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# Theoretical and Practical Advances in the Assessment of Cross-Cultural Competence

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## ABSTRACT

Organizations engaged in international operations must navigate complex intercultural dynamics for successful performance, necessitating identification of individuals who are likely to succeed in these environments and training personnel in cross-cultural competence (3C). To do so, adequate competency models of 3C need to be developed and valid 3C assessment instruments must be identified or generated. The present chapter reviews issues and challenges in 3C model development and illustrates these problems in an analysis of the Defense Language Office's Framework for Cross-Cultural Competence. The comparative advantages of competency versus causal models of 3C are discussed and an integration of competency and causal models is suggested. An examination of 34 instruments that have been recommended in the 3C civilian and military literatures for assessing cross-cultural competencies and their antecedent factors showed that existing 3C measures suffer from poor construct validity and have not been empirically linked to important outcome variables. A measurement strategy that eschews self-report methods and broadly assesses KSAOs and behavioral competencies is advocated.

**Keywords:** cross-cultural competency, assessment, competency models, military

## 1 COMPETENCIES FOR CROSS-CULTURAL READINESS

Cross-cultural competence (3C), often defined as the ability to quickly understand and effectively act in a culture different from one's own (e.g., Abbe, Gulick, & Herman, 2007), has garnered increasing attention within the U.S. Military. Military missions have become more complex, blending traditional military operations with nation building goals that require a broader set of competencies over a greater range of specialties and ranks, than the Military was previously required to sustain (Abbe, 2008). The U.S. Department of Defense, through entities such as the Defense Equal Opportunity Management Institute (DEOMI), the Defense Language Office (DLO), and the

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Army Research Institute (ARI), has devoted substantial resources to understanding and enhancing 3C. Doing so requires resolving three issues: (1) What is 3C, or more specifically, which competencies are needed by which personnel, and at what level of performance? (2) How can these competencies be assessed, for both selection or training purposes? and (3) How can these competencies be trained? The present chapter addresses the first two issues.

Cross-cultural competence has been studied actively in the civilian sector since the 1950s. More recently, the Department of Defense has attempted to develop a conceptualization of 3C for the Military through several official programs, including the National Security Language Initiative (U.S. Department of State, 2008), the Department of Defense Strategic Plan for Language, Regional, and Cultural Capabilities (2010), and the Department of Defense Language Transformation Roadmap (2005). The Roadmap states that language, culture, and regional expertise are not only important “defense core competencies” but also “critical weapons systems.”

Extant conceptualizations of 3C generally include four components: (1) relatively stable characteristics of the individual, such as personality traits, cognitive capabilities, social competency, and cognitive styles; (2) culture-general and region-specific knowledge; (3) attitudinal and motivational dispositions such as ethnocentrism, interest in culture, and motivation to learn; and (4) skills such as communication, language, culturally appropriate behaviors, and executive functions such as emotional regulation and metacognition.

Spitzberg and Changnon (2009) reviewed the many models of 3C developed for business, education, the Peace Corps and migration. The most carefully constructed conceptualization of 3C for the U.S. Military at this time is the “Framework for Cross-Cultural Competence.” The Framework was developed in several stages beginning in 2008 within the Defense Regional and Cultural Capabilities Assessment Working Group (RACCA WG) (McDonald, McGuire, Johnston, Selmeski, & Abbe, 2008). RACCA subject matter experts (SMEs) identified a set of 40 general cross-cultural learning statements consisting of knowledge, skills, and personal characteristics (also called “core competencies”). A second, overlapping group of culture experts reduced the RACCA competencies to a smaller number and drew a distinction between antecedent variables, which were termed “enablers,” and competencies (Johnston, Paris, McCoy, Severe, & Hughes, 2010). Johnston et al. (2010) was revised in 2011 and the Framework was subsequently revised again in a series of communications within a group of DLO culture experts in March, 2011.

