ABSTRACT

IRVINE, CHRISTINA BODE. Mapping, Measuring, and Modeling Cultural Intelligence as the Capacity for Success in the Global Knowledge Economy: A Series of Meta-Analyses. (Under the direction of Dr. Mattie Fleener).

Cultural Intelligence (CQ) "captures a person's capability to adapt effectively to new cultural contexts" (Earley, 2002, p. 274) which is of particular interest to employers in the Global Knowledge Economy (Drucker, 1969), wherein employees' "intellectual capital" is a source of organizational wealth. CQ is comprised of four factors, each of which represents a different aspect of the "know-how" and "know-what" (Stewart, 2001) that lead to successful outcomes in cross-cultural settings—behavioral CQ reflects what a person does, cognitive CQ reflects what a person knows, metacognitive CQ reflects how a person thinks, and motivational CQ reflects how a person feels when interacting with culturally-different people. The Cultural Intelligence Scale (CQS, 2005) is a 20-item instrument that assesses individuals' levels of each factor and has been empirically investigated by researchers from multiple disciplines as a predictor of outcomes, a moderator between antecedents and outcomes, and an outcome of training. Despite having been studied extensively, little is understood about the extent to which each of the four CQ factors relates to individual and contextual differences or outcomes; nor is it clear which factors of CQ may be developed after purposeful interventions such as those designed by Human Resource Development (HRD) professionals.

In order to understand how the four factors of CQ and their relationships to outcomes vary based on individual and contextual differences, this study employs a number of meta-analytic techniques to combine results from multiple studies to calculate mean effect sizes showing the magnitude of the relationships between each factor of CQ and specific variables

identified through a systematic literature review: cross-cultural training, international experience, participants' role (worker or student), participants' familiarity with the study context (native or expatriate), cultural distance of the study context (high or low power distance), task performance, and three adjustment outcomes (general, interactional, and work). This study also uses model-based meta-analysis to investigate the magnitude of the relationships between CQ factors to see the extent to which a person's "know-what" and "know-how" are related.

Results showed that all four factors of CQ can be developed after cross-cultural training, with metacognitive and cognitive increasing the most. Results also showed that previous international experience has a very weak relationship with all four factors of CQ, though the relationship is stronger for students, natives, and those located in high power distance countries. Additionally, it was found that task performance is most strongly related to behavioral CQ and that adjustment outcomes are most strongly related to motivational and metacognitive CQ.

Results also showed that cognitive CQ is the weakest predictor of behavioral CQ, showing that "what you know" does not necessarily predict "what you do" in cross-cultural interactions; instead, "how you think" (metacognitive CQ) and "how you feel" (motivational CQ) are stronger predictors. Finally, it was discovered that the relationships between the know-how and know-what of CQ differ greatly based on individual and contextual differences including whether participants are students or workers, natives or expatriates, or located in high versus low power distance countries. For example, participants in high power distance countries rely more on culture-specific knowledge to enact culturally-appropriate behaviors than do those in low power distance countries. It was also found that

expatriates in high power distance settings have a significantly stronger relationship between motivation and behavior than expatriates in low power distance settings. These results are significant for HRD professionals who should take individual and contextual differences into account when assessing and developing people's capacities for success in the Global Knowledge Economy.

Mapping, Measuring, and Modeling Cultural Intelligence as the Capacity for Success in the Global Knowledge Economy: A Series of Meta-Analyses

by

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BIOGRAPHY

Christina Irvine (Tina) was born November 12, 1971, in New York City. She earned a B.A. in English Lafayette College in 1993 and earned a M.A. in English from UNC Wilmington in 1996. She spent 15 years teaching English and other subjects in community college and university settings. She began her degree in Workforce and Human Resource Education in the College of Education (as it was called then) in 2012. Tina has been self-employed as an academic editor for professors and graduate students since beginning the program. She has been married to her husband, Rob, since 2005, and she is the mother of three children (Lindsay, Aubrey, and James) as well as the stepmother of one (Bella).

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CHAPTER 1: INTRODUCTION

*"Think and Do" (*NC State University Brand*).*

The red flags are prominently hung on light poles throughout all of North Carolina State University's campuses; the thin, white capital letters are oriented vertically, causing the reader to change their visual perspective to absorb the imperative: THINK AND DO. Those three words reflect the underlying purpose and value of an NC State education: "We invest in outcomes that serve the greater good. We pursue research with purpose. Our work results in clear, tangible, meaningful applications. We teach in order to make better thinkers who transform ideas into reality" (2017, https://brand.ncsu.edu/think-and-do/). Per the university's dedicated website, "The NC State brand is the constant connection between thought and action. Each drives the other, always moving together" (2017, https://brand.ncsu.edu/think-and-do/). Think-and-do captures this dynamic as an adaptive process.

1.1: Concept: Connecting Thinking and Doing

This idea—that thinking and doing are part of an adaptive process—undergirds this dissertation on all levels: conceptual, philosophical, theoretical, empirical, and figurative. Such an approach allows for ways to explicate the actual process of transforming the unseen (what is known) into the tangible (what is done). Filling the gaps between thinking and doing serves as a heuristic device that may simplify the complex goals of this study. Based on my own education, experience, worldview, and goals, I believe that thoughts are most easily translated into actions if the individual *wants* to enact them. I ascribe to andragogy, defined as "art and science of educating adults," which holds the following principles: adults learn best by doing and problem-solving, preferably in informal settings; they learn

best when learning considers their previous experiences and when they feel like equal partners in the learning process; and they are only motivated to learn what they believe they need to learn and when they can connect the learning to their goals (Knowles, Swanson, & Holton, 2011). These assumptions have guided my practice as a college instructor, instructional designer, and researcher for more than a decade.

One way to conceptualize the gap between thinking and doing is to visually represent the idea. The figure below represents components of the interrelated concepts, constructs, and theories that I intend to parse out, investigate, and ultimately re-synthesize throughout the research study into what lies between thinking and doing, specifically in unfamiliar cultural contexts. The figure also stands upon the context, which represents the current unfamiliar situation in which individuals' actions in the present are predicated upon their past actions, thoughts and feelings as well as their future goals.

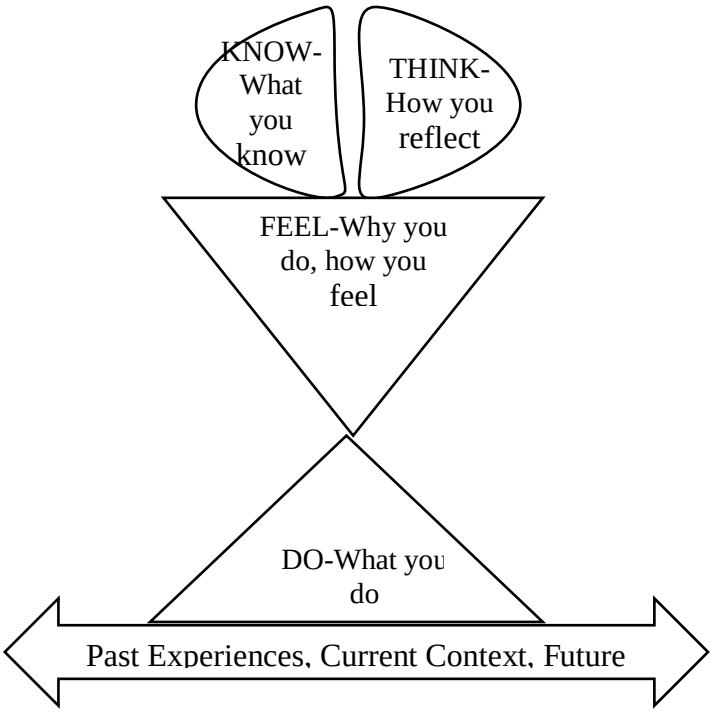

Figure 1.1. Basic Conceptual Model: Connecting Thoughts and Actions

"Thinking and knowing" are represented by two halves of a circle, which, when anthropomorphized, becomes the brain, the locus of cognitive thought processes. Each half represents the logical left and the creative right brain which process and regulate different types of thoughts and ideas. "Doing" is represented by an equilateral triangle, a shape often used to represent skills-based competencies, psychological concepts, and hierarchical values. When anthropomorphized, it represents a human body from its center to its foundation, which exists on the horizontal plane that represents the context in which the individual must "do," "act," "behave," "produce," "adapt," "be successful," and "perform." The missing piece between thinking and doing is represented by an inverted triangle with its pinnacle joined with that of the bottom triangle; the inverted base of the triangle represents another horizontal plane upon which the circle rests.

"Feeling" is represented as the anthropomorphized inverted triangle and is the human torso including the heart and guts, the seats of human desire, visceral responses, fear, love, and motivation. The inverted triangle is meant to represent that element which is very basic yet supremely important and may mediate between thought and action: desire. The figure evolves throughout the course of this dissertation in order to continue to represent how these three basic concepts (think, feel, do) are conceived in extant theories, constructs, measurements, and variables that explain the ways in which adults learn how to be successful in their environment.

Based on the rise of international education and intercultural workplace training, especially for workers who travel abroad, it seems that educators and employers believe that knowing leads to doing. On the most general conceptual level, this dissertation is an attempt to theoretically and empirically investigate how adults from around the globe make

connections between *thinking* and *doing* as they navigate living, learning, and working in the Global Knowledge Economy. Through various methods, this study identifies the mechanisms for producing the types of outcomes "that serve the greater good" (2017, https://brand.ncsu.edu/think-and-do/) by conducting research "with purpose" that can result in "tangible, meaningful applications," thus transforming my own "ideas into reality" (as the NC State brand promises).

1.2: Context: Global Knowledge Economy

"The key component of a knowledge economy is a greater reliance on intellectual capabilities than on physical inputs or natural resources"

(Powell & Snellman, 2004, p. 215).

The transition from a purely industrial economy wherein tangible goods held the highest economic value to one in which ideas hold increasing monetary value was anticipated by Peter Drucker (1969) and termed the "global knowledge economy." Powell and Snellman (2004) investigate the extent to which gross domestic product increases can be attributed to knowledge generation and dissemination, termed "intangible" capital (p. 199). The World Bank (2007) analyzes the impact of the post-industrial "knowledge revolution" (p. 1) on societal growth and recommends strategies for developing knowledge as a way to positively impact societal growth. This system values workers' attributes and capacities (or soft skills) over their ability to replicate job-specific skills. The shift towards globalization and the reconceptualization of capital have left the most recent generations of educators and employers with fewer easily-taught and readily-observed ways to assess and define a worker's capacity for producing successful outcomes.

In *The Wealth of Knowledge: Intellectual Capital and the Twenty-first Century Organization,* Thomas A. Stewart (2001) explains how employers can manage their "knowledge assets," defined as the "talent, skills, know-how, know-what, and relationships" that exist alongside financial and physical capital as tools "that can be used to create wealth" in organizations (p. 11). In the knowledge economy, each worker's "intellectual capital" (Stewart, p. 11) is monetized and strategically managed alongside tangible resources. There is empirical evidence that organizations that invest in developing intellectual capital (also referred to as human capital) benefit financially, as shown in a meta-analysis of over 60 studies of the relationship between human capital development and firm performance (Crook, Todd, Combs, Woehr, & Ketchen, 2011). As with any form of capital, organizations must find ways to assess, predict, and enhance their intangible assets that take the form of the workers' capacities and capabilities for producing successful outcomes. In addition to quantifying the intellectual capital, stakeholders in the global knowledge economy need help describing the "know-how" and "know-what" that comprise these knowledge assets. A key assumption for all stakeholders to embrace is that the locus of success in the Global Knowledge Economy (GKE) is in individual adults, whether they be called workers, students, managers, expatriates, leaders—or, more simply, humans.

1.3: Disciplinary Framework: Human Resource Development

"HRD is a process of developing and unleashing expertise for the purpose of improving individual, team, work process, and organizational system performance"

(Swanson & Holton, 2009, p. 4).

Human Resource Development (HRD) is an interdisciplinary applied field that, at its core, "is about adult human beings functioning in productive systems" (Swanson & Holton,

2009, p. 4). HRD scholars and practitioners assess, develop, design, and facilitate individual learning goals within organizational or societal contexts. HRD is a transdisciplinary applied field that is guided by philosophies and theories drawn from several previously-distinct fields: organization development (i.e., training needs assessment and implementation); adult education (i.e., experiential learning, andragogy, and social learning theories); developmental psychology (i.e., behavioral, cognitive, stage theories), and behavioral economics (i.e., goal orientation, human capital). Influenced heavily by systems theory and driven by a focus on ethics, the HRD profession includes from scholars who can blend different approaches to assessing and addressing individual and organizational needs (Swanson & Holton, 1997, 2009). In addition, HRD's use of multiple theoretical lenses drives its scholars' academic research in the interest of "thorough and systematic problem solving" as well as "working through the theory-research-development-practice cycle" expected in the field (Swanson & Holton, 2005, p. 7).

The context of learning is key for HRD professionals in that the organizational or societal performance goals drive the process of selecting appropriate ways to assess, develop, design, and implement appropriate interventions (such as training sessions, specific courses, relevant experiences) that will increase individual and organizational success. A "core theoretical assumption of the learning paradigm" of HRD is that "individual education, growth, learning and development are inherently good for the individual," which is "drawn from humanistic psychology that stresses self-actualization of the individual" (Swanson & Holton, 2009, p. 147). As an HRD practitioner, my worldview sees the process of developing intellectual capital (or, as Stewart (2001) calls it, "know-what" and "know-how") as a system in which learners with different traits and varying experiences are assisted with

meeting specific goals that add value at the individual, organizational, and even global levels. This worldview is reflected in my identification of the problem, purposes, and methods as well as my choice of constructs, measurements, and data reporting strategies for fulfilling this study's purpose.

1.4: Statement of the Problem

Researchers from numerous disciplines such as management education, human resource management, cross-cultural relations, developmental psychology, and sociology have offered theories, constructs, and instruments to explain how seemingly intangible intellectual and personal attributes can lead to measurable outcomes in the GKE. The field of HRD has yet to produce significant empirical research into how so-called soft skills can be assessed and harnessed to improve "system performance," which is a central purpose of HRD practice (Swanson & Holton, 2009, p. 4).

One problem is the lack of consistent jargon or terminology to capture the constructs of interest. A **construct**, according to Crohnbach and Meehl, (1955) is "some postulated attribute of people, assumed to be reflected in test performance. In test validation the attribute about which we make statements in interpreting a test is a construct" (p. 283); these constructs become part of the nomological network that leads to selection of measurable, predictive factors that can be interpreted or described as thoroughly as possible, keeping in mind that "the integration of diverse data into a proper interpretation cannot be an entirely quantitative process" (Crohnback & Meehl, p. 300). As used in this study, a **concept**, on the other hand, is more of a qualitative description of a phenomenon or broadly-described theory that cannot necessarily be tested in the way a construct can. For example, the concept of developing intellectual capacity or soft skills does not suggest a specific, measurable

construct such as "personality" that may refine the understanding of how to measure or predict outcomes. This distinction is important in this study investigating cultural intelligence as a construct that captures the concepts that reflect individual capabilities in the GKE.

1.5: Desired Outcomes in the GKE

In most organizational settings, success is quantified by analyzing observable output in various forms: number of widgets produced, supervisor observation and assessment, written exams, ability to replicate a process, number of clients procured, and so on. Essentially, **what** you do matters more than **how** you do it—even less important in these settings is **why** you do it. As long as the accepted performance measure shows success, most stakeholders perceive little need to delve into the process(es) that drove the widget-master to have such "high numbers" or the straight-A student to pull it off every time.

The range of terms used to represent successful outcomes in unfamiliar contexts include cultural competence (Deardorff, 2015), cross-cultural adaptability (Kelley & Meyers, 1995), expatriate adjustment (work, task, interaction, general) (Black & Stephens, 1989), cultural agility (Caligiuri, 2012), and cultural intelligence (Earley, 2002; Earley & Ang, 2003). Despite the difference in the nomenclature, many of the constructs explain the same concept—that intangible individual capabilities can somehow be quantified in the interest of predicting, improving, and describing people's capacity for producing desirable, tangible outcomes. While the concept is the same, there is a lack of a unified model or instrument to describe and measure how humans' intellectual capabilities—their "know-how" and "know-what"—become capital in the GKE. HRD scholars Newman, Hitchcock, and Newman (2015) recommend that scholar/practitioners who want to engage in "empirically informed

HRD theory and practice" conduct a thorough analysis of existing literature in order to synthesize findings into identifiable, relevant, and interrelated constructs.

1.6: Overarching Conceptual Framework: Systems Theory

Broadly speaking, systems theory focuses on explaining the mechanisms of change, focusing on the processes (including the influence of external factors) that explain how inputs (unique people—a.k.a. individuals, adults, workers, students, learners, sojourners, expatriates, global citizens) transform into desired outputs (e.g., intellectual capital, knowledge assets). The theory also includes a feedback process that serves to refine and redefine how the input is transformed or changed in the next iteration of the process. In this study, the process of connecting thinking and doing is viewed as a general system on the micro-level. Figure 1.2 represents the researcher's process model showing how adults develop the capability to produce successful outcomes in unfamiliar cultural contexts. The understanding of how different factors contribute to an individual's intellectual capital is essential for stakeholders in the GKE.

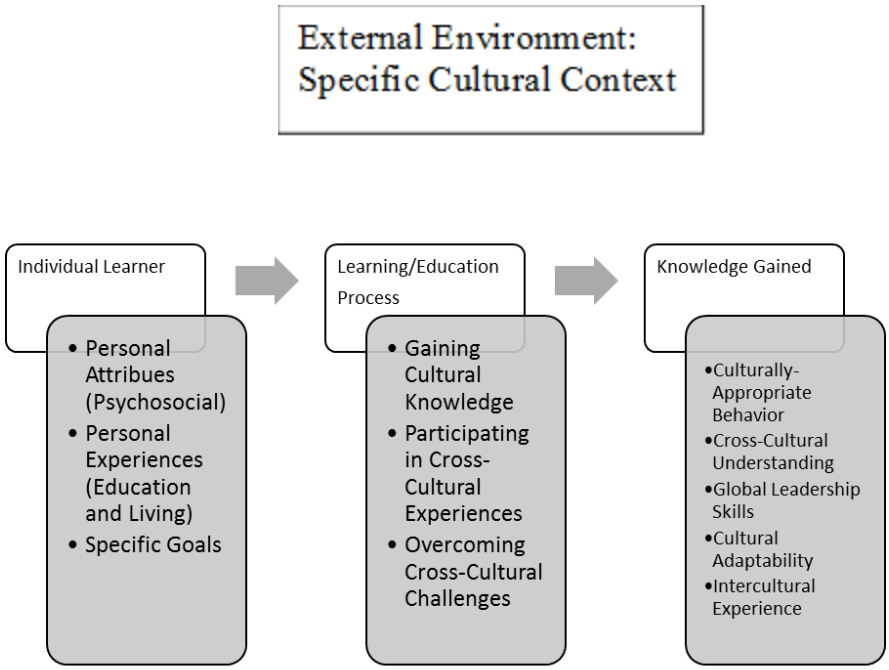

Figure 1.2. Developing Knowledge Assets in the GKE

1.7: Construct of Interest: Cultural Intelligence

In response to the problem of describing and assessing the skills and attributes of global workers, Earley (2002) conceived of a multi-dimensional, process-based construct called Cultural Intelligence (CQ) that represents an individual's capacity for success in cross-cultural contexts. The culturally-intelligent person is characterized as demonstrating "good personal adjustment, good interpersonal relationships with culturally different others, and the effective completion of task-related goals in a cross-cultural setting" (Thomas et al., 2008, p. 126-127). CQ is also characterized by an individual's inductive reasoning abilities as part of the metacognitive capability "required in a new culture to [put] together patterns into a coherent picture even if one doesn't know what this coherent picture might look like" (Earley, 2002, p. 277). The culturally-intelligent individual is to make logical connections between what is known and what is observed in an unfamiliar context, demonstrating a "Zen-

like willingness to accept not knowing (confusion acceptance) that will then allow the sojourner to better evaluate the situation" (Brislin, Worthley, & MacNab, 2006, p. 49). In their quest for successful outcomes, the high-CQ person combines confusion acceptance with "a desire to eventually understand" so as to "become more effective" (Brislin, Worthley, & MacNab, p. 50).

The four measured variables that comprise the latent construct Cultural Intelligence each represent a different aspect of the process an individual undergoes when demonstrating successful outcomes in intercultural settings. CQ is comprised of four variables: behavioral cultural intelligence (BECQ), which demonstrates the ability to know *what* to do (i.e., demonstrate culturally-acceptable verbal and non-verbal behaviors); cognitive cultural intelligence (COCQ), which reflects the knowledge of *what* is important about the intercultural context (i.e., customs, social cues); metacognitive cultural intelligence (MCCQ), which captures the ability to know *how* to think and use knowledge to enact purposeful behaviors (i.e., reflect on any mistakes to learn from them); and motivational cultural intelligence (MOCQ), which reflects *how* feelings drive or inhibit people from learning how to demonstrate the capacity to succeed when called for in an intercultural interaction (i.e., a strong desire to engage in cross-cultural experiences versus an unsolicited expatriation for work). The last two variables—metacognition and motivation—suggest internally-driven processes (the "how") that connect what is known with what is done.

These descriptions show the theoretical and practical promises of using CQ to represent intellectual capital and to identify and measure the soft skills valued by stakeholders in the GKE. In other words, cultural intelligence is an individual's capacity to produce successful outcomes in unfamiliar contexts—it is a valuable so-called "soft skill;"

thus, it is in the interest of employers, educators, and HRD professionals to find ways to assess and increase individuals' CQ. While the theoretical roots of cultural intelligence (CQ) are deep and the resulting instrument (Cultural Intelligence Scale (CQS), 2005) has explanatory as well as predictive power, researchers have yet to produce a unified model that shows how the four factors of CQ—cognition, motivation, metacognition, and behavior—describe the know-how and know-what that comprise human capital in the GKE.

1.8: Purpose of the Study

The purpose of the current study is to explain the extent to which the four factors of cultural intelligence lead to successful performance outcomes identified by other researchers. Another purpose is to identify how previous international experience and specific contextual differences that may influence these outcomes. In addition, this study will offer a useful vocabulary to define the know-how and know-what that comprise intellectual capital in the GKE. A final goal of this study is produce a series of research based visual models showing the relationships between the four factors of CQ and outcomes.

1.9: Research Questions

The following research questions are answered through a systematic literature review and a series of statistical meta-analyses:

1) Which of the CQ factors may be increased or decreased in participants after they undergo purposeful interventions such as training, education, or cross-cultural travel?
2) Which factors of cultural intelligence are most influenced by participants' previous international experience (XP)?
3) In what ways do each of the four factors of CQ relate to successful performance and adjustment outcomes identified in the systematic literature review?

4) What is the strength of the relationships between and among the four factors of Cultural Intelligence (CQ)—cognitive cultural intelligence (COCQ), metacognitive cultural intelligence (MCCQ), motivational cultural intelligence (MOCQ), behavioral cultural intelligence (BECQ)?
5) In what ways do grouping differences such as location of study (participants' home versus a host country), participants' role (worker versus student), and power distance of the country in which the study took place explain variance in the relationships between XP and CQ, between CQ factors, and between CQ and outcomes?

1.10: Preliminary Research Model

Figure 1.3 is a visual model representing this study's proposition that individual differences lead to varying levels of cultural intelligence, which is shown as an individual's capacity to produce desired outcomes (tangible and intangible).

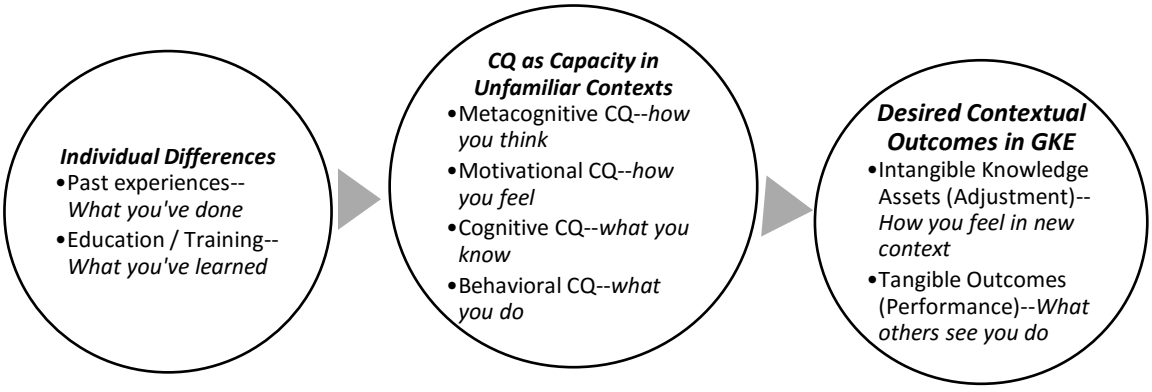

Figure 1.3. Cultural Intelligence as Individual Capacity for Success in GKE: Research Model

1.11: Overview of Meta-Analysis

Social science research provides useful ways to explain and predict human behavior, but the overall utility of research results to interested stakeholders is often limited by the size of the sample under investigation. Such limits often lead to researchers' conducting multiple studies of social phenomena to add power to the findings' usefulness as a diagnostic or descriptive tool. Most researchers do not have the resources to study thousands of people, so they use statistical methods to convey reliability of the results in the form of confidence intervals and standard deviations (for example). One way to collect a large enough sample of participants to produce generalizable results is to employ a series of data collection and analysis methods collectively known as meta-analysis. Meta-analytic methods provide the tools and means to achieve the stated goals because they allow researchers to synthesize and generalize empirical studies' findings in order to describe, measure, and model phenomena of interest (Card, 2012; Lipsey & Wilson, 2001; Littell, Corcoran, & Pallai, 2008; Wilson, 2001).

In general, meta-analysis offers a set of procedures that allow researchers to generalize results in ways that add power to existing data and can guide future research. More specifically, the procedures offer ways to report the following data: the mean and variance of underlying population effects, including confidence intervals; variability in effect sizes across studies to either test models or to select items for moderator analysis to explain variability; and analysis of how different variables contribute to larger effect sizes (Field & Gillett, 2009; Wilson, 2010). To these ends, certain categories of research questions are considered appropriately answered by meta-analytic techniques, explaining that the types of

questions best answered by meta-analysis can cross "how" and "why" phenomena occur (Card, 2012).

1.11.1: Why Conduct Meta-Analyses

These techniques also allow researchers to conduct iterative analyses to build and test theoretical models. Card (2012) explains that the goals of meta-analysis extend beyond simple "integration" of theories and variables; rather, "meta-analysis is a powerful tool to evaluate variables and constructs to inform theoretical concepts" (p. 302). In meta-analyses, the researcher's focus can include identifying "key directions for future conceptual, methodological, and empirical work" (p. 17). The power of using meta-analytic methods is the capacity to calculate standard effect sizes representing the magnitude and direction of variables deemed worthy of meta-analysis through systematic literature review. The acceptable number of studies for a meta-analysis can range from two to hundreds (Card, 2012; Littell, Corcoran, & Pillai, 2008; Wilson, 2001). An array of meta-analytic data analysis methods also allows researchers to test the relationships between variables of interest and to create visual models of the findings. Ultimately, these can become useful instruments for future social science research of the phenomena of interest.

1.11.2: How to Conduct Meta-Analyses

Wilson (2010) explains that the following types of empirical findings are well-suited for meta-analysis: central tendency research (i.e., prevalence rates), pre-post contrasts (i.e., growth rates), group contrasts for experientially-created or naturally-occurring groups, and associations between variables with a focus on either measurement research or exploration of individual differences. Data, in this case, is an effect size for each study under investigation and can be derived from any of the following types of statistics: continuous data of

associations such as the correlation coefficient (*r*); means and standard deviations; algebraic equivalency formulas (*t*-tests); and exact probability values for t-tests (Card, 2012; Lipsey & Wilson, 2001; Wilson, 2010). I used the computer software Comprehensive Meta-Analysis, which has tools to conduct numerous statistical procedures that include defining sets of covariates, testing multivariate models, investigating multiple outcomes, and plotting each study's potential for publication bias. Chapter 3 includes more details about effect sizes and meta-analytic methods, including modeling mean effect sizes.

1.11.3: What to Meta-Analyze

In this study, I employ multiple meta-analytic methods for identifying, selecting, collecting, recording, coding, categorizing, transforming, analyzing, interpreting, and explaining relevant data to explain how experience and CQ lead to successful outcomes. These data can be located in studies that are empirical, study the same constructs, have findings that can be configured in a comparable statistical form, and are comparable given the research questions at hand (Card, 2012; Lipsey & Wilson, 2001; Wilson, 2010). Chapter 2 of this manuscript describes selection criteria for identifying relevant studies as well as search methods and variables identified for meta-analysis.

The selection of study eligibility criteria is guided by the research questions and can fall under broad categories suggested by Lipsey and Wilson (2001): (a) distinguishing features of a study such as how specific constructs are defined or employed; (b) research respondents, such as specific participant types or demographics; (c) key variables such as covariates or outcomes; (d) research methods such as pre- post-test comparisons; (e) cultural and linguistic range such as site location; (f) time frame; and (g) publication type such as peer-reviewed academic journals or unpublished manuscripts. The key to successful meta-

analyses in all phases is following replicable steps that are published along with the analytic results.

1.12: Conclusion

Chapter 2 constructs the landscape of research on cultural intelligence and relevant factors identified and used in this study. First, I present and overview of the theory, concept, and construct of cultural intelligence before describing the four variables measured by the Cultural Intelligence Scale (behavioral CQ, cognitive CQ, metacognitive CQ, and motivational CQ) (CQS, 2005). Next, I provide an overview of empirical literature that investigates the relationship between and among CQ factors. I describe the processes for identifying, selecting, and coding study and sample data before presenting a thorough systematic review of the number and nature of studies to include in the series of meta-analyses reported in Chapters 4 through 7. Chapter 3 explains the methodology of meta-analysis, focusing on the overall purpose and value and providing an overview of research designs within the field of meta-analysis that are employed in this series. Chapter 3 also explains different meta-analytic models including fixed-effects and random-effects models of variance and building synthesized path models as they relate to this study. To answer the five research questions, Chapters 4 through 7 report a series of meta-analyses identified at the end of Chapter 2 following the MARS template. Chapter 8 synthesizes the findings including significance of the results and implications as well as recommendations.

CHAPTER 2: SYSTEMATIC LITERATURE REVIEW

"*A 'synergy' among existing studies may lead to a kind of Gestalt in which the synthesized model is greater than the sum of its separate parts"*

(Becker & Schram, 1994, p. 360).

While a typical literature review presents a broad overview of extant theories and empirical results within a specific subfield of inquiry, a systematic review of the literature takes a more thorough approach to identifying and explicating extant literature with the goal of attaining full coverage (Card, 2012; Littell, Corcoran, & Pillai, 2008). Oftentimes, the goal of a systematic review is to serve as the first step in conducting statistical meta-analyses of variables identified in the review (Card; Littell, Corcoran, & Pillai). Then, the researcher parses out all significant results with the goal of "providing unbiased summaries of empirical research" and discovering if the systematic review should contain quantitative meta-analysis (Littell, Corcoran, & Pillai, p. 27). A systematic review of empirical findings is included in this chapter after a broader narrative review of CQ to explain how variables were selected for inclusion in the meta-analyses reported in Chapters 4 through 7.

Card (2012) explains the difference in the research contributions of narrative theoretical reviews and systematic reviews with meta-analysis: "Although reviews focusing on theories or surveying practices within the literature are valuable contributions to science, it is important to distinguish the focus of meta-analyses on research outcomes from these other types of reviews" because meta-analyses includes methods of synthesis and analysis on a "continuum from qualitative to quantitative synthesis" (p. 6). The benefits of conducting a qualitative systematic review with meta-analyses rather than a "traditional narrative review" (Littell, Corcoran, & Pillai, p. 27) are numerous:

- Greater transparency
- Detection and reduction of bias
- Better estimates of population parameters
- Ability to assess outcomes in multiple domains, and
- Systematic accounts for moderators (participant, treatment, or study design characteristics) that influence outcomes. (Littell, Corcoran, & Pillai, p. 27)

For these reasons, I have used a qualitative systematic review of the literature on cultural intelligence to identify constructs for empirical investigation in this study.

2.1: Overview of Cultural Intelligence (CQ)

In their quest to respond to challenges faced in multinational organizations wherein many global workers lack the ability to "understand others from a new culture" (Earley, 2002, p. 272), organizational behavior scholars P. Christopher Earley and Soon Ang (Earley, 2002; Earley & Ang, 2003) posed the question "What is required for effective intercultural understanding?" Although the question is general, in response they conceived of Cultural Intelligence (CQ), a theory that "captures a person's capability to adapt effectively to new cultural contexts" (Earley, p. 274). Rooted in social constructivist worldviews that discuss how individuals' social experiences influence and shape their identity, CQ offers multiple ways of studying the variety of influences on an individual's ability to adapt and function effectively in new cultural settings. CQ has been extended both theoretically and empirically by numerous others as discussed later in this chapter. The authors claim that CQ provides "theory and new methods for the scientific study of interactions in multicultural settings" (Ang & Van Dyne, 2008, p. 4). Because of the descriptive and predictive power of CQ, it serves as the core theoretical and empirical basis of the proposed study.

2.1.1: Cultural Intelligence as a Capability

By defining CQ as a "capability" to function in multiple cross-cultural settings rather than as a skill or attribute, Earley and Ang (Earley, 2002; Earley & Ang, 2003) emphasize "a person's potential to be effective across a wide range of cultural contexts" rather than within "particular cultural and ecological contexts" (Ang, Rockstuhl, & Tan, 2014, p. 3). An individual's "capability" to be effective at something reflects his or her possessing and demonstrating a necessary combination of technical skills ("functional competence") and social abilities (for example, "to communicate a vision"), according to Smallwood and Ulrich (2004). CQ reflects an individual's "ability to learn" how to call upon learned skills and accumulated social abilities during interactions with culturally-different others in order to minimize the probability of "intercultural misunderstandings, tensions, and conflicts" that negatively impact their adaptation, adjustment, and, ultimately, learning capability (Ang & Van Dyne, 2008, p. 4). Thus, cultural intelligence reflects an individual's ability to not only know a range of culturally-appropriate skills, but also to select and utilize contextually-appropriate skills when interacting with culturally-different others, especially in the global workplace.

The culturally-intelligent global worker, for example, is comfortable interacting with colleagues from multiple countries and has the capacity to adapt to different expectations that arise in unfamiliar settings with a minimum of psychological discomfort that could negatively impact work and life success. Individuals with high CQ have an ability "to use emotional regulation" to overcome the "psychological discomfort" that can be felt when confronted with an unfamiliar cultural behavior or expectations, thus allowing the person to "settle in" and adjust their own behaviors and expectations more easily than others (Caligiuri,

2012, p. 128). A key concept underlying cultural intelligence is "adjustment," whether it refers to the psychological feeling of comfort in an unfamiliar setting or whether it means the behavioral adjustments that are expected to reflect the individual's new cultural expectations rather than one's own. Brislin, Worthley, and MacNab (2006) explain that cultural intelligence can be "increased with experience, practice, and a positive attitude toward lifelong learning" (p. 42) that allows an individual to develop the capacity to function effectively and adapt to differences in cross-cultural settings. The development of the know-how and know-what of CQ is of particular interest to HRD professionals whose purpose is to design interventions meant to increase individuals' capability to produce measurable outcomes that reflect individual and organizational success in the GKE. When examining whether studying CQ as a capacity is "credible" or even ethical in a global climate wherein one culture's values should not be seen as preferred to another, especially American values, Hampden-Turner and Trompenaars (2006) explain, "We grow more culturally intelligent as we study circumstances and cultural responses to these" (p. 62).

2.1.2: Cultural Intelligence as a Construct

Cultural intelligence (CQ) is a construct that is comprised of four factors as defined by Earley (2002)—behavioral (BECQ), cognitive (COCQ), metacognitive (MCCQ), and motivational (MOCQ)—that represents an individual's overall acuity in negotiating interactions with culturally-different others with a level of comfort and ease felt by both the individual and those with whom s/he interacts. In this sense, developing or increasing cultural intelligence results in a higher level of internal, psychological comfort with the unfamiliar as well as others' comfort with the external, behavioral, and verbal interactions

with the high-CQ individual. Figure 2.1 shows how the four factors align with the conceptual model (Figure 1.1) showing thinking and doing connected by feeling.

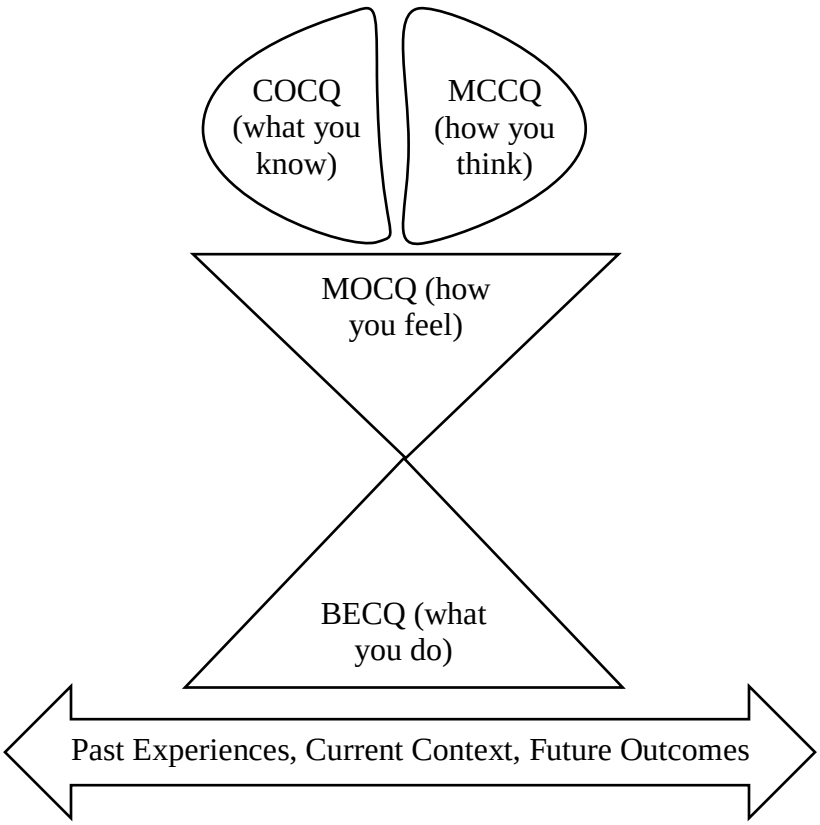

Figure 2.1. CQ Factors and Influences Mapped onto Basic Conceptual Model

2.1.2.1: Cognitive CQ (What you know). COCQ refers to a person's culture-specific knowledge of behaviors, norms, customs, and expectations and can be developed through "educational and personal experiences" (Ng, Van Dyne, & Ang, 2009, p. 574). COCQ can be conceptualized as the "know-what" required for success—it reflects a person's capacity to know what to "think and do." Such knowledge "forms the basis for comprehending and decoding the behavior of others" (Thomas et al., 2008, p. 128), which leads to effective cross-cultural interactions. Cultural intelligence is characterized by

"cognitive flexibility" that "may require abandoning pre-existing conceptualizations of how and why people function as they do" (Earley, 2002, p. 275). Again, while cultural intelligence as a construct is purposefully "culture-free" (Ang, Rockstuhl, & Tan, 2014, p. 3), having specific information about other cultures (including the specific cultural context in which they are interacting) improves global travelers' and workers' cross-cultural understanding.

