood analyses with varimax rotation will be run to evaluate seven-, and two-factor solutions.

Varimax (orthogonal) and oblimin (oblique) rotations were performed across the series of analyses. Results from the varimax rotations were preferred for two reasons: (a) it seemed reasonable to assume that the underlying constructs would be uncorrelated, and (b) besides being the most common rotation option, a varimax solution yields results which make it as easy as possible to identify each variable with a single factor (Rennie, 1995; Costello & Osborne, 2005).

Seven-Factor Solution

Using the rotated factor matrix for interpretation, seven factors accounted for 57.52% of the overall variance (see Table 2 for full rotated factor matrix). Eleven items loaded onto factor 1 (values ranged from .439 to .770; $\alpha = .902$) and accounted for 14.23% of the variance. The items generally reflected contextual performance. Six items loaded onto factor 2 (values ranged from .465 to .709; $\alpha = .875$) and accounted for 11.47% of the variance. These items generally reflected contextual performance. Four items loaded onto factor 3 (values ranged from

Table 2

Rotated Factor Matrix for a seven-factor solution using Maximum Likelihood with Varimax Rotation

Items	Factor						
	1	2	3	4	5	6	7
Getting Information					.400		
Processing information					.731		
Judging the qualities of objects, services, or people	.439						
Analyzing data or information					.529		
Inspecting equipment, structures, or materials			.556		.592		
Operating vehicles, mechanical devices, or equipment			.768				
Repairing and maintaining electronic equipment			.682				
Handling and moving objects			.510				
Communicating with supervisors, peers, or subordinates		.671					
Communicating with people outside the organization		.709					.466
Establishing and maintaining interpersonal relationships		.596					
Guiding, directing, and motivating subordinates	.466	.481					
Resolving conflicts and negotiating with others		.674					
Developing objectives and strategies						.430	
Developing and building teams						.789	
Providing consultation and advice to others				.428			
Evaluating information to determine compliance with standards				.640			
				.504			

Table 2 *Continued*

Items	Factors						
	1	2	3	4	5	6	7
Scheduling work and activities							
Organizing, planning, and prioritizing							
Assisting and caring for others	.496						
Coaching and developing others	.552						
Updating and using relevant knowledge	.770						
Thinking creatively	.604						
Productivity of work output						.551	
Demonstrating effort	.555						
Facilitating peer and team performance	.550	.465					
Volunteering to carry out task activities that are not formally part of the job				.464			
Endorsing, supporting, and defending Organizational objectives	.531						
Persisting with extra enthusiasm when necessary	.540						
Job-specific task proficiency	.482						

.441 to .768; $\alpha = .771$ and accounted for 7.86% of the variance. These items generally reflected task performance. Four items loaded onto factor 4 (values ranged from .428 to .464; $\alpha = .809$) and accounted for 7.72% of the variance.

These items generally reflected contextual performance. Two items loaded onto factor 5 (values ranged from .400 to .592; $\alpha = .458$) and accounted for 7.27% of the variance. These items generally reflected contextual and task performance. Two items loaded onto factor 6 (values ranged from .430 to .789; $\alpha = .756$) and accounted for 5.67% of the variance. These items generally reflected contextual performance. Two items loaded onto factor 7 (values ranged from .466 to .551; $\alpha = .644$) and accounted for 3.32% of the variance. Correlations between factors were moderate to high and ranged from .312 to .812 (see Table 3).

Table 3
Factor Correlation Matrix for 7 – Factor Model

	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7
Factor 1							
Factor 2	.81**						
Factor 3	.47**	.45**					
Factor 4	.72**	.72**	.55**				
Factor 5	.42**	.42**	.56**	.38**			
Factor 6	.64**	.70**	.53**	.68**	.49**		
Factor 7	.64**	.73**	.42**	.59**	.31**	.57**	

** . Correlation is significant at the .01 level (2-tailed).

Three items cross-loaded onto two separate factors (values ranged from .430 to .789) and four items did not load within the solution. Communalities estimates for the seven-factor solution were considerably lower than the 2-factor solutions and ranged from .327 to .716. Although the communalities estimates were lower in the seven-factor solution, the determination of the number of factors to retain is very important, as errors in terms of selecting the number of factors to retain can significantly alter the solution and the interpretation of EFA results (Ledesma & Valero-Mora, 2007). As can be seen in Table 2, the seven-factor solution resulted in over-extraction of factors, as evidenced with factors 5, 6, and 7, with few substantial loadings, making it difficult to interpret and/or replicate this solution (Zwick & Velicer, 1986, O’Connor, 2000, Fabrigar et al., 1999; Hayton, Allen, & Scarpello, 2004). The remaining factors (i.e., factors 1, 2, 3, and 4) were difficult to interpret, as there were many items splitting across these factors, which are indicative of over-extraction (O’Connor, 2000), and may also indicate that there are too many factors being extracted. These findings, combined with numerous low item communalities and item cross loadings are suggestive that the seven extracted factors may not represent a good fit for the data.

Two-Factor Solution

A two-factor solution was selected for extraction based on Borman and Motowidlo (1993) model of job performance, which proposed that job

performance is a multidimensional construct consisting of two factors, namely task performance and contextual performance. The scree plot suggests that 2 factors should be extracted. As can be seen in Figure 1, the curve levels out after just two factors, rather seven. Because the scree plot is not an accurate method for determining the number of factors to be retained, additional analyses were carried out: Parallel analysis (Horn, 1965) and Velicer's MAP test (Velicer, 1976). In the former, "the focus is on the number of components that account for more variance than the components derived from random data. In the MAP test, the focus is on the relative amounts of systematic and unsystematic variance remaining in a correlation matrix after extractions of increasing numbers of components" (O'Connor, 2000, p. 396). Two components were extracted according to Velicer's MAP test because the smallest average squared partial correlation, which was .0172, emerged after extracting the two components. Two components were also extracted using Parallel analysis because the first two eigenvalues from the actual (raw) data (2.65 and 2.22) were larger than the corresponding two 95th percentile (2.26 and 2.05). The results from parallel analysis and Velicer's MAP test are presented in Appendix E and Appendix F respectively.

Table 4 displays the two-factor unrotated solution, using ML as extraction method. Their corresponding eigen values and percentage of explained variance (in brackets) were: 12.09 (37.78%) and 1.69 (5.27%), respectively, and together,

the two factors explained 43.05% of the variance in the JPI items. Following the Varimax orthogonal rotation of the two-factor solution, the corresponding eigen values and percentage of explained variance (in brackets) for the two-factor solution were: 9 (29.94%) and 4.20 (13.12%) and together, the factors explained 43.05%

Table 4

Two-Factor Un-rotated Solution Using Maximum Likelihood as Extraction Method

Factor	Initial Eigenvalues			Extracted Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	12.65	39.53	39.53	12.09	37.78	37.78
2	2.22	6.93	46.46	1.68	5.27	43.05

of the variance in the JPI items. Table 5 displays the variance accounted for by each factor before and after rotation.

Table 5

Eigenvalues and Variance Explained in the Un-rotated Extraction and Orthogonal Rotation

Factor	Initial Extraction (ML)			Orthogonal Rotation	
	Eigenvalues	% of variance	Cum%	Eigenvalues	% of variance
1	12.09	37.78	37.78	9.58	29.94
2	1.69	5.27	43.05	4.20	13.19

Rotation: Varimax

Three items cross-loaded onto two separate factors (values ranged from .437 to .618) and two items did not load within the solution. Items with loading of less than .40 and cross-loaded items with loadings of .32 and above are usually candidates for elimination from a scale (Costello & Osborne, 2005; Henson & Roberts, 2006; Matsunaga, 2010). Given these requirements for item elimination, a series of factor analyses was performed to examine the impact of low-loading items and cross-loading items on the overall factor structure for the two-factor model. After item removal, which reduced the number of JPI items from 32 to 27, results did not reveal any significant changes. Although there were several small increases ($\sim .05$) in factor loadings and explained variance ($<1\%$), these differences were negligible and further investigation was warranted.