## 1.1 Competency Models of 3C

The Framework is one of the most recent 3C models and reflects two mutually supportive trends: (a) an increased emphasis on addressing 3C as an applied psychology problem, the solution to which has important, material implications for the success of businesses and the Military, rather than a theoretical area of pursuit; and (b) the inclusion of behavioral capabilities or performance domains using the language, if not the full development cycle, of competency modeling (Shippmann, Ash, Battista, Carr, Eyde & Hesketh, et al. 2000). In a competency model of 3C, *core competencies* are identified in a hierarchical categorization system. In this system, general competencies such as “cultural perspective taking” are used to form categories encompassing more specific competencies that are defined behaviorally, for example, “understands how one’s own group is viewed by members of another group.” *Competency potential* dimensions (Bartram, 2005) are also identified in such models, incorporating variables that have been called antecedents or precursors in the expatriate and overseas study literatures. These variables are termed *enablers* in the Framework, and include a wide range of characteristics such as personality traits, cognitive abilities, cognitive style, and attitudes. However, unlike antecedents in earlier models, enablers are conceptualized in a competency modeling (i.e., behavioral) style.

Competency models of 3C such as the DLO Framework may be subject to some of the unresolved problems in competency modeling in general. Although competency modeling is popular in human resource management, it suffers from a great deal of ambiguity concerning its core construct—competency—as well as how it differs from traditional job analysis (Shippman et al., 2000). Morgeson, Delaney-Klinger, Mayfield, Ferrara, and Campion (2004) state, “perhaps one of the most vexing issues involves actually defining a competency” (p. 676). For example, are competencies composed of KSAOs (knowledge, skill, ability, other), or are KSAOs antecedent to competencies? If the latter, what is antecedent to KSAOs? As Van de Vijver and Leung note, “It could be argued that intercultural competence is no exception to the rule that there are no widely shared definitions of crucial concepts in psychology” (2009, p. 406). Specifying the correct number of competencies and their organization poses a problem for competency modeling that is also present in the Framework. For any given military occupational

specialty (MOS), mission, or action, which competencies are important and how many can be practically assessed?

Competency models of 3C share several limitations that persist within the intercultural adjustment and performance literature: (1) imprecision in defining constructs, often in the absence of operationalization; (2) conceptual overlap and unsatisfactory distinctions among key model components such as antecedents, KSAOs, and performance outcomes; (3) imprecision in specifying the causal order among constructs; and (4) imprecision or poor articulation of competencies with respect to the U.S. Military's practical selection and training needs due to insufficient attention to MOS, rank, and service variables. These shortcomings limit the predictive and explanatory ability of existing 3C models, and consequently, limit the predictive ability of existing 3C assessments, making them less than ideal for military use. It is critical that future work on 3C focuses explicitly on addressing as many of these concerns as possible.

Gabrenya, Moukarzel, Pomerance, Griffith and Deaton's (2011a) in-depth analysis of the DLO Framework competency model can be used to illustrate some of these issues. The current version of the DLO Framework includes five competencies and seven enablers. Each competency is defined by or explained by sets of more specific behaviors and skills. These definitional items are themselves considered competencies, introducing a hierarchical structure. Some definitional items are in turn comprised of more than one relatively distinctive component competency. For example, the competency Culture General Concepts and Knowledge includes three parts:

- Acquires...culture-general concepts and knowledge
- Applies culture general concepts and knowledge
- Comprehends...
  - ...and navigates...
- ...intercultural dynamics

Gabrenya et al. (2011a) refer to components at the most granular level as *elements*. The imprecision of these elements stems from the Framework's use of colloquial terms, a long-recognized problem throughout social and behavioral science. Most readers would believe they know what "navigates" means in this context, but they would probably disagree about how to operationalize or assess the competency. Similarly, "intercultural dynamics" has strong referents in common life experiences but is not useful from a conceptual or measurement perspective.

