

THREE ESSAYS ON CULTURAL INTELLIGENCE,  
INNOVATION, AND INSTITUTIONAL  
DISTANCE

by

MELANIE PETRA LORENZ

GEORGE R. FRANKE, COMMITTEE CHAIR

ROBERT "GLENN" RICHEY

JACK A. CLAMPIT

ARTHUR W. ALLAWAY

JONATHON HALBESLEBEN

A DISSERTATION

Submitted in partial fulfillment of the requirements  
for the degree Doctor of Philosophy  
in the Department of Marketing  
in the Graduate School of  
The University of Alabama

TUSCALOOSA, ALABAMA

2016

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## ABSTRACT

While cultural differences and related formal and informal distances are often described as creating difficulties and complexity, the ability to understand and to adapt to differences or to leverage those for positive outcomes is an important imperative for individuals and firms operating in an international arena. Innovation, the positive outcome in this study, has particularly shown to be vital for success and long-term survivability of organizations. This dissertation investigates both the impact of cultural abilities, and in particular cultural intelligence (CQ), as well as the impact of cultural distance, as part of the larger institutional distance (ID) framework, on innovation on a micro- and macro level of analysis.

The *first essay* is based on a review of the CQ literature and a reanalysis of past studies. Although research on CQ has increased since the introduction of the concept, the measurement has raised theoretical and empirical concerns. Using a meta-analytic process, we reanalyzed past CQ studies in order to make inferences and generalizations of the antecedents and outcomes of cultural intelligence.

In the *second essay* we use the insights gained from *Essay 1* regarding the application of the CQ scale and apply it to the context of innovation on a micro-level of analysis. Examining a sample of 220 expatriates in the U.S. we demonstrate the importance of CQ for international opportunity recognition and innovation. Specifically, we find that expatriates high in metacognitive CQ are better able to recognize international opportunities and to exploit marketable innovations.

Finally, in the *third essay* we turn away from micro-level drivers of innovation to examine the determinants of innovation on a macro-level. Hereby, we reconcile controversial findings from the ID and diversity literature and suggest that sometimes, ID (composed of formal and informal distances) may positively affect innovation. The findings from the analysis of 371 offshoring implementations provide empirical support for the positive effect of certain formal and informal distances on innovation.

Taken together, the dissertation demonstrates the importance of possessing cross-cultural skills and the ability of appraising differences for micro- and macro level innovativeness while offering suggestions for future research and applications.

## DEDICATION

This dissertation is dedicated to my family who always supported me on this long journey towards the completion of the degree. Danke Jase, Mama & Papa, Michi & Stephan, und Oma Inge & Oma Klara für die jahrelange Unterstützung, Zuspruch, und Verständnis.

## LIST OF ABBREVIATIONS AND SYMBOLS

$\alpha$	Cronbach's index of internal consistency
$\beta$	Beta (standardized coefficient)
$\chi^2$	Chi-square
$df$	Degrees of freedom
$\delta, \Delta$	Delta
<i>e.g.</i>	Exempli gratia (for example)
<i>etc.</i>	Et cetera (and so on)
<i>et al.</i>	Et alia (and others)
$H$	Hypothesis
<i>i.e.</i>	Id est (that is)
$\Lambda$	Lambda
$N, n$	Sample size
$ns$	Not significant
$p$	Probability associated with the occurrence under the null hypothesis of a value as extreme as or more extreme than the observed value
<i>Std Dev</i>	Standard Deviation
$t$	Computed value of $t$ test
$t^*$	Computed value of weighted $t$ test
$\xi$	Xi

<	Less than
>	Greater than
=	Equal to
%	Percent
±	Plus or Minus

## ACKNOWLEDGMENTS

I would like to thank my various mentors during the program that supported me and enabled me to think across various disciplines. I would also like to thank the Management department for accepting me into the program and the Marketing department for letting me out.

In particular, I would like to acknowledge my dissertation committee. I am most indebted to my dissertation committee chair, George Franke, for his continuous support, caring, commitment, and the valuable methods skills he taught me. Thanks also to Glenn Richey and Jack Clampit who enabled me to combine my interest in international business with a marketing and management perspective. Thanks to Jonathon Halbesleben, for his backing since the day I started the program and his commitment to the good of his Ph.D. students. Thanks to Buster Allaway, for his valuable input, making me smile, and convincing me that all will be fine.