Communality estimates for the 27 items were higher than the original 32 items, ranging from .316 to .695. However, the chi-square statistic for goodness-of-fit

was significant, $\chi^2(298) = 563.63, p < .0001$, indicating that the 27 items may not represent a good fit for the data.

In order to investigate if additional removal of items would represent a good fit for the data, items with communality value of less than .45 were considered candidates for removal (Thompson, 2004; Henson & Roberts, 2006). Items that were not clearly defined within a factor, including redundant items were also candidates for elimination from the remaining 27 items of the JPI. The results revealed that simple structure was attributable to the number of items with communality values of more than .45; the explained variance of the factors increased with the elimination of items with communality value of less than .45. A final series of factor analyses was performed to examine the impact of items with low communality values (i.e., less than .45). After item removal, results did reveal significant changes. There were several increases ($> .200$) in factor loadings and explained variance ($>8\%$), these differences were noted and the two-factor structure with 12 items was retained without further investigation.

The result of ML using two factors instead of seven revealed that practically all factor coefficients loading cleanly on two latent factors corresponding to contextual and task dimensions of job performance. The eigenvalues and percentages of variance explained by these factors were: 4.68 (38.96%) and 1.70 (14.19%), respectively, and together, the two factors explained

53.16% of the variance in the 12 items of the JPI. These factors were rotated by the Varimax procedure.

In order to assess model fit, the chi-square statistic, which is produced as a result of ML extraction with 12 items, was noted. The goodness-of-fit test gives an indication of how well the two factors reproduce the variables' variance-covariance matrix. The result from the present study shows that the reproduced matrix is NOT significantly different from the observed matrix, indicating good fit, $\chi^2(53) = 64.46, p = .13$. Table 6 shows the rotated factor matrix. The Rotated Factor Matrix displays the loadings for each item on each rotated factor, clearly showing the factor structure.

As a general conclusion, the two factors accounted for 53.16% of the variance in the 12 items of the JPI. In the Rotated Factor Matrix table, it can be seen that a clear factor structure is displayed; meaning each item loads predominantly on one factor. For instance, the first three items load virtually exclusively on Factor 1. The rotated factor Matrix coefficients displayed in Table 6, ranged from .56 to .72 with values below .40 in light type. Furthermore, communalities ranged from .40 to .721, $M = .531$. The results from PAF were similar to the ML results in terms of factor extraction and rotation. However, the ML results were preferred because ML produces a chi-square statistic which can be used to assess model fit (Fabrigar et al., 1999). It is important to note that the chi-square statistic for goodness-of-fit is sensitive to large samples (Fabrigar et

al., 1999). For example, in the present study, the chi-square statistic was not significant for small sample (i.e., n = 50 cases), but significant for n = 126 cases.

Table 6

Factor loadings based on Maximum Likelihood Analysis with Varimax Rotation for 12 items from the Job Performance Inventory (JPI) N = 126

Items	Factor 1	Factor 2
1. Inspecting equipment, structures, or materials	.180	.560
2. Operating vehicles, mechanical devices, or equipment	.157	.662
3. Repairing and maintaining electronic equipment	.081	.845
4. Communicating with people outside the organization	.700	.086
5. Guiding, directing, and motivating subordinates	.701	.187
6. Resolving conflicts and negotiating with others	.788	.154
7. Providing consultation and advice to others	.763	.154
8. Evaluating information to determine compliance with standards	.706	.247
9. Organizing, planning, and prioritizing	.695	.182
10. Coaching and developing others	.704	.135
11. Facilitating peer and team performance	.740	.099
12. Persisting with extra enthusiasm when necessary	.633	.155

The factor labels proposed by Motowidlo, Borman and Schmit (1997) suited the extracted factors and were retained. The factor labels proposed by Motowidlo et al. (1997) were contextual performance (Factor 1) and task performance (Factor 2). Internal consistency for each of the scales was examined using Cronbach's alpha. The alphas were high -- .91 for Contextual Performance (9 items), .73 for Task Performance (3 items), and .86 for Overall Job Performance (12 items). No substantial increases in alpha for any of the scales could have been achieved by eliminating more items.

Composite scores were created for each of the two factors, based on the mean of the items which had their primary loadings on each factor. Higher scores indicated high performance score for the specific domain or factor. As depicted in Table 7, contextual performance and task performance are frequent among employees, and hence, a negatively skewed distributions. Descriptive statistics are presented in Table 7. The skewness and kurtosis were within a tolerable range (skewness < 2 and kurtosis < 7) for assuming a normal distribution (Fabrigar et. al., 1999).

Table 7

Descriptive statistics for the two Job Performance factors (N = 126)

	No. of items	M (SD)	Skewness	Kurtosis	Alpha
Cont. Performance	9	4.08 (.72)	-1.21	1.86	.91
Task Performance	3	3.08	-.64	.007	.73
		(1 .19)			

Overall, these analyses indicated that two distinct factors (i.e., contextual and task performance) were underlying employees' job performance ratings to of the JPI items and that these factors were moderately internally consistent. Twenty of the 32 items were eliminated; however the original factor structure proposed by Motowidlo, Borman and Schmit (1997) was retained.

In summary, the dimensionality of the 32 items from the JPI was analyzed using maximum likelihood (ML) factor analysis. Three methods were used to determine the number of factors to extract: the scree test, Velicer's MAP test (Velicer, 1976) and parallel analysis (Horn, 1965) Based on the scree plot (see Figure 1), Borman and Motowidlo (1993) model of job performance, Velicer's MAP test and parallel analysis, two factors were extracted using orthogonal rotation procedure. The rotated solution, as shown in Table 6, yielded two

interpretable factors, contextual performance (factor 1) and task performance (factor 2). Contextual performance accounted for 38.96% of the item variance, and task performance accounted for 14.19% of the item variance. The two factors accounted for 53.16 % of the item variance.

Hypothesis 1. These data provide evidence for the multi-dimensionality of the JPI as proposed by the structure of the job performance model, that job performance is composed of two dimensions or factors (contextual performance and task performance).

Analysis of the JPI's Reliability

Internal Consistency of JPI Scales

Internal consistency estimate of reliability was computed for the Job Performance Inventory. Value for the coefficient alpha was .86, indicating acceptable level of reliability. Furthermore, a measure of internal consistency (Cronbach's alpha) was estimated for each scale prior to elimination of items, as well as for the final model for each scale. The two scales obtained good internal consistency coefficients. The internal consistency measures were .70 or above for both scales (contextual and task performance). The widely-accepted social science cut-off is that alpha should be .70 or higher for a set of items to be considered a scale (DeVellis, 1991; de Vaus, 2002; George & Mallery, 2003).

Hypothesis 2. These data provide evidence for hypothesis 2—that the JPI scales are homogeneous.

Analysis of Content Validity

The content validity of the JPI was evaluated by the SMEs and inter-item correlation. Based on suggestions by SMEs the following items were removed from the initial draft of the JPI (Appendix B) (Q2, Q4, Q6, Q8, Q9, Q10, Q12, Q14, Q16, Q17, Q20, Q22, Q23, Q28, Q32, Q34, Q37 and Q46), as they were not clear or were not accurately capturing the domain of interest. A total of 32 items were retained after 18 items were removed and the remaining 32 items were used to conduct EFA. All inter-item correlations of the 32 items were above .70.