The overlapping competency issue is illustrated by considering the competency Culture Perspective Taking, which includes four distinguishable components and some subcomponents:

- Demonstrates an awareness of one's own world view (i.e. cultural perceptions, assumptions, values, and biases) ...
  - ...and how it influences our behavior and that of others
- Understands how one's own group is viewed by members of another group
- Understands ...
  - ...and applies...
  - ...perspective-taking skills to detect, analyze, and consider the point of view of others and recognizes how the other will interpret his/her actions
- Takes the cultural context into consideration when interpreting situational cues

An observer, trainer, or evaluator would be hard-pressed to distinguish "understanding and applying culture general concepts for navigating intercultural dynamics" in the Culture General Concepts and Knowledge competency from "applying perspective-taking skills to recognize how others will interpret one's actions" in this competency.

Competency models do not usually attempt to specify causal relationships among competencies or between competencies and antecedent variables. Nonetheless, such causal relationships are assumed in a model that includes sets of competencies and enablers, and they are implicit in competency hierarchies that specify both the acquisition and subsequent application of knowledge or skills. We argue in a later section that causal models should be explicitly included in 3C conceptualizations.

Most serious for the practical application of cultural expertise in the Military is the fourth criticism, insufficient attention to MOS, rank, and service variables. This problem essentially involves establishing the appropriate content of the model, analogous to establishing content validity in test development. Whether performed from a classic job analysis perspective (Brannick, Levine & Morgenson, 2007) or from a competency modeling approach, information

must be obtained to attend to the competencies, selection factors, and appropriate training of 3C at a greater level of detail than found in existing models. Several empirical studies have been utilized to inform 3C requirements in the Military. A study by the RAND Corporation (Hardison, Sims, Ali, Villamizar, Mundell, & Howe, 2009) was conducted to help conceptualize training program content to improve cross-cultural performance within the Air Force. Unlike most such studies, the RAND study incorporated MOS (AFSC-Air Force Specialty Code) and rank, finding considerable variability in the overall importance rating of 3C across specialties. Spencer (2010) reported a qualitative analysis of special operations forces (SOF) personnel that combined features of competency modeling and job analysis. The most recent investigation of 3C in the Military at the time of this writing was carried out by McCloskey, Grandjean, Behymer, and Ross (2010) using respondents who had returned from various overseas postings. Theoretical approaches to establishing the content of 3C have been carried out by Caligiuri, Noe, Nolan, Ryan, and Drasgow (2011) for the Military and by Deardorff (2006) and Hunter, White and Godbey (2006) using a Delphi approach based on the combined perspectives of multiple subject matter experts (SMEs) concerning civilian 3C.

## **1.2 An Analysis of the Adequacy of the DLO Framework**

Gabrenya et al. (2011a) used these and other sources to analyze the content of the DLO Framework. They concluded that the Framework competencies adequately reflect military and civilian conceptions despite problems involving overlapping and imprecisely articulated competencies. The Framework was found to have 19 enabler elements, 12 of which were well represented in other conceptions while four were poorly or not at all represented (e.g., “avoid stress-induced perspectives that oversimplify culture,” and “acts as a calming influence”). A few competencies were not found in the Framework despite their importance in the civilian competency literature, such as ability to manage family obligations. While not relevant for some deployments, family and spouse adjustment in the foreign context is the strongest predictor of success/failure in overseas assignments (Caligiuri, Hyland, Joshi, & Bross, 1998). The issue of language ability has been discussed in various documents. Caligiuri et al. (2011) note that teaching and maintaining language skills is not cost effective for the Military, but training 3C may yield a better payoff. The RAND Air Force study (Hardison et al., 2009) found both low valuation of language skills and low language capabilities: 4% claimed a working knowledge of the language of the place to which they had been deployed, and 10% claimed a working knowledge of any foreign language. The authors suggest that low proficiency may have led to low valuation, suggesting that self-reported valuation of competencies may not provide a good measure of their actual importance. Language acquisition as a culture competency will undoubtedly remain an ongoing locus of debate in the Military.