In addition to my dissertation committee members, I would like to thank John Gamble for introducing me to academia. Without his support, opportunities, encouragement, and preparation, I probably would not have chosen this career path.

Finally, I would not have made it to this point without the support of my friends and fellow graduate students. In particular, thank you Mick for always encouraging me, as well as reminding me that persistence is what gets you through the program; Katy for making me stay positive, conversing about trips around the world, and proof-reading my “culturally-insensitive” emails and documents; and finally Ayesha and her family for making me feel at home and never alone.

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## CHAPTER I: INTRODUCTION

### **Prologue**

Chapter I serves as the introduction to the dissertation. It provides an overview of the three empirical studies as well as the relationships between them. It is followed by the overall contribution of the three essay dissertation to the fields of marketing, international business, international entrepreneurship, and innovation management. Chapter I concludes with a discussion of how the dissertation is organized.

### **Introduction of the Dissertation**

Intercultural interactions have dramatically increased based on the convergence of factors such as globalization, growing access to the global business community, global sourcing, and increasing workforce mobility including expatriation. These forces necessitate that individuals as well as firms interact cross-culturally on a scale that was previously impossible (Wang et al. 2011). Possessing capabilities to adapt to different cultural environments may be an imperative for individuals as well as international organizations. In the past decade, the concept of *cultural intelligence* (CQ) has emerged as both an important conceptual reference framework for identifying intercultural capabilities and a practical skill to promote more effective transactions and relationships in a global environment (Ang et al. 2015). While understanding cultural differences may be an end in itself, it may also promote other positive outcomes. In the context

of expatriates, high levels of CQ may stimulate, through understanding of differences and reassessing assumptions, the discovery of business opportunities abroad. These business opportunities may lead to innovations when exploited.

In a similar vein, knowing about difference and leveraging those distances, may also stimulate positive outcomes or outweigh the negative outcomes associated with liability of foreignness (LOF). *Institutional distance* (ID) is one of the most discussed constructs in the international business literature (Zaheer et al. 2012). The distance metaphor does not apply to geographical distance between countries, but to the differences in norms, values, cultures, and rules that guide the behavior of economic actors within a certain country. To date, however, the vast majority of papers employing the distance metaphor within the institutional theory literature has focused on the negative effects of distance on various organizational or even individual outcomes (e.g., Ghemawat 2001; Shenkar et al. 2008). Conversely, distance may enhance performance. For example, research has proposed the positive affect of cultural diversity on a variety of outcomes including creativity and innovation (Stahl et al. 2010). Researchers have found that a higher degree of divergence between cultures creates an attention stimulus for decision-makers which shapes attention and reduces bounded rationality with expected positive firm outcomes (Peeters et al. 2015). Similarly, awareness of distance has been suggested to enable firms to mitigate negative effects, proactively take counter measures, or even commercialize on them (Hutzschenreuter et al. 2014). Thus, ID may, under certain circumstances, positively impact innovation and performance.

Consequently, being able to adjust to cultural differences and/or leveraging differences may result in positive individual and firm outcomes.

## Overview of the Essays

*Essay 1* sets out to understand the construct and the measurement of CQ. CQ is defined as “an individual’s capability to function and manage effectively in culturally diverse settings” (Ang et al. 2007, p. 336), and is composed of the components of metacognitive CQ, cognitive CQ, motivational CQ, and behavioral CQ. Similar to emotional intelligence, CQ has emerged as a construct of interest, inspiring an increasing number of studies in international business, management, psychology, and marketing literatures. Unfortunately, CQ research, and especially the measurement of CQ (i.e., the cultural intelligence scale (CQS)), has been challenged with questions concerning its validity. From face, content, and construct validity issues, authors have criticized the construct without yet providing an adequate alternative to the current scale (e.g., Gabrenya et al. 2012). *Essay 1* is also intended to set the stage for *Essay 2* in which the concept of CQ, and particularly the components of metacognitive and cognitive CQ, is used to explore the impact of this cross-cultural competence on opportunity recognition and innovation in an international context.

Operationally, the measurement of CQ has resulted in a variety of different applications of the CQS. Whereas some researchers emphasize the importance of analyzing the different facets of CQ or omitting certain CQ factors due to theoretical irrelevance, others have emphasized a single, aggregated, and unidimensional perspective (Bücker et al. 2014; Magnusson et al. 2013). An interpretation of CQ is likely to result in unusable empirical findings when tested with misspecified models.