2.1.2.2: Metacognitive CQ (How you think). MCCQ requires the "cognitive processes of self-reflection and person perception or inference of mental states in culturally diverse others" (Ang, Rockstuhl, & Tan, 2014, p. 23) by the individual in order to develop the ability to interact effectively in new cultural contexts and "step beyond their existing knowledge in order to fully understand what is going on around them" (Earley, 2002, p. 277). MCCQ reflects the concept that successful adults connect how they think with what they do in the GKE through purposefully-planned actions. The culturally-intelligent individual has the potential to use "meta-strategies" (Earley, 2002, p. 276) to use existing knowledge as a means of anticipating and understanding cultural similarities and differences as well as having "accurate expectations" (Ng, Van Dyne, & Ang, 2009, p. 574) of intercultural interactions based on that knowledge. High metacognitive CQ is also characterized by an individual's inductive reasoning abilities as part of the metacognitive capability "required in a new culture to [put] together patterns into a coherent picture even if one doesn't know what this coherent picture might look like" (Earley, 2002, p. 277).

2.1.2.3: Motivational CQ (How you feel). MOCQ reflects an individual's desire to learn about and function in culturally-different contexts while adjusting behavior accordingly. MOCQ represents the concept that successful adults' feelings and emotions

assist them with enacting the know-how and know-what required to connect thinking and doing in the GKE. The individual with high motivational CQ has the capacity to withstand difficult cross-cultural situations and to learn how to more effectively navigate them. It can be intuited that an individual who does not desire to interact with culturally-different others in a way that is perceived as "appropriate" or "effective" would be described as having low motivational CQ, even if the person has appropriate cultural knowledge and behaviors.

The culturally-intelligent individual expects some level of stress and confusion when entering new situations and accepts the challenge of learning how to function in an unfamiliar context; this willingness to face potential adjustment problems is driven by "the motivation for eventual understanding" (Brislin, Worthley, & MacNab, 2006, p. 49) by the individual. It is argued that the culturally-intelligent "sojourner" combines confusion acceptance with "a desire to eventually understand" so as to "become more effective" (Brislin, Worthley, & MacNab, p. 50). The source and impact of such motivation are of particular interest to researchers who investigate the intrinsic and extrinsic indicators of individual successful outcomes.

2.1.2.4: Behavioral CQ (What you do). Behavioral CQ (BECQ) refers to the ability to enact appropriate verbal, non-verbal, and interpersonal behaviors in various cultural contexts. Ng, Van Dyne, and Ang (2009) refer to this as behavioral "flexibility" (p. 574). In different terms, BECQ reflects the ability to know what to do to be successful in the GKE. Earley (2002) explains that a person with high BECQ has "in one's repertoire responses needed for a given situation [or] the capability to acquire such behaviors" (p. 279). Paula Caligiuri (2012) refers to the ability to quickly adjust to varying situations as they arise as "cultural agility," which she sees as the most important attribute of global professionals. In

Cultural Agility: Building a Pipeline of Successful Global Professionals, she describes "the process of becoming more culturally intelligent" (p. 128) as "changing one's behavior to fit the host culture" and says performing a behavioral adjustment is "different from emotional adjustment and feeling of psychological comfort with the new behavior" (p. 128). She describes a Pakistani worker's eventual adjustment to using the American handshake. First, he needed to cognitively understand the differences between his accustomed greeting and the context-appropriate handshake, and then he needed to practice physically enacting the new greeting when the situation arose; after "engaging mind, body and heart" (p. 128), as she describes it, the worker became more comfortable over time which resulted in better overall performance in the workplace.

2.1.3: Cultural Intelligence across the Disciplines

Within two years of Earley and Ang's (2003) introduction of the theoretical concept of cultural intelligence into the academic and business worlds as a new way of understanding what can predict or increase global workers' and students' abilities to adapt and succeed in non-native cultures, two measures of CQ emerged: the 20-item Cultural Intelligence Scale Self-Report (see Table 2.2) and the 20-item Cultural Intelligence Scale Observer Report (CQS: Cultural Intelligence Center, 2005). Researchers soon began conducting medium and large scale empirical studies assessing CQ as an antecedent, outcome, and as a moderator and mediator between various antecedents and outcomes.

Management and business scholars have published numerous studies of cultural intelligence, including scholars in the following sub-disciplines (or fields) of management, often identified by the journals in which the studies have appeared. Under the broad disciplinary umbrella of Business, specific CQ researchers include those in group and

organization management who often focus on interventions to improve CQ (e.g., *Group & Organization Management);* cross-cultural management *(*e.g., *International Journal of Cross-Cultural Management);* organizational behavior (e.g., *Organizational Behavior and Human Decision Processes*); management education (e.g., *Academy of Management Learning and Education)*; and general business (e.g., *Journal of World Business*). Researchers in the discipline of Psychology have studied CQ by most often linking personality types and psychological processes that lead to CQ; sub-disciplines that have contributed to the overall psychological understanding include applied psychology (in the journal *Applied Psychology*, for example); social psychology (e.g., *Journal of Applied Social Psychology*); cross-cultural psychology (e.g., *Journal of Cross-Cultural Psychology)*; and a hybridized (or transdisciplinary) field called managerial psychology (e.g., *Journal of Managerial Psychology*). The third main discipline that has embraced CQ studies is International Relations, which has investigated the ways in which people function in different cultural settings with an interest in predicting how intercultural exchanges can become more effective (i.e., *International Journal of Intercultural Relations*, *Career Development International*). This dissertation hopes to provide information of use to other researchers and practitioners from the many fields that study CQ.

2.1.4: The CQS: 20-item Cultural Intelligence Scale

In the studies that have been conducted in various disciplines using the 20-item CQS (Table 2.1), all of them validated the four-factor structure, thereby reinforcing my choice of CQS as the central instrument for investigating the effect of CQ on successful outcomes.

2.1.4.1: Measuring COCQ (know-what). In general, questions that assess cognitive CQ seek to measure whether an individual is aware of local customs, languages, social

norms, and taboos. The 20-item CQS Self-Report (Cultural Intelligence Center, 2005) contains questions that reflect the types of cultural knowledge (i.e., laws, religious beliefs, non-verbal behavior) the high-CQ individual utilizes in the process of selecting context-appropriate behaviors. The six questions assessing the cognitive CQ subscale provide a clearer understanding of what, theoretically, should be known by high CQ individuals about other cultures. They include understanding how cultural systems such as legal, economic, and marriage function in the context; understanding rules of appropriate language and nonverbal behavior; and being familiar with and ostensibly appreciative of culturally-local religions and arts.

2.1.4.2: Measuring MCCQ (know-how). By assessing metacognitive CQ, researchers can get a clearer understanding of the ways individuals with high metacognitive CQ are conscious of how they utilize their knowledge in cross-cultural interactions. High CQ people adjust their knowledge and are conscious of how they use this knowledge when in the presence of culturally-different others. The CQS questions about metacognition reflect the general process of the ways the high-CQ individual uses cultural knowledge.

2.1.4.3: Measuring MOCQ (know-how). The motivational subscale of the 20-item CQS Self-Report (Cultural Intelligence Center, 2005) provides insight into how an individual's motivation to interact with culturally-different others and to function in an unfamiliar culture is the key to their willingness to learn about the culture and to use metacognitive strategies to overcome any difficulties they may fact that the low CQ individual might be unable to manage. The individual with high MOCQ is able to tolerate ambiguity in unfamiliar contexts based on a desire to be successful.

2.1.4.4: Measuring BECQ (know-what). The five-item behavioral CQ subscale of the CQS Self-Report (Cultural Intelligence Center, 2005) shows the expected behavioral adjustment reflective of the high-CQ individual's interactions in different situations with culturally-different others. High CQ people are expected to change their verbal behavior in terms of tone, pauses, and rate of speaking as well as to change nonverbal behavior including using appropriate facial expressions. These statements highlight the expectation that an individual with high CQ be aware of "the situation" and be able to frequently call upon his/her cultural knowledge and motivations in order to enact purposefully-designed behaviors.

Table 2.1
Questions on the 20-item Cultural Intelligence Scale

CQ-Metacognitive Strategy:
MC1 I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.
MC2 I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar.
MC3 I am conscious of the cultural knowledge I apply to cross-cultural interactions.
MC4 I check the accuracy of my cultural knowledge as I interact with people from different cultures.
CQ-Cognitive Knowledge:
COG1 I know the legal and economic systems of other cultures.
COG2 I know the rules (e.g., vocabulary, grammar) of other languages.
COG3 I know the cultural values and religious beliefs of other cultures.
COG4 I know the marriage systems of other cultures.
COG5 I know the arts and crafts of other cultures.
COG6 I know the rules for expressing non-verbal behaviors in other cultures.
CQ-Motivation:
MOT1 I enjoy interacting with people from different cultures.
MOT2 I am confident that I can socialize with locals in a culture that is unfamiliar to me.
MOT3 I am sure I can deal with the stresses of adjusting to a culture that is new to me.
MOT4 I enjoy living in cultures that are unfamiliar to me.
MOT5 I am confident that I can get accustomed to the shopping conditions in a different culture.
CQ-Behavior:
BEH1 I change my verbal behavior (e.g., accent, tone) when a cross-cultural interaction requires it.
BEH2 I use pause and silence differently to suit different cross-cultural situations.
BEH3 I vary the rate of my speaking when a cross-cultural situation requires it.
BEH4 I change my non-verbal behavior when a cross-cultural interaction requires it.
BEH5 I alter my facial expressions when a cross-cultural interaction requires it.

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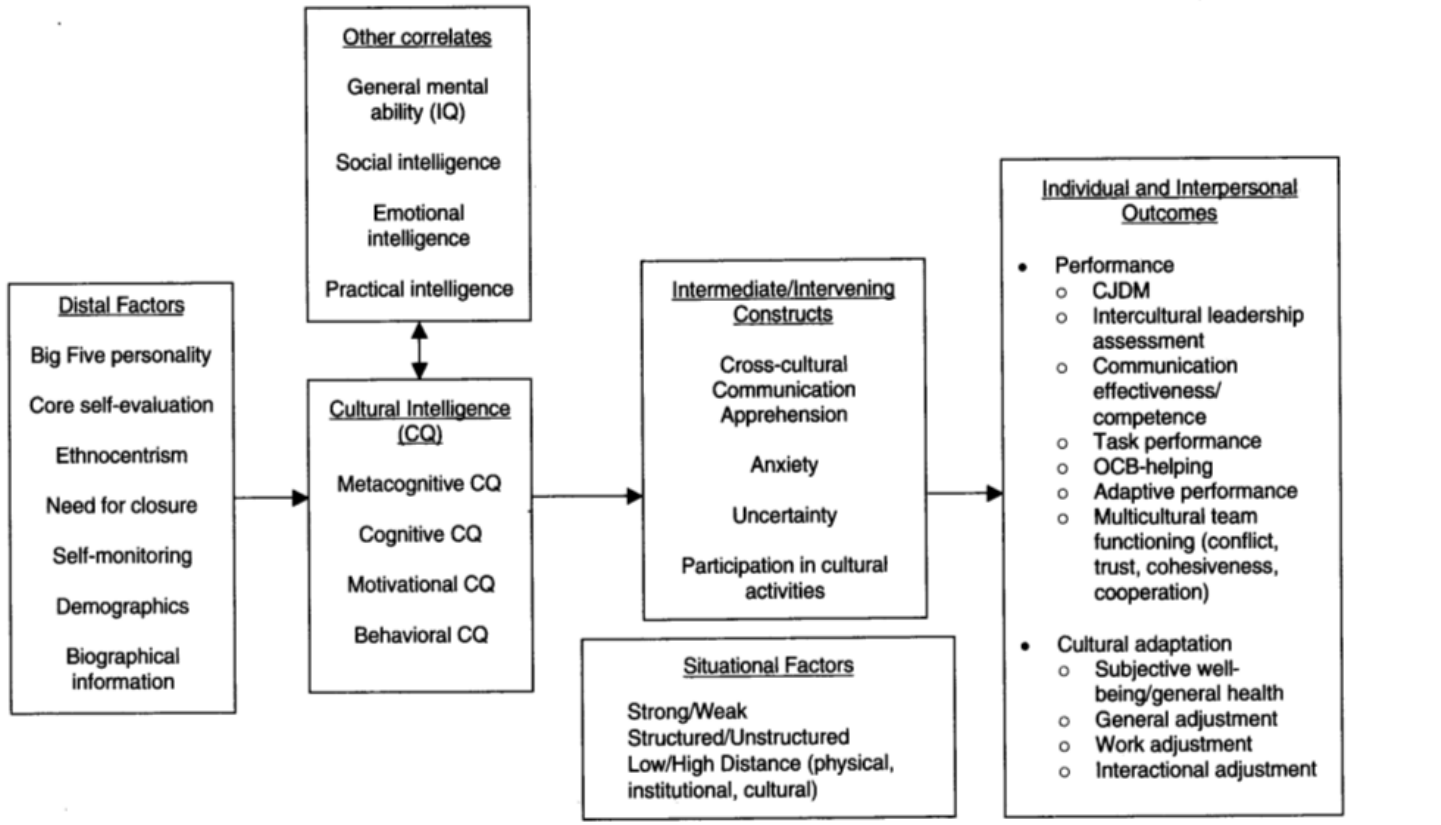
2.2: Nomological Network of Cultural Intelligence

In addition to having been studied by researchers from across the globe, many disciplines have embraced different aspects of investigating and explaining an individual's CQ. Earley (2002) argues that previous research on effective cross-cultural interactions has failed to "capture the complexity of understanding arising from intercultural encounters and travels" (p. 272) that develops an individual's effectiveness at adapting to and understanding culturally-different others with whom they interact. Further, it is essential to understand the "intrapersonal and interpersonal processes" (Earley, 2002, p. 275) underlying an individual's development and demonstration of cultural intelligence.

In their *Handbook of Cultural Intelligence: Theory, Measurement, and Applications*, a text that inspired a decade of follow-up studies analyzed in this series of meta-analyses, Ang, Van Dyne, and Koh (2008) published a nomological network (Figure 2.2) showing 37 constructs that had been shown to relate to CQ. Mapped onto a systems framework, the constructs are separated into distal factors (or antecedents) of CQ; situational factors (or contextual influences); intermediate or intervening constructs (or mediators); other correlates of CQ; and, finally, individual and interpersonal outcomes. Card (2012) explains that the "interplay between theories and meta-analytic results [can be understood] in terms of the metaphor of the 'nomological net' wherein the knots of the net represent constructs, and the webbing among the knots represents associations among the constructs" (p. 300). It is important to recognize that specific individual attributes may influence the four factors in different ways that are not explored in this series of meta-analyses.

On the nomological network, the four factors of CQ are combined into the overall latent construct (total CQ) rather than being parsed out by factor. However, each of the four

dimensions of CQ represents a unique concept that explains different aspects of a person's cultural intelligence, such as how they think (metacognition), how they feel (motivation), what they know (cognition), and what they do (behavior) in cross-cultural interactions. The lack of separation among the four factors of CQ is a concern for researchers who are interested in a more tightly-woven, carefully-designed, empirically-tested nomological net rather than a broadly-cast, loose one. The fact that each of the four unique factors can be isolated and examined independently is one of the most salient aspects of Earley and Ang's (2002, 2003) theory and serves as the basis of their widely-validated instrument, yet the nomological network fails to capture other researchers' findings that tend to formulate hypotheses and report results about CQ by factor. To date, no researchers have modeled the relationships among the four factors to examine the contribution of each to overall CQ. This study is the first to model the relationships among factors as well as the empirically-supported antecedents and outcomes of each CQ factor.



Note: General Permission for use granted by authors for research purposes per Ang & Van Dyne, 2008

Figure 2.2. The Nomological Network of Cultural Intelligence, from Ang & Van Dyne, 2008.

2.3: Methods of Locating and Selecting Empirical Studies using the CQS

To conduct a meta-analysis, the first step researchers take after posing research questions is to identify selection and exclusion criteria for the empirical studies they locate with the data needed for the statistical meta-analysis. The next section of this chapter provides details about the inclusion and exclusion criteria, the literature search strategy and results, and the final selection of 56 empirical studies to systematically review to determine which relationships are ripe for quantitative meta-analysis.

2.3.1: Study Inclusion and Exclusion Criteria

The selection of study eligibility criteria is guided by the research questions and can fall under broad categories suggested by Lipsey and Wilson (2001): distinguishing features of a study such as how specific constructs are defined or employed; research respondents, such as specific participant types or demographics; key variables such as covariates or outcomes; research methods such as pre- post-test comparisons; cultural and linguistic range such as site location; time frame; and publication type such as peer-reviewed academic journals or unpublished manuscripts. Of those seven suggested categories, my specific selection criteria fit into most as discussed below.

- **Research respondents.** One goal of the current study is to synthesize results from studies that surveyed a diverse range of population demographics, including country of origin, student versus worker status, and familiarity with cultural context (native versus expatriate or home versus host country).
- **Distinguishing features.** Rather than an exclusionary criterion, I have located a collection of studies that have been conducted in multiple countries. Such diverse

representation has the potential to increase generalizability, to appeal to a wider range of stakeholders, and will serve as a grouping or moderator variable.

- **Key variables.** Because the study's purposes are to examine the relationships between CQ factors and between CQ and outcomes, the first criterion for my initial selection of studies was that the study must report the variables for each of the four CQ factors measured with the 20-item Cultural Intelligence Scale (CQS, 2005). Other studies of interest include those that analyze variables listed on the refined nomological network summarized on Figure 2.2. Studies that include other variables of interest such as status (worker versus student), location of study (country), prior intercultural experience, and context of the study (home or host country) are also included in selection criteria.
- **Research methods.** This series of meta-analyses includes only those studies that have measured associations between the four factors of CQ using the 20-item CQS Scale and outcome variables. Selected studies included a correlation matrix and many included means, standard deviations, and Cronbach's alphas for instrument reliability.
- **Time frame.** Because my primary selection criterion is studies that utilize a specific instrument that was published in 2005, selected studies all have been conducted and published after that date.
- **Publication type.** My literature searches only included peer-reviewed academic journals and excluded dissertations because they do not undergo unbiased peer review in the same way published studies do.

2.3.2: Study Search Strategies and Results

The following academic databases, each of which includes a collection of articles written by academics from diverse disciplines and applied fields, were searched: ERIC, Web of Science, Academic Search Complete, PsycINFO, PsycARTICLES, Business Source Complete, and JSTOR. Google Scholar was also searched. Using advanced search methods, I sought empirical sources with the exact phrase "cultural intelligence scale" and limited results to those published in English after 2005. I downloaded all citations into a spreadsheet and sorted my results, eliminating duplicates. I then read each abstract and made further refinements to the collection of studies eligible for inclusion in this series of meta-analyses of CQ. Table 2.2 summarizes the literature search process, including databases searched, keyword combinations, and the numbers of results returned. After the electronic search was completed, I conducted what Card (2012) calls a "backward search" (p. 49). Starting with the most recent publication, I searched the reference list in each of my pool of sources.

2.3.3: Excluded Studies

At the end of the thorough search process, I found 87 empirical studies that reported the results of the CQS and other variables. The full text of all 87 studies were downloaded into a folder and reviewed for adherence to selection criteria. Studies that did not include all four factors' correlations, did not include a correlation matrix, or investigated replicated samples were eliminated. After reviewing the 87 studies' reported data more closely, I rejected over 30 for various reasons (listed in Appendix B), including the following:

- Studies did not actually measure all four factors of CQ
- Studies utilized a modified version of the CQS, including truncated versions
- Studies did not include a correlation matrix that had all 4 factors reported

- Studies were conducted by the same authors and reported data on the same population (sample size and means were assessed for identifying duplicate samples). In cases of duplication, I selected the study with the highest number of variables on the correlation matrix.

Table 2.2
Electronic Search Strategies and Results for Studies Measuring Cultural Intelligence

Databases Searched	**Keywords**	**Number of Relevant Results**	**Number of Unduplicated Results**
Web of Science	"cultural intelligence" and English language since 2005	371	47
Academic Search Complete—includes Business Source Complete, ERIC, PsycArticles, and PsychInfo	"cultural intelligence" and English language since 2005	149	30
Google Scholar academic journals only	"cultural intelligence" in article abstract	147	7
NCSU library Summon general article search	"cultural intelligence scale" found anywhere in source	787	3
			TOTAL: 87 empirical studies available for coding, review, and meta-analysis

2.3.4: Selected Studies for Systematic Review and Meta-Analyses

I identified 56 independent samples from empirical studies that measured all four factors of CQ using the CQS and met the other inclusion criteria listed above. Appendix A

lists all studies that are analyzed in the qualitative systematic review reported in the balance of this chapter, the data from which are quantitatively analyzed using meta-analytic techniques outlined in Chapter 3 and reported in Chapters 4-7. Each series of meta-analyses in this report is conducted with sets of studies from within the relevant pool of 56 samples. Each of the 56 samples was assigned an identifying "tag" which, as is typical in meta-analytic reports, is designated with the letter *k* and a number (e.g., *k*1 is Al-Dossary, 2016). Appendix A lists the studies in numerical order and publication information.

2.3.5: Coding Study Characteristics

Appendix C lists all coded aspects of the 56-sample pool identified for meta-analysis in Chapters 4 through 7. In addition to recording standard publication information, I encoded the following study characteristics for each selected source:

- Study location (country)
- Number of unique samples in each selected published study
- Sample sizes
- Participants' role: Worker vs. Student
- Context of study (home vs. host country)
- Which other variables were reported, including measurement instruments
- Whether study investigated pre- and post-training CQ means
- Supported hypotheses

2.4: Systematic Review of Empirical Studies of Constructs from Nomological Network

Each of the 56 empirical studies selected for meta-analytic analysis posed one or more hypotheses that sought to investigate the four factors of CQ as either a correlate, a predictor, a mediator, or an outcome. That one latent construct—total cultural intelligence—

and its four measured variables—behavior, cognition, metacognition, and motivation—has the potential to serve researchers and practitioners as predictor and outcome is what adds theoretical power to the selection of CQ as a proxy for intellectual capital and empirical power to the selection of CQ for deeper analysis using meta-analytic methods.

A simple count of the number of supported hypotheses by CQ factor from the 56-sample pool shows that motivational CQ (MOCQ) had the highest number of empirically-supported hypotheses, followed by metacognitive CQ (MCCQ), then by behavioral CQ (BECQ), and, finally, by cognitive CQ (COCQ).

Table 2.3
Total Number of Supported Hypotheses in 56-sample Pool by CQ Factor

CQ Factor	Number of Supported Hypotheses
MOCQ	69
MCCQ	45
BECQ	42
COCQ	39

Sections 2.4.1 through 2.4.3 summarize the hypotheses that support the factors that the model of the nomological network (Figure 2.2) postulates as antecedents (called distal factors and other correlates on the model), intervening factors (and situational factors per the model), and individual / interpersonal outcomes (divided into performance and adjustment outcomes on the model).

2.4.1: Antecedents of CQ

Eleven different constructs were shown to be distal factors and other correlates of CQ on the nomological network, yet a review of the 56-sample pool selected for inclusion in this series of meta-analyses of CQ showed that only four of those constructs were empirically

studied—Big Five personality (B5); general mental ability (IQ), emotional intelligence (EQ), and biographical information including previous international experience (XP).

2.4.1.1: Big Five personality. The Big Five (B5) is a commonly-used personality assessment comprised of five distinct personality traits (Conscientiousness (CS), Emotional Stability (ES), Agreeableness (AG), Openness (OX), and Extraversion (EX)). Of note is the fact that 11 studies out of the 56-sample pool measured the relationship between Big 5 and CQ, and eight of those found significant relationships between specific factors of the Big 5. Yet of the five measured factors that comprise the Big 5, only openness to experience (OX) and extraversion (EX) had significant correlation with all four factors of CQ; agreeableness (AG) was significantly related all factors except MOCQ; and conscientiousness (CS) was only related to BECQ (Ang, Van Dyne, & Koh, 2006; Duff, Tahbaz, & Chan, 2012; Kim, Kirkman, & Chen, 2008; Li, Mobley, & Kelly, 2016; Nel, Nel, Adams, & de Beer, 2015; Oolders, Chernyshenko, & Stark, 2008; Presbiterio, 2015). One interesting finding was from Li, Mobley, and Kelly (2016), who found that BECQ, COCQ, and MCCQ are predicted by openness to experience (OX) only when agreeableness (AG) is high, but not when it was low, showing that personality factors may need to interact in specific ways to reliably predict levels of CQ. These findings assist researchers in understanding those personality traits that align with the concepts underlying the four factors of CQ—people who are more open and willing to experience different cultures, and people who are perceived as extraverted and agreeable in nature are more likely to be culturally intelligent. The number of studies supporting these factors as predictors of CQ shows that there is no gap in the literature that needs to be filled by meta-analyzing the relationships any further.

2.4.1.2: Emotional intelligence (EQ). Of the 56 samples identified for inclusion in this series of meta-analyses of the four factors of CQ, 10 investigated the relationship between CQ and EQ. Emotional intelligence is a construct that reflects the ways an individual's "social and cognitive functions [are] related to the expression, regulation and utilization of emotions" (Schutte, Malouff, Hall, Haggerty, Cooper, Golden, & Dornheim, 1998, p. 168). Unlike Big Five measurements, the different instruments to measure EQ name factors differently, which makes conducting a meta-analysis of this construct difficult. Schutte's (1998) instrument measures appraisals of emotions, mood regulation, social skills, and utilization of emotions, whereas the ECI by Boyzatzis and Goleman (2002) measures self-management, relationship management, social awareness, and self-awareness. Lennox and Wolfe (1984) include self-monitoring as an EQ factor. Whatever the measurements are called, EQ is comprised of two categories: interpersonal intelligence, which is the "ability to understand other individuals' emotions and intentions," and intrapersonal intelligence, which is "the ability to know one's own emotions" (Schutte, p. 168). Of the 10 studies that investigated the relationship between CQ and EQ, only four reported significant findings: it was found that self-monitoring was significantly related to all four factors (Moon, Choi, & Jung, 2013), that self-awareness was positively related to BECQ and MCCQ (Moon, 2010), and that interpersonal competencies of CQ (social awareness and relationship management) have more explanatory power in predicting CQ than intrapersonal competencies of EQ (self-awareness and self-management) (Moon, 2010).

Another useful finding from the studies of EQ and CQ showed that "CQ offered no additional explanatory power of cross-cultural adaptation and socio-cultural adaptation over time than EQ" (Ward, Fischer, Zaid, Lam, & Hall, 2008, p. 92). Similarly, Lin, Chen, and

Song (2012) found that EQ positively moderated the relationship between CQ and cross-cultural adjustment—the higher the person's EQ, the stronger were the effects of CQ on cross-cultural adjustment. The last two findings reinforce the choice of CQ as the construct that reflects an individual's capability for successful outcomes and suggest that it is not necessary to conduct a statistical meta-analysis of EQ's relationship with CQ.

2.4.1.3: General mental ability (IQ). Of the 56-sample pool, only three studies investigated the relationship between CQ and IQ, which is a measurement reflecting a person's general mental ability (Ang et al., 2007; Ang, Van Dyne, & Koh, 2008; Oolders, Chernyshenko, & Stark, 2008). However, none of the studies found a significant relationship between CQ and IQ, thereby suggesting that IQ should be removed from the nomological network and certainly does not warrant investigation using meta-analytic methods.

2.4.1.4: Previous international experience (XP). Of the studies in the 56-sample pool, 22 investigated how different types of international experiences predicted CQ and cross-cultural outcomes. This measurement is of interest because CQ is theorized as being "developed through educational and personal experiences" (Ng, Van Dyne, & Ang, 2009, p. 574). In their study of international managers from Ireland and China, Li, Mobley, and Kelly (2013) found that the length of overseas work experience was positively related to level of total CQ, a similar finding to Shannon and Begley (2008). On the other hand, Moon, Choi, and Jung (2012) found that previous non-work international experience was positively related to BECQ, COCQ, and MCCQ but not MOCQ; they also found that previous work experience was positively related to COCQ and MCCQ. Tarique and Takeuchi (2008) found that the number of previous non-work international experiences was related to higher BECQ, COCQ, and MOCQ, while the number of short non-work international experiences was

related to higher MCCQ and MOCQ than longer experiences were. In a finding very different from Tarique and Takeuchi, Eisenberg et al. (2013) found that MCCQ was the only CQ factor positively related to previous international experience. These very different findings highlight the need for researchers to quantify the magnitude of the relationship between the four factors of CQ and international experience, which is done in a series of meta-analyses reported in Chapter 5 of this study.

2.4.2: Intervening / Situational Factors and CQ

The nomological network shown in Figure 2.2 lists four intervening constructs modeled to moderate the relationship between CQ and individual or interpersonal outcomes: cross-cultural communication apprehension, anxiety, uncertainty, and participation in cultural activities. Of those four, only two were empirically investigated in the 56-sample pool—anxiety and participation in cross-cultural activities, coded in this study as training (TRN).

2.4.2.1: Anxiety and culture shock. Anxiety was assessed in only one study (Bucker, Furrer, Poutsman, & Buyens, 2014), which postulated that "taking into account anxiety is likely to be critical in the relationship between CQ and outcomes" such as intercultural interactions wherein "people. . .realize that the previously taken-for-granted assumptions they had are no longer relevant or appropriate when communicating with people from a different culture" (p. 2068). They found that higher CQ individuals experience less anxiety in cross-cultural contexts. A similar study investigating how CQ relates to a negative attribute is Chen, Lin, and Sawangpattanakul's (2011) study of culture shock: "Culture shock is regarded as a transitional experience and a mechanism to cross-culture effectiveness either in a work setting or a non-work environment in the host country" (p. 247). Though it was

only one study, their conclusion adds to the understanding of CQ. They found that "the influence of CQ on performance was partially mediated by culture shock" and that "higher CQ individuals suffered less culture shock, which influenced their performance at work" (p. 252). These findings illuminate how CQ can be seen as a capacity to reduce anxiety and improve outcomes in the GKE. However, there are not enough studies of how CQ mediates negative emotional responses in cross-cultural contexts to allow for a meta-analysis.

2.4.2.2: Cross-cultural activities / Training (TRN). The promise of increasing individuals' CQ through purposeful interventions is part of HRD professionals' goal, and it is important to know which of the four factors may be developed. Within the set of studies found in the preliminary literature search, six conducted pre-test and post-test comparisons to show that cross-cultural activities or training (TRN) did, indeed, lead to a change in CQ (Bucker & Korzilius, 2015; Chao, Tekeuchi, & Farh, 2017; Eisenberg, Lee, Bruck, Brenner, Claes, Mironski, & Bell, 2013; Engle & Crowne, 2014; Fischer, 2011; Young, Haffejee, & Corsun, 2017). Eisenberg et al. (2013) found that all four factors of CQ improved after a cross-cultural management course and also concluded that "the relationship between students' previous experience and cognitive CQ was weaker after the course" than at the beginning, suggesting that high CQ has more predictive power than experience might. The relationship between CQ and experience is discussed above in section 2.4.1.4 and is investigated in Chapter 5 to add to the understanding of the extent to which international experience should be valued as an individual capacity for success in the GKE.

Bucker and Korzilius (2015) found that total CQ increased after participation in a cross-cultural role-playing game, while Engle and Crowne (2014) saw an increase in all four factors of CQ after a cross-cultural tour. Moon, Choi, and Jung (2012) did not compare

levels of CQ before and after training, yet they drew a useful conclusion about how CQ is related to multiple factors at once, serving as "a mechanism of cross-cultural adjustment);" they used a Sobel test to confirm "indirect effects of CQ on the relationships among previous experience, training, and adjustment" (p. 289). Because one of the goals of this study is to investigate and categorize factors that may increase each of the four factors of CQ, this study includes meta-analyses that analyzes the extent to which each CQ factor increased or decreased after such an intervention to increase the understanding of how CQ is, indeed a "mechanism" (Moon, Choi, & Jung) that reflects an individual's capacities and capabilities in the GKE (Chapter 4).

2.4.2.3: Situational factors. The nomological network in Figure 2.2 shows a set of constructs that theoretically influence the relationship between CQ and outcomes, named "strong/weak," "structured/unstructured," and "low/high distance." These contextual differences reflect factors beyond individual attributes, skills, and experiences that can influence a person's ability to produce successful outcomes. But cultural distance is the only one of the constructs that has been empirically investigated, and even then, only two studies reported cultural distance. Huff, Song, and Gresch (2014) used cultural distance as a control variable and did not report any significant results showing the role of this contextual variable as it relates to CQ. Ward, Wilson, and Fischer (2011) created two groups of students in their investigation of CQ's predictive validity over time—one of students from countries with low power distance (mostly from North America and Europe) and one of students from countries with high power distance (from Asia, South America, and the Pacific Islands). They found that students from low power distance countries "experienced fewer sociocultural difficulties" (p. 140) during their expatriation at a university in New Zealand. This finding

suggests that cultural distance may influence CQ and could be a salient predictor of successful outcomes. Thus, in the current study, I have recorded data on cultural distance for those studies that include enough information to calculate it so that I may include it as a moderator variable in this set of meta-analyses (see sections 2.5.1 and 7.13 for more about cultural distance).

2.4.3: Performance and Adjustment Outcomes

Several empirical studies in the pool of 56 samples for potential meta-analysis were able to support hypotheses showing the four factors of CQ as predictors of several of the 11 individual and interpersonal outcomes identified on the nomological network (Figure 2.2).

2.4.3.1: Performance outcomes. Performance outcomes are those that are observable by other people rather than by self-report whereas cultural adaptation outcomes are those that reflect an individual's psychosocial ability to feel comfortable with their abilities in an unfamiliar cultural context. Only two studies investigated Cultural Judgement and Decision-making (Ang et al., 2006, 2008), which is a performance-based construct that reflects employees' assessments of a leader's ability to make sound decisions in the workplace. Other constructs listed on the nomological network as performance outcomes that were not measured in any of the 56-sample set of studies include intercultural leadership, communication effectiveness, and multicultural team functioning. Nine studies measured task performance (TP), which is often completed by peers or supervisors and assesses how well a person completes specific tasks in a work environment. On a general level, task performance assesses "what other people see you do," and it is considered an interpersonal or tangible outcome (know-what). Studies found that total CQ predicted task performance (Jyoti & Kour, 2015; Lee, Vaesna, & Wu, 2013). Findings by CQ factor showed that BECQ,

COCQ, MCCQ and MOCQ all were positively related to performance (Chen, Lin, & Sawangpattanakul, 2011; Groves, Feyerherm, & Gu, 2015; Presbitero, 2015). Duff, Tahbazm and Chan (2012) actually found that BECQ was the only one of the four CQ factors that was positively related to TP. These findings reinforce the choice of CQ as a measure of an individual's capacity for successful outcomes in the GKE, yet as a whole, they do not illuminate which of the four factors seems to relate most closely to performance outcomes, which is one purpose of the current study. A meta-analysis showing the relationship between the four factors of CQ and TP is conducted and reported in Chapter 6 to clarify the strength and magnitude of these relationships.

2.4.3.2: Adjustment outcomes. The nomological network identifies four constructs as individual outcomes of CQ: subjective well-being, general adjustment, interactional adjustment, and work adjustment. Of these four, the least-studied construct was subjective well-being (Ang et al., 2006, 2008). On the other hand, general adjustment (GA) was assessed in 11 studies; interactional adjustment (IA) was assessed in 13 studies, and work adjustment (WA) was assessed in 12 studies. These three constructs, most often evaluated using instruments by Black and Stephens (1989), are closely related and are often assessed together to measure overall cross-cultural adjustment. Although they are often combined, each adjustment type reflects different concepts related to how a person feels in a specific cultural context. General adjustment evaluates how comfortable individuals are with day-to-day living experiences such as shopping; interactional adjustment evaluates how comfortable individuals are engaging with culturally-different others; and work adjustment evaluates how comfortable individuals are performing and interacting with culturally-different others in a work context. Total CQ was found to predict GA and IA in three studies (Lee, Veasna, &

Wu, 2013; Lin, Chen, & Song, 2012; Ward et al., 2008), and other studies found significant relationships between adjustment outcomes and specific factors of CQ. Behavioral CQ (BECQ) was found to predict IA and WA (Konanahalli, Oyedele, Spillane, Coates, von Meding, & Ebohon, 2014; Ward, Wilson, & Fischer, 2011), yet one other study found that BECQ was negatively associated with WA (Gudmundsdottir, 2015). Cognitive CQ (COCQ) was found by Ramalu, Rose, Kumar, and Ulki (2010) to be "significantly related to higher levels of interactional adjustment" (p.29), similar to the conclusions drawn by Lin, Chen, and Song (2012) and Konanahalli et al. (2014). Metacognitive CQ (MCCQ) was predictive of all three adjustment outcomes (Gudmundsdottir, 2015; Lin, Chen, & Song, 2012; Ramalu et al., 2010; Ward, Wilson, & Fischer, 2011; Wu & Ang, 2011). Finally, motivational CQ (MOCQ) was empirically shown to predict all three adjustment outcomes (Ang et al., 2007; Gudmundsdottir, 2015; Huff, 2013; Huff, Song, & Gresch, 2014; Konanahalli et al., 2014; Lin, Chen, & Song, 2012; Ramalu et al., 2010; Wu & Ang, 2011). This group of significant findings would seem to definitively lead to the conclusion that CQ leads to successful adjustment outcomes, yet the relative strength of each CQ factor at predicting different kinds of outcomes remains unstudied. Therefore, this study includes a series of meta-analyses of the relationships between CQ factors and different adjustment outcomes, which is reported in Chapter 6.

2.5: Identification of Variables and Studies for Meta-Analysis

The systematic review of empirically supported relationships between CQ factor and experience, contextual factors, training, and individual / interpersonal outcomes has revealed several opportunities for statistical meta-analysis. The coding scheme reported in Appendix

C also reveals several researcher-derived variables to investigate individual and contextual differences that have not yet been studied in any analysis of CQ in the published literature.

2.5.1: Researcher-derived Variables for Meta-analysis

2.5.1.1: Context of study—home or host country. I recorded whether the participants were surveyed in their home country (natives) or in a host country (expatriates) because I suspect the location may explain variance in the relationships between measured variables. In other words, it is theoretically-realistic to expect that a person's CQ would be higher or lower depending if they are in an unfamiliar cultural environment, thus allowing for conclusions about CQ as a capacity for success in different contexts.

2.5.1.2: Participants' role—worker or student. Another characteristic of the sample of populations I coded was the participants' role—student or worker—with the purpose of investigating the possibility that CQ and the factors' relationships to predictors or outcomes are different based on the institutional context (higher education or workplace) and implied future goals (to enter the workforce or to demonstrate success in a current workplace).

2.5.1.3: Cultural power distance. Two of the goals of the current study are to analyze whether the country in which the studies were conducted contributes to the variance in relationships between correlates and outcomes of the four factors of CQ and to discover whether results can be generalized across continental borders, thereby reinforcing the idea that CQ is a valid assessment notwithstanding the location. Per Gert Hofstede's comprehensive website about cultural dimensions, power distance, also referred to as cultural distance, has been theorized to represent the level of respect and deference paid to authority figures within a specific cultural context (geerthofstede.com). In high power distance

countries, people are less likely to question decisions made by those in power, and they are more likely to "accept and expect that power is distributed unequally" (geerthofstede.com). Hofstede has assigned values indicating levels of cultural distance for many places around the globe, and these values are often used in social science analysis as moderator or predictor variables. The website gives blanket permission to researchers who want to use the dimension in their research, saying "the research findings are freely available to the academic community," but they caution that the values are to be used for "the comparison of culturally relevant values between matched respondent samples from two or more societies" and are not to be "used for comparing organizations, occupations, or other social categories or individuals" (geerthofstede.com). This study complies with those requirements.

I have collected data on the location of each study in the 56-sample pool for which such information was available (Figure 2.4) and report the power distance scores for the countries in Appendix C. Of note is the fact that several countries that were categorized as having low power distance had a score much lower than that of the U.S., which scored a 40: New Zealand scored 22, with the lowest value of all contexts; Ireland scored 28; Germany scored 35, Australia scored 38; and Canada scored 39. Only one country in the low power distance group scored higher than the U.S.—that was South Africa with a score of 49. The countries in the high power distance group include those located in Asia and the Middle East, with Japan and Taiwan scoring lowest in the group (54 and 58, respectively), and Malaysia scoring the highest with a score of 104, exceeding the value of 80 assigned to Arab countries and China. Using the values from the cultural dimensions website (geerthofstede.com), I then coded values above 50 as having high power distance, and values equal to or less than 49 as having low power distance.