Hypothesis 3: These data and experts' ratings of the JPI items provide evidence for hypothesis 3, and provide support for the content validity of the JPI

Convergent Validity of the JPI

The Role Based Performance Scale (RBPS) from Welbourne et al. (1998) was used to assess the convergent validity of the JPI. The psychometric data from the present sample paralleled the data obtained from previous studies of the RBPS making the results interpretable. In the present study, the correlation between the final revised items of JPI and RBPS was significant, $r = .80, p < .01$. And the internal consistency of the RBPS for the present sample was consistent with previous studies (.95) (Welbourne et.al, 1998). RBPS also significantly correlated with the two factors (dimensions) of the JPI. Table 8 presents correlations, means, standard deviations, and reliabilities of all measures in the present study.

Table 8

Correlations, Means, Standard Deviations and Reliabilities (N = 126)

	1	2	3	4
1 Contextual Performance	-			
2 Task Performance	.73**	-		
3 Overall Performance	.91**	.92**	-	
4 RBPS	.72**	.77**	.80**	-
Mean	4.08	3	4.09	4.08
Standard Deviation	.72	1.7	.60	.62
Cronbach's Alpha	.93	.88	.95	.95

** Correlation is significant at the .01 (2-tailed)

Note: RBPS (Role Based Performance Scale)

Hypothesis 4: These data provide evidence for hypothesis 4, and provide support for the convergent validity of the JPI.

Supervisors' Experience and Overall Job Performance Ratings

A Pearson correlation did not reveal a significant correlation between supervisors' experience and overall job performance ratings, $r = .02$, $n = 126$, $p > .01$, two tails. Previous research predicted a positive correlation between supervisors' experience and job performance (Landy & Farr, 1980). However, research findings regarding supervisor experience have been mixed, with some

studies reporting that supervisors with more experience tend to be more lenient, and others finding no effect (Landy & Farr, 1980).

Hypothesis 5: These data do not provide evidence that supervisors' experience positively influence job performance. The data did reveal almost a zero correlation between supervisors' experience and job performance.

Therefore, hypothesis 5 was not supported

Summary of Results

In summary, all but one research question for the present study were sufficiently addressed and answered via their associated hypotheses. The JPI is multidimensional, reliable and a valid measure of job performance in minority organizations.

CHAPTER IV

Discussion and Conclusion

This study developed and validated the *Job Performance Inventory (JPI)* with a focus on minority organizations and based on the underlying theories of job performance as postulated by Campbell (1990), Borman and Motowidlo (1993) (), and Varela and Landis (2010). The main purpose of this study was to develop a psychometrically sound instrument to measure the job performance of minorities in a minority organization.

In this chapter, the results will be discussed and integrated with the literature. Limitations of the study will be addressed; implications for industrial and organizational psychology will be noted and directions for future research will be suggested.

The Job Performance Inventory (JPI)

Structure of the JPI

The structure of the JPI was evaluated using three strategies: (a) exploratory factor analysis (EFA); (b) scale inter-correlations; and (c) correlation with one related measure (RBPS). First, results from EFA produced a 12-item inventory (see Appendix B, p. 116 for the revised JPI) with the number of items in each of the two scales ranging from 3 - 9. The results of EFA showed evidence of the dimensionality of the JPI. Specifically, evidence from the present research

provides support for the originally derived factor structures of job performance (Borman & Motowidlo, 1993). Overall, the two-factor model was found to be most interpretable, when compared to the seven-factor solution. These results supported Hypothesis 1—that the scales of the JPI are as proposed by the general structure of the job performance model (Motiwidlo & Borman, 1993) that job performance consists of dimensions of work, which include contextual and task components.

Second, the scales of the JPI were moderately inter-correlated (.73). Specifically, 53% of the variance in task performance is accounted for by contextual performance. This finding is consistent with similar studies investigating the relationship between task performance and contextual performance (Borman & Motowidlo, 1997; Griffin, 2000; Van Scotter, 2000; Devonish & Greenidge, 2010)). Organizations are increasingly aware of the role contextual performance plays in task performance and overall performance (Motiwidlo, 2003). An interesting finding was the correlation between overall job performance and contextual performance and the correlation between overall job performance and task performance. These correlation coefficients revealed significant strong relationships. However, the correlation between overall job performance and contextual performance was stronger (.95) than the correlation between overall job performance and task performance (.92). Again, these correlations reflect the importance of incorporating both task and contextual

components of jobs in evaluating employees in minority organizations. For the most part, the scales were related to each other, but distinct, in a manner predicted by the general structure of the job performance model and supported Hypothesis 1. These strong correlations suggest that the observed dimensions of work in the present study are equally measuring the construct of job performance.

A third analysis of the convergent validity supported correlations with the Role Based Performance Scale (Welbourne et al, 1998). These results provided further support for the convergent validity of the JPI. Results were predicted in Hypothesis 4; significant positive correlation occurred between the RBPS and the JPI. From these results, it can be concluded that the RBPS and the JPI are similar constructs. Given that the correlation between the JPI and the Role Based Performance Scale (RBPS) was high, caution should be taken in concluding that both measures are measuring the same construct. If these measures are related, why should one develop another measure of job performance? In developing the RBPS, the researchers (i.e., Welborne et al, 1998) used different employee roles as a method for generating items for their scale. One of the limitations addressed in their study is that employee roles were not exhaustive. The JPI was not based on employee roles.

Models of job performance that incorporated task and contextual performance were used in the present study to develop the items of the JPI. The RBPS has not been validated using minority employees in minority organizations

(Welbourne et al., 1998). The present study provided preliminary findings of the RBPS in a minority organization.

Reliability

Each scale of the JPI had good internal consistency with alpha coefficients ranging from .73 -.91, thus supporting Hypothesis 2 (the scales will be homogeneous). Task and contextual performance had alpha coefficients of .73 and .91 respectively. Task performance had a lower coefficient (.73) than contextual performance (.91). One plausible explanation was that items from the task domain were fewer than the items in the contextual domain. Another explanation was that cross-loaded items were discarded to achieve a simple factor structure, as these cross-loaded items are indication that these factors can be very difficult to differentiate in actual work context. According to Motowidlo (1997), making distinctions between task performance and contextual can be fraught with difficulties as often seen in practice, the lines of demarcation between task and contextual performance can be blurred,

The type of extraction and rotation methods used in EFA can result in different or similar interpretations regarding a factor solution (Costello & Osborne, 2005). For example, in the present study, performing EFA using Maximum Likelihood with Varimax rotation instead of oblique rotation resulted in a similar account regarding factor loadings. Conway and Huffcutt (2003) have suggested using Oblique rotation in EFA in making decisions regarding factor

structure. However, oblique rotation is rare in the social sciences because, although it makes linkage of the variables with the factors clearer, it makes the distinction between factors more difficult (Lance, Butts, & Michels, 2006). Since identifying the meaning of the different factor is one of the main challenges of factor analysis, oblique rotation tends to make matters worse in most cases (Lance et al., 2006).

Content Validity

Content validity evidence demonstrates the degree to which a sample of items represents the total domain, or the total construct of interest. The results from this study of the SMEs ratings of the JPI items' fit with the general structure of the job performance model supported the content validity of the JPI, as predicted in Hypothesis 3. As a check for this procedure, SMEs read all original 50 items of the JPI and suggested candidates for elimination, due to lack of clarity and not measuring the domain of interest. These procedures reflected a refined JPI items for EFA.