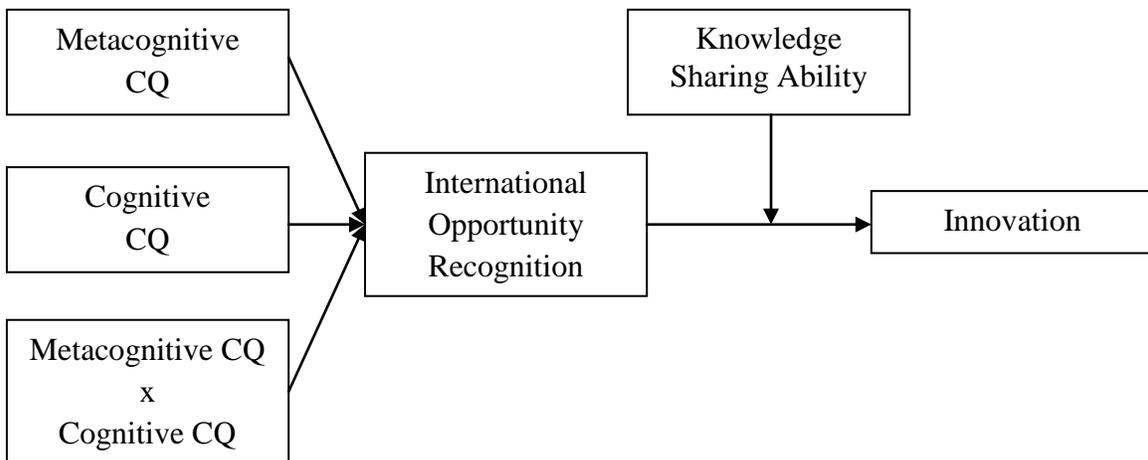
The conceptualization issue, in particular, gives rise to the main research question for *Essay 1*:

- How should the CQS be analyzed?
- Can generalizations and inferences be made when the aggregated scale is used?
- Do the CQ components measure the same thing?

In order to answer the research questions, we empirically assess previous studies in a meta-analytic procedure and provide guidance how the most prominent CQ scale can be used for future research. The findings of our theoretical and empirical analysis revealed that it is generally not safe to treat the CQ construct as unidimensional or as a higher-order construct. Researchers are advised to hypothesize and analyze the CQ subcomponents as distinct constructs with different antecedents and outcomes.

*Essay 2* aims to identify how cultural competencies may induce individual-level innovation outcomes. Particularly, we utilize the knowledge gained from *Essay 1* by suggesting that expatriates high in two CQ subcomponents, namely metacognitive and cognitive CQ, are able to recognize global opportunities that lead to innovative outcomes. Furthermore, we propose that the ability to share knowledge will positively affect innovation (see Figure 1-1 for the Theoretical Model).

**FIGURE 1-1**  
**Theoretical Model Essay 2**



Thus, the main research questions discussed in *Essay 2* are as follows:

- Can culturally intelligent expatriates better recognize opportunities abroad?
- Do these recognized opportunities result in innovation?
- Which impact does knowledge sharing have on innovative outcomes?

We draw upon the Theory of Planned Behavior (TPB) and the cognitive lens of opportunity recognition to identify how expatriates' cultural competencies may lead to innovative outcomes (Ajzen 1991; Muzychenko and Liesch 2015). While previous marketing research has suggested a wide variety of innovation-inducing factors, it has largely neglected the role of cultural competencies that expatriates may use during an international encounter. Furthermore, while the international business literature has provided substantial insights into the role of expatriates in value creation and performance (e.g., Chang et al. 2012) it has paid limited attention to the role of expatriates in the discovery of opportunities resulting in potential innovations. This is somewhat surprising, given the centrality of the expatriate in knowledge brokerage and thus the expatriate's access to novel and idiosyncratic information (Ghoshal and Bartlett 1988; Minbaeva and Michailova 2004).

Consequently, *Essay 2* addresses recent calls for a better understanding of opportunity recognition in an international context, advances knowledge about the value of expatriates from pure knowledge brokers by identifying their potential to discover opportunities if they possess cultural skills, and lastly enhances knowledge about outcomes of CQ and antecedents to international opportunity recognition and innovation.