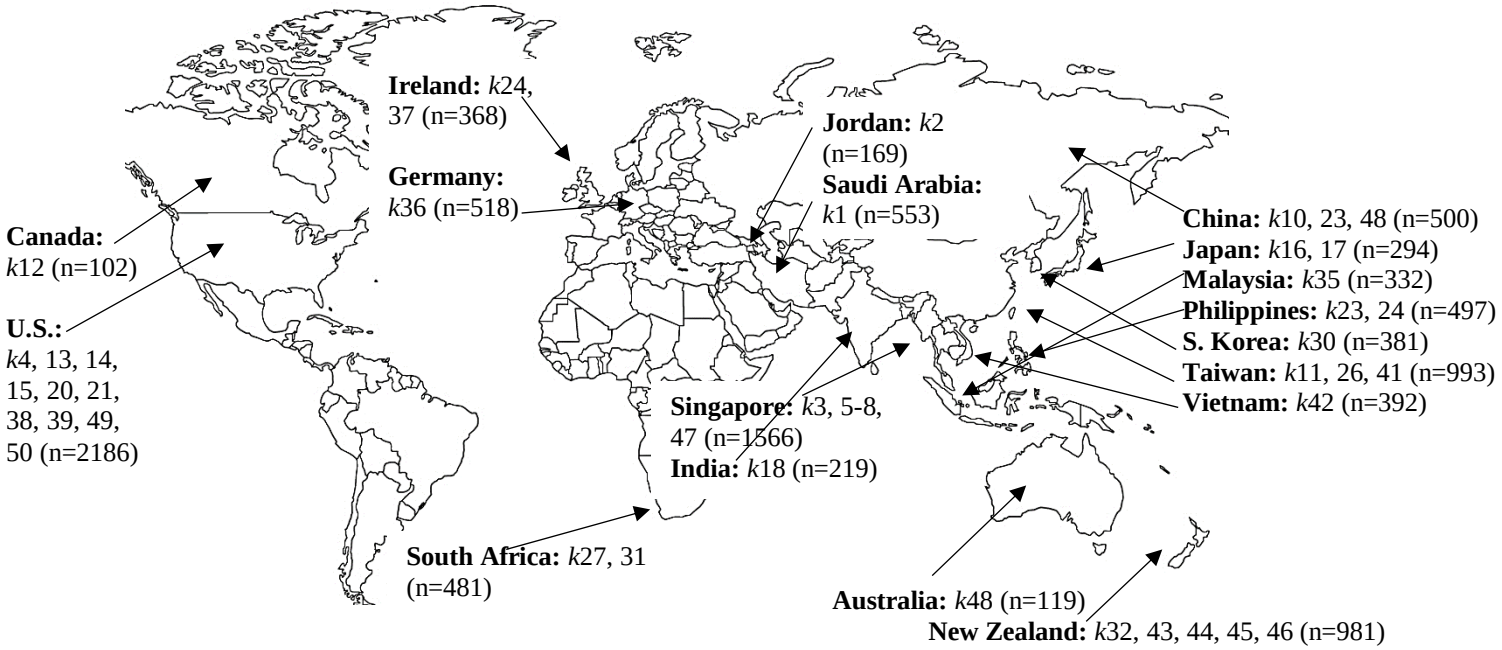


Figure 2.3. Countries in which 56-sample Pool were Conducted with Sample Size

2.5.2: Variables from Empirical Studies

Having investigated the number and nature of studies that conducted empirical investigations of the relationships between the four factors of CQ and specific constructs listed on the nomological network, I determined through this systematic review that a series of meta-analyses would better explain the magnitude and direction of certain relationships between and among variables. I also determined that several variables that have not been empirically studied should be included in the analyses: participants' role in the study context (worker or student); participants' familiarity with the study context (native/home or host/expatriate), and cultural distance (high or low).

Figure 2.4 summarizes the number of studies that have investigated the constructs of interest in for meta-analyzing in this study: experience (XP), participation in cross-cultural activities (TRN), task performance (TP), and three adjustment outcomes (general (GA), interactional (IA), and work (WA)). Table 2.4 lists the variables that are meta-analyzed in Chapters 4-7 along with the research questions answered by each analysis, the studies from which meta-analytic data is collected for each, and the chapters in which each analysis is reported. The table does identify nor list the studies for the researcher-derived variables because they are too numerous and are listed on data tables in each meta-analysis reported in Chapters 4 through 7 when enough samples for the groups are available for moderator analysis.

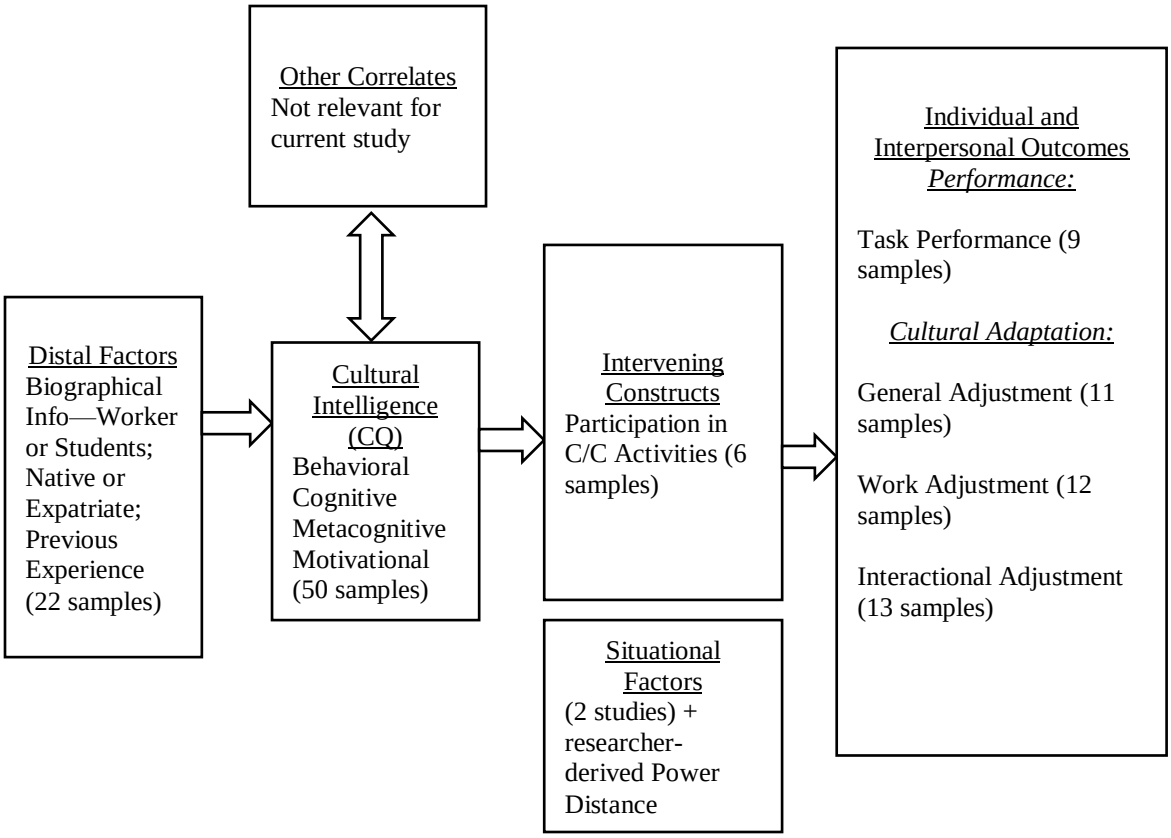


Figure 2.4. Empirically-Investigated Variables for Meta-Analysis in Chapters 4-7

Table 2.4
Overview of Series of Meta-Analyses: Variables, Studies, and Chapters

	Research Question	Construct for Investigation into Relationship with CQ	Number of samples	Included Samples (by Study Tag *k*)	Report Chapter
(1)	Which of the CQ factors may be increased or decreased after participants undergo purposeful interventions?	Pre-Post Comparison (TRN)	6	*k* 51, 52, 53. 54. 55. 56	Chapter 4
(2)	Which factors of CQ are most influenced by previous international experience?	Previous International Experience (XP)	22	*k* 3, 4, 5, 6, 7, 11, 14, 15, 24, 26, 28, 29, 30, 35, 36, 37, 38, 39, 40, 47, 48, 50	Chapter 5
(3)	In what ways do each of the four factors of CQ relate to performance and adjustment outcomes identified in the systematic literature review?	Performance Outcomes (TP)	9	*k 6*, 7, 11, 12, 14, 18, 23, 34, 47	Chapter 6.1
		General Adjustment (GA)	11	*k* 7, 15, 16, 17, 18, 22, 28, 35, 38, 47, 48	Chapter 6.2
		Interactional Adjustment (IA)	13	*k* 4, 7, 8, 15, 16, 17, 18, 22, 23, 35, 38, 47, 48	Chapter 6.3
		Work Adjustment (WA)	12	*k* 7, 15, 16, 17, 18, 22, 23, 28, 35, 38, 47, 48	Chapter 6.4
(4)	What is the strength of the relationships between and among the four factors of CQ?	4 CQ Factors to each other	50	*k* 1-50	Chapter 7
(5)	In what ways do grouping differences such as location of study (home vs host), participants' role (worker vs student) and power distance explain variance in the relationships studied above?	Home (Native) vs Host (Expatriate); Role (Worker vs Student); Power Distance (High vs Low)	Varies	Varies	Chapters 5, 6, 7

2.6: Conclusion

Chapter 2 presented a detailed discussion of the theories that undergird each of the four constructs of cultural intelligence as well as an explanation of what concepts are reflected by each of the four. In addition, Chapter 2 explained the instrument that is used to measure CQ, the CQS (2005). Also, Chapter 2 summarized the intensive search methods used to locate 56 unique samples that have been assessed using the 20-item CQS scale. Finally, Chapter 2 presented a systematic review of the findings that support the nomological network that postulates antecedents, intervening factors, and outcomes of CQ to assist in selecting the variables to include in a series of meta-analyses that will clarify the magnitude and direction of relationships between specific individual differences, contextual differences, factors of CQ, and outcomes. Chapter 3 details the methods that are used to transform and analyze reported effect sizes from these empirical studies to test research-based models of the relationships.

CHAPTER 3: METHODS

"To extract the information needed to calculate effect sizes. . . meta-analysts are forced to develop a certain intimacy with existing data in a research area"

(Rosenthal & DiMatteo, 2001, p. 64).

Two components of meta-analysis drive the accuracy and utility of the results: first is the selection of data and coding protocols (reported in Chapter 2), and second is the integration of results into meaningful generalizations about the phenomenon, concepts, theories, variables, and implications of the results (Card, 2012; Field & Gillett, 2009; Lipsey & Wilson, 2002; Littrell, Corcoran, & Pillai, 2009; Rosenthall & DiMatteo, 2001). One meaningful way to integrate a set of meta-analytic mean effect sizes is to use the data to test path models that examine the magnitude and direction of postulated relationships among measured variables and measure variance in outcomes explained by selected predictors. This method is called explanatory meta-analysis in which researchers "go beyond simple description and estimation of effects and to begin to address the problems of explaining why, or under what conditions, a given effect can be observed" (Cook et al., 1992, p. ix). In explanatory meta-analysis, researchers test theory-driven models of relationships among variables and test moderator variables to explain variance in the mean effect size. Becker (1992, 2009) describes a method called "model-driven meta-analysis" in which a series of mean bivariate calculations are combined in a correlation matrix and presented as a visual model. Results are then presented as visual path models with arrows showing the relationship between and among variables. This study uses model-driven meta-analysis methods in Chapter 8 to synthesize a set of bivariate correlations that are calculated in Chapters 5 through 7 and answer research questions 2 through 5 (see Table 2.4).

The current set of studies uses two types of reported data about the relationship between two variables: standardized mean difference or mean gain score (for the pre-test / post-test analysis in Chapter 4 to answer RQ 1) and correlations (for bivariate meta-analyses in Chapters 5, 6, and 7 to answer RQs 2 through 5). None of the meta-analyses uses data that reports central tendency (such as means or proportions), so those methods are not included in this chapter. No matter what type of reported data is selected for transformation, three types of statistics must be calculated to determine the mean effect size for all studies: effect size (ES), standard error of the effect size (SE), and the inverse variance weight of the effect size (w_i) (Lipsey & Wilson, 2001).

3.1: Transforming, Weighing, and Adjusting Effect Sizes

Meta-analysts' first statistical analytic task is to transform each study's effect size into a format that is suitable for combining and comparing to the effect sizes of other studies. Lipsey and Wilson (2001) explain that "the type of effect size statistic must be the same across studies to allow for meaningful analysis" (p. 35) and must take into consideration studies' sample sizes. The process of transforming reported data into that which can be used in meta-analyses involves selecting an index that reports direction and magnitude of a specific measure as well as having the ability to compute a standard error (typically found from sample size *n*).

3.1.1: Calculations from Correlational Data

The standard product-moment correlation coefficient (*r*) is a value representing the association between two continuous variables within a single sample and ranges in value from -1 to +1. The researcher does not need to record the instrument scales or the original measurements when working with correlations, thus leading Lipsey and Wilson (2001) to

designate the choice of correlations as a "straightforwardly appropriate" choice of index (p. 63). In the current study, correlations are used to calculate mean effect sizes to answer RQs 2 through 5 reported in Chapters 5 through 7.

3.1.1.1: Transforming r to Z_r. Despite its status as an inherently standardized index, there is one problem with simply meta-analyzing the reported correlations: in its raw form, the correlation coefficient leads to a "problematic standard error formulation" (Lipsey & Wilson, p. 63). According to Borenstein (2009), "Most meta-analysts do not perform syntheses on the correlation coefficient itself because the variance depends so strongly on the correlation. Rather, the correlation is converted to the Fisher's *z* scale, and all analyses are performed using these transformed values" (p. 231). The following formula is used to transform correlations to the Fisher's *z* scale:

ES_{Z_r}=.5$\log_e\left[\frac{1+r}{1-r}\right]$, where *r* is the correlation coefficient, and $\log_e$ is the natural logarithm.

After standard errors and weights are calculated, results are converted back to *r* using the following formula:

$r=\frac{e^{2ES_{Z_r}}-1}{e^{2ES_{Z_r}}+1}$, where *e* is the base of the natural log (approx. 2.718).

3.1.1.2: Calculating standard error of Z_r. The standard error of any effect size is the standard deviation of the sampling distribution. In general, larger standard errors correspond with less precise effect size values. The standard error for each study in a meta-analysis is used to calculate the inverse variance weight (section 3.113) that accounts for different levels of precision in each study. The standard error for reported correlations is based on the Z_r value:

$SE_{Z_r}=\frac{1}{\sqrt{n-3}}$, where *n* is the total sample size.

3.1.1.3: Calculating the inverse variance weights for Z_r. To calculate the mean effect size for reported correlation statistics, the meta-analyst must account for the different sample sizes in each selected study. According to Lipsey and Wilson (2001), a procedure was developed by Hedges (1982) to calculate the optimal weight for each effect size that is more precise than simply weighing effect sizes by the proportion of each study's sample to the total set of samples. This formula involves weighing each effect size by the inverse of the squared standard error:

$$w_{Z_r} = \frac{1}{SE^2_{Z_r}} = \text{n-3}$$

3.1.2: Calculations from Mean Gain Scores

When meta-analysts seek to discover whether there is a significant difference between values on a specific measure at two different points in time, they must also calculate standard errors and weigh the effect sizes prior to calculation and interpretation of the mean effect size. First, it must be decided if the means are standardized or unstandardized. In the current study, because all studies used the same instrument—the CQS—there is no need to standardize the means, so they can be used in their raw form without further transformation (Lipsey & Wilson, 2001). The current study uses pre-post scores of six studies to answer RQ 1, the results of which are reported in Chapter 4. The effect size for the unstandardized mean difference follows:

$ES_{ug} = \bar{X}_{T2} - \bar{X}_{T1} = \bar{G}$, where $\bar{X}$ is the mean value at T1 and T2.

3.1.2.1: Calculating the standard error for mean gains. Again, because the standard error is a measure of precision, it is important to take the sample size into consideration when conducting meta-analyses. The formula for calculating the standard error for the unstandardized mean difference involves several reported variables:

$SE_{ug}=\sqrt{\frac{2s_p^2(1-r)}{n}}=\sqrt{\frac{s_g^2}{n}}$, where *n* is the common sample size at T1 and T2; *r* is the reported correlation between Time 1 and Time 2 scores; $2s_p^2$ is the pooled variance of the T1 and T2 scores ($s_{T1}^2+ s_{T2}^2$)/2; and s_g^2 is the variance of the gain scores.

3.1.2.2: Calculating the inverse weights for mean gains. Similar to the methods used for weighing correlations, the standard error of the gain scores is a key component:

$$w_{ug}=\frac{1}{SE_{ug}^2}=\frac{n}{2s_p^2(1-r)}$$

3.2: Calculating Mean Effect Sizes and Confidence Intervals

Once the researcher has created a table of independent effect sizes including the reported values, the transformed values, the standard errors, the inverse variance weights, and any corrections, the next task is to calculate the mean effect size with upper and lower confidence intervals. The methods for calculating the mean effect sizes for correlations and mean gain scores are reported in this section. The effect sizes may be further weighted and adjusted in later steps in the process if the researcher determines it is necessary to investigate sources of heterogeneity in the results (see 3.4 and 3.5 for discussions of analyzing heterogeneity and selecting alternative models of the relationship between variables). The methods and formulas in this section are used for all types of effect size data including correlations and mean gain scores.

3.2.1: Calculating the Mean Effect Size and Standard Error

Once raw data is transformed to a type appropriate for meta-analysis, the next step is calculating the mean effect size from a collection of independent effect sizes, which first involves multiplying each transformed data point by its inverse variance weight. The next

step is to sum all these values and divide the sum by the total sum of all inverse variance weights. The formula for calculating the mean effect size is listed here:

$\overline{ES}=\frac{\sum(w_i\, ES_i)}{\sum w_i}$, where w_i is the inverse variance weight for effect size *i*, and *i* is equal to 1 to *k*, with *k* being the number of effect sizes in the analysis.

The standard error of the mean effect size must be calculated before determining the confidence intervals around the mean effect size. The formula for calculating this value is listed:

$$SE_{\overline{ES}}=\sqrt{\frac{1}{\sum w_i}}$$

3.2.2: Calculating 95% Confidence Intervals around the Mean Effect Size

As in standard statistical analysis, the confidence interval (CI) indicates with a specific researcher-decided probability (95% in this case) that the population mean effect size is between the upper and lower values reported. This data is useful because it indicates the degree of precision of the mean effect size and, if the confidence interval does not contain 0, the mean effect size is statistically significant at the level specified by the confidence interval (α=.05 in this set of analyses). The CI is based on the standard error of the mean as calculated with the formula above and a critical value from the *z*-distribution (for α=.05, the critical value is 1.96).

The lower and upper values are calculated by multiplying the standard error ($SE_{\overline{ES}}$) by the critical value, then adding the product to the mean effect size ($\overline{ES}$) for the upper value ($\overline{ES}_U$) and subtracting the product from the mean effect size ($\overline{ES}$) for the lower value ($\overline{ES}_L$):

$$\overline{ES}_L=\overline{ES} - z_{(1-\alpha)}(SE_{\overline{ES}})$$

$$\overline{ES}_U=\overline{ES} + z_{(1-\alpha)}(SE_{\overline{ES}})$$

If the confidence interval does not contain 0, conclusions can be drawn about the statistical significance of the mean effect size with $p \leq \alpha$ (.05). A *z* value can be directly calculated and analyzed for significance based on whether it exceeds 1.96 ($p \leq .05$) or 2.58 ($p \leq .01$) using the following formula:

$$z = \frac{|\overline{ES}|}{SE_{\overline{ES}}}$$

3.3: Interpreting Mean Effect Sizes

The mean effect sizes in meta-analyses are typically reported as decimals, including mean correlations, mean gain scores, confidence intervals, and heterogeneity statistics. In the current series of meta-analyses, the relative magnitudes of each variable that relates to the four factors of CQ are reported. The study also explains which relationships may be deemed statistically meaningful for use elsewhere. To explain the magnitude of the effect sizes to the audience, researchers refer to accepted guidelines explaining what are considered to be small, medium, and large effects. Lipsey and Wilson (2001) report the minimum values for correlations and mean differences at each level, values that were determined by social science researcher Jacob Cohen (1977) and are termed "Cohen's rule of thumb." These values are reported on Table 3.1 and are used to categorize mean effect sizes in this series of meta-analyses as either small, medium, or large. The magnitude of heterogeneity and statistical power are discussed in this chapter and reported in each meta-analysis included in this dissertation.

Table 3.1
Cohen's Rule of Thumb for Interpreting Magnitude of Effects

Magnitude	Correlation Effect Size	Mean Difference Effect Size
Small	$r \leq .10$	$ES \leq .20$
Medium	$r = .25$	$ES = .50$
Large	$r \geq .40$	$ES \geq .80$

3.4: Significance Tests of Heterogeneous Effect Size Distribution

Once the mean effect size, standard error, and confidence interval have been calculated, the researcher needs to analyze the distribution of the effect sizes around the mean to determine whether the dispersion around the mean is greater than would be expected from sampling error alone. In other words, if each effect size differs from the population mean by more than would be expected from sampling error, the distribution is found to be heterogeneous, which implies that there is another source of error beyond sampling error that may be due to either study or sample characteristics. For this test, the null hypothesis is that the distribution is homogeneous, designated by

H_{null}=there is no variance in effect sizes beyond sampling error.

The alternative hypothesis is that the distribution is heterogeneous, designated by

H_{alt}=there is an unidentified source of heterogeneity.

There are two accepted statistics that meta-analysts calculate and interpret to quantify the dispersion and decide whether to investigate any sources of heterogeneity: the *Q* statistic and I^2. These statistics are based on a chi-squared distribution chart with *k*-1 degrees of freedom, where *k* is the number of effect sizes in the analysis. If *Q* or I^2 is significant, the researcher rejects the null hypothesis of homogeneity and must decide how to proceed with the analysis (section 3.4.1 below). If the statistic is not significant, the researcher accepts the

null hypothesis of a homogeneous distribution and can report these mean effect sizes with what is called the fixed-effects model (FE), with mean effect sizes weighted only by the inverse variance weight and no other potential sources of variance. The decision on what to do about a significant *Q* or I^2 is unique to each meta-analysis in this series; each report in Chapters 4 through 7 includes the chosen methods and the reason behind the choice.

3.4.1: Methods to Identify and Model Sources of Heterogeneity

To attempt to discover sources of the variance effect sizes reported in the empirical studies selected for analysis, the meta-analyst has three options on how to proceed with analysis if the null hypothesis is rejected (Lipsey & Wilson, 2001):

- accepting that some variance may not be identifiable but may actually arise from random differences among the studies, some of which can be accounted for using a random-effects (RE) model (section 3.5)
- partitioning the effect size variance using the fixed-effects model (FE) and sorting effect sizes by some value of a moderator variable to see if the moderator accounts for some between-study variation (analog to ANOVA for categorical moderators (section 3.5) or weighted regression analysis for continuous moderators; or
- attempting to identify and quantify potential sources of variance from other variables identified in the systematic review that may have either systematic or random effects on the distribution.

Each of the three methods for addressing variance beyond sampling error uses the same *Q* and I^2 statistics described in sections 3.4.2 and 3.4.3 below, but their interpretation varies (as reported in sections 3.5 through 3.8).

3.4.2: Calculating and Interpreting the *Q*-statistic

The calculation for the *Q*-statistic first involves computing the squared deviations between effect sizes from each study and the mean effect size across all studies (calculated in section 3.21). Then, the squared deviation is multiplied by the inverse variance weight (w_i) calculated in section 3.113:

$$Q= \sum(w_i(ES_i-\overline{ES})^2)=\sum(w_i ES^2)-\frac{(\sum(w_i ES_i))^2}{\sum w_i}$$

This value is a ratio of the deviations to the expected deviation, and in a homogeneous set of studies, the value would be close to 1.0, indicating very little variance beyond sampling error. The value for *k* studies, then, would be close to *k* in a homogeneous set. To account for the mean effect size, the degrees of freedom (*df*) is *k*-1. The calculated value of *Q* is looked up on a chi-square chart for the specified number of *df* to determine whether *Q* exceeds the critical value for statistical significance (i.e., $p \leq .001$). If it does exceed the critical value, H_{null} is rejected. Again, the researcher may choose several methods to explain the variance.

The conclusion is drawn that whether the mean effect size is reflective of the general population or reflects multiple population values (Card, 2012). Card cautions that *Q* does not provide any information about the magnitude of heterogeneity; it only allows researchers to determine the likelihood that the distribution is heterogeneous. The statistical power of the Q test is not evident in the analysis described in this section, and thus researchers cannot draw conclusions about the magnitude of heterogeneity. The I^2 test explained in section 3.4.3 below is considered a measure of statistical power and is based on the *Q*-statistic.

3.4.3: Calculating and Interpreting the I^2 Statistic

Quantitative researchers often want to report the statistical power associated with their findings, but until recently, methods for doing so did not exist for meta-analysts.

Higgins and Thompson (2002) proposed a method for calculating a value that is similar to the intra-class correlation (ICC) in cluster sampling and is interpreted as "the percentage of variability among effect sizes that exists between studies relative to the total variability among mean effect sizes" (Card, 2012, p. 188), also called the ratio of true to total variance. The value is reported as a percentage and is easily compared among different studies to determine relative magnitudes of heterogeneity. The calculations are based on *Q*, which allows the researcher to calculate two other values that are of use when analyzing sources of heterogeneity: $\hat{\tau}^2$, which is the estimated between-study variability, and $\hat{\sigma}^2$, which is the within-study variability. The formula for I^2 includes these two other values in terms of *Q:*

$I^2=\frac{\hat{\tau}^2}{\hat{\tau}^2+\hat{\sigma}^2}=\frac{Q-(k-1)}{Q}$ x 100% when the value of $Q > (k\text{-}1)$

$I^2=0$ when the value of $Q < (k\text{-}1)$

Huedo-Medina, Sanchez-Meca, Marin-Martinez, and Botella (2006) conducted a Monte Carlo simulation comparing *Q* with I^2 to draw conclusions about the power of each. Among other significant conclusions, they determined a set of guidelines for assessing the power of I^2 at different levels: 25% is a small amount of heterogeneity; 50% is a medium amount of heterogeneity, and 75% is a large amount of heterogeneity. Card (2012) cautions that in the presence of large standard errors and small samples, the within-study variance ($\hat{\sigma}^2$) would be larger and thus lead to a smaller I^2, thereby indicating lower power than may be accurate. Despite the caution, the statistic is a valuable way to compare the magnitudes of heterogeneity among the collection of bivariate meta-analyses reported in this manuscript and is reported for each meta-analysis in Chapters 4 through 7.

3.5: Modeling Population Variance with the Random-Effects Model

The procedures outlined in sections 3.1 through 3.4 for calculating and interpreting effect sizes assume a fixed amount of variance around the mean effect size due to sampling error alone (fixed-effects, FE). However, there are often sources of variance that may either be accepted as unidentifiable or may be investigated using various methods. Section 3.4.1 outlines the three main choices meta-analysts have when they are faced with a significant *Q* test indicating heterogeneity of effect sizes due to reasons beyond sampling error. The first method involves testing a random-effects (RE) model that models the distribution of the effect sizes around the mean due to other sources of population variability (Lipsey & Wilson, 2001). These models account for sources of variance that could potentially be identified by analyzing differences in mean effects for different groups designated by categorical variables such as those identified in the current study.

In practical terms, random-effects models lead to more conservative weights for each study which are based on sample size. As a result of accounting for multiple sources of variance, random-effects models yield a larger standard error and a wider confidence interval around each coefficient and slope, leading to more generalizable and realistic results than the fixed-effects model does. Finally, random-effects models are less likely to yield *p*-values that are statistically significant, thus providing results that have more explanatory power when they are significant. When researchers draw conclusions about the mean effect size calculated under the RE model, they "generalize beyond the particular set of studies included in the meta-analysis to a population of potential studies of which those included are representative," often called "unconditional inferences" (Card, 2012, p. 233), whereas conclusions under the FE model are limited to "the specific set of studies included in the

meta-analysis," often called "conditional inferences" (p. 233). This study reports mean effect sizes using both FE and RE models to show how between-studies variance may impact the mean effect size and provide the widest CIs possible to draw meaningful conclusions.

3.5.1: Calculating the RE Variance Component (τ^2)

The calculations for RE weights include an estimation of the variance between studies (τ^2), also called the random-effects variance component. This value is estimated using the Q statistic, the number of studies (k), and the inverse variance weights calculated in the fixed-effects method (w_i):

$$\tau^2 = \frac{Q-(k-1)}{\sum w_i - \left(\sum w_i^2 / \sum w_i\right)}$$

Thus, the mean effect size ($\overline{ES}$) under the RE model is a function of both the inverse variance weight (sampling error) and the variability in study effect sizes due the population variability in effect sizes introduced in section 3.43 (τ^2).

3.5.2: Weighing and Calculating Effect Sizes and Confidence Intervals in RE Models

To account for variance in effect sizes that may be due to subject-level differences that impact the population effect size, the reported statistics for each study are weighed differently than they are under the FE model. Recall that the inverse variance weight (w_i) in the FE model is calculated as the inverse of the squared standard error (SE). The formula for weighing studies in the RE model follows:

$$\text{RE}w_{i=} \frac{1}{se_i^2 + \tau 2}$$

Once these values are calculated for each study's effect size, the mean effect size, standard error, and confidence intervals are calculated using the same formulas for FE models (sections 3.2.1 and 3.2.2) but using the new RE weights. Under the RE model, the mean

effect size may differ from the FE calculation if sample size highly affects the mean. As stated above, the 95% confidence intervals under the RE model will be wider than they are under the FE model.

The key formulas are repeated here with the addition of RE to designate statistics calculated using RE weights:

Mean effect size: RE $\overline{ES}=\frac{\sum(RE\ w_i\ ES_i)}{\sum RE\ w_i}$

Standard error: $SE_{RE\ \overline{ES}}=\sqrt{\frac{1}{\sum RE\ w_i}}$

Lower 95% CI: $RE\ \overline{ES}_L$=RE$\overline{ES} - z_{(1-\alpha)}(SE_{RE\ \overline{ES}})$

Upper 95% CI: RE $\overline{ES}_U$= RE$\overline{ES} + z_{(1-\alpha)}(SE_{RE\ \overline{ES}})$

3.5.3: Analyzing Q and Population Variability (τ^2) in RE Models

In a FE analysis, when the *Q*-statistic exceeds the degrees of freedom, the researcher rejects the null hypothesis of homogeneity as explained in section 3.4.2. The conclusion is that the statistical model is not valid. However, in a RE analysis, a significant *Q* leads to the conclusion that the prediction model is incomplete and that some of the true variance in effect sizes is still unexplained. An insignificant *p*-value for *Q* leads some researchers to explore sources of heterogeneity such as grouping variables identified in the current study.

Once the *Q*-statistic is analyzed, its value is used to calculate the population variance (τ^2), which is the estimate of the population variability around the mean effect size given the standard errors of the included studies; it is also referred to as between-studies variance (Borenstein, Hedges, Higgins, & Rothstein, 2015). The square root of τ^2, τ, reports the standard deviation of the effect size between studies. This value is similar to the SE in typical statistical analyses.

3.6: Explaining Heterogeneity Using Categorical Moderators: Analog to ANOVA

If the researcher believes there may be some systematic source of variance beyond sampling error or unobserved random sources, a technique to examine the amount of between-studies variance explained by categorical moderator variables is available (Lipsey & Wilson, 2001). This method is used and reported in several of the meta-analyses in this study to explore whether the participants' role (worker versus student) and the study context (home versus host country and power distance) contribute to the variance in effect sizes. The general procedure involves sorting the effect sizes into mutually-exclusive groups and testing the homogeneity among the effect sizes within each category as well as the differences between the categories.

In the analog to ANOVA, the *Q*-statistic, which represents the weighted sum-of-squares of the individual effect sizes around the grand mean, is partitioned into the portion explained by the categorical (or grouping) variable (Q_B) and the residual pooled within-groups portion (Q_W). The Q_B is the weighted sum-of-squares of the mean effect sizes for each group around the grand mean. while the Q_W is the weighted sum-of-squares of the individual effect sizes within around each group around their group means and pooled over the groups (Lipsey & Wilson, 2001). The formulas for calculating each statistic are listed here:

$Q_B = \sum w_j \overline{ES}_j^2 - \frac{\left(\sum w_j \overline{ES}_j^2\right)^2}{\sum w_j}$, where w_j is the sum of weights within each group and j is the number of groups identified and $\overline{ES}_j$ is the weighted mean effect size for each group.

$Q_w = \sum w_i \left(ES_i - \overline{ES}_j\right)^2$, where w_i is the weight for each effect size.

As in standard one-way ANOVA, the degrees of freedom for Q_B is j-1, and degrees of freedom for Q_w=k-j where *k* is the number of effect sizes and *j* is the number of groups.

If Q_B is statistically significant, the null hypothesis that the groups do not differ in their effect sizes can be rejected. The researcher can then report which group is associated with larger effect sizes. This technique is useful for testing one moderator at a time, but it does not allow for evaluating multiple moderators at the same time. In this study, I anticipate that moderators will explain some of the variance in reported effect sizes and will explain some significant differences about the groups under investigation as well as explore which of the four dimensions are influenced by cultural differences represented by power distance.

3.7: Model-Driven Meta-Analysis

Chapters 1 and 2 include several visual models representing concepts, constructs, and variables that were hypothesized to represent how CQ is an individual capacity for successful outcomes and may vary based on individual and contextual differences. The models suggest complex relationships that are not thoroughly explained in the series of bivariate meta-analyses reported in Chapters 5-7. Becker and Schram (1994) explain that meta-analysts can build multivariate models to "piece together parts of the process studied by different researchers" and to examine the "synergy among existing studies [that] may lead to a kind of Gestalt in which the synthesized model is greater than the sum of its parts" (p. 362). Such model-driven analysis allows researchers to explore different paths in the model and explain whether the meta-analytic data supports these paths using an empirical model that can verify or refute existing theories about the hypothesized relationships.

For example, this study's overarching purpose is to explain how the four factors of CQ measure different aspects of an individual's capacity (or capability) for successful

performance and adjustment outcomes in unfamiliar contexts. Becker and Schram (1994) describe model-driven meta-analytic techniques in which the different paths showing how behavioral, cognitive, meta-cognitive, and motivational cultural intelligence relate to empirically-identified outcomes. Admittedly complex, the method promises to provide me with a way to clarify the complexity of the relationships under investigation and, ultimately, data that will increase the significance and implications of the findings.

3.8: Examining Potential Publication Bias

In addition to the widely-reported problem of replicability of research findings in science and social science research, there is a pervasive "file-drawer problem" that suggests non-significant empirical findings are unpublished and, therefore, overestimate the value of those findings that are published. Littell, Corcoran, and Pillai (2008) explain that publication bias "occurs when the results of published studies are not representative of results of all completed studies" (p. 112). In other words, non-significant findings that could potentially negate the conclusions of published studies or could redirect future research to explore reasons for non-significance remain a secret, leading to unnecessary research that may also end up in a file drawer or to an over-reliance on results from the few studies that are made public. While there are few ways to bring the non-significant results out of the file drawer, including new guidelines for government grant recipients requiring them to release all findings no matter their conclusions, the problem will likely persist without a way to quantify the impact.

In the field of meta-analysis, with its requirement to use replicable methods, its goal of synthesizing published results, and its purpose of generalizing findings that have meaningful impact on the fields in which they take place, several methods of detecting and

reporting potential publication bias have been developed (Card, 2012; Lipsey & Wilson, 2001; Littell, Corcoran, & Pillai, 2008). The most widely-suggested and published method of detecting and reporting publication bias is the funnel plot, which is a graphic representation in which the effect sizes in a meta-analysis are plotted against their standard errors or sample sizes. The assumption is that, "in the absence of significant heterogeneity, study ESs will be normally distributed around the mean effect" with smaller sample sizes producing "less precise estimate (with wider confidence intervals [Cis])" leading to a distribution that plots small sample sizes more widely than larger ones and resulting in a graphic that resembles an "inverted funnel" (Littell, Corcoran, & Pillai, p. 113). In the absence of publication bias, the distribution of the plotted points is assumed to be symmetrical within the funnel because it will include null and contradictory results.

Contrarily, meta-analyses with large publication biases are theorized to produce asymmetrical plots with points clustered near the mean effect size. The funnel plot is easy to produce, but it can lead to false conclusions of publication bias, especially in meta-analyses with 10 or fewer samples (Littell, Corcoran, & Pillai). Therefore, the only chapter that includes funnel plots is Chapter 7, the only chapter in which a significant number of studies is analyzed (50 samples).

3.8.1: Acknowledging Limitations due to Study Selection

In the current set of studies, the selection criteria for finding studies that measured all four factors of CQ using the CQS was very specific and thus excluded a large number of studies that analyzed fewer than four factors or that used a modified version of the CQS. I also limited my search to published journals while ignoring dissertations and other sources of so-called "gray" literature against the recommendations of many meta-analysts to search far,

wide, and deep for usable sources (Card, 2012; Lipsey & Wilson, 2001; Littell, Corcoran, & Pillai, 2008). While I acknowledge the value of such recommendations, the purpose of the current set of studies is not to generalize about information such as medical treatments or interventions, a task that seems to ethically require that meta-analyst uncover all possible data. Rather, the overarching goal of the current study is to draw conclusions about how the four factors of CQ lead to desired outcomes in the GKE and to refine current theories; therefore, the decision to limit the types of publications may indicate publication bias but will not invite the potential unintended consequence of over-stating or under-estimating the impact of ignoring unpublished results.

3.8.2: Reducing Bias through Effect Size Selection

Also, since the studies that investigated the relationships between predictors, correlates, and outcomes of CQ were selected from within the 56-sample pool that met the initial criteria, few of the meta-analyses in Chapters 4, 5, and 6 contain more than 10 samples. Therefore, in the interest of transparency, it is likely that any indication of publication bias was actually a result of purposeful delimitations about which studies to include. Although I am acknowledging that the funnel plots may indicate bias, I did anticipate the file-drawer problem's impact on my results. Therefore, rather than using statistics that reported significant p-values or regression results, I chose to use correlation matrices as the primary data source. By using correlations as the data for calculating effect sizes, I necessarily included both significant and non-significant relationships between variables, thereby minimizing the potential impact of meta-analyzing only results that were deemed meaningful prior to publication.

3.9: Reporting Results

Once the effect sizes have been calculated and interpreted, the meta-analyst must report the findings in a way that makes them understandable, accessible, and meaningful to the intended audience. Additionally, the meta-analytic researcher must include information in the report that may not seem easily-digestible for the general audience (i.e., tables of effect sizes) but are necessary to maintain the standards set by the field. Card (2012) recommends using tables, footnotes, appendices, or online documents to manage large amounts of data. In the current manuscript, for the meta-analyses reported in Chapters 4 through 7, I have chosen to place the tables listing sources, data for all calculations for effect sizes, weights, and transformations for individual studies in the appendices. I include tables with summaries of the mean effect sizes, confidence intervals, and heterogeneity statistics within the text of each report for ease of reference when interpreting the effect sizes and explaining the results within the narrative. I also include visual models to assist in digesting the array of numbers that comprise meta-analytic data.

3.10: Methods Overview by Research Question and Chapter

To answer each of the research questions, I employ different meta-analytic methods to transform the originally-reported data into effect sizes with values that describe the magnitude and direction of bivariate relationships that represent the constructs and concepts under investigation.

3.10.1: Cross-Cultural Training and CQ (RQ 1, Chapter 4)

Research question one asks the following question: Which of the CQ factors may be increased or decreased in participants after they undergo purposeful interventions such as training, education, or cross-cultural travel?