The McCloskey et al. (2010) study, although an admirable effort, suffers from some of the limitations of this kind of research and illustrates some of the dilemmas in using active duty service personnel as SMEs. The study included an overly small and insufficiently broad sample, which from the start limited its ability to analyze its SME data in terms of MOS and rank. Like all qualitative research, it had to navigate the problem of developing conceptual categories (in this case, competencies or antecedents) inductively from its respondents’ information, while using the large existing 3C literature to interpret the data. Hence, they used a KSAO set generated from previous research to organize the respondents’ ideas about what caused or constituted effective 3C when they were deployed. In any given time frame, most deployed personnel will experience only a small set of culture regions. For example, at the present time most deployed personnel are in the Middle East or at bases in Korea, Japan, and Europe. While it should be feasible to generate a competency model that is not overly biased toward a particular culture region or kind of deployment, it is not assured, so over time new data should be continually obtained and used to revisit 3C models. A fundamental problem in such a bottom-up generation of KSAOs and competencies is the veridicality of the relationship between the KSAOs reported by respondents and actual performance. Respondent data such as that generated in the McCloskey study privileges the respondent’s point of view, based as it is on the respondent’s implicit theories about the relationships between antecedents and outcomes. Research in social cognition and decision making has shown that people are imperfectly aware of the causes of their own and others’ behavior and success/failure outcomes (Fiske & Taylor, 2008). Therefore, research is needed to establish the causal links in integrated models once valid competency and performance measures are developed.

The problem of identifying the correct source information on which to build 3C models cannot be separated from the bottom-line question of which antecedents do in fact “enable” which competencies, and which competencies in turn actually affect performance. The situationally labile nature of performance, especially in complex missions

involving many units and on-the-ground factors, poses considerable difficulties to researchers who prefer to settle the antecedent-competency-performance relationships empirically. Gabrenya et al. (2011a) called on the large civilian literature to examine the relationships between DLO Framework enablers and competencies on the one hand, and performance on the other. Their strategy was to interpret the competency and enabler elements in terms of constructs or variables that have been the subject of research on intercultural effectiveness (i.e., map elements to constructs), find good measures of these constructs, and then review the research on the criterion validity of the measures that used performance or adjustment criterion variables. The strategy looks like this:

**Competency or Enabler Element → Representative construct → Valid measure → Performance/Adjustment Criterion**

For example, the Framework enabler element *receptive to new ways of doing things* maps to constructs such as flexibility and openness which in turn can be assessed by several instruments. Due to the manner in which elements were often expressed behaviorally, vaguely, or in mission-specific terms, the mapping phase was imprecise.

We performed a comprehensive search of the sojourner adjustment/performance literature to identify measures that could be used in this evaluation. Our search capitalized on other attempts to create comprehensive lists of instruments, for example Fantini (2009), Thornson and Ross (2008), the website of the Institute for Intercultural Training ([www.intercultural.org](http://www.intercultural.org)), and the websites of several consulting companies. In addition to instruments that were developed specifically for cultural research purposes, we also looked at studies that used familiar personality instruments in the large sojourner adjustment literature, such as the NEO, coping style scales, and measures of social interaction individual differences (e.g., the Self-Monitoring Scale). We return to our evaluation of the state of measurement in this field in another section.

The constructs represented by five of the 12 competency elements and five of the 19 enabler elements could not be measured because either (1) no suitable instrument has been developed, or (2) the available instruments have never been used in concurrent or predictive validity studies involving intercultural adjustment of performance variables. Of the seven measurable competency elements, six were supported and one received mixed evidence. Of the 12 measurable enabler elements, four were well supported, six received mixed support, and two received no support. It must be noted that this is a conservative analysis in that (1) better instrumentation would afford evaluation of more elements; (2) additional research might be able to produce more conclusive findings when evidence was mixed by sorting out which instruments best assessed the construct; and (3) most importantly, elements that did not map well against constructs (in one-to-many and many-to-one relationships) need to be additionally decomposed if model adequacy is to be established empirically.

The findings of this evaluation of an important military 3C model are not encouraging in several respects. First, we could not find valid measures of a large number of elements despite a wide-ranging search, and many of the instruments that we did find did not demonstrate adequate psychometric properties. Second, the competency model nature of the Framework rendered it poorly amendable to empirical validation. Third, our mapping project illustrated an intrinsic weakness of competency models, an issue to which we now turn.