Finally, a Pearson correlation did not reveal a significant correlation between supervisors' experience and overall job performance ratings, $r = .02$, $n = 126$, $p > .01$, two tails. Previous research predicted a positive correlation between supervisors' experience and job performance (Landy & Farr, 1980; Befort & Hattrup, 2003). However, research findings regarding supervisor experience have been mixed, with some studies reporting that supervisors with more experience

tend to be more lenient, and others finding no effect (Landy & Farr, 1980).

Evidence from the present research does not provide support there is a positive relationship between supervisors' experience and job performance. Therefore, hypothesis 5 was not supported.

Limitations

There were three limitations with regard to this study. First, one potential source of concern with the current research was the reliance upon asking supervisors to provide job performance ratings of their employees using the JPI. Because context makes a difference in job performance ratings, the ratings obtained from supervisors in a minority setting appeared to be negatively skewed (Harris and Schaubroeck, 1988; Avey, West, Conway, 2008; Atwater et al. 1998; Heidemeier & Moser 2009). Though these problems could not be definitively ruled out with the data obtained from respondents, several steps were taken in an attempt to attenuate inaccuracies. Specifically, participants were informed on the nature of the study, reflecting the idea that data are being collected exclusively for research and developmental purposes (i.e., no administrative consequences) and that all data will be processed anonymously. Both of these steps have been associated with enhancing accuracy of self-ratings (London, 2004).

The second limitation of this study was that the sample size for the current study was 126, which could hinder the generalizability of the findings.

Furthermore, EFA is an internally driven procedure, results may be sample

specific (Costello & Osborne, 2005). However, according to Costello and Osborne (2005), strict rules regarding sample size for exploratory factor analysis have mostly disappeared. Studies have revealed that adequate sample size is partly determined by the nature of the data (Fabrigar et al., 1999; MacCallum, Widaman, Zhang, & Hong, 1999). Gorsuch (1983) maintains that the sample size for an EFA should be at least 100. In general, the stronger the data, the smaller the sample can be for an accurate analysis (Costello & Osborne, 2005). According to Costello and Osborne (2005), “strong data” in a factor analysis means uniformly high communalities without cross loadings, plus several variables loading strongly on each other. Item communalities are considered “high” if they are all .8 or greater (Velicer and Fava, 1998). In the social sciences, more common magnitudes are low to moderate communalities of .40 to .70 (Costello & Osborne, 2005). In the present study, communalities ranged from .40 to .70.

A third limitation of this study was that it did not achieve the goal of random sampling from the target population (i.e., employees in a minority organization). The lack of full representation was a weakness stemming from using a convenience sample, and may have produced biases (e.g., results due to something in common about the participants). For example, while there was diversity in terms of different occupational groups, the sample consisted mainly of student employees, professionals, and females.

Implications for Practice

The importance of identifying dimensions of job performance using current theories or models of job performance cannot be overstated, as one of the important criteria in industrial and organizational psychology is job performance. And measuring job performance with a psychometrically sound instrument that can be validated in the setting in which it will be utilized is equally important (Murphy, 2009). In the present research, the JPI was validated in a minority organization because most performance measures have been validated using majority organizations consisting of white samples (Roth el al., 2003).

A general structure of job performance could be beneficial to current and future practitioners and researchers in industrial and organizational psychology. With various models of job performance reflecting many dimensions of work behavior, Borman and Motowidlo (1993) model of job performance could provide support for or against existing models. Work consists of various dimensions of performance and these dimensions can be measured. Job performance measures could be designed to capture different dimensions of job performance.

Many in the field of industrial and organizational psychology (I/O psychology) and human resource management (HRM) feel that job performance is a multidimensional construct (Borman & Motowidlo, 1993; Campbell, Gasser, & Oswald, 1996). Borman and Motowidlo (1993) model of job performance, consisting of task performance and contextual performance has received the most

attention. However, research conducted by Befort and Hatstrup (2003) revealed three factors underlying the performance domain, namely task performance, extra effort, and compliance. Consequently, Borman and Motowidlo (1993) model of job performance should be further investigated.

Job performance models based on current theories of job performance and consisting of psychometrically sound instruments could help guide practitioners, researchers and academics in the complicated process of assessing job related behaviors. Within the area of I/O psychology the literature is replete with job performance as a multidimensional construct. There does not seem to be any consensus as to how many dimensions they are in job performance. Reliable and valid instruments of job performance, which capture various dimensions of work, are desperately needed within I/O psychology and HRM. One advantage of the JPI is that it has items designed to measure different dimensions of job performance consisting of task performance and contextual performance.

Borman and Motowidlo (1993) model of job performance could potentially be beneficial to the field of I/O psychology and HRM. However, there is much work to be done. This current research is promising in that it provides support for the reliability and convergent validity for the JPI with regard to this sample. From a management perspective, the JPI offers minority organizations a user-friendly and a valid measure of job performance for evaluating minority

employee performance. Furthermore, it is a concise measure, which makes it easy to implement.

Directions for Future Research

Although there is a plethora of research validating job performance measures in majority organizations. The present research is a clarion call for organizational researchers to use this instrument in other settings in which minority populations are present. Previous findings documenting performance measures have been discouraging because researchers failed to use a suitable sample of minorities in their studies (Mckay & McDaniel, 2006; Marloes, Dijk, & Knippenberg, 2009). Accordingly, Murphy (2010) suggests that organizational researchers should validate an instrument in its intended environment. Against this backdrop, it is incumbent for organizational researchers to conduct job performance research using minority populations.

Job Performance researchers have in recent years investigated the dimensions of work and the organizational literature is replete with studies reflecting different dimensions of work, (e.g., Hurt & Donovan, 2000; Hoffman, Blair, Meriac, & Woehr, 2007; Johnson & Meade, 2010), and focusing on two factors or dimensions, namely task and contextual performance. In contrast, several years ago, Welbourne et. al. (1998) investigated the performance construct and identified five factors of the job performance which closely matched task and contextual performance, but the findings in the research have yet to be replicated

in other settings until now. Specifically, Welbourne et. al. (1998) developed the Role Based Performance Scale (RBPS), which was used in the present study to present convergent validity information of the JPI. It is important to note that the RBPS scale significantly correlated with the JPI in the manner predicted by one of the hypothesis. However, the RBPS is problematic to the extent that the number of identifiable of list of roles in any organization cannot be exhaustive. The point being made here is that it is incumbent upon organizational researchers to develop a psychometric sound instrument to capture various dimensions of work.

The issue of sample size in an EFA is an important consideration. In the present study, the sample size was 126 and five or more items tapped the same factor and each of those items was closely related to the factor in question. According to MacCallum et al., if there are a good number of items per latent factor (i.e., preferably five or more items tapping the same factor) and each of those items are closely related to the factor in question, a sample size of 100-200 may be sufficient. These conditions have not been compromised in the present study. However, future researchers should obtain larger sample as this would be necessary to obtain a generalizable factor solution (Matsunaga, 2010).

The researcher attempted to offer a seven factor solution of the JPI in the present study but results were difficult to interpret and hence the choice of a two-factor solution, based on existing models of job performance (e.g., Campbell, 1990; Motiwidlo and Borman, 1993) and result of the scree plot in the present

study, Velicer's MAP test, and parallel analysis which indicated a two-factor solution. Consequently, future studies should be conducted to test or verify the two-factor model of job performance of the JPI with a second sample taken from the same population or from a sample taken from a different minority organization. The proposed analysis using CFA will then verify the findings from the present study.

Conclusion

Although this is a preliminary study of the development and validation of the JPI, it makes a substantive contribution to research on minority performance measurement. In addition to providing a theory grounded measure of job performance in a minority organization, it offers a reliable and valid performance method for researchers as well as for practitioners. It is hoped that the results of this study will encourage the use of the JPI in a minority organization and other organizations.

