Toward A Proposed Cross-Cultural Core Competency Model: Exploring Consensus And

Confirmation Of Competency Model Ratings Across The Globe

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ABSTRACT

The following study can be split into two research questions regarding competency models. The first question explores the accuracy of competency importance ratings by examining if high level organizational members have lower reliability in their competency importance ratings as well as examining how differing levels of job experience across seven industries factors into importance ratings. The second question explores the prospect of a cross-cultural core competency model with two core competencies: *Leadership* and *Performance*. Both of these questions are investigated using data obtained in the summer of 2015 from 34 countries. The large sample of culturally diverse competency raters had varying levels of experience and came from various roles ranging from college students, alumni, faculty and staff members, administrators, as well as external employers. In order to further the science of competency modeling, the study explored error variance associated with job complexity, rater experience, and industry. A set of hypotheses examined accuracy of competency importance ratings such that as the complexity of a job increases, the reliability of ratings will decrease and raters with higher levels of experience will have more accurate and reliable ratings that would hold across various occupational sectors. However, there was no evidence found to support these hypotheses as methodological issues such as range restriction reduced the ability to find significant differences among various groups. Further, the study uses assessment center research to propose a core competency model with two main orientations: Leadership and Performance. Structural equations modeling analyses did find that a two-factor competency model was a better fit than a six-factor model, but no evidence of discriminant validity was found between the two core factors. This theoretical competency model was also tested across multiple countries to determine invariance. Multi-group factor analysis results did not yield any evidence to support that the cross-cultural core competency exists. Future research and practical implications of competency model rating methodology is discussed.

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INTRODUCTION

The path to understanding the origins, purpose, and practice of competency modeling has been a circuitous one. Researchers and practitioners have attempted to delineate the characteristics of competency modeling versus job analysis (Lievens, Sanchez, & De Corte, 2004; Martone, 2003; Rodriguez, Patel, Bright, Gregory, & Gowing, 2002; Green, 1999; Schippmann et al., 2000). Competency modeling is defined as "…collections of knowledge, skills, abilities, and other characteristics (KSAOs) that are needed for effective performance in the jobs in question" (Campion, et al., 2011, p. 226). Competency modeling has become very prevalent in organizational contexts. According to Stone, Webster, and Schoonover (2013), it is estimated that up to 80% of Fortune 500 companies use a competency model for various Human Resource practices. Despite the similarities to traditional job analysis, there is growing evidence that competency modeling can provide incremental benefits above and beyond those offered by job analysis alone. One noteworthy difference is how the two procedures are conceptualized. Job analysis operates at the task level and focuses primarily on "what" behaviors are accomplished for successful performance on the job whereas competency modeling operates at the worker level by identifying "how" work objectives are met (Schippmann et al., 2000). Job analysis is an inductive process whereby job tasks and KSAOs are used to determine which behaviors and characteristics are salient to successful performance on the job from the perspective of the employees who actually perform the work. Conversely, competency modeling is a deductive process that determines which criteria are vital and what pertinent tasks and KSAOs will be used to construct a top-down

approach that links business objectives and strategies by engaging top-level executives (Campion, et al., 2011). Competing theories such as person-organization fit is also similarly tied to competency modeling approaches. Person-organization fit is conceptualized as the employee and the organization having congruent values and goals that will lead to a positive symbiotic working relationship (Kristof, 1996). Competencies can be viewed in a similar vein to person-organization fit mainly because of the lack of distinct conceptual clarity as to how competencies are defined. There are, however, several advantages that have been identified in competency modeling over both job analysis and other competing theories. Nonetheless, competency modeling is not without its critics.

Despite the considerable growth of competency modeling in the private sector, there is a dearth of meticulous research on the subject (Markus, Cooper-Thomas, & Allpress, 2005; Sanchez & Levine, 2012; Stone et al., 2010). The scarcity of research is driven by many academicians purporting that competency modeling lacks a thorough methodology and is not superior to existing measurement techniques used for job analysis as well as inferiority to current predictive measures for cognitive ability and personality (Lievens, et al., 2004; Campion, et al., 2011; Sanchez & Levine, 2012).

The purpose of the following study is to broaden the understanding of competency modeling by helping to explain the variance associated with differences in competency ratings at different job levels and to extend the literature into the realm of cross-cultural psychology by proposing and testing a cross-cultural core competency model. Previous studies have attempted to provide support for the methodological rigor of competency modeling (Lievens, et al., 2004; Bartram, 2005) as well as generate competency models that are specific to one culture or one context (Getha-Taylor, Hummert, Nalbandian, & Silvia,

2013; Hodges & Burchell, 2003; Lee, 2009). However, none to this point have used cross-cultural data to support their rating quality or as a way to test how well raters make quality judgments or generate a global competency model. In order to develop our research study, it is first necessary to provide background into what is known from previous research on competency modeling as well as competing theories and criticisms. Up to this point, competency modeling research has been stunted due to the scant body of support for their generalizability and effectiveness compared to traditional job analysis techniques (Schippmann et al., 2000; Lievens, Sanchez, Bartram, & Brown, 2010; Sanchez & Levine, 2012). This research proposal will attempt to test the usefulness of competency modeling by examining how raters respond to competencies in various organizational contexts such as job level and experience. Finally, the cross-cultural psychology literature will be examined in order to propose a cross-cultural core competency model.

As globalization increases, organizations must adapt to various contexts for multiple Human Resources practices such as hiring and selection, training and development, promotion, etc. Organizations may use this information to make more informed personnel decisions for recruitment, hiring and selection, training, leadership development, succession planning, and developing expatriates. The following study utilizes cross-cultural data collected in an effort to generate a universal competency framework for a global network of institutions of higher education. This large-scale data collection took place in 2015 in over 34 countries with 25,202 survey respondents. The purpose of this data collection was to develop a competency model to be used for selecting and developing first year college students. By using this diverse and sizable dataset, we can begin to strengthen the understanding of what

competency modeling can provide as well as fill the gap that exists between academicians and practitioners.

THEORY AND HYPOTHESES

Job Analysis

In order to better understand the background and purpose of competency modeling, it is important to start by describing its commonly used predecessor: job analysis. Job analysis has served as a foundational technique for Industrial/Organizational psychologists for many years (Cascio & Aguinis, 2005; Borman, Campbell, & Pulakos, 2001; Sanchez & Levine, 2001). For the HR professional, the job analysis tool is analogous to a plumber's wrench. The purpose of this tool is to methodically gather and analyze information about a job's components, characteristics, contexts, and requirements (Gatewood, Feild, & Barrick, 2010). One theory that helps to understand how jobs are compartmentalized is role theory (Kahn, Wolfe, Quinn, Snoek, & Rosenthal, 1964). Role theory focuses on how individuals in an organization enact their roles through specific task-oriented behaviors that are set up by the organization itself or through interactions with managers, supervisors, or peer role holders (Katz & Kahn, 1978; Biddle, 1986). Once these organizational agents set up role expectations, the individual role holder will accept and develop a framework for achieving organizational goals. These expectations are the key component in "maintaining the role system and inducing the required role behavior" (Katz & Kahn, 1978, p.189). These role expectations can be affected by an array of factors such as job autonomy (Morgeson, Delaney-Klinger, & Hemingway, 2005), education and training (McClelland, 1998), and work experience (Borman, Dorsey, & Ackerman, 1992). The expectations of role behaviors can be widely consistent for a certain job role but will also include some level of variability

(Dierdorff & Morgeson, 2007). Role ambiguity occurs when a set of behaviors for a given job are not clearly defined whereas role conflict develops when there is incompatibility between the role expectations of the employee and other agents of the organization (Katz & Kahn, 1978). For this reason, it is useful to use a technique such as job analysis to determine what constitutes successful performance for a job role.

Among the various types of job analysis, the most commonly used is the task inventory approach whereby a list of job relevant tasks, knowledge, skills, or abilities are created with the use of subject matter experts and rated individually by their frequency and importance (Sanchez & Levine, 2001). Tasks that are rated to be most important and frequently carried out are given more relative weight and will be the best predictors of future successful performance in that job role (Cascio & Aguinis, 2005). Further, knowledge, skills, abilities, and other characteristic information is collected and rated for importance and required when first entering the job. These KSAOs are the worker attributes that are rated by SME's in order to determine which are most important for successful job performance as well as which can be trained on the job after hire. Ultimately, job analysis techniques are used to gain a deeper understanding of a specific job for use of hiring and selection decisions (Sackett & Lazco, 2003). The methodologically sound underpinnings of this technique have produced high levels of reliability and validity (Dierdorff & Wilson, 2003) and have provided legally defensible hiring decisions (Sanchez & Levine, 2001). Although this technique is firmly entrenched in the I/O psychologist's tool belt, task analysis and other job analysis techniques have several shortcomings.

Although job analysis is the predominant technique for many practices in I/O psychology, it is riddled with inferential leaps based upon human judgment. According to

Gatewood and Feild (1994) there are two core inferential leaps within job analysis. The first

inferential leap is that work tasks lead to better understanding of worker attributes. Job

analysis researchers assert that worker characteristics needed to perform a job are intrinsic to

the job analysis process (Sanchez & Levine, 2001). So, job analysis is said to derive both the

work tasks required for the job as well as the human attributes through KSAOs. The pertinent

KSAOs for a job role are developed based upon work tasks instead of through other means.

However, the leap from work tasks to derive human attributes has been called into question.

A study by Van Iddekinge, Putka, Raymark, and Eidson (2005) used a generalizability

analysis to analyze KSAO ratings in order to determine how much error was reflected in job

analysis projects across five organizations. Their results produced considerable idiosyncratic

variance by the raters, which supports the assertion that the raters were not supplying a

reliable aggregation of importance ratings and necessary at entry ratings. Follow-up analyses

supported the notion that variance due to rater-by-KSAO were not explained by the facets of

organization, rater demographics, or position level. The variance of the ratings were mainly

due to how individual raters evaluated the KSAO's, thus, providing evidence that the sources

of variance underlying the ratings were questionable.

A second issue with job analysis is that the KSAOs produced are used to select hiring

instruments as well as other human resource interventions (e.g., training, interviews,

assessment centers, performance appraisal systems, etc.). The issue here is that these

idiosyncratic ratings may reduce the validity and transportability of a selection measure

because the inferred KSAOs come from a task inventory. Morgeson and Campion (1997)

assert that since job analysis is based upon human judgment, it is often fallible. They propose

that inaccuracies in job analysis are a product of two sources, social sources and cognitive

sources. Oftentimes, job analysis projects are developed with a group of SMEs gathered together in one setting. These types of social settings could lead to pressure to conform to the judgments of the group as opposed to individual interviews to collect job information (Cascio & Aguinis, 2005; Morgeson & Campion, 1997). Additionally, cognitive sources of judgment inaccuracy are a reflection of our limited capacity to store and recall accurate information as well as to make fine distinctions between similar types of tasks (Hogarth, 1981; Arvey, Davis, McGowen, Dipboye, 1982). In all, Morgeson and Campion (1997) identified up to 16 sources that could influence the accuracy of job analysis projects. A subsequent study by Morgeson, Delaney-Klinger, Mayfield, Ferrara, and Campion (2004) support this assertion. They found that when task statements and ability statements were identical but ability statements were preceded by the phrase "ability to", ability statements were rated more highly. They concluded that SME raters are not always neutral and engage in impression management and self-presentation biases. This evidence supports the idea that self-presentation biases were inherent in raters because they generally inflated their skills in relation to more specified tasks. In short, the empirical evidence lends to support the notion that job analysis may not be able to gather information that comprises all aspects of the job or worker attributes. Competency modeling has been proposed as a means to assist in capturing worker attributions through a blended approach (Schippmann et al., 2000; Lievens et al., 2004; Sanchez & Levine, 2012). Thus, a blended approach could lead to the utilization that capitalizes on the strengths of both techniques. Currently, many organizations have begun to incorporate competency modeling into their human resource practices (Sanchez & Levine, 2012).