## **2 COMPETENCY MODELS, CAUSAL MODELS, AND INTEGRATED MODELS**

The DLO Framework may be termed a *compositional model* in the sense used by Spitzberg and Changnon (2009) in their attempt to categorize the disparate models of sojourner adjustment and expatriate performance. Such models are primarily lists of KSAOs that comprise 3C, usually organized in logical sets in a way that implies a causal sequence. The Framework uses descriptions of job-related behaviors, in the manner of a typical competency model, rather than constructs or variable names, to describe the set of desired qualities. In contrast to list-like compositional models, *causal path models* represent a linear causal system that may or may not involve feedback paths; such models can usually be tested using multivariate methods (Spitzberg & Changnon, 2009). Causal path models are familiar to social scientists who primarily create models to represent individual and social processes and to generate testable hypotheses; hence, they are probably the most common type of model found in this field. Good models approximate miniature theories; they are tentative and falsifiable (Graziano & Raulin, 2004).

Competency models have advantages and disadvantages compared to causal models. A competency model provides generalizable guidance for training, selection, and assessment, and is therefore directed to solving an applied psychology problem, such as enhancing 3C capabilities in the Military. Causal models, however, provide conceptual, theoretical, and research advantages that can guide selection and training by showing where in the

antecedent-to-competency relationship they should be used to greatest effect. A competency model without causal validation may be difficult to generalize to different contexts because it lacks a nomological network of mediational and moderator constructs that can take into account contextual or situational variation.

## 2.1 An Integrated Model Approach

These two approaches may be reconciled, however, if competencies and antecedents were integrated in models that show causality, mediation, and/or moderation. Each higher level or general competency would be embedded in a model, and the competencies would be related to each other in larger models. Valid measures of the competencies would need to be identified or developed that assess a wide range of competencies and antecedents beyond cognitive measures. Figure 1 illustrates how such an integrated model could be developed using competencies and enablers in the DLO Framework.

One final critical advantage of the integrated model approach is that it provides multiple assessment points for evaluating the 3C competency of individuals. An integrated model reveals antecedents that, because they are often more easily measured than complex competencies, can be assessed, along with the competency itself, to provide a *profile* of the knowledge, skills, abilities, and other characteristics of the individual that “triangulates” on the person’s overall level of cross-cultural proficiency. Although the ideal tool for assessment of behavioral competencies is the classic assessment center, this method is costly and time consuming. By including antecedent measurement in the mix of 3C assessments, the need to use full assessment center methods to obtain behavioral observations of competencies is reduced. Instead, simpler and more efficient “mini assessment centers” can be developed to add behavioral assessment to the available information. These simplified behavioral measures would not require assessors and would be designed for administration via the Internet in batteries that include self-report measures of antecedent variables.

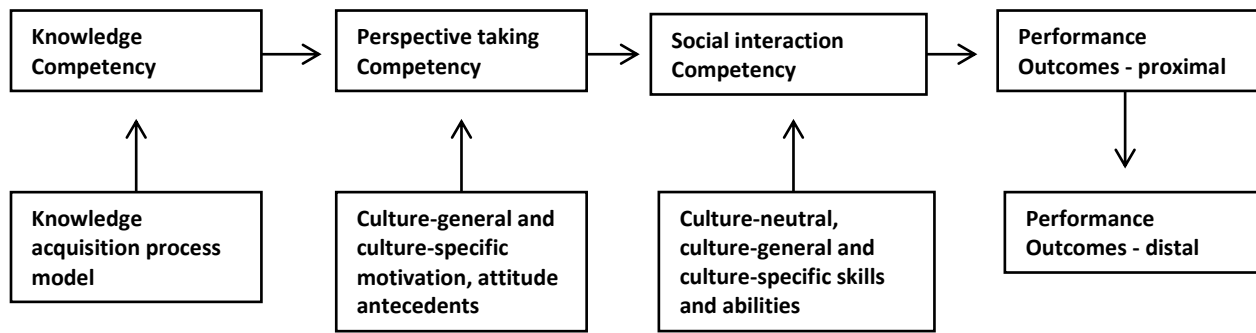


Figure 1. Example of integrated model surrounding perspective taking as a competency