While many theorists have asserted that job performance of minority employees can be attributed to cognitive ability factors and setting (Coleman & Borman, 2000; Mckay & McDaniel, 2006; Hoffman, Blair, Meriac, & Woehr, 2007), the use of current job performance models (general structure of the job performance model) as the theoretical foundation for this research into job performance of minority employees provides a compelling and fresh approach to the performance domain. As a result of the present research, evidence was

accumulated that provides answers to the dimensionality of the JPI. More specifically, this research was grounded in the existing theory and research on modeling the job performance domains and built on the foundation of a general structure of job performance (Borman & Motowidlo, 1997; Varela & Landis, 2010).

Based on statistical analysis of data obtained from respondents in this study, it is important to note that the JPI is a reliable and valid instrument for use in minority organizations. As Murphy (2009) stated, the validation of an instrument or test reflects its use and purpose and should be validated in the setting in which it is planned to be used.

References

- Avey, J. B., West, B. J., Crossley, C. D. (2008). The Association between ethnic congruence in The supervisor-subordinate dyad & subordinate organizational position and salary. *Journal of Occupational Organizational Psychology, 81*, 551-566.
- Barrick, M.R., & Mount, M.K. (1991). The big five personality dimensions and Job performance: A Meta-Analysis. *Personnel Psychology, 44*, 1-27.
- Barrick, M.R., Mount, M.K., & Judge, T. A. (2001). Personality and performance and the beginning of the new millennium: What do we know and where do we go next. *International Journal of Selection and Assessment, 9(1-2)*, 9-30.
- Befort, N., & Hatrup, K. (2003). Valuing task and contextual performance: Experience, job roles, and ratings of the importance of job behaviors. *Applied H.R.M. Research, 8(1)*, 17-32.
- Borman, W.C., & Motowidlo, S.J., (1997). Task performance and contextual performance: The Meaning for performance selection research. *Human Performance, 10(2)*, 99-109.
- Borman, W.C., & Motowidlo, S.J. (1993). Expanding the criterion domain to include elements of contextual performance. In N. Schmitt & W. C. Borman (Eds.), *Personnel selection in organizations* (pp. 71-98). San Francisco, CA: Jossey Bass.

- Bryant, F. B., & Yarnold, P. R. (1995). Principal components analysis and exploratory and confirmatory factor analysis. In L. G. Grimm & P. R. Yarnold (Eds.), *Reading and understanding multivariate statistics* (pp. 99-136). Washington, DC: American Psychological Association
- Campbell, J. P., Gasser, M. B., & Oswald, F. L. (1996). The substantive nature of job performance variability. In K. R. Murphy (Ed.), *Individual differences and behavior in organizations* (pp. 258-299). San Francisco: Jossey-Bass.
- Campbell, J.P. (1990). Modeling the performance prediction problem in industrial and organizational psychology. In M. D. Dunnette & L. M. Hough (Eds.), *Handbook of Industrial and Organizational Psychology* (2nd Ed., Vol. 1, pp. 687-732). Palo Alto, CA: Consulting Psychologists Press.
- Campbell, J.P., McCloy, R.A., Oppler, S.H., & Sager, C.E. (1993). A theory of performance. In N. Schmitt & W. C. Borman (Eds.), *Personnel Selection in Organizations* (pp. 35-70). San Francisco, CA: Jossey Bass.
- Child, D. (1990). *The essentials of Factor analysis*, second edition. London: Cassel Educational Limited.
- Coleman, V.I., & Borman, W.C. (2000). Investigating the underlying structure of citizenship performance domain. *Human Resource Management Review*, 10, 25 - 44.
- Conway, J. M. (2000). Managerial performance development constructs and personality correlates. *Human Performance*, 13, 23-46.
- Conway, J. M., & Huffcutt, A. I. (2003). A review and evaluation of exploratory

- factor analysis in organizational research. *Organizational Review Methods*, 6(2), 147-168.
- Costello, A. B. & Osborne, J. W. (2005). Best practices in exploratory factor analysis: four recommendations for getting the most from your analysis. *Practical Assessment Research & Evaluation*, 10(7). Available online: <http://pareonline.net/getvn.asp?v=10&n=7>
- DeVellis, R. F. (1991). *Scale Development: Theory and Applications*. Newbury Park, California: Sage Publications.
- Devonish, D., & Greenidge, D. (2010). The effect of organizational justice on contextual performance, counterproductive work behavior, and task performance: Investigating the moderating role of ability-based emotional intelligence. *International Journal of Selection and Assessment*, 18, 75-86.
- Fabrigar, L. R., Wegener, D. T., MacCallum, R. C., & Strahan, E. J. (1999). Evaluating the use of exploratory factor analysis in psychological research. *Psychological Methods*, 4(3), 272-299.
- Fowler, F. J. (2002). *Survey research methods* (3rd ed.). [Applied Social Research Methods Series, Vol.1]. Thousand Oaks, CA: Sage Publication.
- French, B. F., & Oakes, W. (2004). Reliability and validity evidence for the institutional integration scale. *Educational and Psychological Measurement*, 64, 88-98.

- Fruchter, B. (1954). *Introduction to factor analysis*. D. Van Nostrand Company. Toronto, Canada.
- Garson, G. D. (2006). *Reliability analysis: Key concepts and terms*. Retrieved August 12, 2006 <http://www2.chass.ncsu.edu/garson/pa765/reliab.htm>
- Green, B.F., & Wing, H. (1988). Analysis of job performance data: Report of a workshop. *National Academy Press: Washington, DC*.
- Griffin, M. A. (2000). The contribution of task performance and contextual performance to effectiveness: Investigating the role of situational constraints. *Applied Psychology: An International Review, 49*, 517-533.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika, 16*, 297-334.
- Goffin, R.D., Gellatly, I.R., Paunonen, S.V., Jackson, D.N. & Meyer, J.P. (1996). Criterion validation of two approaches to performance appraisal: The behavioral observation scale and the relative percentile method. *Journal of Business and Psychology, 11(1)*, 23-33.
- Gorsuch, R. L. (1983). *Factor analysis* (2nd ed.). Hillsdale, NJ: LEA
- Hayton, J. C., Allen, D. G.; & Scarpello, V. (2004). Factor Retention Decisions in Exploratory Factor Analysis: A Tutorial on Parallel Analysis. *Organizational Research Methods, 7*, 191-205.
- Henson, R. K., & Roberts, J. K. (2006). Use of exploratory factor analysis in published research. Common errors and some comment on improved practice. *Educational and Psychological Measurement, 66*, 393-416.

- Hoffman, B.J., Blair, C.A., Meriac, J.P., & Woehr, D.J., (2007). Expanding the criterion domain? A quantitative review of the OCB Literature. *Journal of Applied Psychology, 92* (2), 555-566.
- Horn, J. (1965). A rationale and test for the number of factors in factor analysis. *Psychometrika, 30*, 179 - 185.
- Hurt, G.M., & Donovan, J.J. (2000). Personality and job performance: The Big Five revisited. *Journal of Applied Psychology, 85* (66), 869-879.
- Johnson, E. C., & Meade, A. W. (2010). A multi-level investigation of overall job performance ratings. *Paper presented in the 25th Annual Meeting of the Society for Industrial and Organizational Psychology, Atlanta, GA.*
- Kaiser, H. F. (1974). An index of factorial simplicity. *Psychometrika, 39*, 31-36.
- Kaiser, H. F. (1960). The application of electronic computers to factor analysis. *Educational and Psychological Measurement, 20*, 141-151.
- Kavanagh, M.J., Borman, W.C., Hedge, J.W., & Gould, R.B. (1987). *Job performance measurement in the military: A classification scheme, literature review and directions for research.* Air Force Human Resources Laboratory Report, TR 87-15.
- Lance, C. E., Butts, M. M., & Michels, L. C. (2006). The sources of four commonly reported cut off criteria: What did they really say? *Organizational Research Methods, 9* (2), 202-220.
- Ledesma, R. D. , & Valero-Mora, D. (2007). Determining the number of factors to retain in EFA: An easy-to-use computer program for carrying out parallel analysis. *Practical Assessment Research & Evaluation, 12*(2).