Person-Organization Fit

Competency-based management has become a salient strategic approach for many organizations and human resource professionals (McClelland, 1973). Another area of study that has generated much interest in recruitment and selection is that of person-organization fit. If organizations that are able to recruit and hire top talent hold a strategic advantage against their competitors (Davenport & Prusak, 1998; Nadler & Tushman, 1999), then finding the right employees is key. Core competencies are distinct from person-organization fit and the attraction-selection-attrition theory of recruitment. Mainly this is because person-organization fit is measured by comparing an individual's values with that of the organization (Kristof, 1996; Cable & Judge, 1996; O'Reilly, Chatman, & Caldwell, 1991). Further, person-organization fit is primarily concerned with how well the organization and the individual provide what either entity needs (Kristof, 1996). Fit is achieved when the organization and the individual have compatible or complementary needs that the other can fulfill (Kristof, 1996). When misfit occurs, employees will tend to leave the organization to find alternative employment that synergizes with their values (Schneider, 1987). Competency models are similar in that they are generated from the organization's strategies and values but they are distinct from person-organization fit in that employees can develop these competencies through training and development and be successful contributors who will ultimately stay. Because competencies can be developed over time to fit the organization's strategies, this is seen as one advantage of competency modeling compared to person-organization fit. Another advantage that competencies retain is that they are not intractable innate qualities such as personality or intelligence. Organizations can use core competencies as a framework for implementing organizational change initiatives through hiring practices

and training programs (Schippmann et al., 2000). The purpose of developing a core competency framework is so that they can be implemented in such a way that all employees or job candidates can evolve and expand their competencies to fit with the organization (Schippmann et al, 2000; McClelland, 1998).

Another issue is that person-organization fit is not well-developed cross-culturally. A 2005 study by Westerman and Vanka attempted to test three separate person-organization fit measures cross-culturally to determine if they could predict classroom performance and satisfaction with American and Indian students. Although they were able to find significant results for the American students in that the student-professor personality congruence significantly predicted performance and classroom environment congruence predicted student satisfaction, they did not find the same results in the Indian student sample. Competency models offer an organization a means to align employees strategically to their goals, because they can train and develop them, and this may transcend cultural values that may cause misfit when viewing through the lens of person-organization fit.

Competency Modeling

With the rise of competency modeling over the past 20 years, job analysis has begun to wane in the private sector (Sanchez & Levine, 2012; Stevens, 2012). However, there has been notable conceptual confusion regarding the definition of competencies in the academic literature. It is not always entirely clear what exactly a competency is. Competency models have been conceived as individual characteristics that can be reliably measured and are tied to the organization's strategic goals (Schippmann et al., 2000; Sanchez & Levine, 2009; Campion et al., 2011; Sanchez & Levine, 2012). Additionally, Bartram (2005) states that competencies are "…sets of behaviors that are instrumental in the delivery of desired results

or outcomes" (p. 1187). Some researchers posit that the ultimate purpose of a competency model is to differentiate behaviors exhibited by low performers versus high performers across an entire organization (Schippmann et al., 2000; Sanchez & Levine, 2001; Sanchez & Levine, 2012). Other researchers focus on competency models as sets of behavioral themes that are strongly aligned with the strategic business goals of the organization and is seen as distinct from job analysis in this regard (Sanchez & Levine, 2012; Schippmann et al., 2000; Sanchez & Levine, 2009; Lievens et al., 2010). Within the literature, there is also a focus on competencies as either ascription or achievement oriented. Some researchers assert that competencies are traits or characteristics; others propose that competencies are focused on tasks and their outcomes (Mansfield, 2004). This commingling of definitions has led to deep conceptual confusion. This can be seen by the Dooley, Lindner, Dooley, and Alagaraja (2004) definition that "Competency-based behavioural anchors are defined as performance capabilities needed to demonstrate knowledge, skill and ability (competency) acquisition (p. 317). Thus, according to Dooley et al. (2004), the definition of competencies includes *competency* as a subset. Seemingly, the best definition to date comes from Woodruffe (1991). Le Deist and Winterton (2005) describe his definition as "…aspects of the job which an individual can perform, with competency, referring to a person's behavior underpinning competent performance (p. 29). This definition somewhat ties together the inputs of traits and skills with the desired outcomes. The emphasis is placed on not just successful outcomes, but obtaining the necessary components required to perform competently. For instance, a worker may not necessarily possess all of the required attributes to perform a task but still arrive at the desired outcome. Thus, it is important to not confuse the output of a competency for the

input. Despite all of these conceptual quagmires, competency modeling has advanced in the practitioner world.

Early research on competency modeling sought to supplant job analysis as a better hiring and selection tool. More recent research, however, has begun to intertwine the two techniques (Lievens et al., 2004; Sanchez & Levine, 2012). Research on competency modeling has been sparse by reason of many researchers judging it to be inferior to job analysis. Although competency modeling has been used extensively in applied settings, research has lagged behind due to conceptual confusion, lack of standardized practices, discriminant validity, and, most importantly, the idiosyncratic nature of competency modeling (Stevens, 2012). The very nature of competency models are difficult to generalize given that they are typically customized to a given job environment or singular organization and much of the data evidence for generalizable competency models has been limited (Schippmann et al., 2000; Campion et al., 2011; Stevens, 2012). Despite these shortcomings, many organizations continue to use competency models for their Human Resource applications.

From the academic perspective, competency models are typically compared against traditional job analysis (Schippmann et al., 2000). One of the more pervasive arguments against competency modeling is that they are not conceptually clear (Spencer, McClelland, & Spencer, 1994; Schippmann et al., 2000; Sanchez & Levine, 2009; Lievens et al., 2010). This opinion is beginning to shift as competency models are being defined slightly differently. Instead of defining them as specific KSAOs, competencies are being conceptualized as "behavioral themes", or a group of behaviors that are considered to be critical for successful performance (Bartram, 2005, Sanchez & Levine, 2009, Sanchez & Levine, 2012). In contrast

to traditional job analysis, which focuses on specific work tasks for a work assignment, competencies are more of a global concept of behaviors that emphasize performing across a set of jobs (Sanchez & Levine, 2012). This notion has been described as corresponding to "trait relevance" (channel) and "signal strength" (volume) in signal detection theory (Tett & Burnett, 2003). Job analysis is more concerned with finding the most appropriate channels of tasks for a work assignment whereas competency modeling ensures that the behavioral themes are set at the appropriate volume such that "louder" signals are intended to create a shared set of common behaviors across all jobs within the organization. This has led some researchers to assert that these two practices should be studied alongside one another, but ultimately, as distinct (Sanchez & Levine, 2009; Sanchez & Levine, 2012). This distinction also allows for competencies to be developed on the job instead of relying on the individual to have already developed a specific set of traits to enter the organization. Further, a meta-analysis by Voskuijl and van Sliedgregt (2002) found that broader behavioral statements showed higher interrater reliability than molecular task statements. Other researchers have found opposite effects as well (Dierdorff & Morgeson, 2009), so the research is not clear on the reliabilities for either job analysis or competency modeling.

Researchers and practitioners have developed best practices for generating effective competency models. Most competency models are specially tailored to a specific organizational context and generally account for many factors such as organizational culture, market, customers, and employee relations (Campion, et al., 2011). Second, the competencies must also align with the goals of the organization (Martone, 2003). Third, an organization-wide approach that is driven by top-level employees is preferred because there is more likelihood that the project will be well funded and receive greater support leading to its

successful completion (Campion, et al., 2011). Fourth, effective competency models also use rigorous job analysis methods for the development of the model. Competency models that are created using techniques such as SME interviews, focus groups, and data collection in unison with clear and concise definitions and linkages glean the best results (Rodriguez et al., 2002). Fifth, competencies must be thoroughly defined and describe how they relate to specific behaviors performed on the job (Parry, 1996). Further, each competency should have well-defined levels of proficiency (e.g., a five-point Likert scale), which are typically expressed as observed behaviors (Campion, et al., 2011). Sixth, many competency models are developed to be useful across common job families (Martone, 2003), or specific to one organization's context across all of the firm's jobs (Schippmann, et al., 2000). One such organization that employs this type of competency model is Microsoft. They specify what they have determined to be "foundational competencies" that apply to a common core of organizational life in Microsoft. These foundational competencies are applied across all members of the organization while each profession may have a set of more specific competencies (Campion, et al., 2011). When all of these best practices are applied together, competency models can provide benefits beyond that of traditional job analysis.

The first aim of this study is to examine competency model ratings for their methodological rigor. Most researchers assert that competency modeling is less rigorous than job analysis due to a lack of detailed definitions, reliability, and lack of discriminant validity (Schippmann et al., 2000; Lievens & Sanchez, 2007; Lievens et al., 2004). Indeed, there is variation in competency modeling; even for workers in the same role. Occupational context is seen as the most meaningful intermediary between the way incumbents define and perform activities in their job (Dierdorff & Morgeson, 2007). Although many work roles are highly

routinized and lack autonomy, this is typically not the case for organizational members who have supervisory or managerial roles in the organization. Increased freedom and autonomy will afford role holders to enact their performance in non-traditional ways and lead to more idiosyncratic methods due to weak and undefined situations (Dierdorff & Morgeson, 2007; Mischel, 1977). A 2010 study by Lievens et al. attempted to provide a better understanding for the lack of reliability in competency models that has been previously reported by examining the variance of 20 competency model ratings across 192 incumbents in the same occupation. The aim of the study

was to determine if the variance in the competency ratings could be explained by examining different roles within the sample. They hypothesized and found that higher levels of job complexity would decrease consensus among raters. So managers, who typically have more ambiguous tasks, will have greater variance in their competency ratings than lower level employees with more routinized tasks. Overall, they reported that the perceived lack of consensus that researchers argue is inherent in competency models is, in actuality, substantive factors and not random error variance. One issue with this study is that the sample did not include job level as reported by the participants. The researchers used the Dictionary of Occupational Titles to determine the levels of the incumbents. The present study uses a more specified self-report sample containing a total of 25,202 participants from four levels of job roles: *Individual Contributor* (N = 3,240), *First-Level Supervisor/Manager* (N = 1,736), *Mid-Level Supervisor/Manager* (N = 1,879), and *Senior Manager or Executive* (N = 2,227). This study would attempt to replicate Lievens et al. (2010) hypothesis that increased job complexity creates greater variability in competency importance ratings, but with more explicit levels of complexity reported by the actual incumbents. I would expect

similar results to the Lievens et al. (2010) study that variance due to job level would indicate discriminant validity across these levels. If this is the case, it will strengthen the assumption that competency models can be utilized across an entire organization.

Hypothesis 1: Raters with higher-level roles in an organization will have lower interrater reliability.

Competency models have also been studied along with job analysis to determine if they provide discriminant validity across competencies and jobs. A 2004 article by Lievens et al. conducted a series of studies to shed light on the quality of ratings made in competency modeling. In one study they used a student sample in a lab setting to determine which approach would yield the highest quality inferences about a specific set of jobs. Students were to complete a competency model for three separate jobs using information provided by the researchers. Students were placed in one of three conditions (N=13 per condition), *competency model approach*, *task-based approach*, and a *blended approach*. In the competency model condition, the participants received a job description as well as the business and human resource strategies that were important to the organization. In the task-based condition, participants were not provided with either the job description or business strategies, but only with work tasks. In the blended approach, participants received all information that was delivered to conditions 1 and 2. After completing the competency models, the researchers conducted a generalizability analysis to better understand the sources of variance in the competency ratings. The findings of study 1 showed that there were no beneficial effects of any of the three approaches. MANOVA results of the generalizability coefficients yielded no significant differences between the three conditions due to either raters or job type. These results indicate:

…that regardless of the work analysis approach, the inferential leap from jobs to

competencies might have been too large for the student raters…Therefore, a

practical implication of Study 1 is that practitioners interested in competency

modeling should be cautious about using naïve raters in their SME panels.

(Lievens et al., 2004, p. 891)

Study 2 was the same design but applied to a real world setting in an organization that

wanted to develop competencies for three distinct jobs (N=4 per job). A group of SMEs

(incumbents, supervisors, human resource specialists, and internal customers) were

separately assembled for each job such that none of the three jobs had the same SME

members. Similar to condition 1 of Study 1 (*competency model approach*), the SMEs

developed competencies with business and human resources strategy knowledge.

Generalizability analyses were conducted and results were compared between the student

sample from study 1 and the worker sample of study 2. The raters in the worker sample

showed less variance than the student sample; which provided evidence that experienced

workers had a higher interrater reliability. Further, the worker sample performed better when

rating the different competencies such that they were better able to differentiate the

competencies between jobs, thus providing better discriminant validity. The noteworthy

conclusions from the Lievens et al. (2004) are 1) that SME's with more job-relevant

experience will most likely provide more accurate and acceptable levels of interrater

reliability and that 2) experienced SMEs will provide greater discriminant validity as well.