Therefore, we suggest that an integrated causal-competency approach should be utilized in developing a new 3C model. The integrated 3C model should be built as a set of causal models drawn from existing theory and research, each designed to understand a single 3C competency. Each competency will be conceptualized in a nomological network of antecedents, competencies, and performance outcomes drawn from prior research that includes the most important moderators, articulated as needed by MOS/rank/service. Cross-sectional and longitudinal correlational studies, as well as experimental training studies, can be conducted to test such an integrated model. In this way, the applied usefulness of a competency model can be retained, while a research capability is added that can test the adequacy of the proposed competencies. Through a process of refinement the result should be a robust competency framework that can guide selection and training efforts.

The integrated model we advocate is measurement intensive: we want to measure everything in the model, if possible, in addition to moderators that prove important. A serious problem we encountered in our attempt to establish the criterion validity of the elements of the DLO Framework was the paucity of good measures for elements that one would expect should be measurable, and the complete absence of measures of many behavioral competencies. In the next section, we discuss the state of measurement and suggest some new avenues for

assessment.

### **3 ASSESSING CROSS-CULTURAL COMPETENCE**

#### **3.1 Validity of Existing Instruments**

Our evaluation of the criterion validity of the DLO Framework necessitated identifying instruments to assess the constructs to which the Framework elements were mapped and then finding studies that used these instruments alongside acceptable criterion variables, i.e., performance and adjustment measures. In this second step, we were essentially evaluating the quality of much of the existing 3C instrument domain. Because of the manner in which we tracked down instruments (from others' lists, primarily), we were secondarily evaluating the quality of these ubiquitous lists. We discovered that a variety of performance measures are used in this literature, including job performance (manager ratings, peer ratings, self-ratings) and several informal ratings of overseas "success" or "effectiveness" in non-job situations. Expatriate "performance" is also assessed indirectly through self-reports of intent to remain on the job, job attitudes, and occupational citizenship behaviors (Mol, Born, Willemsen, & van der Molen, 2005; Thomas & Lazarova, 2006). Proprietary instruments were difficult to evaluate: validation studies have been published in peer reviewed journals for only a few such instruments and satisfactory validation reports are rarely published on consulting companies' websites. Altogether, we identified 34 instruments.

Gabrenya et al. (2011a) present the results of this analysis in detail. The criterion validity with respect to intercultural performance or adjustment of five of the instruments was good, for two it was moderate (subscales differed in quality), for 25 it was poor or no validation information could be found, and two turned out not to be quantitative instruments "as advertised" in instrument lists. In several cases, the instruments appeared to have good construct validity but unproven or untried criterion validity, holding out hope that future research would lead to discovering some additional usable instruments. The best overall instrument in terms of face, construct, and criterion validation appears to be the Multicultural Personality Questionnaire (MPQ; Van Oudenhoven & Van der Zee, 2002).

#### **3.2 Need for New Instrumentation**

The list of instruments evaluated in the previous section attests to the tremendous effort that researchers have devoted to developing instruments assessing 3C, but our analysis demonstrates that the results of their efforts are discouraging, so far. The following overlapping problems can be identified in the existing instrument armamentarium: (1) nearly all use self-report methods that appear unsuitable for assessing most competencies; (2) only declarative, cognitively accessible, and self-referent information is usually obtained; (3) the potential for faking ranges from subtle to severe; (4) affective states or processes are poorly assessed; (5) behavior is rarely measured; (6) the instruments map poorly to DLO Framework competencies; and (7) few were found to be adequately validated using performance criteria.