We test our theoretical model using primary data of 220 expatriates working in the United States. The empirical findings demonstrate that, expatriates high in metacognitive CQ discover opportunities abroad leading to marketable innovations. Contrary to our predictions, we

were not able to find support for the impact of cognitive CQ on opportunity recognition or knowledge sharing on innovation. Nevertheless, we contribute to previous international entrepreneurship and international marketing research by extending the role of the expatriate beyond that of knowledge brokerage to one of opportunity recognition.

The *third essay* moves away from the micro-level assessment of drivers of innovative outcomes to macro-level factors. In particular, we investigate the potential positive effect that institutional distance (ID), in form of formal and informal institutional distance, has on innovative activities of firms. ID is one of the most discussed constructs in the international business literature (Zaheer et al. 2012), with the vast majority of papers within the institutional theory literature focusing on the negative effects of distance on various organizational or even individual outcomes (e.g., Ghemawat 2001; Shenkar et al. 2008). Accordingly, most international business studies suggest that multinational enterprises prefer entering countries that are institutionally similar (i.e., where institutional distance is low), in order to avoid negative effects associated with operating in foreign environments (such as poor decisions and increased costs due to a lack of local knowledge regarding formal institutions, e.g., laws and regulations, and informal institutions, e.g., cultural norms) (e.g., Kostova and Zaheer 1999). Yet the diversity and innovation literatures suggest two channels where distance may have positive effects – one where complementary institutional antecedents of innovation that exist abroad produce arbitrage opportunities, and another where distance intrinsically stimulates innovation (e.g., Peeters et al. 2015; Stahl et al. 2010).

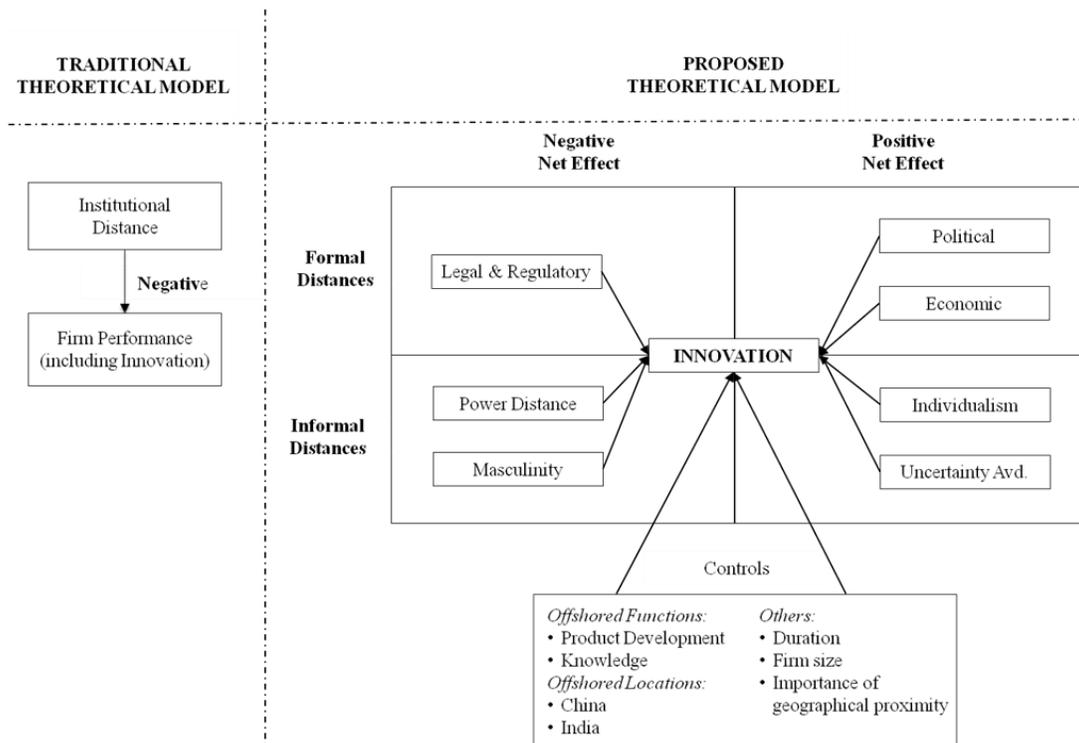
The main questions to be discussed in *Essay 3* are as follows:

- Is there a potential upside to ID?

- Does ID and its formal and informal dimensions distinctively impact firm outcomes, particularly innovation?
- Can distance create opportunities for arbitrage, complementarity or creative diversity?