Nevertheless, one shortcoming of this study is that the researchers were unable to test to see

which of the four types of experienced SME raters provided the most reliable and

differentiable ratings. Further, SME raters used in this study were not all from the same

department, some raters had job-relevant experience and others were from different work areas such as Human Resources. This study will examine competency ratings in several occupational levels from respondents with various levels of experience starting at the inexperienced student and up to the supervisory or managerial level. Experience is distinct from one's level in the organization, a manager with three months of experience in their role will most likely not provide competency importance ratings as accurately as an experienced manager with several years in their role. This dataset is comprised of respondents inside and outside of higher education with four separate role levels (*Individual Contributor*; *First-Level Supervisor/Manager*; *Mid-Level Supervisor/Manager*; and *Senior Manager or Executive*); seven industries (*Manufacturing, Engineering & Technology; Professional Services; Consumer Services; Creative Industries; Healthcare; Government, Non-Profit, Public Administration;* and *Banking, Finance and Insurance*); and five levels of work experience (*Less than 1 year*; *1 to 3 years*; *3 to 5 years*; *5 to 10 years*; and *More than 10 years*). This will provide a broad cross-section of occupational experience that will contribute a great deal of information regarding how well experienced raters can deliver reliable and discriminant competency importance ratings. I would assume that our results would be similar those of Lievens et al. (2004) in that more experienced raters will have higher interrater reliability and be able to discriminate between jobs in specific fields.

> *Hypothesis 2: Raters with higher levels of job experience will have higher*
> *interrater reliability than inexperienced raters across the seven different*
> *industries.*

Hypothesis 3: Raters with higher levels of job experience will exhibit greater discriminant validity among the competencies than inexperienced raters across the seven industries.

Cross-Cultural Competency Models of Performance and Interpersonal Skills

According to Sanchez and Levine (2012), future competency modeling research should shift the focus away from aligning with traditional job analysis and more toward strategic lines of behavior themes or competencies that will be relevant to organizational outcomes of interest. With the spread of globalization over the past two decades, cross-cultural competencies are an area of interest for international businesses (Johnson, Lenartowicz, & Apud, 2006). Research in the I/O literature has largely ignored this topic of cross-cultural competencies, thereby creating a significant gap. In general, cross-cultural psychology has become an area of great interest in the I/O field. Globalization has been increasing with the emergence of the internet and international trade over the past two decades (Dragoni et al., 2014). In order to address this gap, the remainder of this study investigates a theoretical model for two cross-cultural core competencies for performance and interpersonal skills.

The second major aim of this study is to propose a core competency model of performance and interpersonal skills. Although many competency models have been established in various organizations and studies, there has not been a competency model that has been tested cross-culturally. Oftentimes, competency models are well conceived in terms of specifying the requirements and practical necessities for an individual organization (Boyatzis, 1982). However, the main criticism levied against competency models is that few are tested rigorously to determine if they are valid at all, and none have been tested cross-

culturally. Whereas the first section of the study is primarily concerned with assessing the quality of inferences made in competency models, this section will focus on the validity of the measured competencies in a cross-cultural latent model. I will first use literature and research from the assessment center dimension literature as a means to describe the conceptual model and supporting research used to create the competencies within the model. Then I will turn to the assessment center literature for developing effective job-relevant dimensions. Next, I explore similar lines of cross-cultural research, specifically personality research, which has been studied cross culturally to gain a better understanding of how to appropriately proceed.

Assessment Center Literature

The current research will attempt to develop a cross-cultural core competency model for *Performance* and *Interpersonal Skills* competencies. As stated previously, the bulk of competency model research has centered on specific contexts. According to Le Deist and Winterton (2005), competency modeling around the globe has spawned differing approaches to the practice of competency modeling and different terminology depending on what part of the world you are located in or what organization or job family that the competency model is being developed for. The basis for the conceptual model of core cross-cultural competencies pulls from various literatures within the I/O literature such as Assessment Center dimension research as well as research in personality.

Research on Assessment Center dimensions has also been subject to similar criticisms that have plagued competency modeling. One major criticism that has only recently been addressed is in regards to the creation of Assessment Center dimensions and how effectively they measure job-related elements (Meriac, Hoffman, & Woehr, 2014; Arthur, 2012; Arthur,

Day, & Woehr, 2008; Arthur, Day, McNelly, & Edens, 2003). Assessment Center

dimensions are typically idiosyncratic and are generated through job analysis techniques or a

competency model. Assessment Center dimensions are used to rate candidates and are

assumed to possess a high level of content-related validity and are perceived more favorably

than cognitive ability tests (Macan, Avedon, Paese, & Smith, 1994). However, these

dimensions are often denigrated for their lack of generalizability as well as their poor

definitions that overlap with other dimensions. Similar to competency modeling, Assessment

Centers are widely used in practical settings to select managers and supervisors (Meriac,

Hoffman, & Woehr, 2014). These issues have generally been overlooked in the Assessment

Center literature.

A recent meta-analysis by Meriac et al., (2014) attempted to examine multiple

approaches to developing Assessment Center dimensions. Although few researchers have

posited frameworks for creating dimensions, none have followed through and tested their

models. Previous research has shown that specifying fewer dimensions (Gaugler & Thornton,

1989) that cover broad topics (Hoffman, Melchers, Blair, Kleinmann, & Ladd, 2011) is

beneficial. Creating too many dimensions that are intended to be specific seldom hold up

under scrutiny. Meriac et al., (2008) reported that Assessment Center performance

dimensions could range from 3 to 25 with an average of 11 being measured. In light of the

stated issues, Arthur et al., (2008) promoted a six-dimension framework as a starting point

for researchers to develop a more standardized structure for Assessment Center Dimensions.

Given this structure, Meriac et al., (2014) set out to test the construct validity of this six-

dimension framework using confirmatory factor analysis. They also tested three-factor and

two-factor models using confirmatory factor analysis as well.

Drawing from previous research, Meriac et al., (2014) tested which dimensional framework best fit the data and found support that an approach utilizing two to three dimensions was best. Their finding asserted that "…it seems that the AC literature, regardless of analytic method or scoring approach, is beginning to converge on a dimension structure composed of two to three overarching performance dimensions that correspond to behavioral styles identified across different domains" (p. 1288). To date, there has not been any similar research that has been applied to competency model research. Using the approach of Meriac et al., (2014), this study hopes to reduce the number of relevant competencies down to two overarching factors.

Leadership

These two factors encompass universal core competencies as well as competencies that will be relevant to the success of workers at all levels. First, I will discuss the Leadership competency. This factor contains relevant social competencies that will be useful in many organizational contexts across the globe. The Leadership competency is comprised of six competencies: *Applying a Global Mindset*; *Meeting Customer Expectations*; *Working Well with Others*; *Managing the Work of Others*; *Leading Others*; and *Influencing Others* (See Appendix A for List of Scales). Among the myriad of leadership theories in the I/O literature, the subdimensions for the proposed Leadership factor is drawn from transformational/transactional leadership and authentic leadership theories. Managing the work of others can be described as similar to transactional leadership (Den Hartog & Koopman, 2002). Transactional leadership entails an exchange relationship between leaders and their followers where the leader or manager focuses on compliance by the followers in accordance with the objectives set by the organization (Howell & Avolio, 1993; Bass, 1995).

Transactional leaders operate using contingent reward when dealing with their followers. Contingent reward is an active process whereby the leader rewards his followers when they accomplish agreed upon objectives; this is similar to the Managing the Work of Others competency.

The competency subdimensions for Leading Others and Influencing Others are analogous the transformational leadership dimensions of *Idealized Influence*, *Individualized Consideration*, and *Intellectual Stimulation*. Transformational leadership is a leadership style that goes beyond the economic exchange relationship seen in transactional leadership. Transformational leaders inspire their followers to achieve optimal performance through developing and intellectually stimulating them in order to meet a common goal or mission (Howell & Avolio, 1993; Bass, 1995; Piccolo & Colquitt, 2006; Avolio, Walumba, & Weber, 2009). Idealized influence is seen when leaders arouse enthusiasm in their followers through charismatic interactions that engender identifying with the leader. This charismatic influence serves as a means to inspire trust in the leader and commitment to their goals. Similarly, individual consideration is the manner in which the leader addresses the needs of his followers. Leaders cultivate a positive vision for the future in a clear manner that is also challenging to the followers. The proposed competency of Leadership is comparable to these two dimensions. This competency pertains to a leader's skill to propel a vision and positive feedback to followers while motivating and encouraging them. Again, charismatic leaders who are able to effectively guide their followers toward a goal while also advancing the skills and performance of their followers will be examined from leaders around the globe.

Intellectual stimulation in the Transformation Leadership literature is seen when the leader stimulates creativity in their followers by challenging the status quo and setting high

standards and lofty goals. The leader encourages his followers to take risks and to generate novel ways of approaching work activities (Judge & Piccolo, 2004). The competency relating to Applying a Global Mindset is analogous to this concept. Leaders who obtain these competencies will seek to find new and inventive ways to create positive changes that lead to greater efficiency of work processes and products. The conceptual model asserts that leaders that are high in this competency will also foster these positive changes through being open to their followers' ideas and display curiosity for trying new things.

The final subdimension of the proposed competency model relates to ethics and social responsibility. Corresponding research on Authentic Leadership is the underpinning for this competency. Authentic leadership is defined as "A pattern of transparent and ethical leader behaviors that encourages openness in sharing information needed to make decisions while accepting followers' inputs" (Avolio et al., 2009, p. 423). Authentic leaders have a strong internalized moral perspective that compels them to operate with high moral standards through regulating their behavior. They also exhibit relational transparency whereby they are viewed as authentic due to their propensity to openly share information (Avolio et al., 2009). Correspondingly, the competency of Working Well with Others and Meeting Customer Expectations is illustrated when leaders maintain their relational behaviors by acting responsibly, not only to their followers, but also to all stakeholders that may be impacted by their organization. Honesty and transparency are key components to leaders high in this competency. These types of leaders believe that continuous improvement over time will yield worthwhile social changes.

Hypothesis 4: The Leadership factor is linked to the six competencies of

Applying a Global Mindset; Meeting Customer Expectations; Working Well

with Others; Managing the Work of Others; Leading Others; and Influencing

Others.

Performance

Turning to the Performance factor, I will now discuss its subdimensions and rationale

for its development. The Performance orientation geared toward skills that will facilitate high

performance in all workers at all levels. This orientation consists of: *Analyzing and Solving*

Problems; *Learning and Self-Development*; *Communicating in Writing*, *Communicating*

Orally, *Achieving Objectives*; *Leveraging Technology*; and *Planning and Organizing*. In their

2014 meta-analysis, Meriac et al., also examine the link between Assessment Center

dimensions and the five factor model of personality. Researchers have proposed that the five

factor model will exhibit strong relationships with Assessment Center dimensions. Results

have been mixed with some studies supporting this notion (Dilchert & Ones, 2009) by

finding support that some dimensions did related to certain personality factors but it was not

the case for other hypothesized relationships. For instance, Shore et al., (1990) found that

their proposed interpersonal-style dimension was more strongly related to similar relational

personality variables compared to task performance personality variables. Meriac et al.,

(2014) meta-analytically tested their three-factor model (Administrative, Drive, & Relational

Skills) with the five factor model and found that all three dimensions correlated with

Extroversion and their Relational Skills factor weakly correlated with Agreeableness. Thus,

supporting their nomological network that the five factor model can be useful for predicting

interpersonal simulations that are conducted in Assessment Centers.

Planning and Organizing, Written and Oral Communication are competencies relating

to accomplishing work goals while maintaining high standards of performance while meeting

customer expectations centers on the individual's responsibility toward their clients' demands. Conscientiousness is a personality trait within the five factor model and it is described as the degree to which individuals are seen as hardworking, dependable, punctual, detail oriented, and reliable (Costa & McCrae, 1991; Costa & McCrae, 1992; Salgado, 1997). Conscientiousness has been shown to be positively related to job performance in several meta-analyses across multiple contexts in North America and Europe (Salgado, 1997; Barrick & Mount, 1991).

Finally, the competencies of Analyzing and Solving Problems, Leveraging Technology, and Learning and Self-Development is the individual's capabilities in gathering and processing information in order to complete work-related tasks. Employees with high levels of this competency will be better able to find best practices and implement them with success. Identifying and integrating information and then finding patterns or exploring new ways to accomplish goals is an important skillset for most jobs. Similarly, general mental ability has gained extensive support as a key predictor of job performance (Schmidt, 2002; Salgado, Anderson, Moscoso, Fruyt, Anderson, Bertua, and Rolland, 2003; Schmidt & Hunter, 1998). General mental ability is described as the ability to learn and acquire job knowledge (Schmidt & Hunter, 1998). The positive relationship between general mental ability and job performance has been replicated in North America and Europe (Salgado et al., 2003). Further, Meriac et al., (2014) found that all three of their factors were positively and significantly correlated with general mental ability, thus strengthening their nomological network.