The disciplinary framework of the current study is HRD, which focuses on the ways to assess and improve adults' capacity for successful outcomes in the workplace. Therefore, it is important to preliminarily investigate whether research has shown which factor(s) of CQ may increase or decrease after participation in a purposefully-designed intervention focusing on increasing success in unfamiliar contexts. The type of meta-analytic method used to answer this question is similar to that often used in program evaluation, wherein the mean differences between pre- and post-intervention attributes are analyzed for significance. The method described in section 3.1.2 is reported in Chapter 4, and though there are only six studies in the set, some general conclusions are drawn about which CQ factors may be fixed and which may be developed.

3.10.2: Previous International Experience and CQ (RQ 2, Chapter 5)

Research question two asks the following question: Which factors of CQ are most influenced by previous international experience?

To investigate the magnitude of the correlations between previous international experience (XP) and the four factors of CQ, a series of bivariate meta-analyses are conducted using the methods described in Chapter 3. In addition, mean effect sizes are calculated for different groups identified in the literature review to determine whether membership in specific groups explains some of the heterogeneity in effect sizes. These data are used to draw conclusions about the different effects previous experience may have on different types of participants—workers or students, natives or expatriates, and those located in high or low PD countries.

3.10.3: Outcomes and CQ (RQ 3, Chapter 6)

Research question three asks the following question: In what ways do each of the four factors of CQ relate to successful outcomes identified in the systematic literature review?

In order to investigate the extent to which each of the four factors of CQ may predict or reflect successful performance and adjustment outcomes identified in the systematic review of the literature reported in Chapter 2, another series of bivariate meta-analyses are reported in Chapters 6.1 through 6.4 using correlations between four constructs and the four factors of CQ: Task Performance (TP, Chapter 6.1), General Adjustment (GA, Chapter 6.2), Interactional Adjustment (IA, Chapter 6.3), and Work Adjustment (WA, Chapter 643). The studies of outcomes reported in Chapter 6 do not include moderator analysis because it was found that these studies were predominantly conducted with participants who were expatriated workers located in a high power distance country, thereby eliminating the option of comparison. In Chapter 6, I report the magnitude of the relationship between each outcome and the four factors of CQ, drawing conclusions about which factor seems to predict or even describe the outcomes under investigation.

3.10.4: Relationships between Pairs of CQ Factors with Moderators (RQs 4 & 5, Chapter 7)

Research question four asks the following question: What is the relationship between the four factors of Cultural Intelligence (CQ)—cognitive cultural intelligence (COCQ), metacognitive cultural intelligence (MCCQ), motivational cultural intelligence (MOCQ), behavioral cultural intelligence (BECQ)? Research question five asks the following question: In what ways to moderator (or grouping) variables such as country of study,

location of study (participants' home versus a host country), and participants' role (worker versus student) explain variance in the relationships explored in these analyses?

The methods used to calculate the mean correlations between the 6 possible pairs of CQ factors are described in sections 3.1 through 3.4 and are reported in Chapter 7 using 50 sets of data. Moderator analyses using categorical variables assigned to different groups are also conducted. Conceived of as a dynamic capability, CQ is comprised of four factors that reflect the concepts of what you know (COCQ), how you think (MCCQ), how you feel (MOCQ), and what you do (BECQ) in unfamiliar contexts. Because each of the factors is so conceptually different, it is theorized that each factor represents part of a systems model showing the process that connects thinking and doing. To date, no other researcher has investigated or modeled the magnitude of the relationships between and among CQ factors, nor has anyone investigated a full model showing the influences of antecedents, outcomes, and group differences of CQ factors.

3.11: Conclusion

Chapter 3 included an explanation of the procedures used to transform reported data such as correlations and means into formats that allows data to be combined into a mean effect sizes. In addition, the formulas were included to show that the calculations are easily done by hand if needed. Procedures for weighing reported data to reflect sample size differences and to account for sources of variance in the effect sizes were also included as were methods for interpreting heterogeneity in reported effect sizes around the mean effect size. The chapter included a discussion of how mean effect sizes can be used to model the ways the variables under investigation relate to each other. Finally, Chapter 3 included a summary of the methods that are used to answer each of the five research questions.

Chapter 4 reports the first meta-analysis in this series investigating which of the four factors of CQ are increased after training or education. Chapter 5 reports a series of bivariate meta-analyses of the correlations between previous international experience (XP) and the four factors of CQ. Chapter 6 reports a series of bivariate meta-analyses of the correlations between each CQ factor and four outcomes identified in Chapter 2. Chapter 7 reports the results of a series of bivariate meta-analyses between pairs of CQ factors as well as tests whether these effect sizes differ by groups. Chapter 8 reports the answers to the research questions and presents a synthesized model of antecedents, outcomes, and group differences of CQ; Chapter 8 also discusses the significance and implications of the findings.

CHAPTER 4: CAN CQ BE DEVELOPED WITH TRAINING?

"In the conditions of modern life, the rule is absolute: The race which does not value trained intelligence is doomed" (Whitehead, 1929).

A common method used in program evaluation to determine whether the intervention leads to improved outcomes is to survey participants at the start of the program and again when it is over. The values are compared to draw conclusions about which outcomes showed significant improvement over time, and the results are often used to refine the program design to better meet specific needs that may not have been properly addressed. HRD professionals design interventions to improve organizational performance by assessing individual employees' skills and deciding which need to be increased in order to meet both personal and institutional goals. Chao, Takeuchi, and Farh (2017), who conducted a three-stage study of an international student exchange program, underscore the reason empirical studies of how experiences such as those derived from training are needed:

> Understanding the processes through which international experience influences CQ is critical because business organizations and educational institutes have relied heavily on the assumed effectiveness of international experiences to derive personnel training and development programs; yet, the question of how international experience affects CQ development has remained unanswered. (p. 258)

The current study investigates a specific assessment of cultural intelligence, the CQS, to understand how each dimension relates to different types of skills that represent the capacity for individual and organizational success. The study also investigates which of the four factors of CQ may be increased through participation in purposeful interventions such as those designed by HRD professionals to determine whether CQ can be improved.

4.1: Descriptions of Meta-Analyzed Interventions Designed to Improve CQ

Ideally, a meta-analysis of gain scores would assess differences in outcomes after similar interventions, whether they are formal classes, short training sessions, or cross-cultural experiences. However, enough studies of similar interventions that assessed CQ before and after participation do not exist. This section describes the different types of training and development experienced by participants in the six studies included in this meta-analysis, so the audience can understand any conceptual differences that may explain differences in scores.

4.1.1: International Exchange or Contact

Three out of six studies examined participants who were in programs that involved interacting with culturally-different others, whether in their home country or abroad. Chao, Takeuchi, and Farh (2017) assessed the CQ of 270 "culturally-dissimilar" (p. 282) students who studied abroad in Hong Kong, surveying them three months prior to departure and three months after returning home; they investigated how students' implicit culture beliefs and intercultural rejection sensitivity moderated the amount of improvement in each factor of CQ, making the overall level of CQ development after the international exchange unclear. Another study that examined CQ and participants' personal views about culture was conducted by Young. Haffejee, and Corsun (2017), who investigated the ethnocentrism and CQ of 73 American business students before and after their experiences mentoring refugees as part of their coursework. They not only found that low levels of CQ predicted students' level of ethnocentrism, but they also discovered that students' ethnocentrism actually increased after their mentoring experience; this unsettling finding lead the authors to recommend that academic researchers investigate ethnocentrism and its impact on cross-

cultural outcomes. Engle and Crowne's (2014) study included both study and control groups of American college students, one of which received a pre-departure training prior to a one to two-week international community service trip; they found that students who attended the training had a significant improvement in CQ, while those who went into the exchange unprepared had none.

4.1.2: Classroom Lectures and Role-Playing

Unlike the three studies cited above, the other three studies in the meta-analysis did not assess development of CQ before and after intercultural experiences. Eisenberg et al. (2013) studied 289 students' levels of CQ on the first day of a cross-cultural management course and on the last day; they also assessed how students' previous international experience related to levels of CQ at both times. They found that cognitive and metacognitive CQ improved while behavioral and motivational did not; they also found that international experience was more closely related to participants' level of CQ on day one of class than it was on the last day, suggesting that the course had a stronger impact on CQ improvement than did past experience (Eisenberg et al.). Fisher (2011) also looked at CQ improvement after a classroom training that involved six lectures, a behavioral training intervention to assist students with seeking information in unfamiliar cultures, and a simulation game that challenged students' beliefs about culture; he found that cognitive and metacognitive CQ actually declined after the class because "the sessions made students realize their limits in terms of intercultural competence" (p. 773). The last study in this meta-analysis by Bucker and Korzilius (2015) also evaluated a behavioral training class that included a role-playing game in which 66 students practiced cross-cultural encounters and

discussed the communication problems that arose; they found that COCQ was the only factor of CQ that did not improve after the training.

The goal in this study is not to assess the types of programs, but it is acknowledged that any differences in gains may be due to the nature of the program rather than the inherent nature of the CQ factors. Nevertheless, I have endeavored to conduct this meta-analysis not only to model the methods, but also to draw preliminary conclusions about the potential for the Cultural Intelligence Scale (2005, CQS) to become a widely-used assessment of an individual's potential for success and a way for program designers to understand areas where individual growth may be facilitated.

4.2: Reported Statistics

To determine which factors of CQ may be more easily-developed than others, a meta-analysis of pre-test and post-test values for each factor of CQ is required. The statistic is called an unstandardized mean gain score, which is deemed unstandardized when the instrument used in all studies is the same. Section 3.1.2 explains how to calculate mean gain scores and inverse variance weights from different types of reported data, including means at Time 1 and Time 2, the number of participants for whom two sets of data have been recorded, standard deviations, and either correlations between pre- and post- scores or t-values. Luckily, because all studies do not always report the same kinds of data, it is possible to calculate the gain scores using either the correlations or the t-values using Comprehensive Meta-Analysis software. Of the six studies in this meta-analysis (N(total)=697), three reported correlations between pre- and post-scores, and three reported t-values. Tables F.1 through F.4 in Appendix F list the studies and all data needed to calculate the mean gain scores.

The results of these six studies were very different, supporting the use of meta-analysis to calculate mean effect sizes showing which factors of CQ improved after participation in cross-cultural training of different designs. BECQ improved for five out of six samples, and COCQ improved or remained the same in all six. MCCQ increased in four samples while decreasing in two (Fischer, 2011; Young et al., 2017). MOCQ decreased in three out of six studies, including Young et al., Fischer, and Eisenberg et al. (2013); it is interesting to note that all three of these studies involved participants who remained on their native soil rather than experienced cross-cultural interventions abroad. Preliminary results indicate that while MOCQ may have the strongest relationship with adjustment outcomes in an unfamiliar context, it may also be the most malleable factor of CQ, increasing or decreasing notwithstanding participation in purposefully-designed training or education. The results of the meta-analyses of unstandardized mean gain scores reported in section 4.3 reveal whether the overall changes in CQ are statistically significant.

4.3: Mean Gain Scores, Significance, and Confidence Intervals

The data were analyzed using Comprehensive Meta-Analysis software, which provided mean gain scores and confidence intervals using both fixed-effects and random-effects models. These results are shown on Table 4.1 and are listed in order of magnitude from largest to smallest effect.

Table 4.1
Results of Meta-Analysis of Mean Gain Scores for CQ

CQ Factor	FE Mean Gain	*p*-value (Null)	FE Lower CI	FE Upper CI	RE Mean Gain	*p*-value (Null)	RE Lower CI	RE Upper CI
MCCQ	.383	.000*	.304	.463	.327	.027*	.038	.616
COCQ	.356	.000*	.279	.432	.343	.03*	.033	.653
MOCQ	.301	.000*	.220	.381	.265	.027*	-.016	.545
BECQ	.276	.000*	.197	.355	.258	.064	.026	.490

* indicates a significant *p*-value to reject the null hypothesis that the mean gain is 0, thus showing a significant improvement in CQ.

Table 4.1 shows that under the FE model, all four CQ factors showed significant improvement after interventions. It also shows that under the RE model, wherein random sources of excess variance between studies is modeled, the only factor that does not show significant improvement is BECQ. The results indicate that the mean effect sizes under the fixed-effects models were all positive and between .20 and.50, which, according to Cohen's rule-of-thumb (Table 3.1) indicates a medium effect size. The confidence intervals under the FE models also fell within this range. However, while the mean effect sizes under the random-effects models also could be interpreted as indicating a medium improvement in scores, the confidence intervals told a different story: three of the lower values barely exceeded .03, and one was negative. When the CI includes 0, the researcher may conclude that no significant change occurred. The only CI that included zero was that for improvement in MOCQ under the RE model, which is surprising considering a findings in Chapters 5 and 6 that MOCQ has the strongest relationship with XP and all three adjustment outcomes. While it may be a strong predictor of outcomes, it may be the most difficult factor to "train" into improvement.

The rank of correlations also was different for FE and RE models. Under the FE model, MCCQ had a mean effect size of .383, with COCQ coming in second place at .356.

Under the RE model, those ranks are reversed, with COCQ having a mean gain score of .343 and MCCQ have a score of .327. Taken as a whole, these results show that interventions seem to lead to development of those factors that reflect what people know and how people think, which align with the types of outcomes that would be expected after education.

4.4: Heterogeneity Tests

Table 4.2 shows the *Q*-statistics with their *p*-values as well as the I^2, and τ^2statistics. Though none of the *Q* values is significant, they range in value from 39.634 to 80.393. The I^2 values, which have been described as a measure of statistical power, all exceed 75%, indicating that, per Huedo-Medina et al.'s (2006) guidelines, a large amount of unexplained heterogeneity exists. The RE model accounts for some random sources of variance, which is why the confidence intervals are so much wider. However, because no variable has been identified to conduct a moderator analysis, especially with such a small number of studies in the study, the sources of heterogeneity remain unexplained.

Table 4.2
Heterogeneity Statistics: CQ Mean Gains

CQ Factor	*Q*-value (5 df)	*p*-value (*Q*)	I^2	τ^2
BECQ	39.634	.000	87.39	.072
COCQ	80.393	.000	93.78	.14
MCCQ	63.582	.000	92.14	.119
MOCQ	57.999	.000	91.38	.111

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

4.5: Discussion

The series of meta-analyses of improvement in the four factors of CQ provided some results that show no unequivocal conclusions can be drawn about what might lead to their increase or decline. By looking at the results from the six studies individually, it was

observed that decreases in MCCQ and MOCQ occurred. Yet the mean effect sizes indicate overall improvement in these factors, with MCCQ showing the greatest improvement. As an HRD professional, I see some promise in the results that changes might occur, even after short interventions such as those described by Engle and Crowne (2013). But the variation in findings shows that more research needs to be conducted about what aspects of different interventions, what attributes of participants, or what differences in the study context may lead to increases or decreases in scores. The findings contribute a broader understanding of the way CQ factors represent tangible and intangible knowledge assets in the GKE (Stewart, 2004) and suggest that organizations that invest in ways to improve individuals' capacities and capabilities for successful outcomes will see a return on investment as indicated by performance and adjustment outcomes (Chapter 6).

4.6: Conclusion

So far, research question one, which asks which factors of CQ might be improved through purposeful interventions, has been answered, thus validating the use of the CQS as an assessment used by HRD professionals and organizations to analyze which dimensions seem to be strongest in individuals and which might be developed, especially prior to expatriation or involvement in cross-cultural teams. Several questions remain unanswered, though. Research question two asks how previous international experience (XP) relates to the four factors of CQ to determine whether such experience is predictive of an individual's capacity for successful cross-cultural outcomes, and if so, to understand which of the four dimensions is most closely related to such experience. Research question three then asks the magnitude of the relationship between the four factors of CQ and performance and adjustment outcomes that are typically assessed in expatriates who are working and living

abroad as a way to measure CQ as a potential predictor of successful outcomes. Chapter 5 investigates the relationship between XP and the four factors of CQ to answer question two. Chapter 6 investigates the relationships between each factor of CQ and two types of outcomes—task performance (TP) and adjustment outcomes (ADJ, a combination of general adjustment (GA), interactional adjustment (IA), and work adjustment (WA)). After these analyses reveal which factors have the strongest relationship with XP and outcomes, a final meta-analysis in Chapter 7 is conducted to measure and describe the relationships among the four dimensions to further explain how the interaction of the four dimensions represent tangible and intangible capacities (or know-what and know-how) in the GKE. Finally, Chapter 8 reports synthesize results including answers to research questions and path models as well as the significance, implications, and recommendations.

CHAPTER 5: HOW DOES EXPERIENCE RELATE TO CQ?

"Learning is the process whereby knowledge is created through the transformation of experience" (Kolb, 1984, p. 38).

Many of us will agree that the idiom "Experience is the best teacher" has proven to be true more often than not. In the global workplace, employers value previous international experience as a predictor of success, especially if the employee will be working with a multicultural team or will be expatriated. Kolb's (1984) transformative, experiential learning theory posits that adults best learn how to adapt to an unfamiliar cultural environment through a process of reflecting on positive and negative experiences to apply what is learned in the future. During the process, participants are "constantly making meaning out of their actions" during a "generally internal" process that can, nevertheless, be facilitated by educators who encourage the "action-reflection" cycle (Livermore, 2008, p. 281). Research question two asks, "How does previous international experience relate to the four factors of CQ and outcomes?" This series meta-analyses investigates the magnitude of the relationships between CQ factors and previous international experience (XP); it also investigates the relationships between XP and outcomes (TP and ADJ) to determine whether XP has a stronger relationship with CQ or outcomes. This chapter also tests three moderator variables as possible explanations for the variance between XP and the variables under investigation: participants' role (worker versus student), study context (home versus host country), and power distance (high versus low).

5.1: Studies of the Relationship between CQ and XP

Of the 56 samples identified for inclusion in this series of meta-analyses (Appendix A), 22 of them reported the correlation between previous international experience (XP) and

the four factors of CQ—behavioral (BECQ), cognitive (COCQ), metacognitive (MCCQ), and motivational (MOCQ) with a total sample of 5,814. The types of the experiences recorded in each study are not reported here, but they range from previous work experience, non-work experience, and experience in the current country. Tarique and Takeuchi (2008) found that previous non-work experience had a stronger relationship with cultural intelligence than did work experience, perhaps because non-work experience often includes more cross-cultural contact on a daily basis than an international work experience does. Moon, Choi, and Jung (2012) also found a significant relationship between non-work experience and CQ after conducting an investigation of how the number of co-expatriates from the participants' home country and the number of host country nationals with whom participants worked related to CQ. Interestingly, they found that the number of co-expatriates was negatively related to behavioral (BECQ) and motivational (MOCQ) factors of cultural intelligence while the number of host country nationals was positively related to MOCQ. This conclusion supports the idea that individuals who interact frequently with locals while in an unfamiliar culture have more successful outcomes than those who do not.

5.2: Coding Procedures

Unfortunately, there is no way to parse out these different types of experiences for this meta-analysis because some studies did not differentiate among types, so all experience correlates were coded simply as "XP." Each of the 22 studies had different criteria for measuring previous experience—some analyzed previous international work experience, some included previous travel experience, and others assessed amount of time spent living abroad. No outside coders were employed in the process, nor was a study quality scale employed. The goal of this series of bivariate meta-analyses of the relationship between CQ

and XP is to discover which of the four factors is most strongly related to experience, to investigate sources of variance in those relationships, and to determine a mean effect size for each correlation. Appendix G reports each study tag, citation, sample size, and the recorded correlations (*r*) between each CQ factor and experience as well as the researcher-derived grouping variables for context of study (home versus host), participant role (worker versus student), and power distance for moderator analysis.

5.3: Reported Effect Sizes

The data shown in Appendix G shows a range of correlation coefficients between each CQ factor and XP, ranging in magnitude from small to medium. The table uses different fonts to show small, medium, and large effect sizes found in the original studies. The correlation values between BECQ and XP range from a negative correlation of -.177 to a positive value of .30, indicating that a meta-analysis to determine a mean effect size is warranted. The correlation values between COCQ and XP range from -.16 to .33; the values between MCCQ and XP range from -.192 to .38; and the values between MOCQ and XP range from -.218 to .40. Lipsey and Wilson (2001) consider the correlation coefficient to be one of the best indices to transform data measuring continuous variables into meta-analytic effect sizes. According to Cohen's so-called "rules of thumb" (Table 3.1), a small effect size is .10, a medium effect size is .25, and a large effect size is .40 or larger. The range may be wide based on the data not including the type of experience, or it may be based on some characteristic of the study or the sample.

5.4: Effect Size Calculations—Mean Correlations (XP x CQ)

Chapter 3 describes how to calculate the mean effect size of correlations by first using a Fisher's-Z_r transformation and then by weighing each correlation by the inverse variance weight for FE models or by the inverse variance weight and the variance component (τ^2) for RE models. Appendix G contains tables with the values used for calculating mean effect sizes and confidence intervals. Table 5.1 shows the mean effect sizes as well as confidence intervals for the relationships between XP and the four factors of CQ calculated under both fixed-effects and random-effects models. None of the confidence intervals contains 0, which means that there is, indeed, a relationship between XP and CQ. This conclusion is important because the existence of low values along with some negative correlations in the original data suggested that negative values could impact the mean effect size.

The mean correlations under the FE model range from .107 to .148; under the RE model, they range from .112 to .140. Using Cohen's rule-of-thumb as a guideline, all of the mean effect sizes are considered small, hovering between .10 and .15. Beyond analyzing the mean effect size, another goal of the current study is to determine which of the four factors of CQ has the strongest relationship with predictors and outcomes. Analysis shows that MOCQ has the largest correlation with XP and BECQ has the smallest correlation. Table 5.1 lists the mean effect sizes in order of magnitude, showing that COCQ has the second largest correlation while MCCQ has the third largest correlation. These results are surprising in that theory suggests experience is related to knowledge (COCQ), thought process (MCCQ), and behavioral choices (BECQ), yet this analysis indicates that experience is most strongly related to feelings and desires (MOCQ).

Table 5.1
Mean Effect Sizes and Confidence Intervals Ranked: CQ x XP

CQ Factor	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
MOCQ	.148	.122	.173	.140	.064	.214
COCQ	.135	.110	.161	.133	.078	.187
MCCQ	.124	.098	.149	.121	.060	.182
BECQ	.107	.081	.132	.112	.063	.160

Table 5.2
XP x CQ: Heterogeneity Statistics

CQ Factor	*Q*-value (21 df)	*p*-value (*Q*)	I^2	τ^2
BECQ	73.127	.000	71.28	.010
COCQ	92.738	.000	77.36	.013
MCCQ	116.136	.000	81.92	.018
MOCQ	178.843	.000	88.32	.029

5.5: Heterogeneity Analysis

Heterogeneity analysis investigates whether the distribution of an effect size around the mean is due to sampling error or factors beyond this error. Several statistics are calculated for each model to identify whether there is any variance beyond sampling error (*Q*), to calculate the amount of population variance around the effect size (τ^2), and to quantify the amount of variance that is due to real, potentially-identifiable difference in effects (I^2).

5.5.1: Between-studies Variance (Q and τ^2)

The test for homogeneity is based on the *Q* statistic (Lipsey & Wilson, 2001), which is distributed as a chi-square with *k*-1 degrees of freedom (where *k* is the number of effect sizes in the model). A significant *Q* value allows the researchers to reject the null hypothesis of homogeneity and conclude that the mean effect size is not reflective of the general population due to variance beyond sampling error. Table 5.2 shows that all *Q* values (with 21 degrees of freedom) are significant, a conclusion which means researchers may endeavor

to identify additional sources of variance. The value for τ^2 range from .01 and .029; this value is used to weigh effect sizes under the RE model (reported on Table 5.1).

5.5.2: Ratio of True-to-Total Variance Explained (I^2)

The variability attributed to sampling error is reported with *Q*, but the amount of true to total variance is reported with the I^2 statistic, which is a measure of statistical power (section 3.33). This value is a percentage of between-study variability relative to the total variability among all effect sizes. Per Huedo-Medina et al. (2006), an I^2 value above 75% indicates a large amount of heterogeneity exists. Table 6.3 shows that BECQ has the lowest value of I^2 (71.28%) despite also having the lowest correlation with XP, whereas MOCQ has the highest correlation with XP and the highest I^2 value (88.32%). All heterogeneity values lead the researcher to conclude that more variance may be explained using moderator analysis, reported in section 5.6.

5.6: Identifying Sources of Variance—Moderator Analysis

While the weighing scheme employed in a random-effects model provides a wider confidence interval and is based on the *Q* statistic, it does not identify sources of heterogeneity. It is possible to that "the excess between-studies variability can be explained by the independent variables in your meta-analysis" (Lipsey & Wilson, 2001, p. 120). To attempt to account for sources of variance between studies, the effect sizes can be partitioned and evaluated according to a categorical moderator or grouping variable in a procedure that is the analog to ANOVA. This procedure is explained in section 3.5.

In the current study, three possible sources of variance include the coded data for the context of the study (participants' home versus host country), participants' role (worker versus student), and power distance (high versus low). Appendix G lists which of the 22

studies in this meta-analysis reported the study context, the participants' role, and the power distance. While all 22 studies reported whether participants are workers or students, only 18 of them report whether the study was conducted in the participants' home or a host culture, and 17 report data to calculate power distance.

5.6.1: Workers versus Students

One potential source of variance in the mean correlations between the four factors of CQ and international experience is the participants' role—whether they are students in a university setting or workers who contribute directly to an organization's overall success. One reason this is hypothesized to explain some variance is based on the current practice in HRD and adult education to analyze, assess, and intervene differently based on whether the target is a student or a worker. Twelve out of 22 samples are students, and 10 samples are workers (N(total)=5,814). Table 4.3 shows the mean effect sizes under the FE model for the 10 samples of workers and the 12 samples of students, the I^2 values for each group, and the $Q_{between}$ value along with its *p*-value. As section 3.5 explains, a significant *p*-value for $Q_{between}$ indicates that the null hypothesis of no difference between groups can be rejected.

Table 5.3
CQ x XP: Worker versus Student

CQ Factor (CQ x XP)	Mean Effect Size (22 samples)	Workers (10 samples)	Students (12 samples)	$Q_{between}$ (1 df)	*p*-value ($Q_{between}$)	I^2 Work.	I^2 Stud.
MOCQ	.148	.066	.195	23.083	.000*	90.08	93.34
COCQ	.135	.083	.166	9.556	.002*	82.78	64.433
MCCQ	.124	.077	.151	7.483	.006*	86.02	75.15
BECQ	.107	.088	.117	1.121	.290	79.03	62.17

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

The results summarized in Table 5.3 show that for three out of four CQ factors, there is a significant difference between the mean effect sizes for workers and students. Specifically, the magnitude of the relationships between XP and motivation (MOCQ), cognition (COCQ), and metacognition (MCCQ) differ significantly by workers and students, with the mean effect size being larger for students in all three cases. The only relationship that does not differ by participant status is that between XP and BECQ. The I^2 values for the relationships between XP and CQ show that for all factors except MOCQ, the I^2 is lower for the student group; this shows that the ratio of true-to-total variance is lower and has more power when modeling the distribution in effects between XP and BECQ, COCQ, and MCCQ for students.

The implications of this finding are relevant for stakeholders who value a worker's previous experience as a knowledge asset: there is little data to indicate that workers' previous experience relates very strongly to CQ, with none of the mean effect sizes reaching the critical value of .10 for a small effect size. Also significant is the implication of the finding that students' previous experience seems more strongly related to CQ than it is for their employed counterparts; this suggests that perhaps students who are actively engaged in a learning environment (university setting) consciously or unconsciously utilize their previous experience to leverage their cultural intelligence. While the data is not overwhelming and not generalizable based on a purposefully-limited sample, it might be concluded that workers could benefit from interventions that may increase their awareness of how their previous experience could be leveraged to increase success in the GKE.

5.6.2: Home (Natives) versus Host (Expatriates)

Another potential source of variance in the mean correlations between the four factors of CQ and XP is whether the participants were surveyed while in their home culture or while expatriated. According to Kolb's (1984) model, adults reflect on their experience and make purposeful decisions in the future as a result of their having learned from that experience how to produce successful outcomes in the future. A logical extension of that theory is that adults who are in an unfamiliar context would draw more on their experience in other cultures than those who are in their familiar home culture. Therefore, an analysis of whether the participants' location contributes to variance in the levels of each factor of CQ is warranted. The total sample size for this analysis is 4,661. Table 5.4 summarizes the mean effect sizes under the FE model for the 6 samples of home-country participants and 12 samples of host-country participants as well as the I^2 values for each group.

Table 5.4
CQ x XP: Home versus Host Country Context

CQ Factor (CQ x XP)	Fixed-Effects Mean Effect Size (22 samples)	Mean Effect Size (FE): Home (6 samples)	Mean Effect Size (FE): Host (12 samples)	$Q_{between}$ (1 df)	*p*-value ($Q_{between}$)	I^2 Home	I^2 Host
MOCQ	.148	.125	.096	.892	.345	91.50	84.1
COCQ	.135	.124	.118	.029	.865	87.13	71.27
MCCQ	.124	.109	.094	.244	.622	88.41	76.84
BECQ	.107	.151	.060	8.697	.003*	73.55	68.03

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

The results shown in Table 5.4 show that only one relationship—XP x BECQ—has a significantly different mean correlation for participants who were surveyed in their home

country versus those who were surveyed in a host country. This is interesting, considering BECQ was the only CQ factor that did not differ by workers and students, but is the only factor that differs based on a different grouping variable—natives (home) and expatriates (host).

Surprisingly, the magnitude of all relationships between XP and CQ are lower for expatriates, contradicting the theory that adults call upon previous experience to increase their capacity for success in environments with which they are not familiar. On the other hand, perhaps the lack of familiarity with the context makes it more difficult for adults to be cognizant of how experience may assist them; those who are engaging in cross-cultural interactions on their home soil may call upon their previous international experience to assist them in increasing their CQ. The I^2 statistics for all host country relationships between XP and CQ are lower than for home country correlations, indicating that more variance is explained when modeling the effects for those adults in an unfamiliar context.

5.6.3: CQ x XP: High versus Low Power Distance

This analysis determines whether there is a significant difference between the mean correlations between XP and the four factors of CQ based on whether the study was conducted in a high PD country such as Malaysia or in a low PD country such as New Zealaand. Of the 22 studies that investigated the relationship between XP and CQ, 17 included enough data to calculate power distance (8 in low PD (n=1,980), 9 in high PD (n=2,456); N(total)=4,436).

Table 5.5
CQ x XP: High versus Low PD

CQ Factor (CQ x XP)	Mean Effect Size (17 samples)	Mean Effect Size: Low PD	Mean Effect Size (FE): High PD	$Q_{between}$ (1 df)	*p*-value ($Q_{between}$)	I^2 Low PD	I^2 High PD
MOCQ	.153	.182	.129	3.089	.079	86.65	89.09
COCQ	.132	.154	.115	4.735	.188	79.63	68.43
MCCQ	.131	.153	.112	1.911	.167	87.56	52.25
BECQ	.094	.132	.062	5.446	.02*	81.48	36.92

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

Table 5.5 shows that the only CQ factor that is significantly different in high and low PD countries is behavioral CQ. In fact, the mean correlation between XP and BECQ is just shy of being considered a small correlation per Cohen's rule of thumb (where .10 is small); yet when the relationship is analyzed for participants who were surveyed in a high PD country, the correlation passed the minimum threshold. In a low PD country, the correlation was negligible and even lower than the mean at .062. The analysis in Chapter 7 wherein the relationships between pairs of CQ factors are analyzed for group differences will explain more about the unique attributes of these different groups.

5.7: The Relationship between XP and Outcomes

To add a deeper understanding to this discussion of how previous international experience may explain differences in an individual's capacities and capabilities in the GKE, section 5.7 reports analyses of the correlations between XP the outcomes that will be analyzed in Chapter 6. Appendix G (Table G.2) shows the studies and recorded data for studies in this meta-analysis. The performance and adjustment outcomes are not analyzed separately, but correlations in studies that included both performance and adjustment outcomes were averaged so only one effect size was included for each study. The reported

correlations between XP and outcomes vary widely from a significant negative correlation (-.12) to a significant positive correlation (.20). The mean correlations are reported on Table 5.6.

Table 5.6
Mean Effect Sizes, Confidence Intervals, Heterogeneity: XP x Outcomes

FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI	I^2
.049	.006	.092	.053	-.023	.127	65.05

Fixed and random effects meta-analyses indicate that the mean effect size is very small (.049 for FE and .053 for RE), which is half the value considered to be a small effect size per Cohen's rule-of-thumb (Table 3.1). The confidence interval for RE shown on Table 5.6 includes zero, which shows that the relationship is likely zero. These correlations are even smaller than those calculated for the relationship between XP and CQ, showing that previous international experience, at least in this set of studies, is a reliable indicator of neither CQ nor outcomes. The I^2 value of 65.05% indicates medium heterogeneity per Huedo-Medina et al. (2006). Despite the small effect size, more heterogeneity in outcomes is explained by XP than is heterogeneity in other mean effects. Taken alone, this value does not add a significant finding to the research conclusions.

5.8: Discussion

The series of bivariate meta-analyses reported in Chapter 5 revealed some information about the magnitude of the correlations between previous international experience (XP) and the four factors of CQ. The overall mean effect sizes were all considered small according to Cohen's "rule of thumb" with none exceeding .25 (a medium effect size). Despite the correlations being smaller than anticipated based on theories and

practices that give great weight to the value of experience in predicting successful outcomes, this series of analyses provided an important result related to one of the purposes of this series of meta-analyses: the ranked correlations between each CQ factor and XP showed that MOCQ (motivational cultural intelligence) had the strongest relationship with XP while BECQ (behavioral cultural intelligence) had the weakest. This finding underscores the conclusion drawn above—namely, that theories such as Kolb's (1984) describe the process of reflecting and acting on lessons learned during previous experiences, but the one CQ factor that reflects action, BECQ, has the weakest relationship with experience. Despite the relative weakness of the correlation between XP and BECQ, this factor was the only one of the four CQ factors that varied based on whether the participants were natives or expatriates and the power distance of the country in which the study was conducted. This conclusion suggests that BECQ is a theoretically-sound choice as an outcome variable when modeling variance in outcomes explained by CQ factors (reported in Chapter 8). This chapter also investigated the relationship between XP and outcomes, concluding that previous international experience had no significant relationship with the level of performance and adjustment outcomes.

5.9: Conclusion

Research questions one and two have been answered so far. First, in Chapter 4 it was found that all four factors of CQ can improve after participating in a training or education. Second, in this chapter, it was found that previous international experience correlates more closely with CQ than it does with outcomes, and that XP correlates most closely with motivational CQ (MOCQ). This finding suggests that rather than learning culture-specific facts (represented by cognitive CQ, COCQ) or culture-specific behaviors (BECQ), previous

international experience relates most strongly to a person's desire to engage in cross-cultural interactions, reflected in motivational CQ (MOCQ). This finding enhances our understanding of the role of previous experiences and our understanding the four factors of CQ. The results also contribute the data needed to build a synthesized model of antecedents, moderators, and outcomes of CQ using the methods described by Becker and Schram (1994), Becker (1992, 2009), and Lipsey (1992) that are summarized in Chapter 3 and reported in Chapter 8. What remains to be determined is which of the four factors of CQ relates most closely to performance and adjustment outcomes (TP and ADJ). Chapter 6 reports several meta-analyses between the four factors of CQ and four different outcomes—one performance and three adjustment outcomes—to enhance our understanding of CQ and of which tangible and intangible assets have the most power in predicting these different types of outcomes.

CHAPTER 6: WHAT IS THE RELATIONSHIP BETWEEN CQ AND OUTCOMES?

Cultural intelligence is evidenced by "good personal adjustment, good interpersonal relationships with culturally different others, and the effective completion of task-related goals in a cross-cultural setting" (Thomas et al., 2008, p. 127).

The four-factor model of CQ represents four distinct types of knowledge, skills, and attitudes that are typically referred to as "soft skills," or those that are difficult to observe directly but presumed to reflect an individual's capacity for producing successful outcomes. Cognitive CQ (COCQ) and behavioral CQ (BECQ) have been conceived of as tangible capacities that represent an individual's "know-what" (to think and do), and metacognitive CQ (MCCQ) and motivational CQ (MOCQ) have been conceived of as intangible capacities that represent an individual's "know-how" (to think and feel). Some of these outcomes are observable by others and are often categorized as performance outcomes. In the current study, Ang and Van Dyne's (2008) nomological network (Figure 2.2) names several performance (or interpersonal) outcomes that are posited as outcomes of CQ: task performance, cultural judgment and decision-making, multicultural team functioning, international leadership, and adaptive performance. The nomological network also lists several theorized adjustment (or intrapersonal) outcomes of CQ: general adjustment, interactional adjustment, work adjustment, and subjective well-being. Chapter 2 reports a systematic review in which studies that measured the relationship between CQ and outcomes were surveyed. Out of the constructs listed on the nomological network, the only performance outcome that has been reported in multiple studies of CQ was task performance (TP). Of the four intrapersonal adjustment outcomes, all three adjustment outcomes were

analyzed by studies located in the systematic review: general adjustment (GA), interactional adjustment (IA), and work adjustment (WA).

To answer research question four, which asks how CQ factors relate to outcomes, sections 6.1 through 6.4 report the results of a series of meta-analyses investigating the magnitude of the bivariate relationships between the factors of CQ and both adjustment and performance outcomes. The results of these analyses are individually and collectively discussed at the end of Chapter 6 to explain how context-specific outcomes such as performance and adjustment may be related to an individual's capacity for success as represented by the four factors of CQ—behavioral (BECQ), cognitive (COCQ), metacognitive (MCCQ), and motivational (MOCQ).

6.1: The Relationship between CQ and Task Performance (TP)

The research model shown on Figure 2.1 conceives of performance outcomes as representing "what others see you do" (or tangible outcomes) in a specific cultural context. The performance outcome listed on the nomological network that has been studied most extensively as an outcome of CQ is task performance, a measure of an individual's "in-role behavior" (Chen, Lin, & Saw, 2011, p. 251) that is often assessed by a supervisor or colleague. As shown on Table H.1 in Appendix H, the correlation values range from a low of .078 (less than a small effect size using Cohen's rule-of-thumb) to a high of .51 (showing a large effect size), thus making meta-analysis a well-chosen method to determine the magnitude of the mean effect.

Table H.2, also in Appendix H, shows the three grouping variables selected for this set of meta-analyses. As can be seen in the table, the only moderator that has enough studies in each group to warrant its use as a moderator variable is study context—participants' home

or host culture. Of the nine studies, four were conducted in participants' home country, and five were conducted in a host country. Neither participants' role (worker versus student) nor power distance (low versus high) had significant representation in both groups—seven out of nine samples were workers, and seven out of nine were conducted in high power distance cultures. The fact that most studies of TP were conducted on workers makes sense—after all, the construct reflects workplace outcomes. But the fact that most studies were conducted in high PD countries indicates that researchers have a particular interest in understanding how CQ serves as a capacity for producing workplace outcomes in places such as Asia and Arab countries. This first series of meta-analyses looks at how TP relates to the four factors of CQ provides further explanation of how cultural intelligence serves as an individual's capacity for producing observable outcomes in high PD contexts.

6.1.1: Assessing Task Performance

Table H.1 (Appendix H) shows that four different measurement instruments were used in nine studies of the relationship between TP and CQ, each with a different way of assessing this skill. The most commonly-used instrument is by Williams and Anderson (1991) or is adapted from their instrument, as in Ang et al.'s (2007) study in which culturally-different partners in a group of individuals from 17 nations worked together on a business proposal. The instrument assessing TP asked the following three questions, rating them on a scale from 1 to 7: "overall, my partner effectively fulfilled his/her roles and responsibilities concerning the business proposal assignment; overall, my partner's performance met my expectations; for the business proposal assignment, my partner performed his/her tasks the way I would like them to be performed" (Ang et al., p. 354). Presbeterio (2015) sampled call-center employees who were evaluated by their supervisors

using three questions adapted from Williams and Anderson. Groves, Feyerherm, and Gu (2015) used a 7-item instrument from Fisher and Ury (1991) for partners to assess one another's negotiation performance with culturally-different others, including assessments of sensitivity, effective listening, and information-seeking behaviors (p. 238). Jyoti and Kour (2017) reported chief managers' assessments of their assessment managers' ability to adhere to what they called formal and informal job performance standards, based on an instrument by Goodman and Syvank (1999).