Available online: <http://pareonline.net/getvn.asp?v=10&n=7>

- MacCallum, R. C., Widaman, K. F., Zhang, S. B., & Hong, S. H. (1999). Sample size in factor analysis. *Psychological Methods*, 4(1), 84-99.
- Marloes, L. E., Dijk, H., & van Knippenberg, K. (2009). More Than Meets the Eye: A Meta- Analysis of work group diversity and performance. *Paper presented at the Annual Meeting of the Academy of Management, Chicago, IL.*
- Matsunaga, M. (2010). How to factor-analyze your data right: Do's, Don'ts, and how-to's. *International Journal of Psychological Research*, 3 (1), 97-110.
- Mckay, P. F., & McDaniel, M. A. (2006). A reexamination of the Black-White mean differences in work performance: More data, more moderators. *Journal of Applied Psychology*, vol. 91, 3, 538-554.
- McMillan, J. H. & Schumacher, S. (1993). *Research in education: A conceptual introduction* (3rd ed.). New York: HarperCollins.
- Moore, G. (1983). *Developing and evaluating educational research*. Boston: Little, Brown and Co.
- Motowidlo, S.J. (2003). Job performance. In W.C. Borman, D. R. Ilgen & R.J. Klimoski (Eds.), *Handbook of Psychology: Industrial and Organizational Psychology (Vol. 12, pp. 39-53)*.
- Motowidlo, S J., Borman, W.C., & Schmit, M.J. (1997). A theory of individual differences in task and contextual performance. *Human Performance*, 10 (2), 71-83.

- Motowidlo, S J., & Van Scotter, J.R. (1994). Evidence that task performance should be distinguished from contextual performance. *Journal of Applied Psychology, 79*, 475- 580.
- Muchinsky, P.M. (2006). *Psychology Applied to work*. Belmont, CA: Thomson
- Murphy, K.R. (2009). Validity, validation and values. *The Academy of Management Annals, 3 (1)*, 421-461.
- Murphy, K.R. (2008). Explaining the weak relationship between job performance and ratings of job performance. *Industrial and Organizational Psychology: Perspectives on Science and Practice, 1*, 148-160.
- Murphy, K.R., & Cleveland, J.N. (1995). *Understanding performance appraisal: Social, organizational, and goal-based perspective*. Thousand Oaks, CA: Sage
- Mundfrom, D.J., Shaw, D.G., & Tian, L.K. (2005). Minimum sample size recommendations for conducting factor analysis. *International Journal of Testing, 159-168*.
- O'Connor, B. (2000). SPSS and SAS programs for determining the number of components using parallel analysis and Velicer's MAP test. *Behavior Research Methods, Instruments & Computers, 32*, 396-402.
- Netemeyer, R. G., Bearden, W. O., & Sharma, S. (2003). *Scaling procedures: Issues and applications*. Thousand Oaks, CA: Sage Publications.
- Nunnally, J. (1978). *Psychometric theory*. New York: McGraw Hill.
- Patten, M. L. (2002). *Understanding research methods: An overview of the essentials (3rd ed.)*. Los Angeles: Pyrczak.

- Rietveld, T. & Van Hout, R. (1993). *Statistical Techniques for the Study of Language and Language Behaviour*. Berlin – New York: Mouton de Gruyter.
- Roth, P. L., Bobko, P., & Huffcutt. (2003). Ethnic group differences in measures of job performance. *Journal of Applied Psychology*, 88 (4), 694-706.
- Varela, O. E., & Landis, R. S. (2010). A general structure of job performance: Evidence from two studies. *Journal of Business and Psychology*, 25, 625-638. DOI 10.1007/s10869-010-9155-8.
- Velicer, W. F. (1976). Determining the number of components from the matrix of partial correlations. *Psychometrika*, 41, 321-327.
- Velicer, W. F., & Fava, J. L. (1998). Effects of variable and subject sampling on factor pattern recovery. *Psychological Methods*, 3(2), 231-251.
- Velicer, W. F., & Jackson, D.N. (1990). Component Analysis Versus Common Factor-Analysis - Some Further observations. *Multivariate Behavioral Research*, 25(1), 97-114.
- Thompson, B. (2004). *Exploratory and confirmatory factor analysis: Understanding concepts and applications*. Washington, DC: American Psychological Association.
- Thompson, B., & Daniel, L. G. (1996). Factor analytic evidence for the construct validity of scores: A historical overview and some guidelines [Electronic version]. *Educational and Psychological Measurement*, 56, 197-208.
- Van Scotter, J. R. (2000). Relationship of task performance and contextual

performance with turnover, job satisfaction, and affective commitment.

Human Resource Management Review, 10, 79-95.

Viswesvaran, C. (2001). Assessment of individual job performance: A review of

the past century and a look ahead. In N. Anderson, D. S. Ones, H. K.

Sinangil, & C. Viswesvaran (Eds.), *Handbook of industrial, work, and organizational psychology* (Vol.1, pp. 110-126). London: Sage.

Viswesvaran, C. (1993). *Modeling job performance: Is there a general factor?*

Unpublished doctoral dissertation, University of Iowa.

Welbourne, T.M., Johnson, D.E., & Erez, A. (1998). The role-based performance

scale: Validity analysis of a theory-based measure. *Academy of*

Management Journal, 4, 540- 555.

Zillmer, E. A., & Vuz, J. K. (1995). Factor analysis with Rorschach data. In J.E.

Exner (Ed.) *Issues and methods in Rorschach research*. California: Sage Publications.

Zwick, W. R. & Velicer, W. F. (1986). Comparison of five rules for determining

the number of components to retain. *Psychological Bulletin*, 99, 432-442.

Appendix A
Survey Materials

Survey Introduction and Instruction Letter

[Date]

Greetings:

You are invited to participate in a doctoral research study involving the development of the Job Performance Inventory for minority organizations. This research is being conducted through Alliant International University in San Diego. This study is being carried out by the primary researcher Peter Metofe under the supervision and direction of Dr. John Kantor . The study is being conducted across select minority organizations in south east Texas.

To participate in the study, please take 15 minutes to complete the attached survey questions. Participation in this research is **completely confidential** and only the researchers conducting this study will have access to individual answers. No information identifying you individually will be asked. To participate in this study, please complete the following survey and place the completed survey in the envelope provided, seal the envelope, and drop into the box marked “Completed Surveys Here” which is located in your break area.

Thank you for your participation in this study. If you have any questions please contact the lead researcher in this study Peter Metofe at 858-722-6962

Thank you!

All surveys will need to be completed by **insert date**

Peter Metofe

INFORMED CONSENT AGREEMENT

Organizational Psychology Division, San Diego at Alliant International
University

10455 Pomerado Road
San Diego, CA 92131
Institutional Review Board, 1-858-635-4448

DEVELOPMENT AND VALIDATION OF THE JOB PERFORMANCE INVENTORY FOR MINORITY ORGANIZATIONS

You are being asked to participate in a research study. However, before you give your consent to be a volunteer, we want you to read the following and ask as many questions as necessary to be sure that you understand what your participation will involve.