> *Hypothesis 5: The Performance factor is linked to the seven competencies of*
> *Analyzing and Solving Problems*; *Learning and Self-Development*;

Communicating in Writing, *Communicating Orally*, *Achieving Objectives*;

Leveraging Technology; *and Planning and Organizing.*
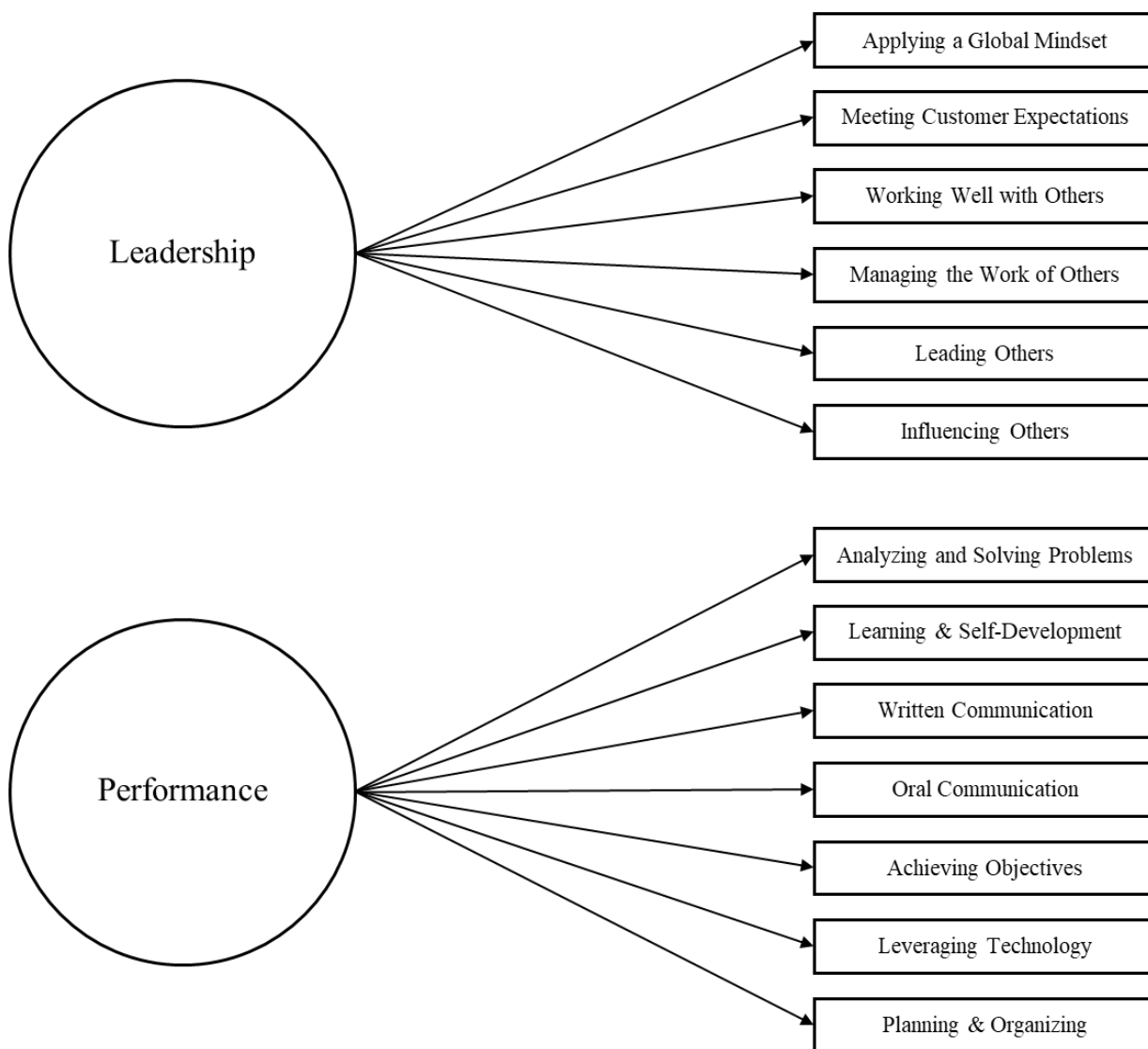

Figure 1. Conceptual framework of Leadership and Performance structural models.

Cross-Cultural Research

Other areas of research have extended into the cross-cultural psychology realm with

some success, but more work is needed. One notable area of study to breach into the cross-

cultural realm is that of personality research, specifically, the five factor model of personality

(McRae, 2001). In the personality literature, culture is conceptualized by McCrae and Terracciano (2005b) in three distinct ways: *Ethos*, *National Character*, and *Aggregate Personality*. Ethos refers to a country's customs and institutions such as their folktales, religious beliefs, and political system. Ethos is very similar to what other researchers have described as values or beliefs (Hofstede, 2001). National character refers to stereotypes or personality characteristics that are typical of members in a specific culture. These generalizations or characteristics can be useful for research purposes (McCrae & Terracciano, 2005b), oftentimes they tend to be oversimplifications. For instance, most people who are asked what a typical person from Texas is like may refer to them as being cowboys. However, there are very few actual cowboys still living within the state. The third conceptualization, aggregate personality, is the most prevalent in the cross-cultural personality research literature due to its convenience (McCrae, 2001; McCrae & Terracciano, 2005a; McCrae & Terracciano, 2005b; McCrae & Allik, 2002). The focus of this type of conceptualization is to assess mean personality trait levels for a specific culture. Oftentimes, personality assessments are administered to groups of individuals in various settings within a country and some type of comparison is made. The bulk of cross-cultural research has used this bottom-up approach to determine if constructs are universally applicable across cultures. By using the individual as the unit of analysis and aggregating their responses, it is possible to take a bottom-up approach to describe a whole culture. For instance, to say that "Germany is an introverted culture" would convey that their aggregate score on the trait of introversion is higher than most other countries (McCrae et al., 2005b). This bottom-up approach has been tested in multiple ways. Huang, Church, & Katigbak, (1997) attempted to use item-response theory (IRT) as a means to test scales across different cultural contexts. However,

the issue with this approach is that IRT only focuses on individual items instead of measuring a latent construct. Further, some may argue that testing for differential item functioning of a scale is one way of determining equivalency across cultures. One issue with this logic is that items may have identical distributions across two cultures but in actuality there may be inherent bias in the translation that is causing these identical distributions. Since many assessments are translating into various languages, other noise may be introduced that could account for any differences or equivalencies. Therefore, cross-cultural methodologists focus on construct validation of aggregate culture level scores.

McCrae (2001) also describes three levels in which cultural measurements can be compared: *Transcultural*, *Intracultural*, and *Intercultural*. Transcultural research attempts to identify underlying universal trait structures that transcend culture or context. According to previous research, the five factor model has shown to have very similar structures in all cultures (McCrae, Costa, del Pilar, Rolland, & Parker, 1998). The research by McCrae et al. (1998) attempts to explain whether or not there are trait structures across cultures or regions. Because there is consistency in the structure of traits in different contexts, it allows us to measure and study traits in other ways. For instance, if Agreeableness was not found within two different contexts, it would not be possible to compare the two settings. The next level of measurement is intracultural level research. This is concerned with examining differences in a trait for one cultural setting. For example, specific regions of the United States may have differing levels of a trait. Citizens living in Los Angeles may vary in their Openness to Experience compared to those living in Oklahoma City. Finally, the third level of analysis is Intercultural. This level refers to cultural differences in traits between two or more countries. Most studies in cross-cultural psychology utilize this approach (Barrett & Eysenck, 1984;

Eysenck & Eysenck, 1975; McCrae, 2001; McCrae & Terracciano, 2005a; McCrae &

Terracciano, 2005b). These intercultural studies have also been conducted in other fields for

a few competency modeling studies (Lunev, Petrova, & Zaripova, 2013; Hodges & Burchell;

2003). Many studies in the competency modeling literature only compare two countries

against each other, but according to McCrae (2001), intercultural studies that compare many

cultures against one another provides greater understanding, practicality, and support. For

instance, there may be a wide diversity of competency ratings between Americans and

Chinese, but it may be difficult to account for those differences if they are the only two

referent groups. However, if you broaden the purview beyond two countries, you can begin

to classify cultures in a meaningful way. According McCrae (2001), intercultural level

studies are preferred because…"When only studying two cultures, it is difficult to identify

the features of culture that may be causally associated with differences in personality, but if a

range of cultures is considered, associations can be tested" (p.822). This is precisely how

McCrae attempts to measure personality differences among cultures.

Cross-cultural assessment was initially approached as *transport* and *test* (Berry, 1969;

Berry, Poortinga, Segall, & Dansen, 2002). This meant that tests and assessments were

developed in the U.S. and Europe and were then transported to other cultures without any

adaptation. This ethnocentric approach is no longer appropriate today and more adaptive

approaches are taken (Cheung, 2012). These adaptations are utilized in order to avoid a

cultural bias or misinterpretation. Cross-cultural psychology research gives special attention

to assessing individuals across cultures (Scholten, Velten, Bieda, Zhang, & Margraf, 2017).

Cross-Cultural Research in Personality

This study will attempt to extend the competency modeling research much in the same way that McCrae and colleagues have expanded the personality research. Many large organizations are connected globally and gaining insight into this new work structure is salient as this interconnectedness continues to flourish. With the modern reality of introducing employees to new environments, much of the cross-cultural focus has been on expatriates (Church, 1982). Expatriates are organizational members who take on a temporary or permanent work assignments in a country where they are not a citizen. Over 100,000 expatriates from the United States are sent overseas each year (Baruch and Altman, 2002). The expatriate failure rate is estimated to be nearly 40 to 55% (Black et al., 1999). Previous research has shown that the failure rate for expatriates is quite high (Hechanova, Beehr, & Christiansen, 2003). Other negative outcomes such as leaving the project early or poor performance have also been reported (Kraimer, Shaffer, Harrison, & Ren, 2012). The impact of failed expatriation can also have negative effects on the organization due to the costs or training and relocating expatriates and their families (Hill, 2001). The current research may also be useful for gaining insight into cross-cultural hiring and selection practices. As organizations continue to expand into new markets, they must alter their hiring and selection practices to fit with the new culture (Steiner & Gilliland, 2001). Given the considerable variation across countries, a competency model that can be applied across countries can be informative for selecting individuals who will be successful in the organization. Very few studies have examined cross-cultural hiring practices to determine what competencies are important for successful performance. The aim of this study is to generate a better

understanding of what competency behaviors are perceived as important for successful performance across various cultures.

Given that competency modeling has become an important tool for recruiting individuals who will fit into this newly developed world economy (Johnson et al., 2006), there is a need to branch out into broader studies beyond a single organization or context. According to Arnold (2002), "recruiting is now based more on the consistency of a person's competencies and values with the overall thrust of the organization than on his or her match with any particular job description" (p.117). Although there is increasing interest in global competency models, there is a dearth of research exploring competency models across cultural contexts. Given the broad range of diversity of our sample, a cross-cultural study seems appropriate. Previous cross-cultural research has yielded significant evidence across contexts in the personality literature, this study will attempt to augment the competency modeling research by adopting methodology from these studies. I propose a two-stage approach for empirically verifying the proposed cross-cultural core competency model. The first stage is to verify the assumptions that the measures used in the competency model are valid and for the two latent factors of Leadership and Performance by using confirmatory factor analysis. The second stage is to test for model invariance across countries of interest to determine if the model can be confirmed in multiple contexts.

Hypothesis 6: Leadership and Performance are independent of each other.

Hypothesis 7: The proposed competency model will be invariant across the five regions of the world (Africa, Asia, Europe, Americas – US/Canada, and Americas – Latin America).

METHOD

Data Collection Procedures

The data collection for this project took place during the summer of 2015 and was administered through an online study as part of a project to determine which competencies are most important for college graduates entering their first year of work. The competency model assessment was administered as part of a collaboration with a higher education company comprising of a network of over 1,000,000 students attending 70 campuses in 25 countries. The survey was launched in 12 languages, including Arabic, Bahasa Malaysia, Brazilian Portuguese, English, French, German, Greek, Latin American Spanish, Malaysian Simplified Chinese, Spanish, Thai, and Turkish. Each respondent was asked to rate the importance of a competency as pertaining to a new college graduate entering the work force. The demographics of the overall 25,202 this sample was comprised of more females (N=13,101) than males (N=12,100) with the largest age range falling between the ages of 21 to 24 (N=6,379) and the second largest age group falling between 30 to 39 (N=5,192). The sample was made up of mostly students (N=10,766), followed by faculty/staff (N=5,851), then professionals in the private sector (N=5,142), and alumnus (N=1,987) and administrators (N=1,456). Of those reported work experience, the largest group was more than 10 years (N=7,957), one to three years was the second highest group (N=3,677), followed by less than one year (N=3,422); then five to 10 years (N=3,101); and lastly, three to five years (N=2,269). Of those who reported profession work experience, the majority were individual contributors (N=3,240); next was senior managers or executives (N=2,227); followed by mid-level supervisors and managers (N=1,879); and first-level supervisors and managers (N=1,736). The breakdown of respondents by industry is as follows:

manufacturing, engineering, and technology (N=2,793); professional services (N=2,766); consumer services (N=1,850); government, non-profit, and public administration (N=1,443); healthcare (N=1,282); creative industries (N=1,106); and banking, finance, and insurance (N=649).