While the majority of studies reported others' assessments of the participants' task performance, three included self-scored ratings. Chen, Lin, and Saw (2011) used Williams and Anderson's (1991) assessment to evaluating their own performance. Lee, Veasna, and Wu (2013) also had participants assess their own job performance using a different instrument by Black and Porter (1991) wherein they rated themselves on four questions that included "My overall performance during my assignment is good" (p. 387). Wu and Ang (2011) had expatriates evaluate their "technical competence" using a four-item scale by Kraimer and Wayne (2004).

6.1.2: $\overline{ES}$ and CI for Correlations between TP and CQ Factors

As explained earlier, one goal of the current study is to determine which factors of CQ relate most strongly to the chosen outcome variables. Table 6.1 summarizes the mean effect sizes and confidence intervals of the relationships between each CQ factor and TP, listed in order of magnitude from largest to smallest effect.

Table 6.1
TP x CQ: Mean Effect Sizes and CIs for Correlations

Pairs	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
TP x BECQ	.403	.361	.444	.391	.316	.462
TP x MOCQ	.366	.322	.409	.335	.244	.420
TP x MCCQ	.332	.287	.386	.324	.215	.426
TP x COCQ	.240	.193	.287	.237	.152	.319

The CQ factor that has the strongest relationship with TP is BECQ, which is not surprising considering both BECQ and TP are constructs that reflect observable, tangible outcomes. More generally, using the language in the conceptual framework, TP measures "what others see you do in a specific context" and BECQ measures "what you do in an unfamiliar context." MOCQ has the second strongest correlation, MCCQ has the third strongest correlation, and COCQ has the weakest relationship with TP. Though this is a small sample, it is notable that "what you know," represented by COCQ, seems to relate the least with TP. This finding goes against some standard training approaches that seek to increase participants' knowledge about the unfamiliar context in order to increase their capacity for success. Section 6.1.4 investigates whether the mean correlations between TP and the four factors of CQ differ significantly based on whether participants are natives (home) or expatriates (host).

6.1.3: TP x CQ Heterogeneity Analysis

Heterogeneity analysis provides information on whether there is a significant amount of variance around the mean effect size that could theoretically be explained by moderator variables. Table 6.2 shows the *Q*-statistics, *p*-values, I^2 heterogeneity ratios, as well as τ^2 (between-studies variance). These results show a medium amount of heterogeneity for all relationships except that between TP and MCCQ per Huedo-Medina et al.'s (2006) guidelines. This data also shows that the largest amount of between-studies variance is found in the relationship between MCCQ and TP.

Table 6.2
TP x CQ: Heterogeneity Statistics

CQ Factor	***Q* (8 df)**	***p*-value (*Q*)**	**I^2**	**τ^2**
BECQ	22.23	.004	64.03	.011
COCQ	23.357	.003	65.75	.012
MCCQ	41.944	.000	80.93	.026
MOCQ	29.619	.000	72.99	.016

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

6.1.4: TP x CQ—Home versus Host as Moderator

Table 6.3 shows the results of using home versus host as a moderator of the relationship between TP and CQ. The table shows the mean correlations for natives and expatriates, with significantly different magnitudes indicated by a significant p-value for $Q_{between}$. The table also shows the I^2 values for each group, which indicates the amount of amount of variance left unexplained by the model. Two values were zero—TP x MOCQ for natives and TP x CO for expatriates. This suggests that the mean effect sizes have little variance for these groups.

Table 6.3
TP x CQ: Home vs Host as Moderator Variable

Pairs	**Home (Natives) $\overline{ES}$ (4 samples)**	**Host (Expatriates) $\overline{ES}$ (5 samples)**	**$Q_{between}$ (1 df)**	***p*-value ($Q_{between}$)**	**I^2 Home**	**I^2 Host.**
TP x BECQ	.386	.416	.478	.489	78.24	49.85
TP x MOCQ	.293	.417	7.53	.006*	0.00	79.84
TP x MCCQ	.273	.373	4.649	.031*	45.00	87.44
TP x COCQ	.323	.178	9.017	.003*	73.74	0.00

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

Results show that three of four relationships are significantly different for expatriates and natives. Surprisingly, considering that BECQ has the highest correlation with TP, the only relationship that is not significantly different for both groups is between TP and BECQ. However, the relationships between TP and two factors are significantly higher for expatriates—MOCQ and MCCQ. In fact, the mean correlation between TP and MOCQ for expatriates is .417, which is even higher than the mean correlation between TP and BECQ (.403). One relationship was significantly higher for natives than for expatriates—TP and COCQ. This implies that it is easier for natives of a country to connect their knowledge with their performance than it is for expatriates.

Sections 6.2 through 6.4 report the results of meta-analyses between three adjustment outcomes and the four factors of CQ to determine whether the ranked correlations between factors and outcomes are similar to those between CQ and TP. There is not enough data to use any of the groups as a moderator, as explained in each section.

6.2: The Relationship between CQ and General Adjustment (GA)

As explained in the introduction to Chapter 6, a systematic review of 56 empirical studies of CQ found three different constructs that were investigated as outcomes of CQ: general adjustment (GA), interactional adjustment (IA), and work adjustment (WA). These three constructs, most often evaluated using instruments by Black and Stephens (1989), are closely related and are often assessed together to measure overall cross-cultural adjustment. Although they are often combined, each adjustment type reflects different concepts related to how a person feels in a specific cultural context. General adjustment evaluates how comfortable individuals are with day-to-day living experiences such as shopping; interactional adjustment evaluates how comfortable individuals are engaging with culturally-different others; and work adjustment evaluates how comfortable individuals are performing and interacting with culturally-different others in a work context. Section 6.2 reports the procedures and results of a series of meta-analyses of 11 studies that measured the relationships between GA and the four factors of CQ (see Appendix I for studies and data).

6.2.1: Assessing General Adjustment

Of the 11 studies that measured correlations between GA and CQ (Appendix I), nine used the Black and Stephens (1989) assessment, one used an instrument by Black and Porter (1991), and one used an instrument by Hemmasi et al. (2010). Appendix E lists which instruments are used in each of these studies. Black and Stephens' (1989) assessment of GA asks participants to evaluate how comfortable they are with "their current situation in terms of living conditions in general; food; shopping; cost of living; healthcare facilities" (Ang et al., 2007, p. 358). The participants are asked to focus on general comfort outside of the workplace in order to distinguish between the larger cultural context of the host country and

what may be a more familiar, comfortable context of a workplace that has its own culture that may be distinct from that of the country in which it is located. Black and Porter's (1991) instrument asks similar questions to the Black and Stephens instrument, adding nothing different to the discussion of the construct of GA.

The reported correlations between GA and the four factors of CQ range in value from a low of .06 (negligent effect size) to a high of .51 (large effect size), which suggests a series of meta-analyses to determine a mean effect size for the magnitude of the relationship between each factor of CQ and GA is warranted. Of the 11 studies listed on Table I.1 (Appendix I), 10 were conducted on participants who were workers and nine were conducted in the participants' host country. Of the 11, only eight had data regarding power distance, and of these eight, only two were conducted in low power distance countries. This data shows that the assessment is meant to evaluate context-specific adjustment outcomes for expatriated workers. It also precludes the use of participants' role, the study context, or power distance as potential moderator variables to explain any heterogeneity in effect sizes because there are not enough participants in both groups to include in a moderator analysis. That most studies of adjustment were conducted on workers and in host countries is not surprising because the construct is meant to assess expatriate outcomes. The reason that most studies were conducted in high PD countries is not as intuitive, but parallels the observation that TP was also assessed in high PD countries. Either researchers from high PD countries are more interested in evaluating CQ and outcomes than those in low PD countries, or practitioners believe that adjusting or performing in high PD countries is a greater challenge than it is in low PD countries.

6.2.2: $\overline{ES}$ and CI for Correlations between GA and CQ Factors

The procedures used to transform reported correlations into values that can be combined to calculate mean effect sizes are explained in Chapter 3. Appendix I contains the values from all 11 studies used to calculate standard errors, study weights, and confidence intervals that are summarized in Table 6.4 (ranked by largest to smallest value).

Table 6.4
Mean Effect Sizes and Confidence Intervals Ranked: CQ x GA

CQ Factor	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
MOCQ	.477	.444	.508	.479	.431	.525
MCCQ	.348	.311	.384	.332	.256	.405
COCQ	.313	.275	.350	.310	.243	.373
BECQ	.269	.230	.307	.268	.204	.331

The results show that MOCQ had the strongest correlation with GA, exceeding the magnitude of the second strongest relationship with MCCQ by 30%. The weakest correlation was between BECQ and GA, which is not surprising considering that internal comfort is not necessarily reflected by a person's ability to adjust outward behaviors such as speech or non-verbal patterns. The fact that BECQ has the weakest relationship with GA highlights the conceptual difference between performance and adjustment outcomes; after all, BECQ had the strongest relationship with TP. The results indicating that the intrapersonal factors of CQ have the strongest relationship with GA support the idea that the root of intrapersonal comfort lies in the heart or is based on emotions. Both GA and MOCQ assess an individual's comfort with functioning on unfamiliar contexts, and these results confirm that. The mean effect sizes ranged from .269 (BECQ x GA), which is a medium effect per Cohen's rule-of-thumb, to .477, which is a large effect.

Another intriguing observation about the results of the meta-analyses between the four factors of CQ and GA is that the mean effect sizes under the FE and RE model are almost indistinguishable, suggesting that the between-studies variance was not very strong. This finding seems to show that an individual's CQ—especially MOCQ—is reliably predictive of adjustment outcomes in an unfamiliar cultural setting, allowing HRD professionals and others to consider using the CQS as a way to assess workers' capacity for success during expatriation.

6.2.3: GA x CQ Heterogeneity Analysis

Table 6.5 lists the *Q*-statistics along with their *p*-values as well as the I^2 values assessing true-to-total variance accounted for in the model and τ^2 showing between-studies variance. This set of analyses shows *p*-values that exceeded 0, with a value of .025 for MOCQ x GA and a value of .004 for BECQ x GA. If the standard for rejecting the null hypothesis of homogeneity was .001, these two relationships would be considered homogeneous and thus reflective of the true effect size, but this study uses .05 as the minimum *p* value. Again, this conclusion supports the idea that CQ and GA are closely related and that the CQS could serve as a useful way to measure a person's capacity for successful intrapersonal adjustment to daily living in an unfamiliar environment.

For MOCQ x GA, 51.16% of true-to-total variance remains to be explained, and the largest ratio is 74.12% for MCCQ x GA. Using the values for statistical power recommended by Huedo-Medina et al. (2006), none of the values exceeds 75%, the ratio at which a large amount of heterogeneity is present, showing that the level of heterogeneity among studies can be categorized as medium.

Table 6.5
GA x CQ: Heterogeneity Statistics

CQ Factor	*Q* (10 df)	*p*-value (*Q*)	I^2	τ^2
BECQ	25.825	.004	61.28	.006
COCQ	28.599	.001	65.03	.009
MCCQ	38.632	.000	74.12	.014
MOCQ	20.474	.025	51.16	.005

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

6.3: The Relationship between CQ and Interactional Adjustment (IA)

Interactional adjustment assesses how comfortable a person feels when they are face-to-face with culturally-different others, especially when they are living in a host country. The construct differs from general adjustment in that it focuses on interpersonal relationships rather than intrapersonal adjustment to daily routines in an unfamiliar context. IA is one of three types of adjustment included as part of Black and Stephens' (1989) cross-cultural adjustment assessment that are often combined into one instrument. In the current study, though, the three are analyzed separately based on the differing concepts reflected by each. Through the series of meta-analyses reported in section 6.2 through 6.4, conclusions may be drawn about whether the conceptual differences are reflected by which factors of CQ have the strongest relationship with each. Appendix J lists the 13 studies (N(total)=2,970) that have assessed the relationship between the four factors of CQ and includes citations and reported correlations for each. It also lists the values for the three grouping variables selected to investigate whether they moderate the relationships between CQ and IA. Four of 13 studies were conducted in the participants' home country while nine were conducted in a host country. Ten of 13 studies were of workers, whereas three were conducted using a student sample. Of the 13 studies, only 11 had coded data indicating whether the study was conducted in a low or high PD country; of these, three were in a low PD country and eight

were in a high PD country. None of these grouping variables has enough studies within both groups to use them in a moderator analysis; therefore, no conclusions will be drawn about the difference in mean correlations based on participants' status, study context (home versus host), or power distance (low versus high).

6.3.1: Assessing Interactional Adjustment

Similar to the studies of GA, a majority of the studies (11 out of 13) assessed IA using Black and Stephens' (1989) instrument, while only one used Black and Porter's (1991) assessment and one used Hemmasi et al.'s (2010). Also similar to the studies of GA, the studies of IA were comprised mostly of workers (with only two student groups), and a majority of participants were surveyed while expatriated (nine out of 13). These data suggest any heterogeneity that may exist will not be analyzed as being due to participants' status or the context of the study.

According to Guomundsdottir (2015), interactional adjustment "refers to adjustment to different communication styles in the host cultures and to communication with host country nationals" (p. 178). Zhang and Oczkowski (2016) explain that being in an unfamiliar country may "involve a series of stress provoking life changes" that "necessitate coping responses to maintain a culturally safe zone for oneself" (pp. 162-163), which is why employers prioritize assessing and facilitating employees' psychological comfort living and interacting in the country to which they have been expatriated. Konanahalli et al. (2014) explain that problems with employees' interactional adjustment could "lead to misunderstandings, misinterpretations, frustration, conflicts [that are] damaging [to] relationships" and could increase "the risk of disputes" that make managing international projects difficult for managers to handle (p. 425). Black and Stephens' (1989) assessment of

IA asks participants to rate their comfort with four areas of their expatriation experience: "socializing with host nationals; interacting with host nationals on a day-to-day basis; interacting with host nationals outside of work; and speaking with host nationals" (Zhang & Oczkowski, 2016, p. 182).

Appendix J, Table J.1 shows that the correlations between IA and the four factors of CQ range in value from a low of .10 (a small effect size) to a high of .831 (an almost unbelievable correlation that exceeds Cohen's limit for a large effect size). This range of values indicates that a series of meta-analyses can reveal a mean effect size from which conclusions about the magnitude of the relationships between each CQ factor and IA can be drawn.

6.3.2: $\overline{ES}$ and CI for Correlations between IA and CQ Factors

The procedures used to transform the reported correlations shown in Table 6.8 into effect sizes for meta-analysis are explained in Chapter 3. Appendix J contains the values for all 13 studies used to calculate standard errors, study weights, and confidence intervals. The summary of mean effect sizes under both FE and RE models is contained in Table 6.6.

Table 6.6
Mean Effect Sizes and Confidence Intervals Ranked: CQ x IA

CQ Factor	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
MOCQ	.461	.432	.489	.476	.358	.579
MCCQ	.344	.311	.375	.337	.219	.446
BECQ	.338	.306	.370	.341	.206	.464
COCQ	.310	.276	.342	.325	.223	.419

Table 6.6 lists the mean effect sizes for the correlations between CQ factors and IA ranked from largest effect to smallest. Of note is the fact that the values under the FE and RE

models vary more widely than they did in the analysis between CQ and GA, suggesting that variance in values can be attributed to between-study differences. Similar to the findings in section 6.2, the strongest relationship was between MOCQ and IA with a value that exceeds the mean correlation between MCCQ and IA by more than 30%. The mean effect sizes of the relationships between MCCQ, BECQ, and COCQ are close in value, with just 10% difference between the lowest-ranked (COCQ x IA) and the second ranked (MCCQ x IA). Unlike the relationship between CQ and GA, COCQ had the weakest correlation with IA.

Yet like the relationship between CQ and GA, the strength of MOCQ's correlation with IA suggests that successful adjustment, whether it is with daily life or interpersonal experiences, is related to or reflective of how the individual feels. It seems that simply having knowledge about the different culture (reflected by COCQ) or even understanding how to adjust verbal and non-verbal behaviors (BECQ) do not reliably indicate one's capacity for successful adjustment in unfamiliar contexts.

6.3.3: Heterogeneity Analysis

Table 6.7 lists the *Q*-statistics along with their *p*-values as well as the I^2 values assessing the ratio of true-to-total variance accounted for in the model. Both sets of heterogeneity statistics in this analysis of the relationship between CQ factors and IA have much higher values than those calculated for the relationship between CQ and GA, indicating that there is a larger amount of unexplained variance in the values in the current set of analyses. Thus, despite the similarity in values and rankings for the correlations, the dispersion of effect sizes between CQ and IA must be due to unidentified differences among participants. All I^2 values indicate a large amount of heterogeneity using the guidelines from Huedo-Medina et al. (2006).

Table 6.7
IA x CQ: Heterogeneity Statistics

CQ Factor	*Q*-value (12 df)	*p*-value (*Q*)	I^2	τ^2
BECQ	192.470	.000	93.77	.068
COCQ	106.078	.000	88.69	.035
MCCQ	146.168	.000	91.79	.050
MOCQ	181.672	.000	93.40	.064

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

6.4: The Relationship between CQ and Work Adjustment (WA)

Black and Stephens' (1989) assessment of cross-cultural adjustment includes three measured variables that each capture the level of psycho-social comfort adults have when they have left their familiar country to spend an extended time abroad: living (general adjustment, GA), socializing (interaction adjustment, IA), and working (work adjustment, WA). This study investigates how the four factors of CQ reflect or predict performance and adjustment outcomes identified as indicators of success for adults living, learning, and working in the GKE. The meta-analyses of GA and IA showed that motivation (MOCQ) had a significantly higher relationship with these adjustment outcomes than did the other three factors: behavior (BECQ), cognition (COCQ), and metacognition (MCCQ). This third analysis assesses the magnitude of each factor's relationship with work adjustment (WA), which focuses on how adults feel within the specific context of their workplace. It is often said that workplaces have a culture of their own which may or may not be reflective of the culture of the country in which they are located.

Section 6.4 reports the procedures and results used to calculate mean effect sizes from reported correlations between CQ and WA for 11 empirical studies (with a total of 2,426 participants), shown in Appendix K. Out of the 11 samples, 10 were conducted on workers,

and nine were conducted in the participants' host country. Of the eight studies for which power distance was coded, only two were conducted in low PD countries. This means that none of the grouping variables are used to explain any heterogeneity in effect sizes because there are not enough studies in both groups for any of the variables.

6.4.1: Assessing Work Adjustment

Konanahalli et al. (2016) explain that WA assesses the person's level of comfort "adjusting oneself to new job tasks, roles, supervision, performance expectations and environment," explaining further that work adjustment "reflects the degree of psychological comfort regarding different work values, expectations and standards" (p. 426). Konanahalli et al. theorize that expatriated individuals may find adjusting to work to be "the easiest of the three facets if there are similarities between parent and the host subsidiary in terms of procedures, policies and task requirements" (p. 426). This description suggests that the values and culture of the workplace can be seen as distinct from those of the national culture. WA specifically asks for an individual's perceptions about his or her own internal level of comfort at work independent of how comfortable they may be living and interacting outside of the workplace. The data in Table K.1 (Appendix K) show that correlations are, overall, smaller than those between CQ and the other two adjustment outcomes. The range in values is from .093 (below the minimum value for a small effect, per Cohen's rule-of-thumb) to .616 (a large effect). This variance shows that a meta-analysis to calculate a mean effect size for the relationship between each factor of CQ and WA is warranted.

6.4.2: $\overline{ES}$ and CI for Correlations between WA and CQ Factors

Chapter 3 explains the methods used to transform reported correlations to data that can be used to calculate mean effect sizes. Appendix K contains the specific values for

weights and standard errors. Table 6.8 shows the mean effect sizes and confidence intervals under both the FE and RE models listed in order of strongest correlation to weakest.

Table 6.8
Mean Effect Sizes and Confidence Intervals Ranked: CQ x WA

CQ Factor	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
MOCQ	.405	.370	.437	.420	.346	.489
COCQ	.298	.261	.334	.301	.209	.387
MCCQ	.289	.251	.325	.285	.202	.364
BECQ	.263	.226	.300	.268	.185	.347

The results show that, again, MOCQ had the strongest correlation with the adjustment outcome by far, again exceeding the value of the second strongest factor by more than 30%. COCQ, MCCQ, and BECQ all had mean correlations that ranged from .263 to .298 under the FE model, showing a near equal shared variance between those three factors and work adjustment. The correlations under the RE model are close to those under the FE model, but their confidence intervals are much wider. The strong correlation between WA and MO shows that high motivation is strongly related to psycho-social comfort in unfamiliar cultural contexts.

6.4.3: Heterogeneity Analysis

Meta-analysts use two different statistics to determine how much variance in effect sizes may be due to sampling error, random sources, or potentially-identifiable sources. The *Q*-statistic, when significant, is used to reject the null hypothesis of homogeneity. It is not a measure of power, unlike the I^2 value that has been conceived as reflecting statistical power,

especially when the values of I^2 are compared among studies. Table 6.9 is a report of the *Q*-values along with their *p*-values as well as the values for I^2 and tau-squared.

Table 6.9
WA x CQ: Heterogeneity Statistics

CQ Factor	*Q*-value (11 df)	*p*-value (*Q*)	I^2	τ^2
BECQ	51.103	.000	78.48	.019
COCQ	64.456	.000	82.93	.025
MCCQ	51.786	.000	78.76	.019
MOCQ	50.598	.000	78.26	.018

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

The *Q*-values are all significant with *p*-values of .000, showing that the variance in effect sizes is due to factors beyond sampling error. The I^2 values all exceed 75%, indicating a large amount of heterogeneity per Huedo-Medina et al.'s (2006) standards. These heterogeneity statistics have values lower than those seen in the analysis between CQ and IA but larger than those seen in the analysis between CQ and GA. The conclusion that may be drawn about the amount of shared variance between CQ and GA is that CQ relates most closely to general adjustment, a construct that reflects comfort with completing everyday tasks of living such as eating, shopping, and moving around in the country to which people have been expatriated.

6.6: Conclusion

This chapter analyzed the magnitude of the relationships between each of the four factors of CQ and both performance and adjustment outcomes measured in a cultural context that was unfamiliar to participants. The results showed that BECQ has the strongest relationship with the performance outcome, TP. The relationship between CQ and TP was significantly different for natives and expatriates for all CQ factors except BECQ. This

shows that BECQ is an accurate predictor of task performance no matter what context the participants are in. The results also overwhelmingly showed that MOCQ has the strongest relationship with adjustment outcomes; however, due to a lack of diverse samples, no moderators between CQ and adjustment outcomes was conducted. Chapter 5 did show that previous experience is not significantly related to either task or adjustment outcomes. These analyses explain how the different concepts that undergird the constructs may be theoretically related and to refine our understanding of how the seemingly intangible capacities of motivation (MOCQ) and metacognition (MCCQ) may have more of an influence on successful outcomes than capacities typically seen as tangible or observable (BECQ, or what you do, and COCQ, what you know). Tangible factors of CQ do have a stronger relationship with tangible outcomes such as TP, which makes sense. Next, Chapter 7 investigates the strength of correlations among all six pairs of CQ factors including testing whether grouping variables including worker versus student status, native versus expatriate status, and the power distance of the country in which the study took place moderates any of these relationships.

CHAPTER 7: HOW ARE THE FOUR FACTORS OF CQ RELATED?

"Although the facets of CQ have discriminant validity, there are relationships among them. Focus on potential overlap and synergies [is needed]"

(Earley & Peterson, 2004, p. 109).

CQ has been conceptualized as representing a process-based system in which cognitive CQ (COCQ) is the input (representing "what you know"), behavioral CQ (BECQ) is the output (representing "what you do"), while motivational CQ (MOCQ, representing "how you feel") and metacognitive (MCCQ, representing "how you think") moderate the relationship between BECQ and COCQ. To test the strength of the relationships between and among CQ factors, a series of meta-analyses to calculate the mean correlations between pairs of factors is conducted in Chapter 7. The relationships are then analyzed to determine if previously-identified moderators may explain some variance in the relationships between pairs of factors: participants' role (worker versus student), study context (participants' home or host country), and cultural distance (of the country in which the study takes place). These results are used to create a visual model of how the four factors represent the know-how and know-what needed for success in the GKE and how the relationships may vary by individual and contextual differences. This is the first study to measure and model the relationships between and among factors as well as the first to examine the specific individual and contextual differences may moderate the magnitude of these relationships.

7.1: Meta-Analyses of Bivariate Correlations between Pairs of CQ Factors

The procedures for transforming the recorded correlations for 50 samples (N (total)= 12,064) identified through the systematic literature review are reported in Chapter 3.

Appendix L (Table L.2) contains the studies, reported correlations, grouping variables, variances, standard errors, and weights used to calculate the mean effect sizes.

7.1.1: $\overline{ES}$ and CI for Correlations between Pairs of CQ Factors

Table 7.1 shows the mean correlations for the relationships between pairs of CQ factors listed in order of magnitude from strongest to weakest relationship.

Table 7.1
Mean Effect Sizes and CIs for Correlations between CQ Factors

Pairs	FE Mean Effect Size	FE Lower CI	FE Upper CI	RE Mean Effect Size	RE Lower CI	RE Upper CI
MOCQ x MCCQ	.523	.510	.536	.528	.477	.576
MCCQ x BECQ	.514	.501	.527	.527	.473	.571
MOCQ x BECQ	.487	.474	.501	.487	.433	.538
MCCQ x COCQ	.453	.439	.467	.456	.410	.500
MOCQ x COCQ	.440	.426	.454	.444	.401	.486
BECQ x COCQ	.425	.411	.439	.421	.384	.457

The strongest relationship was between motivational CQ (MOCQ) and meta-cognitive CQ (MCCQ), which are both considered to be intrapersonal factors that represent the mechanisms by which people connect their knowledge (cognitive CQ, COCQ) and actions (behavioral CQ, BECQ). The weakest relationship was between cognition and behavior (COCQ and BECQ); BECQ was actually related more strongly to motivation and metacognition (MOCQ and MCCQ). Another observation about the mean effect sizes is that the three weakest correlations were between COCQ and the other three factors of CQ, indicating that what people know (COCQ) is not as strongly related to how they feel (MOCQ) and how they think (MCCQ).

7.1.2: Heterogeneity Analyses for Correlations between Pairs of CQ Factors

The *Q*-statistic, when significant, indicates that the variance in the meta-analyzed relationships is due to factors beyond sampling error. The I^2 statistic is a measure of power, especially when it is compared to the values of other meta-analyzed relationships, and the τ^2 statistic is a measure of between-studies variance that is used to calculate weights under the RE model. Table 7.2 shows significant *Q*-statistics for all six pairs of CQ factors, indicating a heterogeneous distribution around the mean effect sizes. It also shows ratios of true-to-total variance (I^2) exceed 75%, the minimum value deemed by Huedo-Medina et al. (2006) to indicate large heterogeneity, with values ranging from 83.71% to 93.32%. These results indicate that most of the variance in the reported correlations is due to sources other than sampling error.

Table 7.2
Heterogeneity Statistics for Correlations between CQ Factors

Pairs	***Q*-value (49 df)**	***p*-value (*Q*)**	**I^2**	**τ^2**
MOCQ x MCCQ	733.777	.000	93.32	.056
MCCQ x BECQ	712.442	.000	93.12	.055
MOCQ x BECQ	733.372	.000	93.32	.056
MCCQ x COCQ	506.232	.000	90.32	.038
MOCQ x COCQ	436.018	.000	88.76	.032
BECQ x COCQ	300.765	.000	83.71	.021

NOTE: Significant *p*-values for *Q* indicate reported effect sizes have heterogeneous distribution around the mean effect size

7.2: Moderators of Relationships between CQ Factors

To assess whether any observed heterogeneity in reported effect sizes is due to differences in group membership, a procedure called an analog to ANOVA is conducted as described in Chapter 3 and previously conducted in Chapter 5.

7.2.1: Participants' Role—Worker or Student

The first variable that is used as a moderator is the participants' role while they were surveyed: worker or student. This moderator was chosen based on common practices in adult education to design different assessments and interventions for students and employees. Of the 50 samples listed, all 50 include data on the participants' role—worker or student—with 21 samples of workers (N(total workers)=4,632), 28 samples of students (N(total students)=7,728), and one mixed sample (N(total mixed)=245). The meta-analyses by participants' role are conducted using 49 of those 50 samples (N(total=12,360 participants).

Table 7.3 shows the mean effect sizes for the correlations between CQ factors for each group under the FE model as well as the $Q_{between}$ statistics for the six pairs of correlations. The FE effect size is used in the analog to ANOVA, and the presence of a significant $Q_{between}$ statistic indicates that the effect sizes are significantly different for each group. The results show that of the six pairs of correlations for which mean effect sizes were calculated for workers and students, two of them were significantly different for each group—the relationship between MCCQ and BECQ was significantly higher for workers than for students, and the relationship between MCCQ and COCQ was significantly higher for students than for workers. The I^2 values show that significant heterogeneity remains to be explained, meaning the participants' role does not offer any further explanation to the

question of why the reported correlations were so widely dispersed around the mean (i.e., worker versus student status is not a major source of heterogeneity in effect sizes).

Table 7.3
Workers versus Students as Moderator Variable

Pairs	**Worker $\overline{ES}$ (21 samples)**	**Student $\overline{ES}$ (28 samples)**	**$Q_{between}$ (1 df)**	***p*-value ($Q_{between}$)**	**I^2 Work.**	**I^2 Stud.**
MOCQ x MCCQ	.517	.525	.346	.556	95.12	91.65
MCCQ x BECQ	.539	.494	10.654	.001*	94.97	90.69
MOCQ x BECQ	.489	.484	.108	.743	95.30	91.18
MCCQ x COCQ	.407	.445	4.487	.034*	86.54	92.26
MOCQ x COCQ	.441	.436	.093	.760	91.30	86.67
BECQ x COCQ	.420	.427	.202	.653	88.02	79.77

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

7.2.2: Context of Study—Participants' Home or Host Country

If CQ is conceptualized as representing an individual's capacity for success in the GKE, it might be assumed that the magnitude of the relationships between interpersonal and intrapersonal factors of CQ might be different when working or studying abroad. Data indicating the study context—participants' home or host country—was recorded for 44 out of 50 samples, with 20 samples surveyed in their home country (N(total)=5,385) and 24 samples surveyed in a host country (N(total)=5,320). Another way to distinguish these two groups is to refer to participants who were surveyed in their home country as "natives" and those who were surveyed in a host country as "expatriates." This data provides equitable group sizes for moderator analyses conducted for each pair of CQ correlations.

The results shown in Table 7.4 indicate that of the six pairs of CQ correlations for which mean effect sizes were calculated for participants in their home versus those in a host

country, four of them were significantly different for the two groups: the relationships between MCCQ and all three other CQ variables was significantly higher for expatriates, as was the relationship between MOCQ and BECQ. This result suggests that metacognition, or how a person thinks about what they know and how their knowledge impacts how they act in a specific context, is stronger in those people who are in an unfamiliar context. The other relationship for which the correlation was significantly higher for expatriates is that between MOCQ and BECQ, which suggests that in order for a person to change his or her verbal and non-verbal behaviors in an unfamiliar context, he or she needs to want to adapt—motivation to adjust to an unfamiliar set of cultural expectations is a key factor. The I^2 values are lower than they are for workers versus students, showing that this grouping variable explains more variance in the relationships between pairs of CQ factors.

Table 7.4
Home versus Host Country as Moderator Variable

Pairs	**Home $\overline{ES}$ (20 samples)**	**Host $\overline{ES}$ (24 samples)**	**$Q_{between}$ (1 df)**	***p*-value ($Q_{between}$)**	**I^2 Home**	**I^2 Host**
MOCQ x MCCQ	.511	.542	4.902	.027*	95.76	85.53
MCCQ x BECQ	.506	.542	6.662	.010*	95.27	87.56
MOCQ x BECQ	.439	.541	47.082	.000*	94.83	90.45
MCCQ x COCQ	.420	.484	16.949	.000*	92.02	88.17
MOCQ x COCQ	.432	.463	4.151	.042	90.84	86.43
BECQ x COCQ	.428	.394	2.101	.147	81.23	82.66

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

7.2.3: Power Distance Score—Low or High

Out of the 50 samples that reported correlations between factors of CQ, 42 provided information to code the name of the country in which the study took place. Of the 41

samples for which power distance was recorded, 20 are low power distance (N(total)=4,513) and 22 are high power distance (N(total)=5,777). Table 7.5 shows the mean correlations for each group of participants as well as heterogeneity statistics. A significant *p*-value for $Q_{between}$ indicates that the mean correlation significantly differs between groups. The results of the moderator analysis show that there is a significant difference in the correlations between five out of six pairs of CQ factors, with the effect sizes for four of them being significantly larger for those whose studies took place in low power distance countries. The only relationship that was higher for participants in high power distance countries was the relationship between BECQ and COCQ.

Table 7.5
Low and High Power Distance Study Contexts as Moderator

Pairs	**Low PD $\overline{ES}$ (20 samples)**	**High PD $\overline{ES}$ (21 samples)**	**$Q_{between}$ (1 df)**	***p*-value ($Q_{between}$)**	**I^2 Low**	**I^2 High**
MOCQ x MCCQ	.550	.462	35.100	.000*	92.63	92.77
MCCQ x BECQ	.540	.448	37.147	.000*	90.69	92.17
MOCQ x BECQ	.453	.404	9.934	.002*	82.78	91.58
MCCQ x COCQ	.446	.403	6.807	.009*	85.19	87.51
MOCQ x COCQ	.403	.379	2.544	.111	77.39	89.61
BECQ x COCQ	.402	.447	7.941	.005*	89.17	71.05

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

The significance of this finding is that people who live or work in high power distance countries such as Arab countries and Asian countries may not exhibit the same magnitude of CQ as their peers who live and work in countries wherein power distance is not accepted and may even be challenged. The I^2 values reported show that power distance explains more variance between some pairs of CQ factors than other moderators do. These

values also show that more variance between pairs of factors is explained for one group versus the other. However, since the goal here is to examine which groups' relationships between pairs of CQ factors are significantly different than the mean effect size for all groups, these values do not need to be scrutinized. It is enough to understand how these meta-analytic methods reveal differences in how much between-studies variance may be explained by such moderator analyses.

Because the results so far show that power distance and home versus host context (natives versus expatriates) are significant moderators, a question arose that warranted further analysis: How do the correlations between factors for natives and expatriates of high and low power distance countries vary? To answer this question, the answer to which sheds more light on how contextual differences moderate the relationships, further moderator analyses were conducted separating participants into one of four groups: low PD expatriates, low PD natives, high PD expatriates, and high PD natives.

7.2.4: Further Moderator Analysis—High PD Context for Natives versus Expatriates

To test the differences in mean effect sizes for natives versus expatriates located in high power distance countries, four groups of participants were dummy coded using pairs of codes for home versus host (0 for home, 1 for host) and PD (0 for low, 1 for high) (Appendix L) to represent the following different categories: expatriates located in low PD countries (1, 0), expatriates located in high PD countries (1,1), natives living in low PD countries (0,0), and natives living in high PD countries (0,1). An analog to ANOVA method was used to test whether the mean correlations were significantly different based on four different pairs of grouping variables: expatriates (low versus high); natives (low versus high); low PD country (natives versus expatriates); and high PD country (natives versus expatriates). Rather than

testing the differences among the groups, pairs were created in order to draw conclusions about the power distance as primary difference versus the study context (participants' home or host country, making them natives or expatriates). Table 7.6 reports correlations for each group and shows which groups had significantly different mean effect sizes based on context variables.

Table 7.6
High and Low PD Country Natives and Expatriate: Four Sets of Moderators

	High PD Context		Low PD Context		Natives		Expatriates	
	Natives	Expatriates	Natives	Expatriates	Low PD	High PD	Low PD	High PD
BECQ x COCQ	.438	.420	.356	.344	.389	.438	.378	.420
BECQ x MCCQ	.61	.468*	.48	.478	.48	.61*	.478	.468
BECQ x MOCQ	.526	.506	.431	.370*	.431	.526*	.37	.506*
MCCQ x MOCQ	.608	.474*	.494	.477	.494	.608*	.477	.474
MCCO x COCQ	.466	.417	.419	.385	.419	.466	.385	.417
COCQ x MOCQ	.428	.427	.409	.408	.409	.428	.408	.427

NOTES: *Indicates a significant *p*-value for $Q_{between}$ which means there is a significant difference in mean effect sizes for the groups. Non-significant *p*-values indicate there is no significant difference in mean effect sizes for the groups.

Studies that use the CQS are conducted only on people who are engaged in intercultural business or educational experiences; thus, the finding that there are differences based on geographical location is significant. Stakeholders in the GKE including students, employees, employers, academics, and HRD professionals should be aware of the different ways individuals from certain cultures, whether they are at home or abroad, may utilize and demonstrate the different aspects of CQ that reflect the tangible and intangible capacity for success in the GKE. HRD professionals who design interventions to facilitate the development of CQ need to consider both individual differences based on expatriation status and the country in which the individual engages in cross-cultural interactions.

7.3: Summary of Bivariate Meta-Analyses

7.3.1: Relationship between What You Know (COCQ) and What You Do (BECQ)

Chapter 1 postulated that the relationship between what people know and what people do is not direct; in other words, simply having culture-specific knowledge about the norms and values of different cultures (measured by cognitive CQ (COCQ)) does not guarantee that a person will enact appropriate culture-specific behaviors (BECQ). Both BECQ and COCQ are considered to be tangible knowledge assets in that both can be assessed by a fact-based exam or observed by other with whom a person interacts.

The current study found that that of the three non-CQ factors in the model, COCQ had the weakest relationship with BECQ. In fact, of the six pairs of CQ factors that were analyzed in this series, the weakest relationship was between COCQ and BECQ, suggesting that intangible dimensions (metacognition (MCCQ) and motivation (MOCQ)) have more to do with enacting culturally-appropriate behaviors than just having knowledge about what is expected. The current study also found that participants who were surveyed in high PD countries had a stronger relationship between COCQ and BECQ than those in low PD countries, suggesting that enacting culture-specific behaviors in countries such as Singapore or Jordan requires a person to tap into their knowledge of what is expected more so than in low PD countries such as the United States or Germany. Interestingly, the magnitude of the correlation between COCQ and BECQ is not significantly different for natives and expatriates of high PD countries. Gooden, Creque, and Chin-Loy (2017) conducted an analysis that showed metacognitive CQ (MCCQ)—not cognitive—explained the most variance in participants' behavior, concluding that a person's awareness of "potential differences across cultures" does not necessarily lead them to "modify his [or her] behavior

to accommodate the differences" (p. 228). This study measured the magnitude of the relationships between BECQ and the two intangible, intrapersonal dimensions of CQ, drawing the same conclusion as Gooden, Creque, and Chin-Loy—how you think (MCCQ) has the strongest relationship with BECQ followed by how you feel (MOCQ).

7.3.2: Relationship between How You Think (MCCQ) and What You Do (BECQ)

Metacognition represents "thinking about thinking" and is required for "adaptation across new cultural contexts [that] requires novel ways of dealing with others" because "existing strategies must be adjusted, adapted, or reinvented depending on the situation and culture" (Earley & Peterson, 2004, p. 105). MCCQ thus is conceived as the attribute that allows people to connect what they know (COCQ) and what they do (BECQ), representing how a person strategically plans to apply culture-specific knowledge to cross-cultural interactions. Of the six pairs of CQ factors evaluated in this series of bivariate meta-analyses, the second highest correlation was between MCCQ and BECQ (second to the relationship between motivation (MOCQ) and metacognition (MCCQ)), reinforcing the conclusion that intangible capacities are more important for enacting tangible, observable outcomes such as BECQ. Further evidence of the power of the connection between MCCQ and BECQ is that the magnitude of this relationship is significantly different for all four groups tested as moderators—it is stronger for workers than for students, for expatriates than for natives, and for low PD contexts than high PD contexts (except for high PD natives, which has a stronger relationship than for low PD natives). For all expatriates, regardless of context, the magnitude of the relationship between MCCQ and BECQ was almost equal, showing that metacognition is a salient predictor of outcomes that should be developed and leveraged in expatriates. Because it was shown in Chapter 4 that all four factors of CQ might

be improved through purposeful interventions, HRD professionals need to find ways to assist individuals with developing metacognitive strategies to tap into during cross-cultural interactions.