INVESTIGATORS

Peter A. Metofe PhD, Candidate
pmetofe@alliant.edu 858 722-6962
John Kantor, PhD, Chair

PURPOSE OF THE RESEARCH

The purpose of this study is to develop and validate the *Job Performance Inventory* (JPI) for minority organizations. This research will shed light on dimensions of job performance ratings of minority employees in a minority organization.

DURATION OF PARTICIPATION IN THE RESEARCH

You will be involved in this study for a period of up to 30-minutes. A total of approximately 250 individuals will participate in this study.

PROCEDURES TO BE FOLLOWED DURING THE RESEARCH

If you agree to be in this study, you will be asked to fill out a questionnaire that may take up to 30 -minutes to complete. You may be informed of any significant new findings developed during the course of the research.

EXPERIMENTAL PROCEDURES

The treatment and procedures are the kind that would be standard psychological practice. The experimental part is that we are collecting information and comparing it with information from other individuals.

RISKS

The risk is minimal and is not greater than that ordinarily encountered in daily life or during the performance of routine physical or psychological examinations or tests.

BENEFITS OF THE RESEARCH

This research departs from other research to the extent a job performance measure is being developed and validated in a setting in which it will be used and may help the researchers learn more about minority job performance ratings. The findings of this research may lead to the emergence of a two dimensions of job performance as a reflection of the overall job performance of minority employees.

ALTERNATIVES TO THIS RESEARCH

There is no alternative treatment other than what has been described. However, you do not have to participate in this research.

CONFIDENTIALITY

You have a right to privacy, and all information identifying you will remain confidential, unless otherwise required by law. The results of this study may be published in scientific journals, or be presented at a professional conference as long as you are not identified and cannot reasonably be identified from it. Your answers will be combined with others and a summary of research findings will be provided to your organization upon completion of the research. You may receive a copy of the findings upon request.

QUESTIONS ABOUT THE RESEARCH

Should you have any questions about the research or any additional concerns, please contact Peter Metofe at 858-722-6962 during normal working hours.

SUBJECT COST or COMPENSATION FOR PARTICIPATION

There is no cost for your participation in this study.

PREVIOUS RESEARCH PARTICIPATION

I have participated in the following research studies within the last three months:

SUBJECT RIGHTS AND RESEARCH WITHDRAWAL

Your participation in this study is voluntary. You may refuse to participate or withdraw once the study has started. You will not lose any benefits to which you are otherwise entitled nor will you be penalized.

We have tried to explain all the important details about the study to you. If you have any questions that are not answered here, contact the primary investigator, Peter Metofe at 858-722-6962 during normal working hours who will be happy to give you more information.

SIGNATURE AND ACKNOWLEDGMENT (this section must be on the same page as signatures)

My designation below indicates that I have read the above information and I have had a chance to ask questions to help me understand what my participation will involve. I agree to participate in the study until I decide otherwise. I acknowledge having received a copy of this agreement and a copy of the **Participant's Bill of Rights**. I have been told that by agreeing to this consent form I am not giving up any of my legal rights.

Please indicate whether you choose to participate in this study and consent for your responses to be used for research purposes. Check the appropriate blank below:

____ **I have read and understand the above information and agree to participate.**

By completing the surveys I am consenting to participation.

____ **I do not wish to participate.**

Peter A. Metofe

858-722-6962

Researcher's Name

Contact phone number

Researcher's Signature

Date

John Kantor, Ph.D.

(858) 635-4413

Typed Name of Supervisor or Chair

Contact phone number

For Research Office Only:

IRB#

This study is valid from:

Until

PARTICIPANT BILL OF RIGHTS

As a participant in a research study, or as someone who is requested to give consent on behalf of another for such participation, you have certain rights and responsibilities. It is important that you fully understand the nature and purpose of the research and that your consent be offered willingly and with complete understanding. To aid in your understanding, you have the following specific rights:

1. To be informed of the nature and purpose of the research in which you are participating.
2. To be given an explanation of all procedure to be followed.
3. To be given a description of any risks or discomforts which can be reasonably expected to occur.
4. To be given an explanation of any benefits which may be expected to come to the subject as a result of this research.
5. To be given an opportunity and encouraged to ask any questions concerning the study or the procedures involved in this research.
6. To be made aware that consent to participate in the research may be withdrawn and that participation may be discontinued at any time.
7. To be given a copy of the signed and dated written consent form if requested.
8. To not be subjected to any element of force, fraud, deceit, duress, coercion, or any influence in reaching your decision to consent or to not consent to participate in the research.

If you have any further questions or concerns about your rights as a research subject, please contact Peter Metofe at 858-722-6962.

Demographic Questions

In this section you are asked to answer some questions about your personal characteristics and employment history Please place a check in the appropriate boxes

1. What is your gender?

- Male
 Female

2. What is your age?

- 16 to 21
 22 to 30
 31 to 40
 41 to 50
 Older than 50

3. What is the highest level of education you have completed?

- Primary School
 High School
 Some College
 2-Year College Degree (Associates)
 4-Year College Degree (BA , BS)
 Postgraduate

4. What is your race?

- Black
 White
 Hispanic or Latino
 Asian-Pacific
 Native American
 Other _____

5. Have you any formal training in performance appraisal?

Yes

No

6. At Work, what is your position?:

General or Assistant Manager

Shift Manager

Line Manger or Assistant Line Manager

Regular Employee

7. How many years have you been with this organization?

Less than 1 year

1 to 2 years

3 to 5 years

5 to 10 years

More than 10 years

Appendix B

INITIAL DRAFT OF THE JOB PERFORMANCE INVENTORY (JPI)

JOB PERFORMANCE INVENTORY

2011

This self-reported questionnaire is designed to assist the user in making accurate ratings of job performance. Please be sure to provide responses to each item by checking excellent, good, satisfactory, needs some improvement, or needs much improvement. The intended users are supervisors, managers, administrators, human resource specialists, and trainers involved in conducting performance evaluations.

JOB PERFORMANCE INVENTORY (JPI)

You are invited to participate in a research study where we are interested in your honest thoughts about yourself and the ratings you assigned to each employee. Please indicate the first response that comes to mind when reading the statement. Complete this survey for each employee in your department or division.

Instruction: Please mark your answers directly on this survey by checking the appropriate circle.

1. Getting information
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
2. Documenting/recording information
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
3. Processing information
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
4. Identifying objects, actions, and events
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
5. Judging the qualities of objects, services, or people
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
6. Interpreting the meaning of information for others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
7. Analyzing data or information
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

8. Drafting, laying out, or specifying technical devices, parts, and equipments
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
9. Inspecting equipment, structures, or materials
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
10. Estimating the quantifiable characteristics of products, events, or information
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
11. Operating vehicles, mechanized devices, or equipment
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
12. Repairing and maintaining mechanical equipment
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
13. Repairing and maintaining electronic equipment
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
14. Performing general physical activities
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
15. Handling and moving objects
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
16. Working with computers
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
17. Controlling machines and processes
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

18. Communicating with supervisors, peers, or subordinates
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
19. Communicating with people outside the organization
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
20. Selling or influencing others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
21. Establishing and maintaining interpersonal relationships
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
22. Performing for or working directly with the public
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
23. Making decisions and solving problems
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
24. Guiding, directing, and motivating subordinates
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
25. Resolving conflicts and negotiating with others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
26. Developing objectives and strategies
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
27. Developing and building teams
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

28. Training and teaching others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
29. Providing consultation and advice to others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
30. Evaluating information to determine compliance with standards
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
31. Coordinating the work and activities of others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
32. Monitoring processes, materials, or surroundings
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
33. Performing administrative activities
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
34. Staffing organizational units
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
35. Scheduling work and activities
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
36. Organizing, planning, and prioritizing work
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
37. Monitoring and controlling resources
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

38. Assisting and caring for others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
39. Coaching and developing others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
40. Updating and using relevant knowledge
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
41. Thinking creatively
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
42. Productivity of work output
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
43. Demonstrating effort
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
44. Facilitating peer and team performance
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
45. Volunteering to carry out task activities that are not formally part of the job
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
46. Following organizational rules and procedures
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
47. Endorsing, supporting, and defending organizational objectives
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

48. Persisting with extra enthusiasm when necessary
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
49. Job-specific task proficiency
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
50. Overall Job Performance
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

Note: After the appropriate analyses, including factor analysis, the final JPI document would be developed: The number of items in the final draft will be predicated upon expert analysis and further statistical analysis.