Table 1

Frequency Counts of Respondents by Country, Role, Experience, and Industry

	N
Country (N=25,202)	
Australia	281
Brazil	1737
Canada	88
Chile	2749
China	325
Costa Rica	1935
Cyprus	290
Ecuador	408
France	58
Germany	287
Ghana	32
Honduras	606
India	597
Indonesia	19
Italy	104
Jordan	13
Malaysia	612
Mexico	4214
Morocco	163
New Zealand	44
Nigeria	236
Panama	358
Peru	5097
Portugal	248
Qatar	47
Saudi Arabia	140
South Africa	256
Spain	642
Switzerland	219
Thailand	73
Turkey	1045

United Arab Emirates	77
United Kingdom	141
United States	1432
Other	629
Role (N=9,082)	
Individual contributor	3240
Senior Manager or Executive	2227
Mid-level Supervisor/Manager	1879
First-level Supervisor/Manager	1736
Experience (N=25,093)	
More than 10 years	7957
None[a]	4667
1 to 3 years	3677
Less than 1 year	3422
5 to 10 years	3101
3 to 5 years	2269
Industry (N=11,889)	
Manufacturing, Engineering & Technology	2793
Professional Services	2766
Consumer Services	1850
Government, Non Profit, Public Administration	1443
Healthcare	1282
Creative Industries	1106
Banking, Finance and Insurance	649

The competencies were generated by the representatives from the global network of institutions of higher education along with the assistance of a North American consulting firm. The competencies contain many of the elements recommended by Schippmann et al. (2000) and Campion et al. (2011) for successful creation of competency models. For example, these elements included starting at the top of the organization by consulting top-level incumbents with considerable experience as well as defined levels of proficiency that are used as anchors.

The survey was split into two parts with the first part containing importance ratings for a total 20 competencies. Part 2 of the survey presented 97 behavioral items that contain scales for each competency. So, in part 2, "Achieving Objectives" was presented as four separate items to be rated for importance (same importance rating scale as part 1). The scales for each subdimension used in this research project were part of the second half of the survey (e.g., competency behaviors). An importance rating ranging from 1 (*Not at all important*) to 5 (*Critically important*) was presented for each item in both parts of the survey. Only part 1, the single competency importance ratings, were used in the ANOVA analyses. This choice was made to keep in line with the prevalent conceptualization of competencies in that they are made up of a single rating for each competency (Lievens et al., 2004; Lievens et al., 2010).

The first three hypotheses will be analyzed using a univariate ANOVA with a sample drawn from the overall dataset. A univariate ANOVA is a technique for comparing the systematic variance to unsystematic variance by using the *F*-ration statistic (Maxwell & Delaney, 2004). This approach will allow for determining differences between group means where a large and significant *F*-statistic indicates better discrimination between cases from different groups (Maxwell & Delaney, 2004).

Hypotheses 4 through 6 will be analyzed using confirmatory factory analysis and hypothesis 7 will be analyzed using a multi-group confirmatory factor analysis to test for invariance. The competency behavior importance ratings from part 2 of the survey will be used for these analyses. These competency behavior items make up the factors to be tested and are included below in Appendix C.

For the cross-cultural model, a multi-group confirmatory factor analysis will be used. Initially, cross-cultural research approached measurements across countries as *transport* and *test* (Berry, 1969; Berry et al., 2002). This meant that tests and assessments were developed in the U.S. and Europe and were then transported to other cultures without any adaptation. This ethnocentric approach is no longer appropriate today and more adaptive approaches are taken (Cheung, 2012). These adaptations are utilized in order to avoid a cultural bias or misinterpretation. Cross-cultural psychology research gives special attention to assessing individuals across cultures (Scholten, Velten, Bieda, Zhang, & Margraf, 2017). Oftentimes in the cross-cultural literature, researchers will translate an assessment to the primary language in a given culture. However, the assumption that the assessment will be comparable based solely on the translation of items is not an absolute. Even though the survey used in this study was translated for each country in which it was administered, in order to determine whether or not the adaptation of an assessment is applicable, the assessment must be validated by testing it across various groups using multi-group confirmatory factor analysis methods (Kline, 2005). The main question addressed in multi-group confirmatory factor analysis pertains to measurement invariance, which is used interchangeably with measurement equivalence. In other words, does a set of items assess the same constructs in different groups? In the case of the current study, we can test this given the diverse dataset. Hence, it is possible to test the competencies for equivalence, meaning that the test measures equally for one group versus another.

In order to determine whether or not a translated version of an assessment is comparable across countries, a multi-group confirmatory factor analysis will be conducted to determine configural invariance (Hirschfeld & Von Brachel, 2014; Steenkamp &

Baumgartner, 1998; Vandenberg & Lance, 2000). Configural invariance tests the

configuration of the model across the groups by allowing the factor loadings to freely vary

and simultaneously constraining the factor variances. After running the constrained model to

determine if there are statistical differences between the groups, a non-significant result

provides support that the assessment is equivalent across groups, or that the assessment

exhibits metric invariance. In other words, if the measurement model is tested and found to

be invariant, the evidence will support the hypothesis that this proposed cross-cultural core

competency model is the same when administered to multiple cultural contexts. Given that

the dataset is so large, multiple subsamples will be extracted to run these analyses to ensure

that they are generalizable.

Classification of Competencies into Dimensions

Of the original list of 20 competencies, only 13 were used in the final analyses. The

initial phase of classification began by sorting the competencies into Arthur et al.'s (2003)

model of six assessment center dimensions. Given the dearth of research on core competency

models, the model of six assessment dimensions was used as a proxy. Definitions of Arthur

et al.'s (2003) assessment center dimensions were reviewed alongside the competency

definitions for classification among seven I-O doctoral students and one professor. The goal

was to sort the 20 competencies into Arthur et al.'s six assessment center dimensions.

Dimensions for which six out of 8 raters agreed (75%) were retained while dimensions with

lower levels of agreement were discussed with the purpose of reaching consensus. Two

competencies, *Cultivating a Strategic and Entrepreneurial Mindset* and *Generating Ideas
and Innovating*, were not able to be classified and the group failed to reach consensus as to

where they should be sorted. These two competencies were subsequently dropped, leaving 18 remaining competencies.

Following the sorting process, each scale for the remaining competencies were then run together in a principal components exploratory factor analysis (EFA) with a Varimax rotation. Missing data was excluded listwise and the sample dropped to n = 8,956. The results of the EFA yielded low factor loadings (< .4) for the *Adapting to Change*, *Resilience*, and *Decision-Making* scales, both of these scales were dropped from subsequent analyses. Further, items for *Oral Communication* and *Written Communication* cross-loaded into other factors. Items four, five, and six of the *Oral Communication* scale were removed as well as item five of the *Written Communication* scale. *Demonstrating Accountability* and *Upholding Ethical Standards* and *Demonstrating Social Responsibility* loaded on the same factor and were dropped from further analysis. After these scales and items were removed, another EFA was conducted and all of the remaining competency scales loaded on a single factor. The remaining competencies used in this study are 1) overall competency importance ratings for hypotheses 1 through 3: *Achieving Objectives* (M=4.23, SD=.787)*, Analyzing & Solving Problems* (M=4.32, SD=.761)*, Applying a Global Mindset* (M=3.75, SD=..929)*, Communicating in Writing* (M=4.03, SD=.858)*, Communicating Orally* (M=4.31, SD=.763)*, Influencing Others* (M=3.73, SD=.889)*, Leading Others* (M=3.89, SD=.954)*, Learning & Self-Development* (M=4.28, SD=.778)*, Leveraging Technology* (M=3.98, SD=.857)*, Managing the Work of Others* (M=3.68, SD=.976)*, Meeting Customer/Stakeholder Expectations* (M=4.15, SD=.866)*, Planning & Organizing* (M=4.20, SD=.810)*, and Working Well with Others* (M=4.31, SD=.775) and 2) competency behavior rating scales for hypotheses 4 through 7: *Achieving Objectives* (M=4.10, SD=.650)*, Analyzing & Solving*

Problems (M=4.04, SD=.649)*, Applying a Global Mindset* (M=3.80, SD=.804)*,*

Communicating in Writing (M=4.11, SD=.721)*, Communicating Orally* (M=4.21, SD=.660)*,*

Influencing Others (M=3.90, SD=.724)*, Leading Others* (M=3.98, SD=.815)*, Learning &*

Self-Development (M=4.19, SD=.670)*, Leveraging Technology* (M=3.97, SD=.772)*,*

Managing the Work of Others (M=3.88, SD=.846)*, Meeting Customer/Stakeholder*

Expectations (M=4.14, SD=.778)*, Planning & Organizing* (M=4.17, SD=.697)*,* and *Working*

Well with Others (M=4.16, SD=.674)*.*

The demographics of the final sample were as follows (N=8,020). There were more

males (N=4,525) than there were females (N=3,494) and the largest age group was between

30 to 39 (N=2,388) with the second largest group being between the ages of 40 to 49

(N=1,730). The data also includes four levels of job roles including *Individual Contributors*

(N=2,792); *First-Level Supervisors/Managers* (N=1,532); *Mid-Level Supervisors/Managers*

(N=1,709); and *Senior Managers or Executives* (N = 1,987). There were also seven different

areas of industry surveyed including *Manufacturing, Engineering & Technology* (N=1,937)*;*

Professional Services (N=1,627)*; Consumer Services* (N=1,225)*; Creative Industries*

(N=693)*; Healthcare* (N=783)*; Government, Non Profit, Public Administration* (N=816)*;*

and *Banking, Finance and Insurance* (N=428).

RESULTS

In order to test hypothesis 1, descriptives and Cronbach's alpha reliabilities were

calculated for each role by their 13 respective competency importance ratings from part 1 of

the survey. Table 1 displays the descriptive statistics and Cronbach's alpha reliabilities for

the study variables for hypotheses 1 through hypothesis 3. The Cronbach's alpha reliabilities

did not indicate any major differences across the different roles: *Individual Contributor* (α =

.857); *First-Level Supervisor/Manager* (α = .878); *Mid-Level Supervisor/Manager* (α =

.855); and *Senior Manager or Executive* (α = .868). Additionally, a univariate ANOVA was

conducted to compare the effect of role on the 13 overall competency importance rating

means (Maxwell & Delaney, 2004). Results (Table 2) showed a non-significant effect of role

on the competency importance ratings, $F(3, 8016) = 2.523$, $p = .056$, $\eta^2 = .001$. Given that the

results were approaching significance, post-hoc Tukey tests were analyzed to compare the

differences in the means across the four roles. None of the comparisons were significant,

thus, hypothesis 1 was not supported.

Table 2

Descriptive Statistics & Reliabilities for Overall Competency Importance Ratings by Role, Industry, & Tenure

	N	Mean	SD	α
Role				
Individual contributor	2792	4.075	0.513	.857
First-level Supervisor/Manager	1532	4.085	0.540	.878
Mid-level Supervisor/Manager	1709	4.065	0.505	.855
Senior Manager or Executive	1987	4.040	0.539	.868
Industry				
Manufacturing, Engineering & Technology	1937	4.037	0.546	.874
Professional Services	1627	4.116	0.521	.868
Consumer Services	1225	4.030	0.521	.858
Creative Industries	693	4.055	0.521	.858
Healthcare	783	4.117	0.480	.849
Government, Non Profit, Public Administration	816	4.080	0.505	.854
Banking, Finance and Insurance	428	4.018	0.507	.846
Other	511	4.061	0.538	.878
Tenure				
None	71	4.015	0.614	.897
Less than 1 year	497	4.069	0.530	.869
1 to 3 years	1189	4.074	0.554	.872
3 to 5 years	974	4.070	0.512	.854
5 to 10 years	1432	4.077	0.517	.861
More than 10 years	3857	4.059	0.515	.862

Note. N = 8,020

Table 3

Univariate ANOVA results of the effects of Role by Competency Importance Rating

	SS	df	MS	$F_{(3,8016)}$	p	Partial η^2
Overall Model	2.071[a]	3	0.690	2.52	.056	.001
Intercept	126395.852	1	126395.852	461879.612**	.000	.983
Role	2.071	3	0.690	2.52	.056	.001
Error	2201.831	8046	0.274			

Note. [a] *R*-Squared = .001 (Adjusted *R*-Squared = .001). **p < .01.