7.3.3: Relationship between What You Know (COCQ) and How You Think (MCCQ)

As the findings above imply, the relationship between having culture-specific knowledge and using meta-cognitive strategies to enact culture-specific behaviors is a more salient predictor of BECQ than COCQ alone. The relationship between COCQ and MCCQ work together to assist individuals enact behaviors that are expected of them in cross-cultural encounters. Earley and Peterson (2004) explain that cognition and metacognition relate in that "a person learns things about how the type of information encountered influences how it should be dealt with in various contexts," and metacognitive strategies are used by people who "realize that a great deal of persistence is required" (p. 107) to select the appropriate behavior from their repertoire based on the context in which it is required. These findings reinforce the idea that the connection between what you know and how you think differs by context—the power distance of the country and the participant's familiarity with the culture (native or expatriate) moderate the relationship between COCQ and MCCQ. Not surprisingly, the relationship between COCQ and MCCQ was significantly stronger for expatriates than for natives, indicating that this interaction represents a key capacity for success in unfamiliar cultural contexts. The relationship was also stronger in low PD countries, which could be reflective of the value low PD countries place on "mindfulness," or it could be due to factors that are not examined here; nevertheless, the significance of the finding is that power distance does moderate the relationship between CQ factors.

7.3.4: Relationship between How You Feel (MOCQ) and What You Do (BECQ)

Motivational CQ (MOCQ) represents a person's feelings about cross-cultural interactions and is related to concepts of "efficacy and confidence, persistence, value congruence and affect for the new culture" (Earley & Peterson, 2004, p. 105). Earley and Peterson also claim that "if the motivational facet of cultural intelligence is weak, adaptation does not occur" because low people with self-efficacy (or a belief in one's ability to successfully engage in cross-cultural interactions) are "likely to disengage after experiencing early failures" and thus are "unable to maintain commitment to a course of action under such duress and potential personal threat" (p. 107). In Chapter 1, it was postulated that what you think and what you do are connected by how you feel, and the results of this series of meta-analyses confirm this hypothesis. The relationship between MOCQ and BECQ was almost as strong as the relationship between MCCQ and BECQ, showing that intrapersonal, intangible dimensions of CQ are more predictive of a person's capacity to produce culturally-appropriate behaviors than the tangible dimension of culture-specific knowledge (COCQ). Interestingly, the magnitude of the relationship between motivation and behavior did not differ significantly for any of the groups tested in this series of analyses, reinforcing the idea that no matter the participants' role, familiarity with the cultural context, or the country, motivation is a key capacity for success in the GKE.

7.3.5: Relationship between How You Think (MCCQ) and How You Feel (MOCQ)

As described above, high motivation assists individuals with overcoming the types of stress and discomfort that can arise in cross-cultural interactions, especially when such interactions do not go smoothly. It has also been shown that the intangible, intra-active attributes of CQ are more predictive of successful behavioral outcomes than having tangible,

culture-specific knowledge. The magnitude of the relationship between the two intra-active capacities of CQ was the strongest of all six correlations tested in this series of analyses. This finding shows that people who are highly motivated are self-efficacious and confident that they can use meta-strategies to overcome difficulties and reach the goals they have set that require cross-cultural interactions. Earley and Peterson (2004) explain that training designed to assist people with improving cross-cultural interactions should focus on "confidence-building" by exposing participants to a series of situations in which efficacy is established to "provide the perseverance needed to tackle greater cultural challenges" (p. 111). This confidence will assist adults with producing successful outcomes in situations with culturally-different others, which, per the analyses in Chapter 5, are most closely tied to the intra-active, intangible factors of MOCQ and MCCQ.

7.3.6: Relationship between What You Know (COCQ) and How You Feel (MOCQ)

The final relationship that was examined in this series of analyses was the relationship between the two tangible capacities of CQ—culture-specific knowledge (COCQ) and feelings about cross-cultural encounters (MOCQ). This relationship was the second weakest, only stronger than the relationship between COCQ and BECQ. This finding shows that simple knowledge is not enough to drive motivation or behavior. It is not intuitive that having a large amount of culture-specific knowledge would lead to higher motivation, though some say "knowledge is power." The magnitude of the relationship between what you know and how you feel was not significantly different for any of the groups evaluated as moderators, a finding that also underscores that the interaction between these two capacities is not necessarily predictive or explanatory.

7.4: Publication Bias

As explained in section 3.8, publication bias is a very real problem in academia. Meta-analytical theorists have acknowledged this problem and because part of the purpose of meta-analysis is to draw generalizable conclusions from existing research findings, they have included assessments of potential publication bias as part of the reporting protocol. The most common measure of publication bias is to analyze a graph of effect sizes versus standard errors to detect whether an expected range of reported effect sizes is present. The set of studies without publication bias is ideally plotted in the shape of an inverted funnel, with most effects distributed normally around the mean. Figures 7.1 through 7.6 are the funnel plots for the 50 studies included in this series of meta-analyses between the six pairs of CQ factors. The plots appear to be normally distributed, though there are several studies that fall significantly on both sides of the mean. This set of meta-analyses produced a set of mean effects that took the range of reported values into effect and attempted to explain the variance in effect sizes with heterogeneity statistics and moderator analyses.

The literature search process described in Chapter 2 included efforts to locate as many studies that used the CQS instrument as possible. Over 86 studies were located, but by applying specific exclusion criteria (excluded studies are listed in Appendix A), many were rejected, resulting in a final sample of 56 studies in which CQ was reported for all four factors (six of these samples were only analyzed for standard mean gains in Chapter 4 and were not included in the meta-analyses between pairs of CQ factors. Every effort was made to minimize publication bias, including using correlational data that provides both significant and insignificant data, thereby reducing the bias that can be caused by only analyzing significant results.

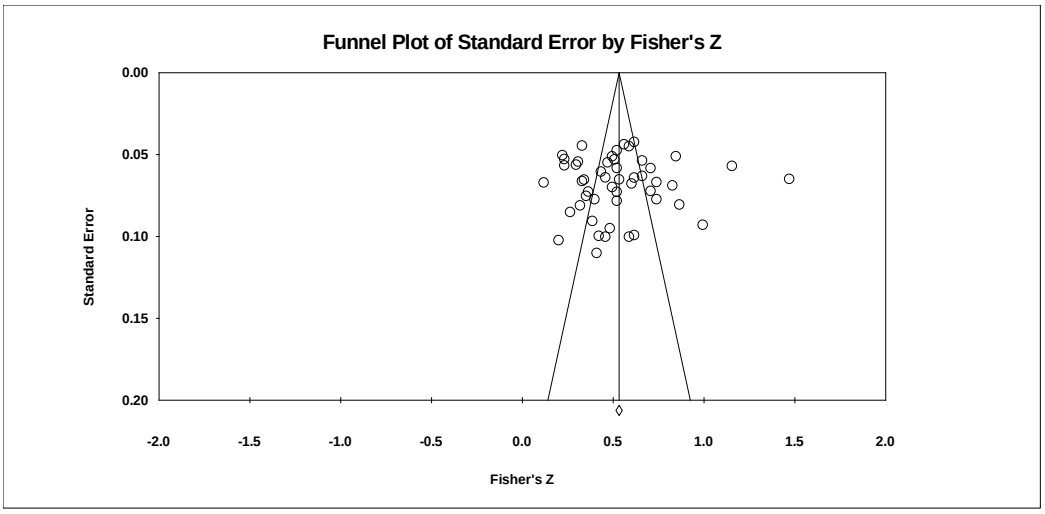


Figure 7.1. MOCQ x BECQ Funnel Plot

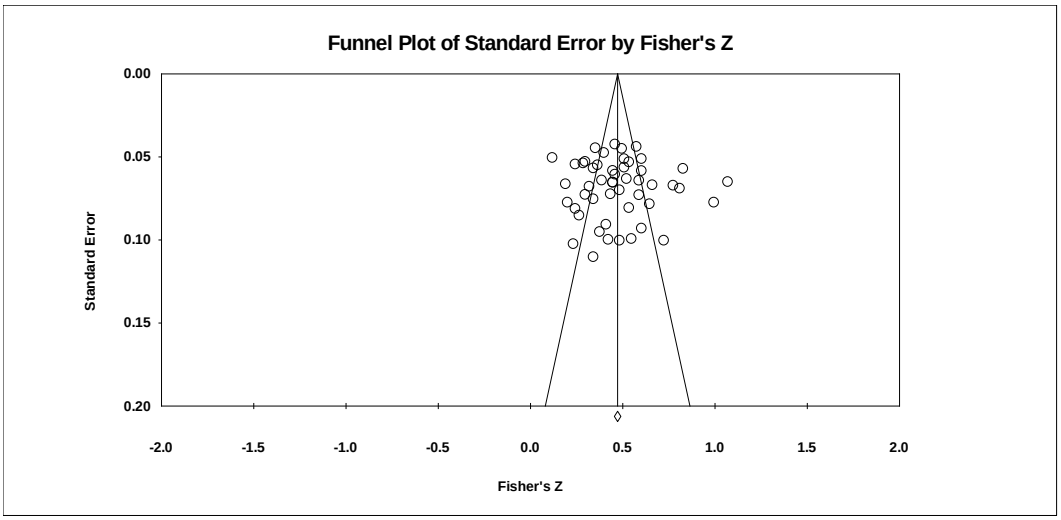


Figure 7.2. MOCQ x COCQ Funnel Plot

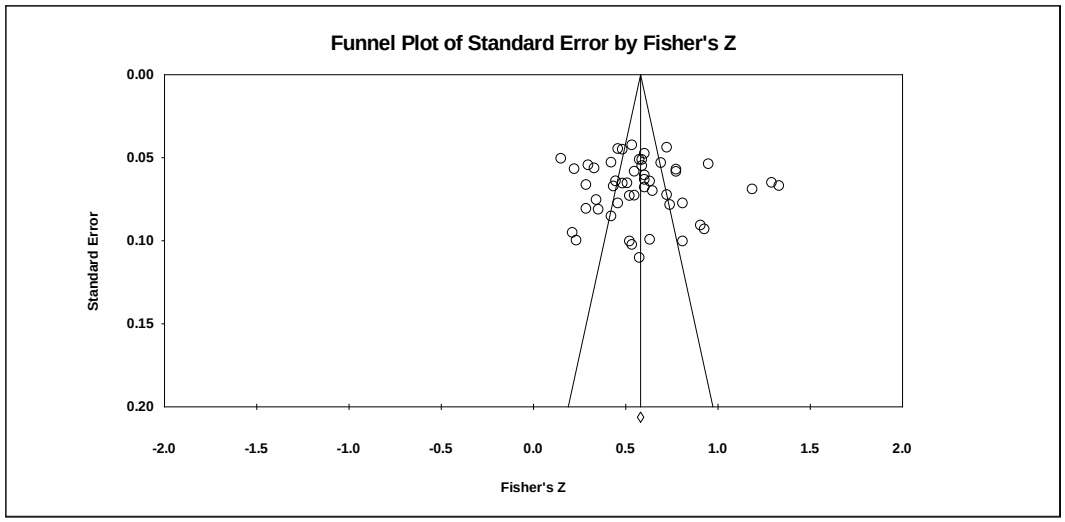


Figure 7.3. MOCQ x MCCQ Funnel Plot

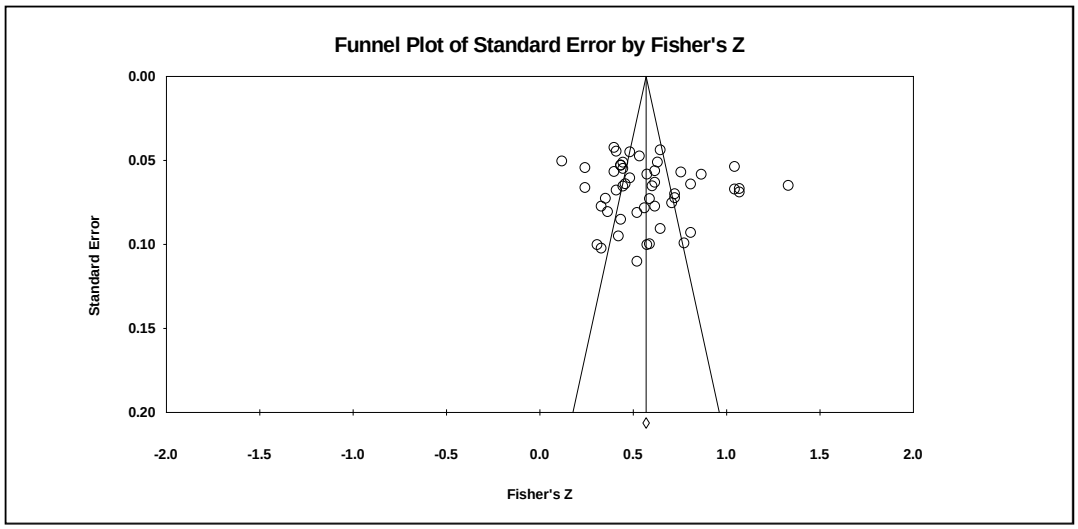


Figure 7.4. MCCQ x BECQ Funnel Plot

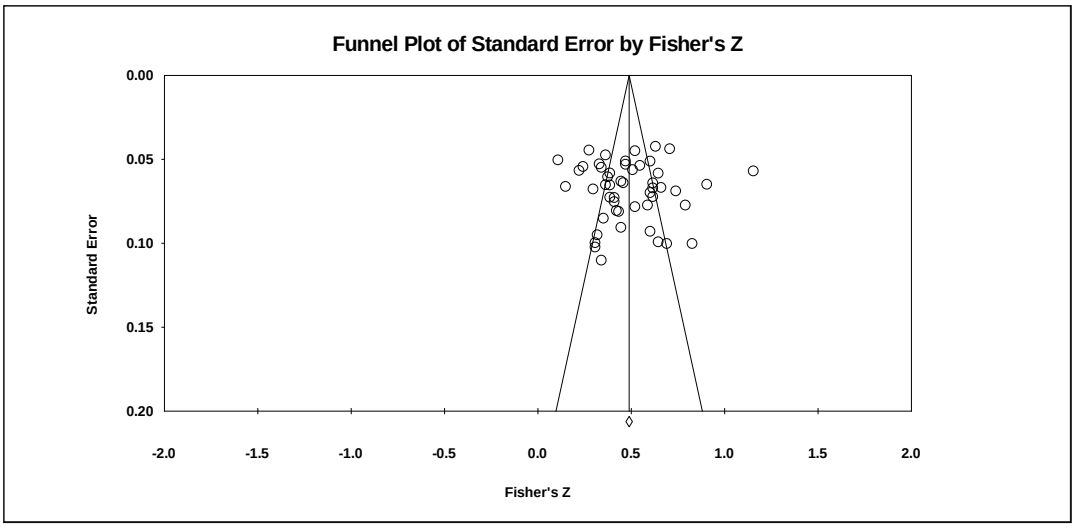


Figure 7.5. MCCQ x COCQ Funnel Plot

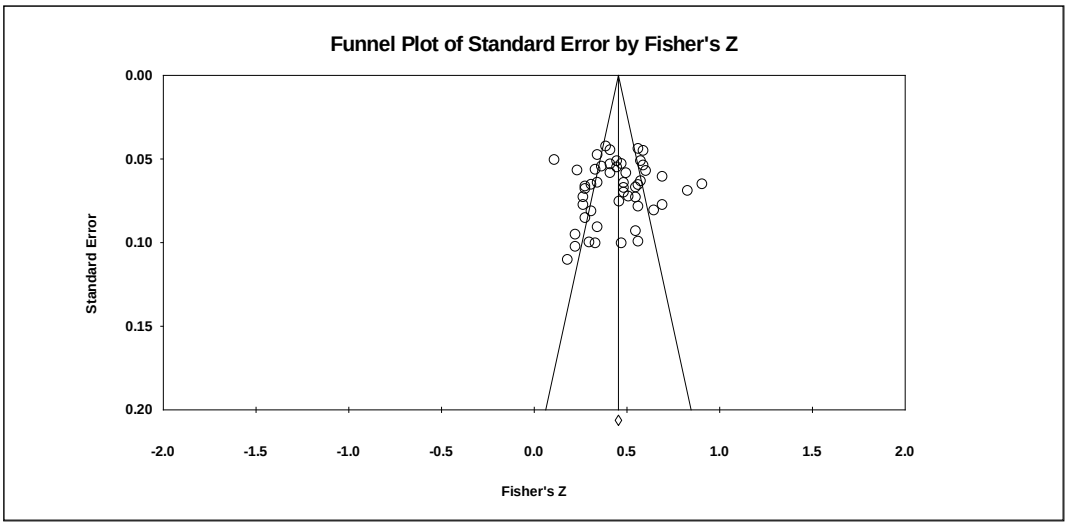


Figure 7.6. BECQ x COCQ Funnel Plot

7.5: Conclusion

This chapter has reported methods and results of 48 different bivariate meta-analyses of the magnitude of relationships between CQ factors and whether they varied based on participants' role (worker or student), the location of the study (participants' home or host country), the power distance of the country in which the study took place (high or low), or a

combination of power distance and study context (i.e., high PD natives versus low PD natives). Several significant findings emerged from this series of analyses that clarify the connections between what people know (COCQ), how people think (MCCQ), how people feel (MOCQ), and what people do (BECQ) and how these relationships represent intellectual capital, or know-how and know-what (Stewart, 2004) that comprises the intellectual capital (or knowledge assets) of adults in the Global Knowledge Economy. Chapter 8 synthesizes the results of Chapters 5 through 7, answers the research questions, and discusses the significance and implications of the findings as well as recommendations.

CHAPTER 8: SUMMARY OF FINDINGS

"The synthesis of results across studies is a highly complex task that is not performed reliably with cognitive algebra" (Littell, Corcoran, & Pillai, 2008, p. 11).

Through the series of meta-analyses reported in Chapters 4 through 7, several conclusions were drawn that were discussed individually as being significant findings. It was discovered that training can be a way to develop individuals' CQ (Chapter 4), that previous international experience is not as closely related to CQ as might be expected (Chapter 5), that behavioral CQ is closely related to performance outcomes such as task performance, and that intangible capacities of motivation and metacognition are closely related to adjustment outcomes such as general adjustment (Chapter 6). It was also discovered that several relationships between adults' tangible capacities (BECQ and COCQ) and intangible capacities (MCCQ and MOCQ) are different for participants with a different status (worker or student), a different level of familiarity with the culture in which the study took place (natives or expatriates), and in a different cultural context (high or low PD countries). Section 8.1 describes how the mean effect sizes (correlations) from Chapters 5 through 7 are synthesized on a single matrix (Table 8.1). After summarizing what it means to synthesize meta-analytic findings using model-based methods, Section 8.1 also contains a visual path model that reports all effect sizes and shows which groups were significant moderators. Sections 8.2 through 8.6 summarize the conclusions and significance of the findings by research question.

8.1: Model-Based Synthesis of Meta-Analyzed Relationships

Before I present a narrative summary of the answers to the five research questions, it is appropriate to offer a one-page summary of significant effect sizes in the form of a

correlation matrix (Figure 8.1). It is also appropriate and part of the purpose of this dissertation to modify the conceptual models in Chapters 1 and 2 that posited relationships between and among concepts and constructs in this study. To synthesize the results into a format that is a condensed and useful quick reference for the audience, I used model-based meta-analytic techniques by Becker and Schram (1994) and Becker (1992, 2004) to synthesize a correlation matrix and draw path models of the relationships between and among variables of interest with correlations and moderators included. Recently, Byars-Winston, Diestelmann, Savoy, and Hoyt (2017) published an exemplary analysis based on these techniques in the *Journal of Counseling Psychology* called "Unique Effects and Moderators of Effects of Sources on Self-Efficacy: A Model-Based Meta-Analysis." They conducted a series of bivariate analyses similar to those reported in Chapters 5 through 7, reporting conclusions about which factors related to self-efficacy and how those relationships were moderated by different categories of participants and studies. Byars-Winston et al. explain that model-based meta-analysis "allows researchers to address complex research questions (e.g. mediation hypotheses) using data from many studies that report on relations among the variables of interest" and to derive correlations as well as to "present a full picture of the nature of the relationships under investigations (p. 655).

Table 8.1 shows the synthesized correlation matrix above the diagonal and includes the correlations that were significantly different based on tested grouping moderators below the diagonal. Note that moderator analyses were not conducted for the meta-analysis of correlations between CQ and adjustment outcomes because enough studies were not available for equitable analysis, and the only moderator that was tested for the correlations between CQ and TP was home versus host (or native versus expatriate). The picture in

Figure 8.1 is in the form of a visual path model that reflects how the factors of CQ each serve as part of a system in which previous experiences, individual differences, contextual differences, and outcomes are related and influence each other.

Table 8.1
Synthesized Correlation Matrix of Results Including Group Differences and Ranked Correlations per CQ Factor

	BECQ	COCQ	MCCQ	MOCQ	XP	TP	GA	IA	WA
BECQ	**1**	0.425 [6/6]	0.514 [2/6]	0.487 [3/6]	.107 [4/4]	0.403 [1/4]	0.269 [4/4]	0.338 [3/4]	.263 [4/4]
COCQ	***(L=.402/ H=.447)***	**1**	0.453 [4/6]	0.44 [5/6]	.135 [2/4]	0.24 [4/4]	0.313 [3/4]	0.31 [4/4]	.298 [2/4]
MCCQ	***(W=.539/ S=.494) (N=.506/ E=.542) (L=.540, H=.448)***	***(W=.407/ S=.445) (N=420, E=.484) (L=.446, H=.403)***	**1**	0.523 [1/6]	.124 [3/4]	0.332 [3/4]	0.348 [2/4]	0.344 [2/4]	.289 [3/4]
MOCQ	***(N=.439/ E=.541) (L=.453/ H=.404)***		***(N=.511/ E=.542) (L=.550/ H=.462)***	**1**	0.148 [1/4]	0.366 [2/4]	0.477 [1/4]	0.461 [1/4]	.405 [1/4]
XP	***(N=.151, E=.06) (L=.132/ H=.062)***	***(W=.083/ S=.166)***	***(W=.077, S=.151)***	***(W=.066, S=.195)***	**1**	.006 for XP x all Outcomes			
TP		***(N=.323, E=.178) other groups n/a***	***(N=.273/ E=.373) other groups n/a***	***N=.293/ E=.417) other groups n/a***		**1**	**n/a**	**n/a**	**n/a**
GA	**Groups n/a for CQ x GA or XP x GA**					**n/a**	**1**	**n/a**	**n/a**
IA	**Groups n/a for CQ x IA or XP x IA**					**n/a**	**n/a**	**1**	**n/a**
WA	**Groups n/a for CQ x WA or XP x WA**					**n/a**	**n/a**	**n/a**	**1**

Note: N=Native, E=Expatriate, L=Low PD, H=High PD, W=Worker, S=Student

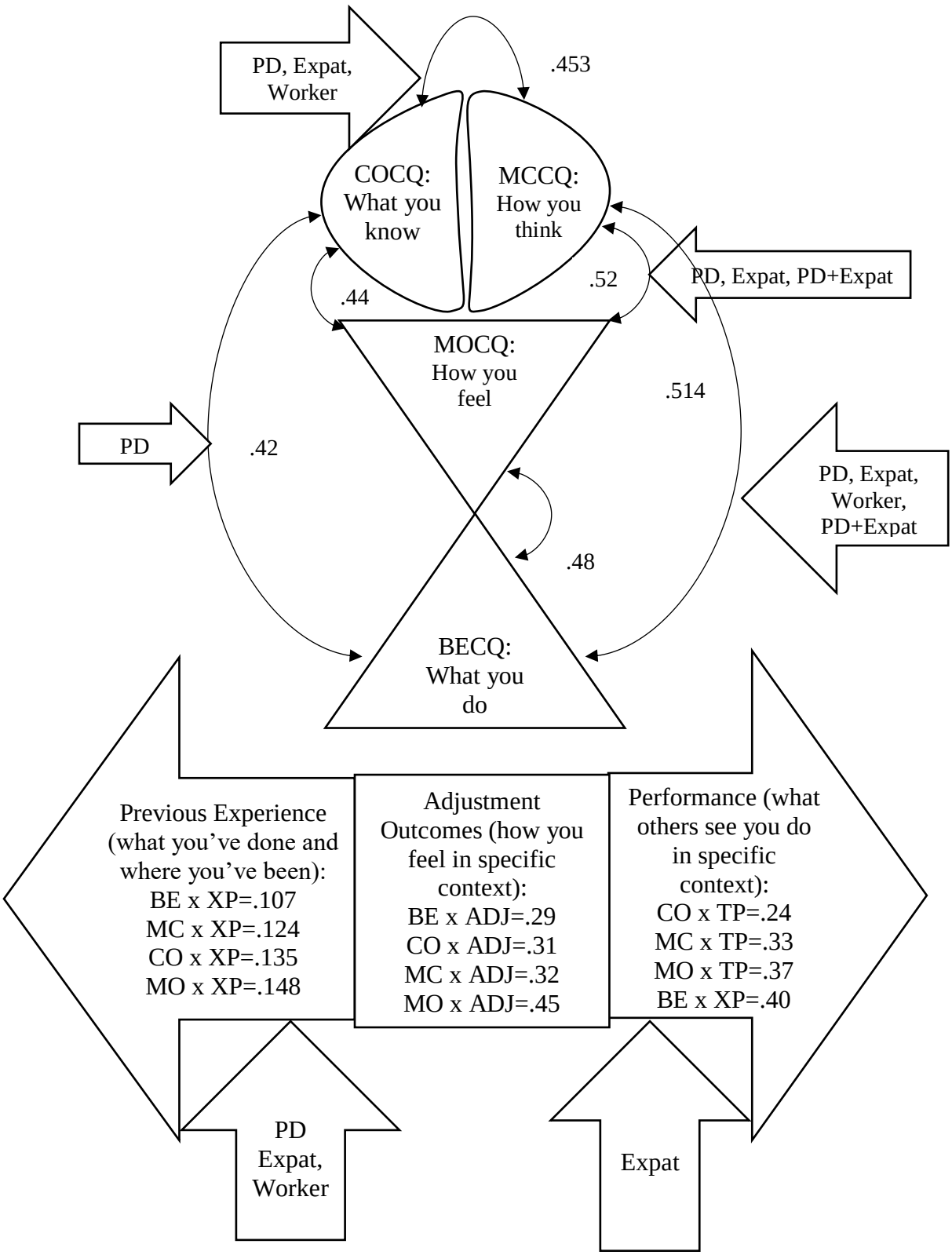


Figure 8.1: Synthesized Concept Map and Empirical Model of Mean Correlations between Antecedents and Outcomes of CQ with Significant Moderators
NOTE: PD is power distance; Expat is expatriate status; Worker is worker vs student

8.2: Conclusion 1—CQ Can Be Developed

Chapter 4 showed that individual factors of CQ can be developed after participating in purposeful interventions. This finding suggests that HRD professionals and employers in the GKE can use the Cultural Intelligence Scale (CQS, 2005) to assess the impact of purposefully-designed interventions meant to improve employees' knowledge assets that are comprised of people's tangible and intangible capacities, or their know-how and know-what (Stewart, 2001). The findings also suggest that the CQS can be employed as a stand-alone assessment of individuals' tangible and intangible capacities for engaging in successful cross-cultural interactions, eliminating the need for administering a series of assessments such as personality profiles, experience surveys, and context-specific outcomes.

8.3: Conclusion 2—Previous Experience is Not A Significant Predictor

Chapter 5 showed that previous international experience is not as closely related to CQ as might be expected, and it is even less closely related to specific cross-cultural performance and adjustment outcomes. Of the four factors of CQ, motivational CQ (MOCQ) had the strongest relationship with experience, suggesting that we call upon previous experiences as a source of self-efficacy and confidence in our abilities to be successful in similar circumstances (i.e., cross-cultural interactions). Behavioral CQ had the weakest relationship with previous experience, which may suggest that unless the previous cross-cultural experience was in the same culture in which the participants were assessed, it has little impact on their capacity for enacting verbal and non-verbal behaviors that are context-appropriate.

Though the correlations between XP and CQ factors were small (with mean correlations between .10 and .148), and the correlations between XP and outcomes were

insignificant (less than .10), this series of meta-analyses did enrich our understanding of how experience interacts with CQ and outcomes differently based on individual and contextual differences.

8.3.1: Students Have Higher Correlations between XP and CQ

The mean correlations between XP and CQ were significantly larger for students than for workers; in fact, students' mean correlations ranged from .117 to .195, with significantly higher correlations between the three non-BECQ factors of CQ. For workers, all correlations between XP were significantly lower than for students, with none of the correlations reaching the threshold for a small effect size per Cohen's rule-of-thumb (Table 3.1). This finding suggests that college students, who are currently engaged in the active learning process of gaining knowledge, skills, and attitudes that will ultimately lead to successful employment upon graduation, call upon their previous experiences to assist them in demonstrating their capacity for successful cross-cultural interactions captured by the four factors of CQ.

8.3.2: Expatriates Have Lower Correlations between XP and CQ

Although only one of the four relationships between XP and CQ was significantly different for natives and expatriates (home versus host context)—that between behavioral CQ (BECQ) and XP—the mean correlations were lower for expatriates than for natives. This could be due to expatriates focusing more on the current context in which they are expected to adapt and perform than on their past experiences, or it could be due to native participants' evaluating their own CQ on a higher scale when they are at home than when they are abroad. The natives' confidence about their capacities could be aspirational and not as high if they were actually expatriated. However, it is significant that the correlation between BECQ and XP was much lower for expatriates than natives (.06 versus .151, respectively) because it

suggests that behavioral CQ—or the tangible capability to adjust verbal and non-verbal behaviors in cross-cultural situations—is a malleable capability that is context-dependent. This conclusion reinforces the idea that the CQS can be used multiple times in many different contexts and after specific interventions to show how each factor reflects differences in abilities over time or in different places.

8.3.3: Power Distance Moderates the Relationship between XP and BECQ

The magnitude of the correlations between XP and CQ were similar for participants who were located in high versus low power distances for all factors except behavioral CQ, which was significantly lower in high PD countries such as those in Asia or the Middle East. This could be based on cultural differences or on unidentified differences in participants, though it should be noted that BECQ was the only factor of CQ that was significantly lower for both expatriates and in high PD countries, suggesting an untested interaction between expatriate status and PD. Again, the fact that BECQ was the only factor that differed significantly shows that the capacity to adjust verbal and non-verbal behaviors is not fixed and may be the one factor that is most influenced by contextual differences.

8.4: Conclusion 3: CQ Predicts Performance and Adjustment Outcomes

Chapter 6 reported the results of a series of bivariate meta-analyses testing the magnitude of the correlations between each CQ factor and four outcomes identified on the nomological network and from the systematic review of empirical findings—one performance outcome (task performance, TP) and three adjustment outcomes (general (GA), interactional (IA), and work (WA)).

8.4.1: Behavioral CQ Predicts Task Performance

Task performance is most often assessed by supervisors or peers in a workplace setting and can loosely be summarized as reflecting "what others see you do" in a specific context. TP is conceptually related to behavioral CQ in that both constructs reflect an interpersonal outcome that is the tangible evidence of someone's efficacy in a specific context. Considering the similarity between the concepts reflected by TP and BECQ, it is not surprising that "what you do" (or have the capacity to do) in cross-cultural interactions as measured by BECQ has the highest correlation with "what others see you do," or "how others evaluate what you do" as measured by TP (r=.403 for BECQ x TP). The conclusion is drawn that BECQ reflects an individual's tangible knowledge assets, also conceptualized as a person's capability (or capacity or potential) to demonstrate the "know-what" required in the GKE.

Another valuable finding from the series of analyses between CQ and TP is that the magnitudes of correlations between three of four CQ factors were significantly different for natives and expatriates. Intriguingly, although BECQ was the strongest predictor of TP, it is the only factor that does not significantly vary based on whether participants were surveyed during cross-cultural work in their native culture or in a host culture. The relationships between task performance and the two intangible factors of CQ—motivation (MOCQ) or how confident and eager you are—and metacognition (MCCQ) or how you reflect upon and select appropriate behaviors based on the specific context—were significantly higher for expatriates than they were for natives. This finding supports the postulation that intrapersonal, intangible capabilities that represent the capacity to "know-how" to produce outcomes in the GKE serve as the key adaptive capacities needed to overcome challenges in

unfamiliar contexts that could impede success. CQ's power as a description and assessment of the key capabilities that comprise individual's potential for success is that it explains differences between how adults leverage internal and external knowledge, skills, and attitudes in unfamiliar environments and with culturally-dissimilar people in different cultural situations—at home and abroad.

Another significant finding about how the measured factors of CQ represent different capacities in different cultural contexts is that cognitive CQ was significantly lower in expatriates than in natives. Cognitive CQ reflects culture-specific knowledge about cultural norms and traditions (or "what you know," a tangible knowledge asset), and the correlation was much smaller than for natives (.179 for expatriates, .323 for natives) than for expatriates. COCQ is considered a tangible capacity because it can be tested or assessed in interpersonal ways the intangible capacities of motivation and metacognition cannot; the finding that expatriates know less about the legal systems, marriage customs, and other specific knowledge assessed with the CQS is not surprising. Even the most thoroughly-prepared sojourners will not know as much about their host culture as natives will know about their own. HRD professionals should use this result to consider whether their clients will be engaging in cross-cultural situations at home or abroad to design interventions that develop the factors of CQ that are most salient predictors based on group and contextual differences.

8.4.2: Motivational CQ Predicts Adjustment Outcomes

Adjustment outcomes in this series of meta-analyses were most often assessed using an instrument by Black and Stephens (1989) with a set of three measured variables that together comprise total cultural adjustment—general adjustment (GA), interactional adjustment (IA), and work adjustment (WA). Most studies were conducted with samples of

expatriate workers in high power distance countries, so no moderators were tested for these relationships. Conceptually similar in that they all evaluate a person's psychosocial comfort with day-to-day living, the three factors of adjustment (ADJ) differ based on the specific context about which questions were asked. General adjustment (GA) asks participants how comfortable they are with the food, shopping, cost of living, and other daily necessary aspects of life outside of work in an unfamiliar culture. Interactional adjustment (IA) assesses a person's psychological comfort with interpersonal interactions with culturally-different others outside of work. Finally, work adjustment (WA) assesses how comfortable a person is engaging in tasks and interpersonal relations specifically in the workplace. Interestingly, Konanahalli et al. (2016) posited that WA was the "easiest of the three facets" of cultural adjustments for expatriated workers to make, perhaps because workers are more likely to find culturally-similar peers in a foreign workplace than they would in other non-work contexts in the host country or because workplaces have their own cultures independent of the national culture; yet the results of the series of meta-analyses between CQ factors and the three adjustment outcomes did not necessarily support this assertion. There is one difference between results for WA versus the other two adjustment outcomes—COCQ (what you know) related more strongly with WA than it did the other two adjustment outcomes. In fact, COCQ had the weakest correlation of the four factors of CQ with IA and the second weakest correlation with GA.

Motivational CQ (MOCQ) was the factor of CQ that had by far had the highest correlations with all three adjustment outcomes (r=.477 for GA; r=.461 for IA; r=.405 for WA). This finding is not surprising; after all, MOCQ and the set of adjustment outcomes are conceptually similar in that they both reflect a person's feelings, efficacy, desire, comfort,

and the "know-how" to overcome or avoid potential stresses that arise from living, socializing, and working in unfamiliar cultural contexts. The second strongest correlation was between MCCQ and two adjustment outcomes—GA (r=.348) and IA (.344). Of note is the finding that cognitive CQ (COCQ) had the second strongest correlation with WA instead of MCCQ, which suggests that successful work adjustment in a host culture workplace is more related to specific knowledge than mindfulness. The strength of the correlation between the two intangible factors of CQ—MCCQ and MOCQ—and adjustment outcomes also leads to the conclusion that the CQS could serve as a stand-alone assessment of a person's capacity, capabilities, and potential for successful adjustment outcomes when expatriated.

8.5: Conclusion 4—Cultural Intelligence=Intellectual Capital

The background of this study explained that the Global Knowledge Economy (GKE) anticipated by Peter Drucker in 1969 values workers' attributes and skills and considers them tangible organizational capital. Stewart (2001) explains that organizations in the GKE use their employees' "intellectual capital" as a way to "create wealth;" as such, organizations invest a lot of resources into evaluating and developing their so-called "knowledge assets" through assessments and training interventions that are meant to improve workers' capacities and capabilities (p. 11). One problem that exists in the GKE is the difficult task of recognizing, describing, and assessing individuals' tangible and intangible capacities such as "talent, skills, know-how, know-what, and relationships" (11). Cultural intelligence (CQ) reflects the tangible capabilities (behavior and cognition) and intangible capacities (motivation and metacognition) that represent the know-how and know-what of intellectual capital.

The results of the meta-analyses of bivariate relationships between pairs of CQ factors show that the intangible dimensions of CQ (motivation (MOCQ) and metacognition (MCCQ)) relate more strongly to the most tangible dimension, behavior (BECQ), than cognition does (COCQ). In other words, a person's cross-cultural behavior is more driven by mindfulness (represented by MCCQ) and feelings (represented by MOCQ) than by culture-specific knowledge (represented by COCQ). Indeed, it was concluded that what you know and what you do are connected by how you think and how you feel, as suggested by the conceptual framework in Chapter 1. It was also found that the magnitude of the relationships between intangible and tangible factors of CQ vary based on individual and contextual differences, also included in the conceptual model. The conclusions thus far have shown some differences in the relationships between CQ factors and experience and outcomes based on individual and contextual differences. The conclusions have also shown that CQ has power at describing and predicting interpersonal and intrapersonal capabilities related to cross-cultural situations. The findings in Chapter 7 enrich the understanding of the four factors of CQ and how each reflects a different aspect of a person's intellectual capital in different contexts. The balance of this section is organized by findings according to CQ factor and aims to thoroughly explain what it means to have high behavioral CQ, cognitive CQ, metacognitive CQ, and motivational CQ, and it also strives to enrich our conceptualization how adults connect thinking and doing in various contexts in the GKE.

8.5.1: Cognitive CQ is a Tangible, Easily-Assessed Capability (Know-What You Know)

The CQS asks six specific questions of participants to measure their COCQ, or culture-specific knowledge. On a Likert scale with 7 being "strongly agree," respondents report what they know about "economic systems, rules of other languages, cultural values

and religious beliefs, marriage systems, arts and crafts, and rules for expressing non-verbal behaviors" in other cultures. Perhaps it is hyperbole to observe that many natives do not understand all of those things about their own culture, but the implication is the same: low self-assessments of COCQ should not necessarily be seen as a lack of sufficient knowledge to live and work in another culture. Results of this series of meta-analyses showed weak correlations of all factors and outcomes with COCQ, either because people did not strongly agree that they knew about other cultures' marriage and legal systems, or because simply having knowledge is not a sufficient predictor of being able to interact and adjust in unfamiliar cultures. It has already been noted that of the six correlations between pairs of CQ factors, the weakest relationship was between COCQ and BECQ, reinforcing that what you know does not predict what you do. Nevertheless, it is notable that COCQ was almost equally correlated with the two intangible factors of CQ (MCCQ and MOCQ), with values higher than the correlation between COCQ and the other tangible factor, BECQ.

8.5.2: Behavioral CQ is a Tangible, Interpersonal Capability (Know-What You Do)

Throughout this dissertation, several findings related to the most observable factor of CQ—BECQ—have been reported. The assessment of BECQ asks participants to answer five questions that assess the level at which they enact the following cross-cultural behaviors: "chang[ing] verbal behavior (e.g., accent, tone);" "us[ing] pause and silence differently;" "vary[ing] the rate of speaking;" "chang[ing] non-verbal behavior;" and "alter[ing] facial expressions." Thus, the person with high BECQ is malleable, adaptable, and flexible; this person is a "cultural chameleon," as Earley and Peterson (2004) termed it. It has already been discussed that previous international experience has the weakest relationship with BECQ, and that BECQ had the strongest relationship with task performance (TP). And, of

course, it has been discussed numerous times (including in the paragraph above) that COCQ has the weakest correlation with BECQ of all six pairs of relationships (r=.425)—repeating that finding ad infinitum is to underscore the power of the conclusion that "what you know" is less predictive (or associated with) "what you do" than are "how you think" and "how you feel." Specifically, the mean correlation between BECQ and the two intangible, intrapersonal capacities of CQ had the second and third strongest correlation of the six pairs—the correlation between BECQ and MCCQ (metacognition) was .514, and the correlation between BECQ and MOCQ (motivation) was .487. The actual values of the mean correlations are less important than the observation that what you do is strongly related to how you think, or metacognitive capabilities, described and reported next.