These issues significantly limit the validity and construct coverage of existing measures. For instance, relying on assessments that target explicit, declarative knowledge neglects important characteristics that are more implicit or procedural in nature (e.g., affective and skill-based variables). The self-report approach used in existing measures may not provide sufficiently valid assessments of key constructs. Faking, for example, is one major issue with self-report measures in many situations where respondents are motivated to make a good impression. Numerous studies have indicated that individuals are able to substantially alter their scores these measures (e.g., Birkeland, Manson, Kisamore, Brannick, & Smith, 2006; Viswesvaran & Ones, 1999) and that a sizable proportion do fake in motivating situations (e.g., Griffith & Converse, 2011). Further evidence has indicated this behavior has negative implications for construct and criterion-related validity (e.g., Converse, Peterson, & Griffith, 2009). Another concern with these types of self-reports is that respondents may not be able to provide accurate self-assessments of knowledge-, skill-, ability-, or competency-related constructs relevant to cross-cultural competence. Thus, even if there is little motivation to intentionally distort responses, self-report measures of these variables may not provide valid assessments. Indeed, a number of studies have indicated self-reports of knowledge, skills, abilities, or competencies have limited validity (e.g., Carter & Dunning, 2008).

Consistent with these ideas, self-reports of cross-cultural skills and abilities have been criticized on methodological grounds and may have questionable validity (see Brackett, Rivers, Shiffman, Lerner, & Salovey,



2006; Gabrenya, van Driel, Culhane, Turner, Pathak, & Peterson, 2011b; Thomas et al., 2008). For example, Gabrenya, et al. (2011b) examined the validity of the Cultural Intelligence Scale (CQS; Ang & Van Dyne, 2008). The CQS uses self-reports of competencies, attitudes, and behaviors to infer cultural intelligence, the ability to generate appropriate behavior in new cultural settings (Earley & Ang, 2003). They found that the CQS fails to mediate between antecedent variables assessed using objective and behavioral measures and criterion variables such as situational judgment tests and adjustment. The CQS appears to unintentionally assess constructs such as self-efficacy rather than cultural intelligence or competence.

The considerations listed above indicate there is a critical need to develop alternative measurement approaches to assess 3C. Comprehensive measurement of 3C involves three sets of variables: (1) the antecedent variables that comprise each competency's causal model, such as the DLO Framework enablers; (2) the individuals' competencies; and (3) the performance outcomes through which criterion-related validation of the competency models is accomplished.

We propose that the development of new measures should be based on two general principles for improving overall measurement: (1) broadening the measurement spectrum and (2) moving toward more dynamic measurement. As noted earlier, a major limitation of existing 3C measures is that they tend to have a strong cognitive focus, with most involving self-reports of declarative, cognitively accessible, self-referent information. Cultural competence involves not only cognitive factors, but also affective (e.g., emotion regulation) and behavioral (e.g., interpersonal skills) components. Thus, future measure development should expand the focus of assessment to include cognitive, affective, and behavioral approaches in order to more closely and accurately match the full set of competencies and antecedents in a well developed competency model.

Another key limitation of existing 3C measures is that they are also largely static in nature, where individuals respond to sets of items under typical testing conditions. However, cross-cultural experiences and interactions are generally much more complex and dynamic, requiring more active behavior (e.g., decision making and self-regulation) and involving elements such as distraction, stress, ambiguity, and emotion. Thus, instrument development must incorporate more dynamic assessment approaches. In this context, we use the term *dynamic* in a general sense to refer to alternatives to traditional self-reports that involve richer stimuli, changing task characteristics, and/or more active involvement from the individual, i.e., behavioral responding.

## **4 CONCLUSION**

In summary, many models of 3C have been proposed across decades of military and civilian research and theorizing. Most recently, competency frameworks of 3C that are aimed at informing selection and training of personnel have taken the forefront. These models have the potential to solidify an amorphous research area and aid multi-national organizations as they encounter new cultures. However, the existing frameworks suffer from conceptual ambiguity, a lack of causal linkages between enablers and competencies, and inadequate assessment measures. To advance the study of 3C and provide organizations with the tools to make important personnel decisions, integrated models of 3C that incorporate competencies with traditional causal modeling are necessary. In addition, psychometrically sound measures that rely less on self-report methods must be developed if these models are to be tested. While the construct of 3C has intuitive appeal to address many of the challenges facing 21<sup>st</sup> century organizations, operational measures and models of 3C have far to go before they meet that promise.

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