Hypotheses 2 and 3 sought to determine if raters with higher levels of job experience exhibit higher interrater reliability and greater discriminant validity than inexperienced raters across seven industries. Again, descriptives and Cronbach's alpha reliabilities were calculated for each of the variables used in this set of analyses (Table 3). As with hypothesis 1, a univariate ANOVA was used to analyze the differences in means and variances between the groups of interest (Maxwell & Delaney, 2004). There were no major differences between the reliabilities for either role or industry, however, the univariate ANOVA model was significant, $F(47, 7972) = 2.174$, $p = .000$, $\eta^2 = .013$. Neither of the main effects of role or industry were significant and had very small effect sizes. Tukey tests were also run post-hoc and yielded some significant comparisons. Taken together with the statistically significant result and the small effect sizes, there was not enough evidence to support either hypotheses 2 or 3.

Table 4

Univariate ANOVA results of the effects of Industry & Tenure by Competency Importance Rating

	SS	df	MS	$F_{(47,7972)}$	p	Partial η^2
Overall Model	27.754[a]	47	0.591	2.174**	.000	.013
Intercept	12295.945	1	12295.945	45263.066**	.000	.850
Industry	3.418	7	0.488	1.797	.083	.002
Tenure	0.668	5	0.134	0.491	.783	.000
Industry * Tenure	16.091	35	0.460	1.692*	.007	.007
Error	2165.635	7972	0.272			

Note. a R-Squared = .013 (Adjusted *R*-Squared = .007). *p < .05.**p < .01.

In order to test hypotheses 4, 5, and 6, a structured equation modeling (SEM) approach with maximum likelihood and variance adjustment procedures were conducted in SPSS AMOS version 25. Several models were tested for comparative fit using goodness of fit indices such as the chi-square (x^2) model fit statistic, root mean square error approximation (RMSEA; Steiger, 1990), the comparative fit index (CFI; Bentler, 1990), and the goodness of fit index (GFI; Bentler, 1990). A stratified sample based upon United Nations region classification was taken to test hypotheses four through seven to test the two-factor model. The sample consisted of a total of n = 4,475 participants (*Africa* n =181; *Americas* n = 3,386; *Asia* n = 497; *Europe* n = 366; *Oceania* n = 45) and all missing data was removed so all participants had complete data. The two-factor model was compared against the six-factor model developed by Arthur et al. (2003) in the same way the Meriac et al. (2014) compared it to their conception of assessment center dimensions. Drawing from the aforementioned literature, competing models were tested against each other in an attempt to determine a core set of competencies.

A six-factor model was run using AMOS to determine the appropriateness of Arthur et al.'s (2003) framework. The six dimensions were treated as a second order factor with the classified competencies serving as the first order factors with error terms and residuals. Constraints of 1.0 were placed on the first path of each regression path as well as each factor loading (Hair et al, 2010). The six-factor model fit the data as most indices also fit the data very well. However, some items had error terms with large modification indices values. A succeeding model was run allow for these error terms to covary, this resulted in a better fitting model as well as no Heywood cases and all standardized regression weights higher

than .7. This rerun model fit the data better and all indices evaluated were within acceptable limits, $x^2_{(1736)} = 13,447.78$; RMSEA = .039; CFI = .944; GFI = .905.

The two-factor model was run next with the Leadership and Performance dimensions serving as the second order factor and the competencies as the first order factors. The two-factor model also fit the data very well. However, this model also showed error terms with large modification indices values. These errors were allowed to covary and a second two-factor model was run, thus increasing the model fit, $x^2_{(1745)} = 12,644.05$; RMSEA = .037; CFI = .948; GFI = .904. Although there are only slight differences between three of the fit indices (RMSEA, CFI, and GFI), there was significant improvement in fit relative to the two-factor model compared to the six-factor model, $\Delta x^2(9) = 803.74$, $p < .001$, suggesting that six-factor model is not highly distinguishable. Hence, hypotheses four and five were supported.

An additional analysis was computed for a one-factor model to determine if there was better model fit. This did not improve the model fit over the two-factor model, $x^2_{(1756)} = 15,832.30$; RMSEA = .042; CFI = .932; GFI = .880. Although there are only slight differences between three of the fit indices (RMSEA, CFI, and GFI), there was significant improvement in fit relative to the one-factor model compared to the two-factor model, $\Delta x^2(11) = 3,188.25$, $p < .001$, this would suggest that the two-factor model is the best fitting model of the three tested (Table 4).

Table 5
Comparison of Measurement Models for Proposed Competency Models

Model	χ^2	df	$\Delta\chi^2$	Δdf	RMSEA	CFI	GFI
Six-Factor Model	13447.78	1736	-	-	.039	.944	.905
Two-Factor Model	12644.05	1745	803.74**	9	.037	.948	.904
One-Factor Model	15832.30	1756	3188.25**	11	.042	.932	.880

Note. RMSEA = Root Mean Square Error of Approximation; CFI = Comparative Fit Index; GFI = Goodness of Fit Index.
** $p < .01$

In addition to hypothesized improved fit of the two-factor model, it was also hypothesized that the second order factors of Leadership and Performance would show discriminant validity. Two models were run to test this, one model allowed the two latent factors to vary freely, $x^2_{(1745)} = 12,644.05$, $r = .955$, while the second model constrained the two factors to a perfect correlation, $x^2_{(1746)} = 14,336.10$, $r = .982$. The difference between the two models exhibited poor discriminant validity, $x^2_{(1)} = 1,692$, $p < .001$, thus, not supporting hypothesis six.

Hypothesis seven sought to test the invariance between regions of the world to determine is the model fit is the same. Factorial and structural models are often tested in other areas of research such as in personality to establish global sets of traits across various contexts (Byrne, 2016). For this hypothesis, the full sample of participants who completed the survey was used (*Africa* n =361; *Americas* n = 6,744; *Asia* n = 1,002; *Europe* n = 739; *Oceania* n = 89). The foundational step for examining multigroup equivalence is to first test for configural invariance. In this step, no equality constraints are placed on any of the parameters, $x^2_{(8,785)} = 33,592.30$; RMSEA = .018; CFI = .940; GFI = .882. This baseline model was compared against each group, $x^2_{(10470)} = 35,308.10$; RMSEA = .018; CFI = .936; GFI = .877 and was found to lack factorial invariance, $\Delta x^2_{(186)} = 1,715.8$, thus, hypothesis seven was not supported.

DISCUSSION

The primary goal of this study was to expand upon what is known about the use of competency models by examining the consensus ratings of a large, cross-cultural sample and to determine if there exists a common set of competency dimensions.

Research in competency modeling, to date, has yet to provide evidence that can explain factors resulting in substantive agreement or disagreement among competency raters (Lievens et al., 2010). The results of this study were parallel to previous research as it did not yield any meaningful results to provide clarification on the accuracy of competency ratings. This study did not find the same results as Lievens et al. (2010) as higher-level organizational members did not show greater variability in competency ratings. Similarly, there were no significant rater differences for raters with more experience or across seven industries. A univariate ANOVA model was statistically significant but none of the main effects and many of the post-hoc comparisons were not. Additionally, given the low effect sizes of this significant model, there is no practical significance (Moore & McCabe, 2003). There was, however, a significant interaction between Industry and Tenure ratings perhaps may indicate that these two variables are working together in some way to influence importance ratings; this is worth looking into in further research to provide better understanding.

One of the main issues with attempting to find significant differences from these ratings is a restriction of range. Many of the average competency ratings were above the mid-point of the 5-point scales, several averages were above 4.0. Competency model researchers may consider expanding rating scales beyond a 5-point scale to introduce more variance. Perhaps another approach for creating ratings scales could include some type of level of performance or behaviorally anchored rating scales (Smith & Kendall, 1963) associated with each scale point to reduce ceiling effects in ratings. Also, moving away from importance or agreement rating

scales may aid in increasing variance and reduce the ceiling effects seen in this study.

Another potential strategy to increase variance and reduce ceiling effects could be to

include negatively worded or reverse coded items. There may be an overall

consideration to include some negative competencies to provide some contrast

between the core set of competencies. The general agreement of importance of all

competencies included in this study may be offset by the inclusion of more negatively

worded competency definitions and behaviors. This may have been the case for the

Influencing Others competency since it had the second lowest mean importance

rating (M = 3.73). This also could have been a result of the question of what

competencies are most important for new graduates entering their first year in the

workforce. Other similar competencies such as Applying a Global Mindset (M =

3.75), Managing the Work of Others (M = 3.68), and Leading Others (M = 3.89) were

rated among the lowest in importance. Future studies should explore the mean levels

across competency importance ratings to determine if creating more negatively

worded competencies increases the variability and ensures that all competencies do

seem very important or critical.

Additionally, rater training may be of use in future studies. The 2010 study by

Lievens incorporated a one-day competency model training for the graduate students

that were helping job incumbents make competency model ratings. However, the

incumber raters were not given any specific competency model or competency rater

training. Their conclusion was that rater training may not be an effective means for

increasing the consensus among competency ratings. Further study is required to

explore how competency models should be configured and rated as there is no standardized procedure or methodology at this time.

The second half of the study was dedicated to examining if a cross-cultural competency model using structural equations modeling and invariance testing. Using previous assessment center dimension research developed by Arthur et al. (2003) as a framework, support was found for a two-factor core competency model of *Leadership* and *Performance* over a six-factor core set of competencies, though there was no evidence to show discriminant validity between the two core competencies. Little research has been conducted on cross-culture competency models, especially with a large sample size. Moreover, the utilization of competency models across differing cultural languages and contexts has not been studied in academia. This study attempted to analyze competency importance ratings from five regions around the globe to determine if a cross-cultural competency model exists. Nevertheless, there was no evidence found to show invariance between differing regions of the world. Perhaps a different configuration of the regions would be appropriate, such as splitting the Americas region into North American and South America regions. Plus, moving the participants in the Oceania region into a culturally homogenous region such as Europe or North America would be more appropriate than having them as their own separate region. The classification of regions should be explored using the work of researchers such as Geert Hofstede in subsequent studies to determine which regions are more cohesive.

Practical Implications

Competency modeling research has shown to be lacking viable support for its methodology. This study attempted to extend previous research that has been conducted by using a substantial sample size to show how reliable competency ratings are. A central tenet of competency modeling is that they can be used across all roles within the organization, this study was not able to provide support for this claim. A better understanding of this may help to provide organizations with more information regarding how to effectively use competency models more precisely. A 2011 study by Dai, Tang, and De Meuse found that importance ratings in leadership competencies increase as the worker moves up the ladder of the organization. This suggests that organizational members must learn new skills as they increase in the ranks because the competencies required for successful performance can change. Organizations utilizing competency models may consider taking a more targeted approach when developing competency models instead of using them broadly. However, this undercuts the usefulness of competency modeling in that its purpose to be used broadly across various organizational development project (Schippmann et al., 2000).

Researchers have been frustrated with the lack of academic rigor and reliability that competency modeling has reported for several decades. By using competency models in conjunction with traditional job analysis, employers can have the best of both worlds. There has been a call for researchers to focus competency modeling research on the strategic goals of the organization.

Limitations

The current study is not without limitations. First, although the survey was translated into several different languages, there may be slight shifts in phrasing that may increase or

decrease the ratings of certain competency items. For instance, a 1997 study by Huang et al. found that nearly 40% of the NEO-PI items administered in English to both American and Filipino groups showed differential item functioning (DIF) and many significant differences in culture were nullified when these items were removed. Second, it is also possible that these samples are not representative of the countries in which they were administered given that a large portion of the responses are from college students. The sheer fact that some of these respondents are able to attend college given the country in which they reside may indicate that they are among the social elites in their society. Further, drawing conclusion about cultures may introduce a reverse ecological fallacy. This is a false assumption that individual level constructs are applicable to all living within that culture.

As mentioned above, there were methodological issues with this study such as range restriction and ceiling effects. Future researchers should find appropriate ways to increase the variances of the ratings. This range restriction and lack of variability were critical issues when attempting to find significant differences between groups or contexts.

In conclusion, this study was not able to provide support for the use of competency models under the current practices that are proscribed by previous research (Schippmann et al., 2000; Campion et al., 2011). There still exists a deficiency of direct evidence to show the rating accuracy needed to defend the use of competency models. The study attempted to expand the scope of competency model beyond a single organization or a set of organization in one culture to a cross-cultural model. Although the use of competency models is gaining popularity in the private sector, it has still not been translated into evidence-based organizational strategy from a scientific view (Campion, Schepker, Campion, & Sanchez, 2020).

REFERENCES

Arnold, J. (2002). Careers and career management. In N. Anderson, D. S. Ones, H. K.

    Sinangil, C. Viswesvaran, N. Anderson, D. S. Ones, ... C. Viswesvaran (Eds.),

    Handbook of industrial, work and organizational psychology, Volume 2:

    Organizational psychology (pp. 115-132). Thousand Oaks, CA, US: Sage

    Publications, Inc.

Arthur, W., Jr. (2012). Dimension-based assessment centers: Theoretical perspectives. In D.