8.5.3: Metacognition is an Intangible, Intrapersonal Capacity (Know-How You Think)

Metacognitive CQ has been described as "thinking about thinking" and being conceptually similar to the current cultural trend towards "mindfulness." The CQS includes just four questions for respondents to rate the level at which they believe they engage in metacognitive strategies that connect knowledge and actions. In cross-cultural interactions, people with high MCCQ are "conscious of cultural knowledge [they] use," "adjust cultural knowledge as [they] interact," are "conscious of the cultural knowledge [they] apply," and "check the accuracy of [their] cultural knowledge" when they "interact with people from different cultures." Recall the cultural knowledge that is called upon was evaluated with six questions about cultural systems and appropriate behaviors (COCQ). The concept reflected by MCCQ is that it enables us to demonstrate how we connect knowledge and actions based on contextual differences and has been called a learning capability (Earley, 2002; Earley & Ang, 2003). The analyses in Chapter 7 showed that MCCQ had a higher correlation with the

other three factors of CQ than other factors did with each other, showing that metacognition is a key capacity for success in the GKE, representing "how you think," and one of CQ's intangible capabilities.

8.5.4: Motivation is an Intangible, Intrapersonal Capacity (Know-How You Feel)

Motivational CQ has been represented throughout this dissertation as an inverted triangle, crudely designed to reflect a person's heart, the locus of CQ that allows people to identify and leverage their desires, interests, goals, and beliefs about themselves and why they do what they do as well as how they do it. The assessment of MOCQ asks respondents to answer five questions about how "confident" they are that they "can socialize with locals in a culture that is unfamiliar" and "can get accustomed to the shopping conditions." The assessment also asks people to evaluate the level at which they "enjoy interacting with people from different cultures" and "living in cultures that are unfamiliar;" finally, MOCQ evaluates whether respondents are "sure [they] can deal with the stresses of adjusting to a culture that is new to me." The range of concepts reflected in the construct of MOCQ is broad and describes a person's self-efficacy, desire, and adaptability. Results of this series of analyses have shown that MOCQ and adjustment outcomes are strongly related both statistically and conceptually. Motivation is an individual's intangible capacity to leverage confidence and self-efficacy to ensure that they can connect what they know, how they think, and what they do in the GKE.

Thus far, the discussion of the findings from the series of bivariate meta-analyses between pairs of CQ factors has enriched the understanding of how culturally-intelligent people act, think, and feel in addition to what they know. The final research question investigated how the relationships between these tangible and intangible capabilities differ

based on individual and contextual differences. Sections 8.5 through 8.7 discuss the findings related to workers versus students, natives versus expatriates, studies in high versus low PD countries, and studies of both natives and expatriates of high and low PD countries. The results have practical and theoretical implications for the way researchers and practitioners understand adults' adaptive capacities and how to assess and develop their capabilities based on contextual and individual differences.

8.6: Conclusion 5—Workers and Students use Metacognition Differently

I chose to include this grouping variable in this series of meta-analyses of the results of over 50 empirical studies that used the CQS to assess adults in both organizational and educational contexts because different assessments of individuals' capacities are often given to different groups. This study exemplifies that fact—all of the studies that assessed adjustment and performance outcomes were given to workers rather than students. I also found in my preliminary analysis that the only participants who were given the Big 5 personality test and Emotional Intelligence assessments were students, mostly located in low power distance countries such as the U.S. and New Zealand. Thus, I sought to investigate whether the CQS and cultural intelligence in general was reflective of the tangible and intangible capacities of those who are formal learners such as university students, and those who are informal lifelong learners represented by workers who learn to adapt to living and working in unfamiliar cultures.

Results show that workers have a stronger correlation between how they think (MCCQ) and what they do (BECQ) than students do. This may be because students are not as meta-cognitive about their meta-cognitive abilities, if you will. In other words, students are actively engaged in connecting what they know (i.e., culture-specific knowledge) and

what they do (i.e., demonstrate culturally-appropriate behaviors), so they may not always evaluate the strength of their meta-cognitive capabilities as highly as workers might. The other significant difference between workers and students was that the correlation between COCQ and MCCQ (or what you know and how you think) was higher for students than for workers, reaffirming the previous suggestion that students may be more aware of their overt knowledge and how it influences their thought process than they are aware of how their thought process influences their behavior. Notwithstanding the possible reason for the significant difference, the result is that four out of six correlations between pairs of CQ factors was similar for students and workers, indicating that the CQS is a valid instrument to use on both student and employee populations. Using a stand-alone assessment such as the CQS allows researchers and HRD professionals to avoid evaluating such broadly-conceived constructs such as Big 5 and EQ, both of which have been shown to have validity only in a person's home culture and are not indicative of expatriates' capacities to leverage their personality or emotional intelligence in unfamiliar cultural contexts.

8.7: Conclusion 6—Expatriates Leverage Know-How

It was intuitive that people's ability to connect what they know (COCQ) and what they do (BECQ) would be different if they are in a cultural context familiar to them (home or native culture) or in an unfamiliar culture (host or culture of expatriation). After all, it is axiomatic that it is harder for people to adjust to living, working, and interacting in unfamiliar places than it is adjusting to working with culturally-different people on their home turf. This study found that four out of six correlations between CQ factors were significantly higher for expatriates than for natives: the relationships between metacognition

(MCCQ) and the other three factors and the relationship between motivation (MOCQ) and behavior (BECQ) (see Table 7.4 or 8,1).

This finding reinforces, yet again, the concept that the intangible, intrapersonal factors that represent a person's "know-how" are stronger indicators of the capacity for success in unfamiliar cultural contexts than are the tangible ones. The finding also shows that expatriates with high BECQ have higher MOCQ than their native peers do. In fact, the relationship between motivation and behavior was significantly stronger for expatriates in both high and low PD countries. Again, these findings suggest that researchers, employers, and practitioners need to understand how CQ is enacted and demonstrated differently depending on the individual's familiarity with the culture in which they are working, learning, and living.

8.8: Conclusion 7—CQ in High and Low PD Countries Differs Significantly

Power distance is one of several cultural dimensions resulting from Geert Hofstede's years-long assessment of differences in values between countries such as Malaysia (highest PD) and New Zealand (lowest PD). No matter what concept the PD construct reflects, the results of the CQS differ greatly based on whether participants took it in a low or a high PD country. Five out of six correlations between pairs of CQ factors were significantly different based on PD, with correlations for low PD participants being significantly higher for four out of those five correlations (see Table 7.5 or 8.1). The only relationship that was not significantly different for low and high PD contexts was the relationship between motivation (MOCQ) and cognition (COCQ), which makes sense since it is not clear how someone's culture-specific knowledge about, say, legal systems would theoretically relate to someone's feelings about why they want to engage in cross-cultural interactions. Nevertheless, the most

surprising difference between the results of low and high PD participants was that in high PD countries, the relationship between COCQ and BECQ—the relationship that has been lionized as the "weakest" thus far in several discussions—is actually the second strongest relationship for people in high PD countries, whereas it is the sixth or weakest relationship for all other groups. In high PD countries, people seem to leverage their culture-specific knowledge to enact culturally-appropriate behaviors more so than they leverage their motivation or metacognition. The findings invite more investigations into the nature of life and work in high PD countries and why people who live and work there demonstrate a stronger connection between their tangible capacities of knowledge and behavior than they do between their intangible capacities of metacognition and motivation. It is also notable that the weakest relationship for those in high PD countries is between cognition and metacognition (COCQ and MCCQ), which work together to help people operationalize their cultural knowledge in appropriate ways.

Another significant finding related to power distance is that natives of high PD countries have much higher mean correlations between BECQ and other factors than natives of low PD countries or expatriates in high PD countries. The reasons are unclear, though it may be deduced that natives of high PD cultures have to work harder when they are working in cross-cultural groups on their home soil; in other words, the native of the Philippines who works on his or her home soil with Americans, Germans, and Chinese (for example) must work harder and leverage their tangible and intangible capabilities to enact the types of behaviors that are deemed "culturally appropriate" in cross-cultural groups. These same natives of high PD countries may not need to be so mindful and motivated to enact culturally-appropriate behaviors with their home culture peers than with the people whom

they are hosting. Again, this finding warrants more investigation into how culture distance and other broad cultural dimensions reflect interactive and intra-active capabilities and how the adaptive process reflected by CQ influences successful outcomes.

Taken as a whole, this series of meta-analyses fulfilled the multiple purposes reflected in the set of research questions, and it also exemplified a different way of studying the relationships between and among theoretically-sound and empirically-studied relationships using meta-analytic methods. Finally, the study provided results that allow me to refine Ang and Van Dyne's (2008) nomological network (Figure 2.2) that not only listed an unwieldy 37 correlates, but also failed to distinguish how the four factors of CQ relate differently to the antecedents, moderators, and outcomes listed on it. A more tightly-woven, empirically-sound nomological network pictured in section 8.9, wherein findings from both the systematic literature review and empirical meta-analyses are re-mapped onto the same model with the same categories (i.e., distal factors, situational factors) first published by Ang and Van Dyne. Finally, section 8.10 summarizes the implications of the findings and recommendations for further research.

8.9: Refined Nomological Network

As mentioned above, the findings from both the literature synthesis and the series of bivariate meta-analyses allow me to refine the nomological network that included 37 related constructs to include only those that have been empirically supported herein or in extant literature (11 total non-CQ factors listed). The refined nomological network in Figure 8.2 also includes the four factors of CQ rather than the composite CQ as the central construct. This model mirrors the format of Ang and Van Dyne's (2008) model shown on Figure 2.2.

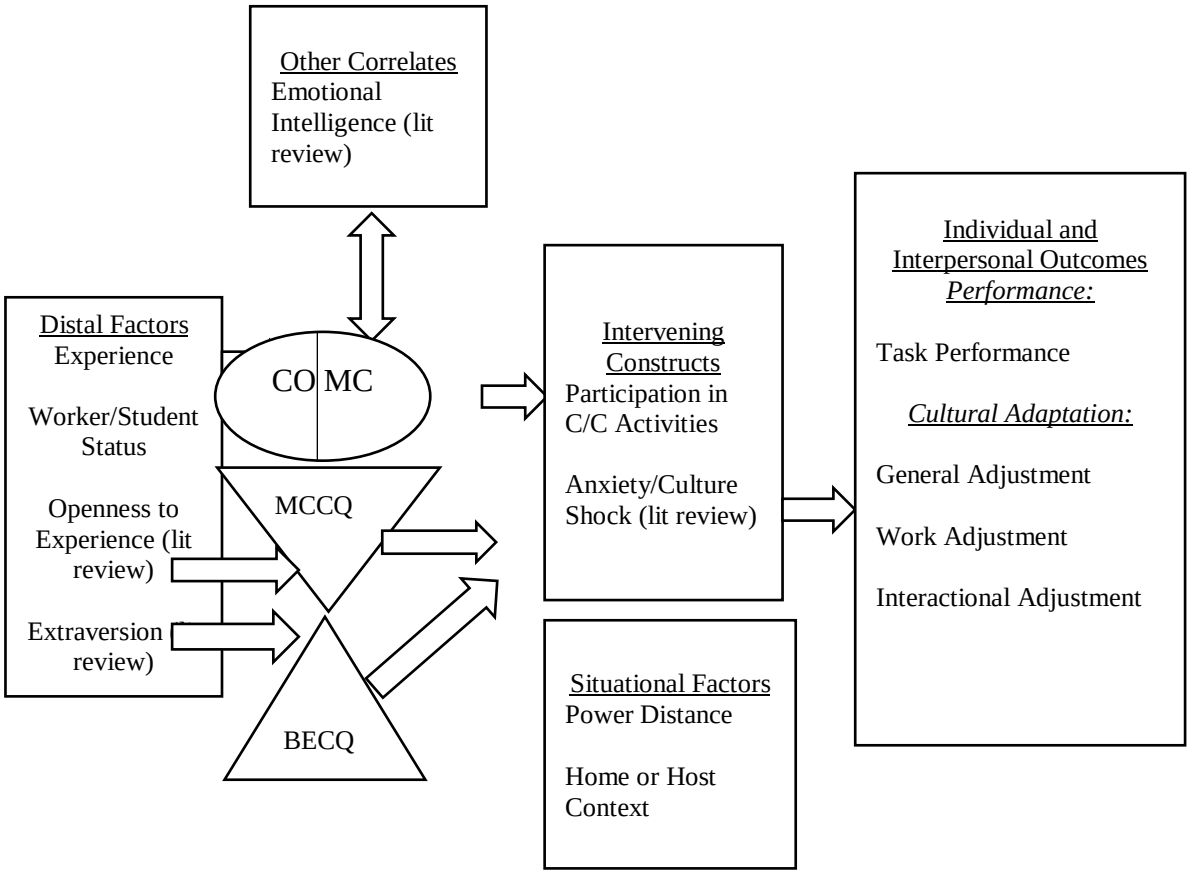


Figure 8.2. Refined Nomological Network with Significant Constructs per Empirical Findings in Literature and Current Study

8.10: Implications and Recommendations

"The good life is inspired by love and guided by knowledge" (Bertrand Russell, 1925).

The question, "What connects thinking and doing?" was driven as much by curiosity as necessity when I first posed it—at the time, I was being paid to assist students with increasing their *savoir-faire* and *savoir-être*, necessary skills for the business students' success in the global knowledge economy (GKE). (Note: These two phrases were listed as outcomes in the business school's literature, and when I taught courses at the same school, they were listed as outcomes on the required syllabus template.) *Savoir-faire* "means skills acquired by experience in various practical problems when doing one's work," and *savoir-être* "is the capacity to adapt to different situations and adjust behavior according to the characteristics of the environment, the issues involved and the type of person concerned," according to a website called Aussie in France. Cultural Intelligence (CQ) (Earley, 2002; Earley & Ang, 2003) represents the *savoir-faire* and *savoir-être* that are designated by business schools as measurable outcomes of their degree programs, and the widely-validated assessment tool, the Cultural Intelligence Scale (CQS, 2005), has proven an effective instrument for measuring individuals' tangible and intangible capacities.

The main implication of these findings for researchers in the disciplines that have studied CQ and cross-cultural competence in general is that the four factors of cultural intelligence are robust measures and descriptions of the types of knowledge, skills, and attitudes that comprise individuals' capacity to produce successful performance and adjustment outcomes in cross-cultural interactions abroad and at home. In addition, this study has shown that the CQS can continue to be used by researchers and practitioners as formative, summative, and developmental assessments.

Recommendations for future research include more thorough meta-analyses of how the four factors of CQ develop after purposeful interventions such as cross-cultural classes and experiences. Recommendations also include using more advanced meta-analytic methods such as multivariate and multilevel modeling to parse out significant interaction and mediation effects. In addition, recommendations include encouraging researchers, scholars, and practitioners to utilize meta-analytic methods to draw meaningful conclusions about widely-studied but rarely-generalizable findings reported in multiple studies. The final recommendation is that everyone who struggles to connect what they know, how they think, and what they do look into their hearts to find the reason, desire, curiosity, love, and motivation that might be the catalyst to make the intangible tangible.

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APPENDICES

Appendix A: Selected Studies for Meta-Analysis (56-sample Pool) with Tags

Study Tags (*k*)	APA Citation of Sources Located per Chapter 2 Methods
1	Al-Dossary, S.A. (2016). Psychometric properties of the cultural intelligence scale in a Saudi Arabian context. *International Journal of Selection and Assessment 24*(4), 305-311. 10.1111/ijsa.12149
2	Al-Jarraj, A. (2016). The cultural intelligence level among international students in Jordanian universities. *Educational Research Quarterly 39*(3), *23-39.*
3	Ang, S., Van Dyne, L., Koh, C., Ng, K. Y., Templer, K. J., Tay, C., & Chandrasekar, N. A. (2007). Cultural intelligence: Its measurement and effects on cultural judgment and decision making, cultural adaptation and task performance. *Management and Organization Review 3*(3), 335–371. doi:10.1111/j.1740-8784.2007.00082.x
4, 5, 6, 7	Ang, S., Van Dyne, L., & Koh, C. (2006). Personality correlates of the four-factor model of cultural intelligence. *Group & Organization Management 31*(1), 100–123. doi:10.1177/1059601105275267
8	Ang, S., Van Dyne, L., & Koh, C. (2008). Development and validation of the CQS: The Cultural Intelligence Scale. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 16-38). Armonk, NY: M.E. Sharpe.
9	Bucker, J., Furrer, O., & Lin, Y. (2015). Measuring cultural intelligence (CQ): A new test of the CQ scale. *International Journal of Cross Cultural Management 15*(3), 259-284. doi: 10.1177/1470595815606741
10	Bu¨cker, J.J., Furrer, O., Poutsma, E., & Buyens, D. (2014). The impact of cultural intelligence on communication effectiveness, job satisfaction for Chines host country managers working in foreign multinationals. *The International Journal of Human Resource Management 25*(14), 2068-2087. doi: 10.1080/09585192
11	Chen, A. S., Lin, Y. C., & Sawangpattanakul, A. (2011). The relationship between cultural intelligence and performance with the mediating effect of culture shock: A case from Philippine laborers in Taiwan. *International Journal of Intercultural Relations, 35*(2), 246–258. doi:10.1016/j.ijintrel.2010.09.005
12	Duff, A.J., Tahbaz, A., & Chan, C. (2012). The interactive effect of cultural intelligence and openness on task performance. *Research and Practice in Human Resource Management 20*(1), 1-12.
13	Gooden, D.J., Creque, C.A., & Chin-Loy, C. (2017). The impact of metacognitive, cognitive, and motivational cultural intelligence on behavioral cultural intelligence. *International Business & Economics Research Journal 16*(3), 223-230.
14	Groves, K.S., Feyerherm, A, & Gu, M. (2015). Examining cultural intelligence and cross-cultural negotiation effectiveness. *Journal of Management Education 39*(2), 209-243. doi: 10.1177/1052562914543273

Study Tags (*k*)	APA Citation of Sources Located per Chapter 2 Methods
15	Guðmundsdóttir, S. (2015). Nordic patriots in the U.S.: The relationship between cultural intelligence and adjustment. *International Journal of Intercultural Relations 40*, 175-186. doi: 10.1016/j.ijintrel.2015.05.001
16	Huff, K. C., Song, P., & Gresch, E. B. (2014). Cultural intelligence, personality, and cross-cultural adjustment: A study of expatriates in Japan. *International Journal of Intercultural Relations 38*(1), 151–157. doi:10.1016/j.ijintrel.2013.08.005
17	Huff, K.C. (2013). Language, cultural intelligence and expatriate success. *Management Research Review 36*(6), 596-612. doi: 10.1108/01409171311325750
18	Jyoti, J., & Kour, S. (2015). Assessing the cultural intelligence and task performance equation. *Cross Cultural Management 22*(2), 236-258, doi:/10.1108/CCM-04-2013-0072
19	Keung, E.K., & Rockinson-Szapkiw, A.J. (2013). The relationship between transformational leadership and cultural intelligence: A study of international school leaders. *Journal of Educational Administration 51*(6), 836-854. doi: 10.1108/JEA-04-2012-0049
20	Kim, K., Kirkman, B.L., & Chen, G. (2008). Cultural intelligence and international assignment effectiveness: A conceptual model and preliminary findings. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 71-90). Armonk, NY: M.E. Sharpe.
21	Klafehn, J., Li, C., & Chiu, C. (2013). To know or not to know, is that the question? Exploring the role and assessment of metacognition in cross-cultural contexts. *Journal of Cross-Cultural Psychology 44*(6), 963–991. doi:10.1177/0022022113492893
22	Konanahalli, A., Oyedele, L.O., Spillane, J., Coates, R., von Meding, J., & Ebohon, J. (2014). Cross-cultural intelligence (CQ): It's [sic] impact on British expatriate adjustment on international construction projects. *International Journal of Managing Projects in Business 7*(3), 423-448. doi: 10.1108/IJMPB-10-2012-0062
23	Lee, L.-Y., Veasna, S., & Wu, W. (2013). The effects of social support and transformational leadership on expatriate adjustment and performance. *Career Development International 18*(4), 377–415. doi:10.1108/CDI-06-2012-0062
24	Li, M., Mobley, W. H., & Kelly, A. (2013). When do global leaders learn best to develop cultural intelligence? An investigation of the moderating role of experiential learning style. *Academy of Management Learning & Education 12*(1), 32–50. doi:10.2307/23412390
25	Li, M., Mobley, W.H., & Kelly, A. (2016). Linking personality to cultural intelligence: An interactive effect of openness and agreeableness. *Personality and Individual Differences 109*, 105-110. doi: 10.1016/j.paid.2015.09.050

Study Tags (*k*)	**APA Citation of Sources Located per Chapter 2 Methods**
26	Lin, Y. C., Chen, A. S. Y., & Song, Y. C. (2012). Does your intelligence help to survive in a foreign jungle? The effects of cultural intelligence and emotional intelligence on cross-cultural adjustment. *International Journal of Intercultural Relations 36*(4), 541–552. doi:10.1016/j.ijintrel.2012.03.001
27	Mahembe, B., Engelbrecht, A.S. (2014) A preliminary study to assess the construct validity of a cultural intelligence measure on a South African sample. *SA Journal of Human Resource Management 12*(1), 8 pgs. doi: 10.4102/sajhrm.v12/i.558
28	Moon, H. K., Kwon Choi, B., & Jung, J.S. (2012). Previous international experience, cross-cultural training, and expatriates' cross-cultural adjustment: Effects of cultural intelligence and goal orientation. *Human Resource Development Quarterly 23*(3), 285–330. doi:10.1002/hrdq
29	Moon, H. K., Kwon Choi, B., & Jung, J.S. (2013). Comprehensive examination on antecedents of cultural intelligence: Case of South Korea. *Personnel Review 42*(4), 440–465. doi:10.1108/PR-10-2011-0146
30	Moon, T. (2010). Emotional intelligence correlates of the four-factor model of cultural intelligence. *Journal of Managerial Psychology 25*(8), 876–898. doi:10.1108/02683941011089134
31	Nel, N., Nel, J.A., Adams, B.G., & de Beer, L.T. (2015). Assessing cultural intelligence, personality and identity amongst young white Afrikaans-speaking students: A preliminary study. *SA Journal of Human Resource Management 13*(1), 12 pgs. doi: 10.1042/sajhrm.v13i1.643
32	Oolders, T., Chernyshenko, O.S., & Stark, S. (2008). Cultural intelligence as a mediator of relationships between openness to experience and adaptive performance. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 145-158). Armonk, NY: M.E. Sharpe.
33, 34	Presbitero, A. (2015). Cultural intelligence (CQ) in virtual, cross-cultural interactions: Generalizability of measure and links to personality dimensions and task performance. *International Journal of Intercultural Relations 50*, 29-38. doi: 10.1016/j.jintrel.2015.11.001
35	Ramalu, S.S., Rose, R.C., Kumar, N., & Ulki, J. (2010). Doing business in global arena: An examination of the relationship between cultural intelligence and cross-cultural adjustment. *Asian Academy of Management Journal 15*(1), 29-97.
36	Remhof, S., Gunkel, M., & Schlagel, C. (2013). Working in the 'global village:' The influence of cultural intelligence on the intention to work abroad. *Zeitschrift fur Personalforschung 27*(3), 224-250. doi: 10.1688/1862-0000-ZfP_2013_03_Remhof
37	Shannon, L.M., & Begley, T.M. (2008). Antecedents of the four-factor model of cultural intelligence. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 41-55). Armonk, NY: M.E. Sharpe.

Study Tags (*k*)	**APA Citation of Sources Located per Chapter 2 Methods**
38	Shu, F., McAbee, S.T., Ayman, R. (2017). The HEXACO personality traits, cultural intelligence, and international student adjustment. *Personality and Individual Differences 106*, 21-25.
39	Tarique, I., & Takeuchi, R. (2008). Developing cultural intelligence: The roles of international nonwork experiences. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 56-70). Armonk, NY: M.E. Sharpe.
40	Tay, C., Westman, M., & Chia, A. (2008). Antecedents and consequences of cultural intelligence among short-term business travelers. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 126-144). Armonk, NY: M.E. Sharpe.
41	Tsai, Y.-H., Joe, S.-W., Lin, C.-P., Wu, P.-H., & Cheng, Y.-H. (2017). Modeling knowledge sharing among high-tech professionals in culturally diverse firms: Mediating mechanisms of social capital. *Knowl Manage Res Pract 15*, 225-237. doi: 10.1057/s41275-017-0048-8
42	Tuan, L.T. (2016). From cultural intelligence to supply chain management. *The International Journal of Logistics Management 27*(1), 95-121. doi: 10.1108/IJLM-01-2014-0009
43, 44, 45	Ward, C., Fischer, R., Zaid Lam, F. S., & Hall, L. (2008). The convergent, discriminant, and incremental validity of scores on a self-report measure of cultural intelligence. *Educational and Psychological Measurement 69*(1), 85–105. doi:10.1177/0013164408322001
46	Ward, C., Wilson, J., & Fischer, R. (2011). Assessing the predictive validity of cultural intelligence over time. *Personality and Individual Differences 51*(2), 138–142. doi:10.1016/j.paid.2011.03.032
47	Wu, P.-C., & Ang, S.H. (2011). The impact of expatriate supporting practices and cultural intelligence on cross-cultural adjustment and performance of expatriates in Singapore. *The International Journal of Human Resource Development 22*(13), 2683-2702. doi: 10.1080/09585192.2011.599956
48	Zhang, Y., & Oczkowski, E. (2016). Exploring the potential effects of expatriate adjustment direction. *Cross Cultural & Strategic Management 23*(1), 158-183. doi: 10.1108/CCSM-05-2015-0062
49, 50	Imai, L., & Gelfand, M.J. (2010). The culturally intelligent negotiator: The impact of cultural intelligence (CQ) on negotiation sequences and outcomes. *Organizational Behavior and Human Decision Processes 112*, 83-98. doi: 10.1016/j.obhdp.2010.02.001
51	Bucker, J.J., & Korzilius, H. (2015). Developing cultural intelligence: Assessing the effect of the Ecotonos cultural simulation game for international business students. *The International Journal of Human Resource Management 26*(15), 1995-2014. doi: 10.1080/09585192.2015.1041759

Study Tags (*k*)	**APA Citation of Sources Located per Chapter 2 Methods**
52	Chao, M.M., Takeuchi, R., & Farh, J.-L. (2017). Enhancing cultural intelligence: The roles of implicit culture beliefs and adjustment. *Personnel Psychology 70*, 257-292. doi: 10.1111/peps.12142
53	Eisenberg, J., Lee, H. J., Brück, F., Brenner, B., Claes, M. T., Mironski, J., & Bell, R. (2013). Can business schools make students culturally competent? Effects of cross-cultural management courses on cultural intelligence. *Academy of Management Learning and Education 12*(4), 603–621. doi:10.5465/amle.2012.0022
54	Engle, R.L., & Crowne, K.A. (2014). The impact of international experience on cultural intelligence: An application of contract theory in a structured short-term program. *Human Resource Development International 17*(1), 30-46. doi: 10.1080/13678868.2013.856206
55	Fischer, R. (2011). Cross-cultural training effects on cultural essentialism beliefs and cultural intelligence. *International Journal of Intercultural Relations 35*(6), 767–775. doi:10.1016/j.ijintrel.2011.08.005
56	Young, C.A., Haffejee, B., Corsun, D.L. (2017). The relationship between ethnocentrism and cultural intelligence. *International Journal of Intercultural Relations 58*, 31-41. doi: 10.1016/j.jintrel.2017.04.001

Appendix B: Studies Rejected from Meta-Analysis with Exclusion Criteria

APA Citation for Studies Excluded from Samples for Meta-Analysis	Why Excluded
Adair, W.L., Hudeg, I., & Spence, J.R. (2013). The culturally intelligent team: The impact of team cultural intelligence and cultural heterogeneity on team shared values. *Journal of Cross-Cultural Psychology 44*(6), 941-962. doi: 10.1177/0022022113492894	No correlations
Beikzadeh, S., & Damirchi, Q.V. (2013). Evaluating the impact of cultural intelligence on faculty members [sic] effectiveness at Islamic Azad University. *International Journal of Management Research and Review 3*(7), 3028-3038.	Low n
Charoensukmongkol, P. (2014). Cultural intelligence and export performance of small and medium enterprises in Thailand: Mediating roles of organizational capabilities. *International Small Business Journal 34*(1), 105-112. doi: 10.1177/0266242614539364	Not all 4 factors
Chua, R. Y. J., Morris, M. W., & Mor, S. (2012). Collaborating across cultures: Cultural metacognition and affect-based trust in creative collaboration. *Organizational Behavior and Human Decision Processes 118*(2), 116–131. doi:10.1016/j.obhdp.2012.03.009	MCCQ only
Chen, M.-L., & Lin, C.-P. (2013). Assessing the effects of cultural intelligence on team knowledge sharing from a socio-cognitive perspective. *Human Resource Management 52*(5), 675-695. doi: 10.1002/hrm.21558.	
Crowne, K. A. (2008). What leads to cultural intelligence? *Business Horizons 51*(5), 391–399. doi:10.1016/j.bushor.2008.03.010	No usable data
Crowne, K. A. (2012). An empirical analysis of three intelligences. *Canadian Journal of Behavioural Science/Revue Canadienne des Sciences Du Comportement 45*(2), 105–114. doi:10.1037/a0029110	Total CQ only
Crowne, K. A. (2013). Cultural exposure, emotional intelligence, and cultural intelligence: An exploratory study. *International Journal of Cross Cultural Management 13*(1), 5–22. doi:10.1177/1470595812452633	Total CQ only
Delpechitre, D., & Baker, D.S. (2017). Cross-cultural selling: Examining the importance of cultural intelligence in sales education. *Journal of Marketing Education 39*(2), 94-108. doi: 10.1177/0273475317710060	No correlations
Dollwet, M., & Reichard, R. (2014). Assessing cross-cultural skills: Validation of a new measure of cross-cultural psychological capital. *The International Journal of Human Resource Management 25*(12), 1669–1696. doi:10.1080/09585192.2013.845239	Total CQ only
Erez, M., Lisak, A., Harush, R., Glikson, E., Nouri, R., & Shokef, E. (2013). Going global: Developing management students'cultural intelligence and global identity in culturally diverse virtual teams. *Academy of Management Learning and Education 12*(3), 330–355. doi:10.5465/amle.2012.0200	Total CQ only
Goncalves, G., Reis, M., Sousa, C., Santos, J., Orgambidez-Ramos, A., & Scott, P. (2016). Cultural intelligence and conflict management styles. *International Journal of Organizational Analysis 24*(4), 725-742. doi: 10.1108/IJOA-10-2015-0923	No correlations

APA Citation for Studies Excluded from Samples for Meta-Analysis	Why Excluded
Groves, K. S., & Feyerherm, A. E. (2011). Leader cultural intelligence in context: Testing the moderating effects of team cultural diversity on leader and team performance. *Group & Organization Management 36*(5), 535–566. doi:10.1177/1059601111415664	Total CQ only
Jyoti, J., & Kour, S. (2017). Factors affecting cultural intelligence and its impact on job performance: Role of cross-cultural adjustment, experience, and perceived social support. *Personnel Review 46*(4), 767-791. doi: 10.1108/PR-12-2015-0313	Low n
Kim, Y. J., & Van Dyne, L. (2012). Cultural intelligence and international leadership potential: The importance of contact for members of the majority. *Applied Psychology 61*(2), 272–294. doi:10.1111/j.1464-0597.2011.00468.x	Total CQ only
Korzikius, H., Bucker, J.J., & Beerlage, S. (2017). Multiculturalism and innovative work behavior. *International Journal of Intercultural Relations 56*, 13-24. doi: 10.1016/jaintrel2016.11.007	Not all 4 factors
Lee, L.-Y., & Sukoco, B. M. (2010). The effects of cultural intelligence on expatriate performance: The moderating effects of international experience. *The International Journal of Human Resource Management 21*(7), 963–981. doi:10.1080/09585191003783397	Not full CQS
MacNab, B. R., & Worthley, R. (2012). Individual characteristics as predictors of cultural intelligence development: The relevance of self-efficacy. *International Journal of Intercultural Relations 36*(1), 62–71. doi:10.1016/j.ijintrel.2010.12.001	Not all CQ factors
MacNab, B., Brislin, R., & Worthley, R. (2012). Experiential cultural intelligence development: Context and individual attributes. *The International Journal of Human Resource Management 23*(7), 1320–1341. doi:10.1080/09585192.2011.581636	Not all CQ factors
Moon, T. (2013). The effects of cultural intelligence on performance in multicultural teams. *Journal of Applied Social Psychology 43*, 2414–2425. doi:10.1111/jasp.12189	Total CQ only
Mor, S., Morris, M. W., & Joh, J. (2013). Identifying and training adaptive cross-cultural management skills: The crucial role of cultural metacognition. *Academy of Management Learning and Education 12*(3), 453–475. doi:10.5465/amle.2012.0202	Total CQ only
Rehg, M. T., Gundlach, M. J., & Grigorian, R. A. (2012). Examining the influence of cross-cultural training on cultural intelligence and specific self-efficacy. *Cross Cultural Management: An International Journal 19*(2), 215–232. doi:10.1108/13527601211219892	No MCCQ
Rockstuhl, T., Seiler, S., Ang, S., Van Dyne, L., & Annen, H. (2011). Beyond general intelligence (IQ) and emotional intelligence (EQ): The role of cultural intelligence (CQ) on cross-border leadership effectiveness in a globalized world. *Journal of Social Issues 67*(4), 825–840. doi:10.1111/j.1540-4560.2011.01730.x	Military
Rosenblatt, V., Worthley, R., & Macnab, B. (2013). From contact to development in experiential cultural intelligence education: The mediating influence of expectancy disconfirmation. *Academy of Management Learning and Education 12*(3), 356–379. doi:10.5465/amle.2012.0199	Total CQ only

APA Citation for Studies Excluded from Samples for Meta-Analysis	Why Excluded
Şahin, F., Gurbuz, S., & Köksal, O. (2014). Cultural intelligence (CQ) in action: The effects of personality and international assignment on the development of CQ. *International Journal of Intercultural Relations 39*, 152–163. doi:10.1016/j.ijintrel.2013.11.002	Military
Sousa, C., & Goncalves, G. (2017). Expatriates and non-expatriates: Effects of cultural intelligence and multicultural personality on passion for work and satisfaction with life. *Psychological Thought 10*(1), 90-108. doi: 10.5964/psyct.v10i1.197	No correlations
Story, J. S. P., Barbuto Jr., J. E., Luthans, F., & Bovaird, J. A. (2014). Meeting the challenges of effective international HRM: Analysis of the antecedents of global mindset. *Human Resource Management 53*(1), 131–155. doi:10.1002/hrm.21568	Partial CQS
Templer, K. J., Tay, C., & Chandrasekar, N. A. (2006). Motivational cultural intelligence, realistic job preview, realistic living conditions preview, and cross-cultural adjustment. *Group & Organization Management 31*(1), 154–173. doi:10.1177/1059601105275293	MOCQ only
Ward, C., & Fisher, R. (2008). Personality, cultural intelligence, and cross-cultural adaptation: A test of the mediation hypothesis. In S. Ang & L. Van Dyne (Eds.). *Handbook of cultural intelligence: Theory, measurement, and applications* (pp. 159-173). Armonk, NY: M.E. Sharpe.	MOCQ only
Wood, E.D., & St. Peters, H.Y.Z. (2014). Short-term cross-cultural study tours: Impact on cultural intelligence. *The International Journal of Human Resource Management 25*(4), 558-570. doi: 10.1080/09585192.2013.796315	No correlations

Appendix C: Coding Sheet with Data for Meta-Analyses

k Tag	Citation (author(s) and years)	Sample size *(n)*	Context of Study: Country	Participant Context of Study: Home (0), Host (1)	Role: Worker (0), Student (1)	Int'l Exp (XP)	Perform Outcome (TP)	Adjustment Outcomes (GA, IA, WA)
1	Al-Dossary (2016)	553	Saudi Arabia	n/a	1			
2	Al-Jarraj (2016)	169	Jordan	1	1			
3	Ang, Van Dyne, & Koh (2006)	338	Singapore	n/a	1	XP		
4	Ang et al. (2007)	235	US	0	1	XP		IA
5	Ang et al. (2007)	358	Singapore	n/a	1	XP		
6	Ang et al. (2007)	98	Singapore	1	0	XP	TP	
7	Ang et al. (2007)	103	Singapore	1	0	XP	TP	GA, IA, WA
8	Ang, Van Dyne & Koh (2008)	500	Singapore	0	1			IA
9	Bucker, Furrer & Lin (2015)	308	Chinese students abroad	1	1			
10	Bucker, Furrer, Poutsma & Buyens (2014)	225	China	0	0			
11	Chen, Lin, & Sawangpattanakul (2011)	382	Taiwan	1	0	XP	TP	
12	Duff, Tahbaz & Chan (2012)	102	Canada	0	1		TP	
13	Gooden, Creque & Chin-Loy (2017)	85	US	0	1			
14	Groves, Feyerherm & Gu (2015)	113	US	0	1	XP	TP	
15	Guðmundsdóttir (2015)	178	US	1	0	XP		GA, IA, WA
16	Huff, Song & Gresch (2014)	154	Japan	1	0			GA, IA, WA
17	Huff (2013)	140	Japan	1	0			GA, IA, WA
18	Jyoti & Kour (2015)	219	India	0	0		TP	GA, IA, WA
19	Keung & Rockinson-Szapkiw (2013)	193	International	n/a	0			
20	Kim, Kirkman & Chen (2008)	442	US	0	1			
21	Klafehn, Li & Chiu (2013)	206	US	0	1			
22	Konanahalli, et al., 2014	191	n/a	0	1			GA, IA, WA
23	Lee, Veasna & Wu (2013)	156	China	1	0		TP	IA, WA

k Tag	Citation (author(s) and years)	Sample size *(n)*	Context of Study: Country	Participant Context of Study: Home (0), Host (1)	Role: Worker (0), Student (1)	Int'l Exp (XP)	Perform Outcome (TP)	Adjustment Outcomes (GA, IA, WA)
24	Li, Mobley & Kelly (2013)	294	Ireland & China	1	0	XP		
25	Li, Mobley & Kelly, A. (2016)	244	n/a	1	0.5			
26	Lin, Chen & Song (2012)	295	Taiwan	1	1	XP		
27	Mahembe & Engelbrecht (2014)	229	South Africa	0	1			
28	Moon, Choi & Jung (2012)	190	International	1	0	XP		GA, WA
29	Moon, Choi & Jung (2013)	165	International	1	0	XP		
30	Moon (2010)	381	Korea	0	1	XP		
31	Nel, Nel, Adams & de Beer (2015)	252	South Africa	0	1			
32	Oolders, Chernyshenko & Stark (2008)	311	New Zealand	0	1			
33	Presbitero (2015)	274	Philippines	0	0			
34	Presbitero (2015)	223	Philippines	0	0		TP	
35	Ramalu, Rose, Kumar & Ulki (2010)	332	Malaysia	1	0	XP		GA, IA, WA
36	Remhof, Gunkel & Schlagel (2013)	518	Germany	0	1	XP		
37	Shannon & Begley (2008)	245	Ireland	n/a	1	XP		
38	Shu, McAbee & Ayman (2017)	355	US	1	1	XP		GA, IA
39	Tarique & Takeuchi (2008)	212	US	n/a	1	XP		
40	Tay, Westman & Chia (2008)	491	3 countries	1	1	XP		
41	Tsai, Joe, Lin, Wu & Cheng (2017)	316	Taiwan	0	0			
42	Tuan (2016)	392	Vietnam	0	0			
43	Ward, Fischer, Zaid Lam & Hall (2008)	346	New Zealand	1	1			
44	Ward, Fischer, Zaid, Lam & Hall (2008)	118	New Zealand	1	1			
45	Ward, Fischer, Zaid, Lam & Hall (2008)	102	New Zealand	1	1			
46	Ward, Wilson & Fischer (2011)	104	New Zealand	1	1			
47	Wu & Ang (2011)	169	Singapore	1	0	XP	TP	GA, IA, WA

k Tag	Citation (author(s) and years)	Sample size *(n)*	Context of Study: Country	Participant Context of Study: Home (0), Host (1)	Role: Worker (0), Student (1)	Int'l Exp (XP)	Perform Outcome (TP)	Adjustment Outcomes (GA, IA, WA)
48	Zhang, & Oczkowski (2016)	238	Australia & China	0	0	XP		GA, IA, WA
49	Imai & Gelfand (2010)	236	US	1	1			
50	Imai & Gelfand (2010)	124	US	0	1	XP		
51	Bucker & Korzilius (2015)	66					Pre-/Post-Intervention	
52	Chao, Takeuchi & Farh (2017)	254					Pre-/Post-Intervention	
53	Eisenberg, Lee, Bruck, Brenner, Claes, Mironski & Bell (2013)	150					Pre-/Post-Intervention	
54	Engle & Crowne (2014)	105					Pre-/Post-Intervention	
55	Fischer (2011)	49					Pre-/Post-Intervention	
56	Young, Haffejee & Corsun (2017)	73					Pre-/Post-Intervention	