JOB PERFORMANCE INVENTORY (JPI) (Revised Version)

You are invited to participate in a research study where we are interested in your honest thoughts about yourself and the ratings you assigned to each employee. Please indicate the first response that comes to mind when reading the statement. Complete this survey for each employee in your department or division.

Instruction: Please mark your answers directly on this survey by checking the appropriate circle.

1. Inspecting structures
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
2. Operating vehicles and Machinery
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
3. Repairing systems
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
4. Coaching and developing others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
5. Communicating with people outside the organization
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
6. Guiding, directing, and motivating subordinates
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
7. Resolving conflicts and negotiating with others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

8. Providing consultation and advice to others
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
9. Evaluating information to determine compliance with standards
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
10. Organizing, planning, and prioritizing work
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
11. Facilitating peer and team performance
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
12. Persisting with extra enthusiasm when necessary
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

Appendix C

PANEL EXPERTS EVALUATION FORM

Enclosed is the Job Performance Inventory (JPI). Please evaluate each statement in two ways.

The group of numbers deals with the clarity of the statement.

Please circle your response.

- 1 The wording of the statement is not at all clear.
- 2 The wording of the statement is somewhat clear
- 3 The statement is wording clearly

The group of letter deals with the validity of the statement.

Please circle your response.

- N Not a valid statement – delete this statement completely
- Q Questionable – consider deleting or rewarding this statement
- V Valid – definitely keep this statement

EXAMPLE	1. Doing things that help others which is not part of work				
	5 = Excellent				
	4 = Good				
<u>Clarity</u>	<u>Content</u>	3 = Satisfactory			
1 2 3	N Q V	2 = Needs Some Improvement			
		1 = Needs much Improvement			

Appendix D

THE ROLE-BASED PERFORMANCE SCALE (Welbourne, 1998)

This self-reported questionnaire is designed to assist the user in making accurate ratings of job performance. Please be sure to provide responses to each item by checking excellent, good, satisfactory, needs some improvement, or needs much improvement. The intended users are supervisors, managers, administrators, human resource specialists, and trainers involved in conducting performance evaluations.

THE ROLE-BASED PERFORMANCE SCALE (RBPS)

You are invited to participate in a research study where we are interested in your honest thoughts about yourself and the ratings you assigned to each employee. Please indicate the first response that comes to mind when reading the statement. Complete this survey for each employee in your department or division.

Instruction: Please mark your answers directly on this survey by checking the appropriate circle.

1. Quantity of work output
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
2. Quality of work output
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
3. Accuracy of work
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
4. Customer service provided (internal and external)
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
5. Obtaining personal career goals
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
6. Developing skills needed for his/her future career
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
7. Making progress in his/her career
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
8. Seeking out career opportunities

5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

9. Coming up with new ideas
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
10. Working to implement new ideas
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
11. Finding improved ways to do things
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
12. Creating better processes and routines
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
13. Working as part of a team or work group
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
14. Seeking information from others in his/her group
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
15. Making sure his/her work group succeeds
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
16. Responding to the needs of others in his/her work group
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
17. Doing things that help others when it's not part of his/her job
5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable
18. Working for the overall good of the company

5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

19. Doing things to promote the company

5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

20. Helping so that the company is a good place to be

5 = Excellent, 4 = Good, 3 = Satisfactory, 2 = Needs Improvement, 1 = Needs much Improvement, 0 = Not Applicable

Appendix E

PARRALLEL ANALYSIS

Run MATRIX procedure:

PARALLEL ANALYSIS:

Principal Components & Raw Data Permutation

Specifications for this Run:

Ncases 126
Nvars 32
Ndatsets 1000
Percent 95

Raw Data Eigenvalues, & Mean & Percentile Random Data Eigenvalues

Root	Raw Data	Means	Prntyle
1.000000	12.648360	2.097604	2.256829
2.000000	2.218518	1.933255	2.045742
3.000000	1.621116	1.813488	1.911692
4.000000	1.386103	1.714998	1.798048
5.000000	1.235719	1.626158	1.702367
6.000000	1.123687	1.544412	1.612405
7.000000	1.015371	1.468286	1.532401
8.000000	.942048	1.399127	1.457388
9.000000	.810951	1.331120	1.384756
10.000000	.753448	1.270648	1.325809
11.000000	.732872	1.210505	1.267164
12.000000	.703882	1.153389	1.203311
13.000000	.627094	1.097822	1.145008
14.000000	.590983	1.046518	1.092449
15.000000	.557710	.995350	1.041689
16.000000	.533022	.946893	.993256
17.000000	.494811	.898539	.942634
18.000000	.454564	.851776	.894903
19.000000	.427006	.807825	.851613
20.000000	.386893	.763465	.806643
21.000000	.356005	.721184	.761885
22.000000	.348150	.678221	.719329

Appendix E

Continued

23.000000	.304008	.637909	.678285
24.000000	.295860	.597787	.637556
25.000000	.280067	.559279	.596828
26.000000	.247136	.521855	.559121
27.000000	.176844	.484207	.521618
28.000000	.163685	.445161	.484118
29.000000	.158205	.407965	.443353
30.000000	.149207	.369006	.405865
31.000000	.135761	.328012	.366323
32.000000	.120913	.278239	.322281

----- END MATRIX -----

Appendix F

Velicer's Minimum Average Partial (MAP) Test:

Eigenvalues

12.6484
2.2185
1.6211
1.3861
1.2357
1.1237
1.0154
.9420
.8110
.7534
.7329
.7039
.6271
.5910
.5577
.5330
.4948
.4546
.4270
.3869
.3560
.3482
.3040
.2959
.2801
.2471
.1768
.1637
.1582
.1492
.1358
.1209

Average Partial Correlations

	squared	power4
.0000	.1484	.0298

Appendix F

Continued

1.0000	.0184	.0010
2.0000	.0172	.0009
3.0000	.0175	.0008
4.0000	.0178	.0009
5.0000	.0180	.0008
6.0000	.0187	.0009
7.0000	.0196	.0010
8.0000	.0208	.0012
9.0000	.0229	.0016
10.0000	.0256	.0019
11.0000	.0278	.0024
12.0000	.0306	.0028
13.0000	.0335	.0035
14.0000	.0363	.0040
15.0000	.0409	.0053
16.0000	.0449	.0061
17.0000	.0499	.0068
18.0000	.0547	.0082
19.0000	.0597	.0097
20.0000	.0661	.0118
21.0000	.0758	.0161
22.0000	.0850	.0189
23.0000	.0980	.0251
24.0000	.1101	.0298
25.0000	.1278	.0379
26.0000	.1531	.0536
27.0000	.1868	.0776
28.0000	.2385	.1157
29.0000	.3288	.1907
30.0000	.4931	.3645
31.0000	1.0000	1.0000

The smallest average squared partial correlation is
.0172

The smallest average 4rth power partial correlation is
.0008

Appendix F

Continued

The Number of Components According to the Original (1976) MAP Test is
3

The Number of Components According to the Revised (2000) MAP Test is
2

----- END MATRIX -----