    J. R. Jackson, C. E. Lance, & B. J. Hoffman (Eds.), *The psychology of assessment*

    centers (pp. 95-120). New York: Routledge/Psychology Press.

Arthur Jr., W., Day, E. A., McNelly, T. L., & Edens, P. S. (2003). A meta-analysis of the

    criterion-related validity of assessment center dimensions. *Personnel Psychology*, *56*,

    125-154.

Arthur Jr, W., Day, E. A., & Woehr, D. J. (2008). Mend it, don't end it: An alternate view of

    assessment center construct-related validity evidence. *Industrial & Organizational*

    Psychology, *1*, 105-111. doi:10.1111/j.1754-9434.2007.00019.x

Arvey, R. D., Davis, G. A., McGowen, S. L., & Dipboye, R. L. (1982). Potential sources of

    bias in job analytic processes. *Academy of Management Journal*, *25*, 618-629.

Avolio, B. J., Walumbwa, F. O., & Weber, T. J. (2009). Leadership: Current theories,

    research, and future directions. *Annual Review of Psychology*, *60*, 421-449.

Barrett, P. T., & Eysenck, S. B. G. (1984). The assessment of personality across 25 countries.

    Personality and Individual Differences, *25*, 805–819.

Barrick, M. R., & Mount, M. K. (1991). The Big Five personality dimensions and job

    performance: A meta-analysis. *Personnel Psychology*, *44*, 1-26.

Bartram, D. (2005). The great eight competencies: A criterion-centric approach to validation. *Journal of Applied Psychology*, *90*, 1185-1203.

Baruch, Y., & Altman, Y. (2002). Expatriation and repatriation in MNC: A taxonomy. *Human Resource Management*, *41*, 239-259.

Bass, B. M. (1995). Theory of transformational leadership redux. *Leadership Quarterly*, *6*, 463-478.

Bentler, P. M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, *107*, 238–246.

Berry, J. W. (1969). On cross-cultural comparability. *International Journal of Psychology*, *4*, 119–128.

Berry, J. W., Poortinga, Y. H., Segall, M. H., & Dasen, P. R. (2002). *Cross-cultural psychology: Research and applications*. Cambridge University Press.

Biddle, B. J. (1986). Recent developments in role theory. *Annual Review of Sociology*, *12*, 67-92.

Black, J.S., Gregersin, H.B., Mendenhall, M., & Stroh, L.K. (1999). *Globalizing people through international assignment*. Reading, MA.

Borman, W. C., Campbell, C. H., & Pulakos, E. D. (2001). Analyzing jobs for performance measurement. In J. P. Campbell & D. K. Knapp (Eds.), *Exploring the limits of personnel selection and classification* (pp. 157-180). Mahwah, NJ: Lawrence Erlbaum

Borman, W. C., Dorsey, D., & Ackerman, L. (1992). Time-spent responses as time allocation strategies: Relations with sales performance in a stockbroker sample. *Personnel Psychology*, *45*, 763-777.

Boyatzis, R.E. (1982). *The competent manager: a model for effective performance*.

London: Wiley.

Byrne, B. M. (2016). *Structural equation modelling with AMOS: Basic concepts,*

applications, and programming (3rd ed.). New York: Routledge.

Cable, D. M., & Judge, T. A. (1996). Person–organization fit, job choice decisions, and

organizational entry. *Organizational Behavior and Human Decision Processes*, *67*,

294-311.

Campion, M. A., Fink, A. A., Ruggeberg, B. J., Carr, L., Phillips, G. M., & Odman, R. B.

(2011). Doing competencies well: Best practices in competency modeling. *Personnel*

Psychology, *64*, 225-262.

Campion, M. C., Schepker, D. J., Campion, M. A., & Sanchez, J. I. (2020). Competency

modeling: A theoretical and empirical examination of the strategy dissemination

process. *Human Resource Management*, 59(*3*), 291–306.

Cascio, W. F. & Aguinis, H. (2005). *Applied psychology in human resource management*,

(6th Ed.). New Jersey: Prentice Hall.

Cheung, F. M. (2012). Mainstreaming culture in psychology. *American Psychologist*, *67*,

721-730.

Church, A.T. (1982), "Sojourner adjustment", *Psychological Bulletin*, *3*, 540-72.

Costa, P. T., & McCrae, R. R. (1992). Revised NEO Personality Inventory (NEO-PI-R) and

NEO Five-Factor Inventory (NEO-FFI) professional manual. Odessa, FL:

Psychological Assessment Resources.

Costa, P. T., Jr., McCrae, R. R., & Dye, D. A. (1991). Facet scales for Agreeableness and

Conscientiousness: A revision of the NEO Personality Inventory. *Personality and Individual Differences*, *12*, 887-898.

Dai, G., Tang, K. Y., & De Meuse, K. P. (2011). Leadership competencies across organizational levels: A test of the pipeline model. *Journal of Management Development*, *30*, 366-380.

Davenport, T. H., Prusak, L. (1998) *Working knowledge: How organizations manage what they know*. Harvard Business School Press, Boston.

Den Hartog, D. N., & Koopman, P. L. (2002). Leadership in organizations. In N.Anderson, D. S. Ones, H. K.Sinangil, & C.Viswesvaran (Eds.), *The handbook of industrial, work and organizational psychology* (Vol. 2, pp. 166–187). Thousand Oaks, CA: Sage.

Dierdorff, E. C., & Morgeson, F. P. (2007). Consensus in work role requirements: The influence of discrete occupational context on role expectations. *Journal of Applied Psychology*, *92*, 1228-1241.

Dierdorff, E. C., & Morgeson, F. P. (2009). Effects of descriptor specificity and observability on incumbent work analysis ratings. *Personnel Psychology*, *62*, 601-628.

Dierdorff, E. C., & Wilson, M. A. (2003). A meta-analysis of job analysis reliability. *Journal of Applied Psychology*, *88*, 635-646).

Dilchert, S., & Ones, D. S. (2009). Assessment Center Dimensions: Individual differences correlates and meta-analytic incremental validity. *International Journal of Selection & Assessment*, *17*, 254–270.

Dooley, K. E., Lindner, J. R., Dooley, L. M. and Alagaraja, M. (2004). Behaviorally anchored competencies: Evaluation tool for training via distance. *Human Resource Development International*, *7*, 315-332.

Dragoni, L., Oh, I., Tesluk, P. E., Moore, O. A., VanKatwyk, P., & Hazucha, J. (2014). Developing leaders' strategic thinking through global work experience: The moderating role of cultural distance. *Journal of Applied Psychology*, *99*, 867-882. doi:10.1037/a0036628

Eysenck, H. J., & Eysenck, S. B. G. (1975). *Manual of the Eysenck Personality Questionnaire (Junior and Adult)*. Kent, UK: Hodder & Stoughton.

Gatewood R.D, & Feild H. (1994). *Human Resource Selection*, 3rd Edition, Fort Worth Harcourt Brace.

Gatewood, R., Feild, H. S., & Barrick, M. (2010). *Human Resource Selection*. 7th ed. Mason, OH: South-Western, Cengage Learning.

Gaugler, B. B., & Thornton, G. C., III. (1989) Number of assessment center dimensions as a determinant of assessor accuracy. *Journal of Applied Psychology*, *72*, 493-511.

Getha-Taylor, H., Hummert, R., Nalbandian, J., & Silvia, C. (2013). Competency model design and assessment: Findings and future directions. *Journal of Public Affairs Education*, *19*, 141-171.

Green, P.C. (1999). *Building robust competencies: Linking human resource systems to organizational strategies*. San Francisco, CA: Jossey-Bass.

Hair, J. F. Jr., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis* (7th ed.). Upper Saddle River, NJ: Prentice Hall.

Hechanova, R., Beehr, T.A., & Christiansen, N.D. (2003). Antecedents and consequences of employees' adjustment to overseas assignments: A meta-analytic review. *Applied Psychology*, *52*, 213-236.

Hill, C. W. (2001). *International business: Competing in the global marketplace*. Burr Ridge, IL: Irwin McGraw-Hill.

Hirschfeld, G., von Brachel, R., (2014). Multiple-group confirmatory factor analysis in R: A tutorial in measurement invariance with continuous and ordinal indicators. *Practical Assessment, Research and Evaluation*, *19*, 1-12.

Hodges, D., & Burchell, N. (2003). Business graduate competencies: Employer's views on importance and performance. *Asia-Pacific Journal of Cooperative Education, 4*, 16-22.

Hoffman, B. J., Melchers, K., Blair, C. A., Kleinmann, M., & Ladd, R. T. (2011). Exercises and dimensions are the currency of assessment centers. *Personnel Psychology*, *64*, 351-395.

Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations*. Thousand Oaks, CA: Sage.

Hogarth, R. M., (1981). Beyond discrete biases: Functional and dysfuncitonal aspects of judgmental heuristics. *Psychological Bulletin*, *90*, 197-217.

Howell, J. M., & Avolio, B. J. (1993). Transformational leadership, transactional leadership, locus of control, and support for innovation: Key predictors of consolidated business-unit performance. *Journal of Applied Psychology*, *78*, 891–902.

Huang, C. D., Church, A. T., & Katigbak, M. S. (1997). Identifying cultural differences in items and traits: Differential item functioning in the NEO Personality Inventory. *Journal of Cross-Cultural Psychology*, *28*, 192-218.

Johnson, J. P., Lenartowicz, T., & Apud, S. (2006). Cross-cultural competence: Toward a definition and a model. *Journal of International Business Studies*, *37*, 525-543.

Judge, T. A., & Piccolo, R. (2004). Transformational and transactional leadership: A meta-analytic test of their relative validity. *Journal of Applied Psychology*, *89*, 755-768.

Kahn, R. L., Wolfe, D. M., Quinn, R. P., Snoek, J. D., & Rosenthal, R. A. (1964). *Occupational stress: Studies in role conflict and ambiguity*. New York, NY: Wiley.

Katz, D., & Kahn, R. L. (1978). *The social psychology of organizations*. (2nd Ed). New York: John Wiley & Sons.

Kline, R.B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford Press.

Kraimer, M. L., Shaffer, M. A., Harrison, D. A., & Ren, H. (2012). No place like home? An identity distress perspective on repatriate turnover. *Academy of Management Journal*, *55*, 399-420.

Kristof, A.L. (1996). Person-organization fit: An integrative review of its conceptualizations, measurement, and implications. *Personnel Psychology*, *49*, 1-15.

Le Deist, F. D., & Winterton, J. J. (2005). What Is Competence?. *Human Resource Development International*, *8*, 27-46.

Lee, Y. (2009). Competencies needed by Korean HRD master's graduates: A comparison between the ASTD WLP competency model and the Korean study. *Human Resource Development Quarterly, 20*, 107-133.

Lievens, F., Sanchez, J. I., Bartram, D., & Brown, A. (2010). Lack of consensus among competency ratings of the same occupation: Noise or substance?. *Journal of Applied Psychology*, *95*, 562-571.

Lievens, F., Sanchez, J. I., & De Corte, W. (2004). Easing the Inferential leap in competency

modeling: The effects of task related information and subject matter expertise. *Personnel Psychology*, *57*, 881-904.

Lievens, F., & Sanchez, J. I. (2007). Can training improve the quality of inferences made by raters in competency modeling? A quasi-experiment. *Journal of Applied Psychology. 92*, 812-819.

Lunev, A., Petrova, I., & Zaripova, V. (2013). Competency-based models of learning for engineers: A comparison. *European Journal of Engineering Education*, *38*, 543-555.

Macan, T. H., Avedon,M. J., Paese, M., & Smith, D. E. (1994). The effects of applicants' reactions to cognitive ability tests and an assessment center. *Personnel Psychology*, *47*, 715-738.

Mansfield, B. (2004). Competence in transition. *Journal of European Industrial Training*, *28*, 296-309.

Markus, L., Cooper-Thomas, H., & Allpress, K. (2005). Confounded by competencies? An evaluation of the evolution and use of competency models. *New Zealand Journal of Psychology*, *34*(2), 117-126.

Martone, D. (2003). A guide to developing a competency-based performance-management system. *Employment Relations Today*, *30*, 23-32.

Maxwell, S. E., & Delaney, H. D. (2004). *Designing experiments and analyzing data: A model comparison perspective* (2nd ed.). Lawrence Erlbaum Associates Publishers.

McCrae, R. R. (2001). Trait psychology and culture: Exploring intercultural comparisons. *Journal of Personality*, *69*, 819-846.

McCrae, R. R., & Allik, J. (Eds.). (2002). *The Five-Factor Model of personality across cultures*. New York: Kluwer Academic/Plenum Publishers.

McCrae, R. R., & Costa, P. T. (1991). The NEO Personality Inventory: Using the Five-Factor Model in counseling. *Journal of Counseling & Development*, *69*, 367-372.