Appendix D: Measurement Instruments for Non-CQ Variables

Variable Abbreviation & Name	**Samples (*k*) and # samples**	**[*k* tag] Measurement Instruments**
GA=General Adjustment	7, 15, 16, 17, 18, 22, 28, 35, 38, 47, 48 ***(11 samples)***	[7, 15, 16, 22, 28, 35, 38, 47, 48] Black & Stephens, 1989
		[17] Hemmasi et al., 2010
		[18] Black & Porter, 1991
IA=Interaction Adjustment	4, 7, 8, 15, 16, 17, 18, 22, 23, 35, 38, 47, 48 ***(13 samples)***	[4, 7, 8, 15, 16, 22, 23, 35, 38, 47, 48] Black & Stephens, 1989
		[17] Hemmasi et al., 2010
		[18] Black & Porter, 1991
TP=Task Performance	6, 7, 11, 12, 14, 18, 23, 34, 47 ***(9 samples)***	[6, 7, 11, 12, 34] Williams & Anderson, 1991
		[14] IBN Behaviors (Fisher & Ury, 1991)
		[18] Goodman & Svyank, 1999
		[23] Black & Porter, 1991
		[47] Kraimer & Wayne, 2004
WA=Work Adjustment	7, 15, 16, 18, 22, 23, 28, 35, 38, 47, 48 ***(11 samples)***	[7, 15, 16, 22, 23, 28, 35, 38, 47, 48] Black & Stephens, 1989
		[18] Black & Porter, 1991

Appendix E: Meta-Analysis Reporting Standards (MARS)

Meta-Analysis Reporting Standards (MARS)

Paper section and topic	Description
Title	Make it clear that the report describes a research synthesis and include "meta-analysis"
Abstract	The problem or relation(s) under investigation Study eligibility criteria Type(s) of participants included in primary studies Meta-analysis methods (indicating whether a fixed or random model was used) Main results (including the more important effect sizes and any important moderators of these effect sizes) Conclusions (including limitations) Implications for theory, policy, and/or practice
Introduction	Clear statement of the question or relation(s) under investigation: Historical background Theoretical, policy, and/or practical issues related to the question or relation(s) of interest Rationale for the selection and coding of potential moderators and mediators of results Types of study designs used in the primary research, their strengths and weaknesses Types of predictor and outcome measures used, their psychometric characteristics Populations to which the question or relation is relevant Hypotheses, if any
Method	
Inclusion and exclusion criteria	Operational characteristics of independent (predictor) and dependent (outcome) variable(s) Eligible participant populations Eligible research design features (e.g., random assignment only, minimal sample size) Time period in which studies needed to be conducted Geographical and/or cultural restrictions
Moderator and mediator analyses	Definition of all coding categories used to test moderators or mediators of the relation(s) of interest
Search strategies	Reference and citation databases searched Registries (including prospective registries) searched: Keywords used to enter databases and registries Search software used and version Time period in which studies needed to be conducted, if applicable Other efforts to retrieve all available studies: Listservs queried Contacts made with authors (and how authors were chosen) Reference lists of reports examined Method of addressing reports in languages other than English Process for determining study eligibility: Aspects of reports were examined (i.e, title, abstract, and/or full text) Treatment of unpublished studies
Coding procedures	Number and qualifications of coders (e.g., level of expertise in the area, training) Intercoder reliability or agreement Whether each report was coded by more than one coder and if so, how disagreements were resolved Assessment of study quality: If a quality scale was employed, a description of criteria and the procedures for application

	If study design features were coded, what these were
	How missing data were handled
Statistical methods	Effect size metric(s):
	Effect sizes calculating formulas (e.g., *M*s and *SD*s, use of univariate *F* to *r* transform)
	Corrections made to effect sizes (e.g., small sample bias, correction for unequal *n*s)
	Effect size averaging and/or weighting method(s)
	How effect size confidence intervals (or standard errors) were calculated
	How effect size credibility intervals were calculated, if used
	How studies with more than one effect size were handled
	Whether fixed and/or random-effects models were used and the model choice justification
	How heterogeneity in effect sizes was assessed or estimated
	*M*s and *SD*s for measurement artifacts, if construct-level relationships were the focus
	Tests and any adjustments for data censoring (e.g., publication bias, selective reporting)
	Tests for statistical outliers
	Statistical power of the meta-analysis
	Statistical programs or software packages used to conduct statistical analyses
Results	Number of citations examined for relevance
	List of citations included in the synthesis
	Number of citations excluded from the meta-analysis
	Number of exclusions for each exclusion criterion (e.g., effect size could not be calculated), with examples
	Table giving descriptive information for each study, including effect and sample size
	Assessment of study quality, if any
	Tables and/or graphic summaries:
	Overall characteristics of the database (e.g., # of studies with different research designs)
	Overall effect size estimates, including measures of uncertainty (confidence intervals)
	Results of moderator and mediator analyses (analyses of subsets of studies):
	Number of studies and total sample sizes for each moderator analysis
	Assessment of interrelations among variables used for moderator and mediator analyses
	Assessment of bias including possible data censoring
Discussion	Statement of major findings
	Consideration of alternative explanations for observed results:
	Impact of data censoring
	Generalizability of conclusions:
	Relevant populations
	Treatment variations
	Dependent (outcome) variables
	Research designs
	General limitations (including assessment of the quality of studies included)
	Implications and interpretation for theory, policy, or practice
	Guidelines for future research

NOTE: *Publication Manual of the American Psychological Association*, 6th ed.

Appendix F: Chapter 4 Data for Pre-Post Meta-Analyses

Table F.1
Reported Data for Pre- and Post-Test Scores for BECQ

k *Tag*	Citation	n	BECQ T1	T1 SD	BECQ T2	T2 SD	Pre- / Post- *r*	Paired t-test
51	Bucker & Korzilius (2015)	66	5.07	.67	5.30	.62		2.95
52	Chao et al. (2017)	254	4.89	.85	5.20	.84	.41	
53	Eisenberg et al. (2013)	150	4.87	.92	5.01	.92		1.58
54	Engle & Crowne	105	5.04	.98	5.70	.68		-7.05
55	Fischer (2011)	49	5.14	1.37	5.31	.90	.42	
56	Young et al. (2017)	73	5.39	.67	5.222	.89	.54	

Table F.2
Reported Data for Pre- and Post-Test Scores for COCQ

k *Tag*	Citation	n	COCQ T1	T1 SD	COCQ T2	T2 SD	Pre- / Post- *r*	Paired t-test
51	Bucker & Korzilius (2015)	66	4.46	.89	4.63	.86		1.78
52	Chao et al. (2017)	254	4.18	.85	4.75	1.23	.44	
53	Eisenberg et al. (2013)	150	4.20	1.03	4.46	.92		3.01
54	Engle & Crowne	105	3.88	.83	4.69	.86		-8.84
55	Fischer (2011)	49	3.85	1.30	4.46	1.23	.79	
56	Young et al. (2017)	73	4.18	1.04	4.18	1.10	.60	

Table F.3
Reported Data for Pre- and Post-Test Scores for MCCQ

k *Tag*	Citation	n	MCCQ T1	T1 SD	MCCQ T2	T2 SD	Pre- / Post- *r*	Paired t-test
51	Bucker & Korzilius (2015)	66	5.30	.83	5.64	.68		3.69
52	Chao et al. (2017)	254	5.09	.78	5.42	.79	.38	
53	Eisenberg et al. (2013)	150	5.20	.80	5.54	.76		4.39
54	Engle & Crowne	105	5.26	.87	5.77	.60		-6.55
55	Fischer (2011)	49	4.82	1.35	4.70	1.11	.69	
56	Young et al. (2017)	73	5.57	.75	5.43	.85	.53	

Table F.4
Reported Data for Pre- and Post-Test Scores for MOCQ

k Tag	**Citation**	**n**	**MOCQ T1**	**T1 SD**	**MOCQ T2**	**T2 SD**	**Pre- / Post- *r***	**Paired t-test**
51	Bucker & Korzilius (2015)	66	5.74	.62	5.89	.62		3.16
52	Chao et al. (2017)	254	5.14	.84	5.51	.84	.32	
53	Eisenberg et al. (2013)	150	5.58	.81	5.01	.92		2.92
54	Engle & Crowne	105	5.72	.88	6.09	.57		-7.05
55	Fischer (2011)	49	5.36	1.08	5.32	.96	.67	
56	Young et al. (2017)	73	5.89	.75	5.64	.93	.46	

Appendix G: Chapter 5 Data for XP x CQ Meta-Analyses

Table G.1
Reported Data from 22 Studies of CQ x XP for Meta-Analyses

k *Tag*	Source Citation	*n*	Role: Worker (0) or Student (1)?	Home (0) or Host (1)?	Low PD=0, High PD=1	BE x XP	CO x XP	MC x XP	MO x XP
3	Ang et al., 2006	338	1	n/a	1	.12	.10	0.12	*0.25*
4	Ang et al., 2007	235	1	0	0	.10	.25	0.15	0.23
5	Ang et al., 2007	358	1	n/a	1	.12	*.26*	0.22	**0.40**
6	Ang et al., 2007	98	0	1	1	.23	*.26*	*0.32*	*0.34*
7	Ang et al., 2007	103	0	1	1	.15	.16	-0.02	-0.08
11	Chen et al., 2011	382	0	1	1	.03	.05	0.06	-0.02
14	Groves et al., 2015	113	1	0	0	-.1	-.16	-0.18	-0.06
15	Guomundsdottir, 2015	178	0	1	0	-.177	-.066	-0.192	-0.156
24	Li et al., 2013	294	0	1	n/a	.09	.20	0.13	*0.27*
26	Lin et al., 2012	295	1	1	1	.03	.14	0.06	0.08
28	Moon et al., 2012	190	0	1	n/a	*.29*	*.33*	*0.36*	*0.36*
29	Moon et al., 2013	165	0	1	n/a	.20	.24	**0.28**	**0.25**
30	Moon, 2010	381	1	0	1	.05	.13	0.13	0.08
35	Ramalu et al., 2010	332	0	1	1	-.071	-.08	0.013	-0.092
36	Remhof et al., 2013	518	1	0	0	.22	.24	*0.26*	*0.32*
37	Shannon & Begley, 2008	245	1	n/a	0	.18	.12	0.23	0.21
38	Shu et al., 2017	355	1	1	0	.07	.09	0.08	0.1
39	Tarique & Tekeuchi, 2008	212	1	n/a	0	*.30*	*.32*	*0.38*	*0.36*
40	Tay et al., 2008	491	1	1	n/a	.05	.15	0.06	0.08
47	Wu & Ang, 2011	169	0	1	1	.09	.16	0.18	0.23
48	Zhang & Oczkowski, 2016	238	0	0	n/a	*.266*	-.154	-0.184	-0.218
50	Young et al., 2017	124	1	0	0	*.25*	.14	0.13	0.02
	Total Sample:	**5,814**							

NOTE: correlations with a small effect size (.10 ≥< .249) are underlined; those with a medium effect size (.25 ≥< .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table G.2
XP x Outcomes (8 samples)

k Tag	**Source Citation**	***n***	**Role: Worker (0) or Student (1)?**	**Home (0) or Host (1)?**	**Low PD=0, High PD=1**	**XP x TP**	**XP x ADJ**	**XP x Outcomes**
4	Ang et al., 2007	235	1	0	0		.20	.20
6	Ang et al., 2007	98	0	1	1	.16	.04	.10
7	Ang et al., 2007	103	0	1	1	.14		.14
11	Chen et al., 2011	382	0	1	1	.04		.04
15	Guomundsdottir, 2015	178	0	1	0		*-.12*	*-.12*
35	Ramalu et al., 2010	332	0	1	1		-.04	-.04
38	Shu et al., 2017	355	1	1	0		*.13*	*.13*
47	Wu & Ang, 2011	169	0	1	1	*.14*	*.16*	*.15*
48	Zhang & Oczkowski, 2016	238	0	0	n/a		-.09	-.09
	Total Sample:	**1,992**						

NOTE: correlations with a small effect size (.10 ≥≤. .249) are underlined; those with a medium effect size (.25 ≥≤ .39) are *italicized*

Appendix H: Chapter 6 Data for TP x CQ

Table H.1
Reported Data from 9 Studies of CQ x TP

k ***Tag***	**Citation**	**n**	**BE x TP**	**CO x TP**	**MC x TP**	**MO x TP**	**Instrument**	**α**	**a_{unrel}**
6	Ang et al., 2007	98	*.37*	.14	**.46**	.08	Williams & Anderson, 1991	.95	.97
7	Ang et al., 2007	103	*.37*	.13	**.55**	*.33*	Williams & Anderson, 1991	.91	.95
11	Chen et al., 2011	382	*.5*	.21	**.47**	**.49**	Williams & Anderson, 1991	.68	.82
12	Duff et al., 2012	102	**.4**	.15	.16	.18	Williams & Anderson, 1991	.85	.92
14	Groves et al., 2015	113	**.43**	**.47**	**.41**	*.26*	Fisher & Ury, 1991	.83	.91
18	Jyoti & Kour, 2015	219	.21	.22	*.31*	*.31*	Goodman & Svyank, 1999	.76	.87
23	Lee et al., 2013	156	*.36*	.25	.08	*.36*	Black & Porter, 1991	.94	.97
34	Presbitero, 2015	223	**.51**	**.41**	.21	*.34*	Williams & Anderson, 1991	.74	.86
47	Wu & Ang, 2011	169	*.31*	.09	.21	**.51**	Kraimer & Wayne, 2004	.77	.88
	Total Sample: 1565								

NOTE: correlations with a small effect size (.10 ≥< .249) are underlined; those with a medium effect size (.25 ≥< .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table H.2
Moderator Variables for 9 Studies of CQ x TP

k Tag	**Citation**	**n**	**Home (0), Host (1)**	**Worker (0), Student (1)**	**Power Distance: Low (0), High (1)**
6	Ang et al., 2007	98	1	0	1
7	Ang et al., 2007	103	1	0	1
11	Chen et al., 2011	382	1	0	1
12	Duff et al., 2012	102	0	1	0
14	Groves et al., 2015	113	0	1	0
18	Jyoti & Kour, 2015	219	0	0	1
23	Lee et al., 2013	156	1	0	1
34	Presbitero, 2015	223	0	0	1
47	Wu & Ang, 2011	169	1	0	1
	Total Sample:	**1565**			

Appendix I: Chapter 6 Data for GA x CQ

Table I.1
Reported Data from 11 Studies of CQ x GA

k Tag	Study Citation	*n*	Home (0), Host (1)	Worker (0), Student (1)	PD: Low (0), High (1)	BE x GA	CO x GA	MC x GA	MO x GA
7	Ang et al., 2007	103	1	0	1	*.36*	*.33*	.20	**.40**
15	Guomundsdottir, 2015	178	1	0	0	.157	*.23*	*.28*	*.34*
16	Huff et al., 2014	154	1	0	1	.17	.19	.06	**.49**
17	Huff, 2013	140	1	0	1	.16	.20	.24	**.5**
18	Jyoti & Kour	219	0	0	1	**.41**	*.31*	**.54**	**.55**
22	Konanahalli et al., 2014	191	1	0	n/a	.24	*.37*	*.36*	**.52**
28	Moon et al., 2012	190	1	0	n/a	*.39*	**.53**	**.45**	**.58**
35	Ramalu et al., 2010	332	1	0	1	.22	.25	*.38*	**.52**
38	Shu et al., 2017	355	1	1	0	.23	*.32*	*.34*	*.36*
47	Wu & Ang, 2011	169	1	0	1	.15	.18	*.25*	**.51**
48	Zhang & Oczkowski, 2016	238	0	0	n/a	**.41**	**.42**	**.42**	**.48**
	Total Sample:	**2,269**							

NOTE: correlations with a small effect size (.10 ≥< .249) are underlined; those with a medium effect size (.25 ≥< .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table I.2
GA x CQ Data for Calculating $\overline{ES}$, $\overline{SE}$, and 95% CI (k=11)

k Tag	*n*	CQ x GA Var	CQ x GA SE	FE w_i	RE w_i	BE x GA Fisher's Z	CO x GA Fisher's Z	MC x GA Fisher's Z	MO x GA Fisher's Z
7	103	0.010	0.100	100	55.57	0.377	0.343	0.203	0.424
15	178	0.006	0.076	175	72.94	0.158	0.231	0.284	0.355
16	154	0.007	0.081	151	68.41	0.172	0.192	0.060	0.536
17	140	0.009	0.095	110	58.53	0.161	0.203	0.245	0.549
18	219	0.005	0.068	216	79.21	0.431	0.324	0.606	0.616
22	191	0.005	0.073	188	75.11	0.249	0.384	0.371	0.571
28	190	0.005	0.073	187	74.95	0.412	0.590	0.485	0.662
35	332	0.003	0.055	329	90.62	0.222	0.253	0.402	0.572
38	355	0.003	0.053	352	92.28	0.234	0.332	0.354	0.377
47	169	0.006	0.078	166	71.33	0.151	0.182	0.255	0.563
48	238	0.004	0.065	235	81.63	0.440	0.453	0.446	0.518
	2269			**2209**	**820.58**				

Appendix J: Chapter 6 Data for IA x CQ

Table J.1
Reported Data from 13 Studies of CQ x IA

k Tag	**Citation**	**Home (0), Host (1)**	**Worker (0), Student (1)**	**PD: Low (0), High (1)**	***n***	**BE x IA**	**CO x IA**	**MC x IA**	**MO x IA**
4	Ang et al., 2007	0	1	0	235	*.25*	.13	.23	*.29*
7	Ang et al., 2007	1	0	1	103	*.36*	*.35*	.17	.48
8	Ang et al., 2008	0	1	1	500	.17	.10	.17	.23
15	Guomundsdottir, 2015	1	0	0	178	.19	.19	*.28*	*.35*
16	Huff et al., 2014	1	0	1	154	.18	*.36*	.12	**.41**
17	Huff, 2013	1	0	1	140	.15	*.32*	*.36*	**.5**
18	Jyoti & Kour	0	0	1	219	*.34*	.18	**.42**	*.33*
22	Konanahalli et al., 2014	1	0	n/a	191	*.29*	*.39*	*.34*	**.53**
23	Lee et al., 2013	1	0	1	156	**.46**	**.40**	.17	**.61**
35	Ramalu et al., 2010	1	0	1	332	*.33*	*.35*	**.44**	**.55**
38	Shu et al., 2017	1	1	0	355	*.35*	*.39*	*.37*	**.46**
47	Wu & Ang, 2011	1	0	1	169	*.26*	*.27*	*.32*	*.36*
48	Zhang & Oczkowski, 2016	0	0	n/a	238	**.82**	**.68**	**.77**	**.83**
				Total Sample:	**2,970**				

NOTE: correlations with a small effect size (.10 ≥≤. .249) are underlined; those with a medium effect size (.25 ≥≤ .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table J.1
IA x CQ Data for Calculating $\overline{ES}$, $\overline{SE}$, and 95% CI (k=13)

k ***Tag***	***n***	**CQ x IA Var**	**CQ x IA SE**	**FE w_i**	**RE w_i**	**BE x IA Fisher's Z**	**CO x IA Fisher's Z**	**MC x IA Fisher's Z**	**MO x IA Fisher's Z**
4	235	0.004	0.066	232	13.84	0.255	0.131	0.234	0.299
7	103	0.010	0.100	100	12.83	0.377	0.365	0.172	0.523
8	500	0.002	0.045	497	14.30	0.172	0.100	0.172	0.234
15	178	0.006	0.076	175	13.58	0.192	0.196	0.286	0.367
16	154	0.007	0.081	151	13.41	0.182	0.377	0.121	0.436
17	140	0.007	0.085	137	13.29	0.151	0.332	0.377	0.549
18	219	0.005	0.068	216	13.78	0.357	0.181	0.442	0.346
22	191	0.005	0.073	188	13.65	0.294	0.409	0.356	0.590
23	156	0.007	0.081	153	13.43	0.497	0.425	0.170	0.706
35	332	0.003	0.055	329	14.09	0.343	0.363	0.471	0.624
38	355	0.003	0.053	352	14.13	0.365	0.412	0.388	0.497
47	169	0.006	0.078	166	13.52	0.266	0.277	0.332	0.377
48	238	0.004	0.065	235	13.85	1.163	0.822	1.013	1.191
	2970			**2931**	**177.73**				

Appendix K: Chapter 6 Data for WA x CQ

Table K.1
Reported Data from 11 Studies of CQ x WA

k Tag	**Citation**	***n***	**Home (0), Host (1)**	**Worker (0), Student (1)**	**PD: Low (0), High (1)**	**BE x WA**	**CO x WA**	**MC x WA**	**MO x WA**
7	Ang et al., 2007	103	1	0	1	*.27*	.18	.14	**.44**
15	Guomundsdottir, 2015	178	1	0	0	.09	.14	*.31*	.24
16	Huff et al., 2014	154	1	0	1	.15	.16	.07	*.36*
17	Huff, 2013	141	1	0	1	.12	.20	*.34*	**.54**
18	Jyoti & Kour	219	0	0	1	*.31*	.24	**.44**	*.37*
22	Konanahalli et al., 2014	191	1	0	n/a	*.29*	*.36*	**.40**	**.50**
23	Lee et al., 2013	156	1	0	1	.52	.43	.22	**.62**
28	Moon et al., 2012	190	1	0	n/a	**.54**	**.62**	**.55**	**.58**
35	Ramalu et al., 2010	332	1	0	1	.16	.11	.2	.23
38	Shu et al., 2017	355	1	1	0	*.27*	*.32*	.32	*.39*
47	Wu & Ang, 2011	169	1	0	1	.21	*.37*	.16	*.37*
48	Zhang & Oczkowski, 2016	238	0	0	n/a	.21	*.37*	.16	*.37*
	Total Sample:	**2426**							

NOTE: correlations with a small effect size (.10 ≥≤. .249) are underlined; those with a medium effect size (.25 ≥≤ .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table K.2
WA x CQ Data for Calculating $\overline{ES}$, $\overline{SE}$, and 95% CI (k=12)

k ***Tag***	***n***	**CQ x WA Var**	**CQ x EA SE**	**FE w_i**	**RE w_i**	**BE x WA Fisher's Z**	**CO x WA Fisher's Z**	**MC x WA Fisher's Z**	**MO x WA Fisher's Z**
7	103	0.010	0.100	100	35.05	0.277	0.182	0.141	0.472
15	178	0.006	0.076	175	41.24	0.093	0.139	0.319	0.245
16	154	0.007	0.081	151	39.75	0.151	0.161	0.070	0.377
17	141	0.007	0.085	137	38.71	0.121	0.203	0.354	0.604
18	219	0.005	0.068	216	43.18	0.315	0.244	0.477	0.385
22	191	0.005	0.073	188	41.93	0.303	0.381	0.425	0.544
23	156	0.007	0.081	153	39.89	0.570	0.455	0.219	0.719
28	190	0.005	0.073	187	41.88	0.604	0.725	0.618	0.662
35	332	0.003	0.055	329	46.36	0.161	0.112	0.203	0.229
38	355	0.003	0.053	352	46.79	0.277	0.332	0.332	0.412
47	169	0.006	0.078	166	40.72	0.213	0.388	0.161	0.388
48	238	0.004	0.065	235	43.88	0.213	0.388	0.161	0.388
	2426			**2389**	**499.39**				

Appendix L: Ch 7 Data for Correlations among CQ Factors

Table L.1
Reported Data for CQ Correlations of 50 Samples

k			**MO x**	**MO x**	**MO x**	**MC x**	**MC x**	**CO x**
Tag	***n***	**Citation**	**BE**	**CO**	**MC**	**BE**	**CO**	**BE**
1	553	Al-Dossary (2016)	**0.55**	**0.43**	**0.49**	*0.38*	**0.56**	*0.37*
2	169	Al-Jarraj (2016)	**0.63**	**0.76**	**0.67**	**0.55**	**0.66**	**0.60**
3	338	Ang et al. (2006)	*0.30*	0.24	*0.29*	0.24	0.24	*0.35*
4	235	Ang et al. (2007)	*0.33*	**0.42**	**0.45**	**0.42**	*0.37*	**0.51**
5	358	Ang et al. (2007)	0.23	*0.29*	**0.40**	**0.41**	*0.32*	**0.44**
6	98	Ang et al. (2007)	0.20	0.23	**0.49**	*0.32*	*0.30*	0.22
7	103	Ang et al. (2007)	**0.40**	**0.40**	0.23	**0.53**	*0.30*	*0.29*
8	500	Ang et al. (2008)	*0.32*	*0.34*	**0.43**	*0.39*	*0.27*	*0.39*
9	308	Bucker et al. (2015)	**0.82**	**0.68**	**0.65**	**0.64**	**0.82**	**0.54**
10	225	Bucker et al. (2014)	**0.63**	**0.58**	**0.87**	**0.79**	**0.58**	**0.50**
11	382	Chen et al. (2011)	**0.69**	**0.54**	**0.52**	**0.56**	**0.44**	**0.52**
12	102	Duff et al. (2012)	**0.43**	**0.45**	**0.48**	*0.30*	**0.68**	*0.32*
13	85	Gooden et al. (2017)	*0.39*	*0.33*	**0.52**	**0.48**	*0.33*	0.18
14	113	Groves et al. (2015)	**0.45**	*0.36*	0.21	**0.40**	*0.31*	0.22
15	178	Guðmundsdóttir (2015)	*0.34*	*0.33*	*0.33*	**0.61**	*0.39*	**0.43**
16	154	Huff et al. (2014)	*0.31*	0.24	*0.34*	**0.48**	**0.41**	*0.30*
17	140	Huff (2013)	*0.26*	*0.26*	**0.40**	**0.41**	*0.34*	*0.27*
18	219	Jyoti & Kour (2015)	**0.54**	*0.31*	**0.54**	*0.39*	*0.29*	*0.27*
19	193	Keung & Rockinson-Szapkiw (2013)	**0.61**	**0.41**	**0.62**	**0.62**	**0.55**	**0.47**
20	442	Kim et al. (2008)	**0.48**	*0.38*	**0.54**	**0.49**	*0.35*	*0.33*
21	206	Klafehn et al. (2013)	**0.46**	**0.45**	**0.57**	**0.62**	**0.54**	**0.45**
22	191	Konanahalli, et al., 2014	*0.35*	*0.29*	**0.50**	*0.34*	*0.37*	*0.26*
23	156	Lee et al. (2013)	**0.70**	**0.49**	*0.28*	*0.35*	**0.40**	**0.57**
24	294	Li et al. (2013)	**0.61**	**0.54**	**0.65**	**0.70**	**0.57**	**0.46**
25	244	Li et al. (2016)	**0.55**	**0.53**	**0.56**	**0.67**	**0.55**	**0.45**
26	295	Lin et al. (2012)	**0.48**	**0.42**	**0.50**	**0.52**	*0.37*	*0.39*
27	229	Mahembe & Engelbrecht (2014)	*0.32*	0.19	*0.28*	0.24	0.15	*0.27*
28	190	Moon et al. (2012)	**0.48**	**0.53**	**0.48**	**0.53**	*0.39*	**0.50**
29	165	Moon et al. (2013)	**0.48**	**0.57**	**0.63**	**0.51**	**0.48**	**0.51**

30	381	Moon (2010)	**0.46**	**0.47**	**0.53**	**0.42**	**0.54**	**0.42**
31	252	Nel et al. (2015)	**0.58**	**0.48**	**0.54**	**0.55**	**0.42**	**0.52**
32	311	Oolders et al. (2008)	0.23	*0.33*	0.22	*0.38*	0.22	0.23
33	274	Presbitero (2015)	**0.41**	**0.43**	**0.54**	**0.45**	*0.36*	**0.60**
34	223	Presbitero (2015)	0.21	**0.65**	**0.41**	**0.78**	**0.55**	**0.45**
35	332	Ramalu et al. (2010)	**0.44**	*0.35*	**0.53**	**0.42**	*0.33*	**0.42**
36	518	Remhof et al. (2013)	**0.51**	**0.52**	**0.62**	**0.57**	**0.61**	**0.51**
37	245	Shannon & Begley (2008)	**0.43**	*0.37*	**0.42**	**0.43**	**0.43**	*0.33*
38	355	Shu et al. (2017)	**0.47**	**0.49**	**0.60**	**0.41**	**0.44**	*0.39*
39	212	Tarique & Takeuchi (2008)	**0.68**	**0.67**	**0.83**	**0.79**	**0.63**	**0.68**
40	491	Tay et al. (2008)	**0.53**	**0.46**	**0.45**	**0.45**	**0.48**	**0.53**
41	316	Tsai et al. (2017)	*0.29*	**0.47**	*0.32*	**0.55**	**0.47**	*0.32*
42	392	Tuan (2016)	0.22	0.12	0.15	0.12	0.11	0.11
43	346	Ward et al. (2008)	**0.58**	*0.28*	**0.74**	**0.78**	**0.50**	**0.53**
44	118	Ward et al. (2008)	**0.76**	**0.54**	**0.73**	**0.67**	**0.54**	**0.50**
45	102	Ward et al. (2008)	**0.53**	**0.62**	**0.67**	**0.52**	**0.60**	**0.44**
46	104	Ward et al (2011)	**0.55**	**0.50**	**0.56**	**0.65**	**0.57**	**0.51**
47	169	Wu & Ang (2011)	*0.38*	0.20	**0.43**	*0.32*	**0.53**	*0.26*
48	238	Zhang, & Oczkowski (2016)	**0.90**	**0.79**	**0.86**	**0.87**	**0.72**	**0.72**
49	236	Imai & Gelfand (2010)	**0.49**	**0.42**	**0.47**	**0.54**	**0.47**	*0.30*
50	124	Imai & Gelfand (2010)	*0.37*	*0.39*	*0.35*	**0.42**	**0.42**	*0.33*
	12,604:	**Total Sample**						

NOTE: correlations with a small effect size (.10 ≥≤. .249) are underlined; those with a medium effect size (.25 ≥≤ .39) are *italicized*; those with a large effect size (≥.40) are in **bold**

Table L.2
Moderator Variables for CQ Bivariate Analyses

k Tag	*n*	Citation	Home (0) or Host (1)?	Worker (0) or Student (1)?	Context of Study: Country	Cultural Distance Score	Low CD (0) ≤49 High CD (1) >50
1	553	Al-Dossary (2016)		1	Saudi Arabia	80	1
2	169	Al-Jarraj (2016)	1	1	Jordan	80	1
3	338	Ang et al. (2006)		1	Singapore	74	1
4	235	Ang et al. (2007)	0	1	US	40	0
5	358	Ang et al. (2007)		1	Singapore	74	1
6	98	Ang et al. (2007)	1	0	Singapore	74	1
7	103	Ang et al. (2007)	1	0	Singapore	74	1
8	500	Ang et al. (2008)	0	1	Singapore	74	1
9	308	Bucker et al. (2015)	1	1	Chinese students abroad	n/a	n/a
10	225	Bucker et al. (2014)	0	0	China	80	1
11	382	Chen et al. (2011)	1	0	Taiwan	58	1
12	102	Duff et al. (2012)	0	1	Canada	39	0
13	85	Gooden et al. (2017)	0	1	US	40	0
14	113	Groves et al. (2015)	0	1	US	40	0
15	178	Guðmundsdóttir (2015)	1	0	US	40	0
16	154	Huff et al. (2014)	1	0	Japan	54	1
17	140	Huff (2013)	1	0	Japan	54	1
18	219	Jyoti & Kour (2015)	0	0	India	77	1
19	193	Keung & Rockinson-Szapkiw (2013)		0	International	n/a	n/a
20	442	Kim et al. (2008)	0	1	US	40	0
21	206	Klafehn et al. (2013)	0	1	US	40	0
22	191	Konanahalli, et al., 2014	1	0	n/a	n/a	n/a
23	156	Lee et al. (2013)	1	0	China	80	1
24	294	Li et al. (2013)	1	0	Ireland & China	28; 80	n/a
25	244	Li et al. (2016)	1	0.5	n/a	n/a	n/a
26	295	Lin et al. (2012)	1	1	Taiwan	58	1

27	229	Mahembe & Engelbrecht (2014)	0	1	South Africa	49	0
28	190	Moon et al. (2012)	1	0	International	n/a	n/a
27	229	Mahembe & Engelbrecht (2014)	0	1	South Africa	49	0
28	190	Moon et al. (2012)	1	0	International	n/a	n/a
29	165	Moon et al. (2013)	1	0	International	n/a	n/a
30	381	Moon (2010)	0	1	Korea	60	1
31	252	Nel et al. (2015)	0	1	South Africa	49	0
32	311	Oolders et al. (2008)	0	1	New Zealand	22	0
33	274	Presbitero (2015)	0	0	Philippines	94	1
34	223	Presbitero (2015)	0	0	Philippines	94	1
35	332	Ramalu et al. (2010)	1	0	Malaysia	104	1
36	518	Remhof et al. (2013)	0	1	Germany	35	0
37	245	Shannon & Begley (2008)		1	Ireland	28	0
38	355	Shu et al. (2017)	1	1	US	40	0
39	212	Tarique & Takeuchi (2008)		1	US	40	0
40	491	Tay et al. (2008)	1	1	3 countries	n/a	n/a
41	316	Tsai et al. (2017)	0	0	Taiwan	58	1
42	392	Tuan (2016)	0	0	Vietnam	70	1
43	346	Ward et al. (2008)	1	1	New Zealand	22	0
44	118	Ward et al. (2008)	1	1	New Zealand	22	0
45	102	Ward et al. (2008)	1	1	New Zealand	22	0
46	104	Ward et al (2011)	1	1	New Zealand	22	0
47	169	Wu & Ang (2011)	1	0	Singapore	74	1
48	238	Zhang, & Oczkowski (2016)	0	0	Australia & China	38; 80	n/a
49	236	Imai & Gelfand (2010)	1	1	US	40	0
50	124	Imai & Gelfand (2010)	0	1	US	40	0
	12,604:	**Total Sample**					

Appendix M: CQ Correlation Matrices with Group Differences

Table M.1
Meta-Analytically-Derived CQ Correlations: Fixed and Random Effects

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**0.425**	**0.514**	**0.487**
COCQ	*0.421*	1	**0.453**	**0.44**
MCCQ	*0.527*	*0.456*	1	**0.523**
MOCQ	*0.487*	*0.444*	*0.528*	1

N=12,604; k=50 samples

NOTES: **Fixed Effects estimates above diagonal in bold**; *Random Effects estimates below diagonal in italics.*

Table M.2
Worker vs Student: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**0.42**	**0.539***	**0.489**
COCQ	*0.427*	1	**0.407***	**0.441**
MCCQ	*0.494**	*0.445**	1	**0.517**
MOCQ	*0.484*	*0.436*	*0.525*	1

N=12,360; k=49 samples

NOTES: **Worker estimates above diagonal in bold (N=7,728 workers (28 samples)).** *Student estimates below diagonal in italics (N=4,632 students (21 samples)).*
*Indicates significant difference in mean effects for Workers vs. Students

Table M.3
Natives (Home) vs Expatriates (Host): Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**0.428**	**0.506***	**0.439***
COCQ	*0.394*	1	**0.42***	**0.432**
MCCQ	*0.542**	*0.484**	1	**0.511**
MOCQ	*0.541**	*0.463*	*0.542*	1

N=10,700; k=44 samples

NOTES: **Home (Native) estimates above diagonal in bold (N=5,385 natives/home (20 samples)).** *Student estimates below diagonal in italics (N=5,320 expatriates/host (24 samples)).*
*Indicates significant difference in mean effects for Natives vs. Expatriates

Table M.4

High vs Low Power Distance: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**.402***	**.540***	**.453***
COCQ	*.447**	1	**0.446**	**0.379**
MCCQ	*.448**	*.403**	1	**.550***
MOCQ	*.404**	*0.379*	*.462**	1

N=10,290; k=42 samples

NOTES: **Low PD estimates above diagonal in bold (N=4,513 low PD (20 samples)).** *High PD estimates below diagonal in italics (N=5,777 high PD (42 samples)).*

*Indicates significant difference in mean effects for High vs Low PD

Table M.5

Expatriates in High vs Low PD Countries: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**0.378**	**0.478**	**.37***
COCQ	*0.42*	1	**0.385**	**0.408**
MCCQ	*0.468*	*0.417*	1	**0.477**
MOCQ	*.506**	*0.427*	*0.474*	1

N=3,437; k=17 samples

NOTES: **Low PD Expatriate estimates above diagonal in bold (N=1,439 low PD expatriates (7 samples)).** *High PD Expatriate estimates below diagonal in italics (N=1,998 high PD expatriates (10 samples)).*

*Indicates significant difference in mean effects for High vs Low PD Expatriates

M.6

Natives in High vs Low PD Countries: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**0.389**	**.48***	**.431***
COCQ	*0.438*	1	**0.419**	**0.409**
MCCQ	*.61**	*0.466*	1	**.494***
MOCQ	*.526**	*0.428*	*.608**	1

N=5,147; k=19 samples

NOTES: **Low PD Native estimates above diagonal in bold (N=2,617 low PD natives (11 samples)).** *High PD Native estimates below diagonal in italics (N=2,530 high PD natives (8 samples)).*

*Indicates significant difference in mean effects for High vs Low PD Natives

Table M.7

High PD Context Natives vs Expatriates: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**.438**	**.61***	**.526**
COCQ	*.420*	1	**.466**	**.428**
MCCQ	*.468**	*.417*	1	**.608***
MOCQ	*.506*	*.427*	*.474**	1

N=4,528; k= 18 samples

NOTES: **Natives of High PD estimates above diagonal in bold (N=2,530 high PD natives (8 samples)).** *Expatriates in High PD estimates below diagonal in italics (N=1,998 high PD expatriates (10 samples)).*

*Indicates significant difference in mean effects for Natives vs Expatriates in High PD Context

Table M.8

Low PD Context Natives vs Expatriates: Meta-Analytically-Derived CQ Correlations

	BECQ	COCQ	MCCQ	MOCQ
BECQ	1	**.356**	**.48**	**.431***
COCQ	*.344*	1	**.419**	**.409**
MCCQ	*.478*	*.385*	1	**.494**
MOCQ	*.370**	*.408*	*.477*	1

N=4,056; k=18 samples

NOTES: **Natives of Low PD estimates above diagonal in bold (N=2,617 natives in low PD (11 samples)).** *Expatriates in Low PD estimates below diagonal in italics (N=1,439 high PD expatriates (7 samples)).*

*Indicates significant difference in mean effects for Natives vs Expatriates in High PD Context