McCrae, R. R., Costa, P. T. Jr., del Pilar, G. H., Rolland, J. P., & Parker, W. D. (1998). Cross-cultural assessment of the Five-Factor Model: The revised NEO Personality Inventory. *Journal of Cross-Cultural Psychology*, *29*, 171-188.

McCrae, R. R., Terracciano, A., & 78 Members of the Personality Profiles of Cultures Project. (2005a). Universal features of personality traits from the observer's perspective: Data from 50 cultures. *Journal of Personality and Social Psychology*, *88*, 547-561.

McCrae, R. R., Terracciano, A., & 79 Members of the Personality Profiles of Cultures Project. (2005b). Personality profiles of cultures: Aggregate personality traits. *Journal of Personality and Social Psychology*, *89*, 407-425.

McClelland, D. (1973). Testing for competence rather than for 'intelligence'. *American Psychologist*, *1*, 1-14.

McClelland, D. (1998). Identifying competencies with behavioural-event interviews. *Psychological Science*. *5*, 331-339.

Meriac, J. P., Hoffman, B. J., & Woehr, D. J. (2014). A conceptual and empirical review of the structure of assessment center dimensions. *Journal of Management*, *40*, 1269-1296.

Meriac, J. P., Hoffman, B. J., & Woehr, D. J. (2014). A conceptual and empirical review of the structure of assessment center dimensions. *Journal of Management*, *40*, 1269–1296.

Meriac, J. P., Hoffman, B. J., Woehr, D. J., & Fleisher, M. S. (2008). Further evidence for

the validity of assessment center dimensions: A meta-analysis of the incremental criterion-related validity of dimension ratings. *Journal of Applied Psychology*, *93*, 1042-1052.

Mischel, W. (1977). "The interaction of person and situation". In Magnusson, D.; Endler, N.S. *Personality at the crossroads: Current issues in interactional psychology* (pp. 333–352). Hillsdale, New Jersey: Lawrence Erlbaum Associates.

Moore, S. D. & McCabe, G. P. (2003). *Introduction to the Practice of Statistics*. W. H. Freeman and Company, New York.

Morgeson, F.P. & Campion, M.A. (1997). Social and cognitive sources of potential inaccuracy in job analysis. *Journal of Applied Psychology*, *82*(5), 627-655.

Morgeson, F. P., Delaney-Klinger, K., Ferrara, P., Mayfield, M. S., & Campion, M. A. (2004). Self-Presentation processes in job analysis: A field experiment investigating inflation in abilities, tasks, and competencies. *Journal of Applied Psychology*, *89*, 674-686.

Morgeson, F. P., Delaney-Klinger, K., & Hemingway, M. A. (2005). The importance of job autonomy, cognitive ability, and job-related skill for predicting role breadth and job performance. *Journal of Applied Psychology*, *90*, 399-406.

Nadler, D. A., & Tushman, M. (1999). The organisation of the future: Strategic imperatives and core competencies for the 21st century. *Organisational Dynamics*, *27*, 45-58.

O'Reilly III, C.A, Chatman, J. & Caldwell, D.F. (1991). People and organizational culture: A profile comparison approach to assessing person-organization fit. *Academy of Management Journal*, *34*, 487-516.

Parry, S. B. (1996). Just what is a competency? (And why should you care?). *Training*, *35*,

58-64.

Piccolo, R. F., & Colquitt, J. A. (2006). Transformational leadership and job behaviors: The mediating role of core job characteristics. *Academy of Management Journal*, *49*, 327-340.

Rodriguez, D., Patel, R., Bright, A., Gregory, D., & Gowing, M. K. (2002). Developing competency models to promote integrated human resource practices. *Human Resource Management*, *41*, 309-324.

Sackett, P. R., & Laczo, R. M. (2003). Job and work analysis. In W. C. Borman, D.R. Ilgen, & R. J. Klimoski (Eds.), *Comprehensive handbook of psychology: Industrial and organizational psychology*. (Vol. 12, pp.21-37). New York: John Wiley & Sons.

Salgado, J. F. (1997). The Five Factor Model of personality and job performance in the European community. *Journal of Applied Psychology*, *82*, 30-43.

Salgado, J. F., Anderson, N., Moscoso, S., Bertua, C., de Fruyt, F., & Rolland, J. P. (2003). A meta-analytic study of general mental ability validity for different occupations in the European community. *The Journal of Applied Psychology*, *88*, 1068-1081.

Sanchez, J. I., & Levine, E. L. (2001). Work analysis in the 20th and 21st centuries. In Neil Anderson, & Associates (Eds.), *International handbook of industrial, work and organizational psychology*. Thousand Oaks, CA: Sage.

Sanchez, J. I., & Levine, E. L. (2009). What is (or should be) the difference between competency modeling and traditional job analysis?. *Human Resource Management Review*, *19*, 53-63.

Sanchez, J.I. and Levine, E.L. (2012). The rise and fall of job analysis and the future of work analysis. *Annual Review of Psychology*, *63*, 397-425.

Schippmann, J. S., Ash, R. A., Battista, M., Carr, L., Eyde, L. D., Hesketh, B., and Sanchez, J. I. (2000). The practice of competency modeling. *Personnel Psychology*, *53*, 703-740.

Schmidt, F. L. (2002). The role of general cognitive ability and job performance: Why there cannot be a debate. *Human Performance*, *15*, 187-210.

Schmidt, F., & Hunter, J. (1998). The validity and utility of selection methods in personnel psychology: Practical and theoretical implications of 85 years of research findings. *Psychological Bulletin*, *124*, 262-274.

Schneider, B. (1987). The people make the place. *Personnel Psychology*, *40*, 437-453.

Scholten, S., Velten, J., Bieda, A., Zhang, X. C., & Margraf, J. (2017). Testing measurement invariance of the depression, anxiety, and stress scales (DASS-21) across four countries. *Psychological Assessment*, doi:10.1037/pas0000440

Shore, T. H., Thornton, G. C., & Shore, L. M. (1990). Construct validity of two categories of assessment center dimension ratings. *Personnel Psychology*, *43*, 101–116.

Smith, P. C., & Kendall, L. M. (1963). Retranslation of expectations: An approach to the construction of unambiguous anchors for rating scales. *Journal of Applied Psychology*, *47*, 149–155.

Spencer, L. M., McClelland, D. C., & Spencer, S. (1994). *Competency assessment methods: History and state of the art*. Boston: Hay-McBey Research Press.

Steenkamp, J. E., & Baumgartner, H. (1998). Assessing measurement invariance in cross-national consumer research. *Journal of Consumer Research*, *25*, 78-90.

Steiger, J.H. (1990). Structural model evaluation and modification. *Multivariate Behavioral*

Research, *25*, 214-12.

Steiner, D. D., & Gilliland, S. W. (2001). Procedural justice in personnel selection:

International and cross-cultural perspectives. *International Journal of Selection and*

Assessment, *9*, 124-137.

Stevens, W. S. (2012). A critical review of the science and practice of competency modeling.

Integrative Literature Review, *12*, 86-107.

Stone, T., Webster, B., & Schoonover, S. (2010). What do we know about competency

modeling? *International Journal of Selection and Assessment*, *21*, 334-338.

Tett, R. P., & Burnett, D. D. (2003). A personality trait-based interactionist model of job

performance. *Journal of Applied Psychology*, *88*, 500−517.

Van Iddekinge, C. H., Putka, D. J., Raymark, P. H., & Eidson, C. E. (2005). Modeling error

variance in job specification ratings: The influence of rater, job, and organization-

level factors. *Journal of Applied Psychology*, *90*, 323-334.

Vandenberg, R. J., & Lance, C. E. (2000). A review and synthesis of the measurement

invariance literature: Suggestions, practices, and recommendations for organizational

research. *Organizational Research Methods*, *3*, 4-69.

Voskuijl, O. F., & van Sliedregt, T. (2002). Determinants of interrater reliability of job

analysis: A meta-analysis. *European Journal of Psychological Assessment*, *18*, 52-62.

Westerman, J. W., & Vanka, S. (2005). A cross-cultural empirical analysis of person-

organization fit measures as predictors of student performance in business education:

Comparing students in the United States and India. *Academy of Management*

Learning & Education, *4*, 409-420.

Woodruffe, C. (1991). Competence by any other name. *Personnel Management*, *9*, 30-59.

APPENDIX A: LIST OF SCALES

Analyzing & Solving Problems

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

	Not At All Important	Somewhat Important	Important	Very Important	Critically Important
	1	2	3	4	5

1. Critically evaluates information and its sources
2. Identifies gaps in information and seeks appropriate sources to close them
3. Synthesizes and integrates information into what is already known about a topic
4. Recognizes patterns in information to identify the bigger picture
5. Follows best practices and appropriately analyzes quantitative and qualitative data
6. Identifies and independently solves work problems, as appropriate
7. Considers multiple approaches when solving problems

Learning & Self-Development

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

	Not At All Important	Somewhat Important	Important	Very Important	Critically Important
	1	2	3	4	5

1. Identifies and addresses own knowledge gaps and training needs
2. Continually expands own knowledge and skills
3. Applies knowledge and training to professional contexts
4. Critically evaluates own strengths and weaknesses and pursues development
5. Seeks feedback and learns from successes and failures
6. Learns from others and seeks mentors

Communicating Orally

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

	Not At All Important	Somewhat Important	Important	Very Important	Critically Important
	1	2	3	4	5

1. Organizes thoughts and speaks professionally, using proper language and vocabulary
2. Speaks clearly and displays confidence

3. Accurately communicates ideas and concepts verbally
4. Skillfully delivers formal presentations
5. Actively listens to others and adjusts to their needs
6. Communicates effectively in a non-native spoken language required for the job

Communicating in Writing

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important 1	Somewhat Important 2	Important 3	Very Important 4	Critically Important 5

1. Writes professionally using proper grammar, punctuation, spelling, and vocabulary
2. Writes in an accurate, engaging manner, citing sources as appropriate
3. Writes in an organized, clear, and concise manner
4. Creates documents with structure, length, and language appropriate for the topic and audience
5. Communicates effectively in a non-native written language required for the job

Achieving Objectives

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important 1	Somewhat Important 2	Important 3	Very Important 4	Critically Important 5

1. Accepts or sets demanding individual goals
2. Meets individual goals and objectives
3. Takes initiative to seek additional responsibilities, as appropriate
4. Evaluates work outcomes to ensure quality standards are met

Leveraging Technology

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important 1	Somewhat Important 2	Important 3	Very Important 4	Critically Important 5

1. Applies technology tools and techniques to gather and store information
2. Uses technology and visual aids to facilitate and enhance communications
3. Leverages standard technology and applications to complete work

4. Applies profession-specific or other specialized applications to complete work
5. Stays up-to-date on technological changes

Planning & Organizing

How __important__ is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Sets project objectives, strategies, and milestones
2. Tracks progress toward project completion
3. Plans and prioritizes activities, and adjusts plans based on changes
4. Identifies and obtains the resources needed to accomplish work
5. Manages time effectively and completes work on schedule

Applying a Global Mindset

How __important__ is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Demonstrates interest in, and understanding of, other geographic regions, languages, and cultures
2. Recognizes own biases and balances local and global perspectives
3. Works effectively with a global community
4. Shows an understanding of other countries' standards, certifications, and processes

Meeting Customer/Stakeholder Expectations

How __important__ is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Understands and meets internal and external customer/stakeholder needs and expectations
2. Responds to customer/stakeholder requests in a timely manner
3. Balances customer/stakeholder demands with the organization's objectives

Working Well with Others

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Develops and maintains effective working relationships
2. Interacts effectively with people from different backgrounds
3. Listens to others and values and incorporates diverse viewpoints
4. Supports team decisions once they have been made
5. Adjusts own workload to help meet team commitments, as appropriate
6. Recognizes and demonstrates empathy for others' feelings, needs, and concerns
7. Appropriately resolves own work disagreements

Managing the Work of Others

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Delegates work tasks to others
2. Monitors performance of team members
3. Provides others with clear direction and expectations
4. Provides feedback and coaching to others

Leading Others

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Provides guidance to others
2. Motivates and encourages others
3. Willingly shares information, trains, and mentors others on areas of expertise
4. Develops and communicates a compelling vision that is aligned with the organizational strategy

Influencing the Work of Others

How <u>important</u> is this competency for the successful performance of new professionals entering the workplace?

Not At All Important	Somewhat Important	Important	Very Important	Critically Important
1	2	3	4	5

1. Offers suggestions and advocates for own ideas
2. Understands how own actions are interpreted by others and creates a positive impression
3. Navigates the formal and informal organizational structure
4. Sees issues from others' perspectives and effectively negotiates with them
5. **Adapts style to gain agreement and commitment**