As current measures of distance may be too theoretically and methodologically coarse to accurately capture these effects, we aim to uncover the black box of ID by analyzing the distinct effect of its dimensions on innovative performance using a sample of 371 offshoring ventures (see Figure 1-2 for an overview of the theoretical model). *Essay 3* also aims to contribute to the emerging literature on *positive ID* by providing theoretical and empirical support that disaggregated measures of formal and informal distance may, at times, be associated with positive innovation outcomes.

**FIGURE 1-2**  
**Theoretical Model Essay 3**



We test our hypotheses using the Offshoring Research Network database (ORN), the Fraser Institute's annual survey of institutional quality around the world, and Hofstede's value survey. The recent advances in offshoring research have served as a useful lens to investigate the nature of innovation through distance creation. While ID is presumed to negatively affect firm performance as aforementioned, offshoring research has shown that sourcing from abroad, often in quite distant countries, may lead to beneficial firm outcomes including increased innovative performance (Nieto and Rodríguez 2011; Peeters et al. 2015). The findings provide empirical support for the positive effect of a formal and informal distance component on the important firm outcome of innovation. By showing the potential positive effect of distance, we also introduce ID as a potential innovation-inducing factor to the innovation literature, thus extending research on innovation antecedents.

### **Relationship among the Essays**

As apparent in the introduction, a central and unifying component of this dissertation is the positive effect of understanding and leveraging differences and distances in a global context. While we highlight the importance and positive outcome of understanding and overcoming differences on an individual-level with regards to culture, we also take into account formal distances on a macro-level of analysis.

Besides differences and distances, the second overarching concept of the dissertation is innovation. Innovation has been determined to be an integral part of companies' international performance and a means to achieve competitive advantage. Literature has suggested various antecedents to innovation but has surprisingly neglected the role of cultural competencies, particularly cultural intelligence. Furthermore, ID (both formal and informal) has been generally

suggested to hamper MNEs innovation performance. Yet, differences, when acknowledged and understood, may actually stimulate innovativeness on a micro- as well as macro-level.

Accordingly, we suggest that innovation can be an important outcome when understanding and/or leveraging different cultures (i.e., informal distance) and formal distances.

### **Contribution of the Dissertation**

Overall, the dissertation contributes to research in international business, international entrepreneurship, international marketing, and innovation management. While we discuss well-acknowledged concepts such as CQ and ID, this current research provides new, and often controversial, insights. For example, in *Essay 1* we show that CQ is sometimes misunderstood and incorrectly analyzed. *Essay 2* provides us with new knowledge about the role of expatriates, which can go beyond that of a knowledge broker to one that discovers business opportunities abroad. Finally, *Essay 3* opens up the black box of ID by analyzing theoretically as well as empirically the distinct (and sometimes positive) impacts of various formal and informal distance dimensions on innovative outcomes. Specifically, we answer recent calls to better understand (1) how CQ can be accurately measured and the current scale be applied?, (2) how and by whom global opportunities are recognized and innovations are exploited?, and (3) how and under which conditions ID and its respective dimensions can have positive outcomes? Specific contributions for each essay are discussed in Chapters II – IV and summarized in Chapter V.

### **Organization of the Dissertation**

This dissertation is organized as follows: Chapter I provides an introduction to the topic areas, an overview of the three essays and a broad statement summarizing the findings of each

study, a statement of the relationship between the essays, and the overall contribution to the fields of study. Chapter II presents *Essay 1*, which provides an extensive overview of the nomological network of CQ. Furthermore, this essay sets out to explore the measurement of CQ by analyzing prior studies using the CQ scale. The chapter closes by giving guidance for how to use the CQ scale. Chapter III presents *Essay 2*, which views CQ, particularly metacognitive and cognitive CQ, as a valuable ability for expatriates to discover opportunities and exploit international opportunities. Chapter IV presents *Essay 3*, which explores the potential positive effect of formal and informal distances on innovation in the context of offshoring. For each of the three essays, we provide a review of the relevant literature streams from which the hypotheses evolve, followed by the presentation of methods, results, discussion, and theoretical and practical contributions. Chapter V summarizes the results as well as gives final conclusions and implications for both theory and practice.

CHAPTER II – ESSAY 1:  
THE CULTURAL INTELLIGENCE SCALE:  
LEVEL OF ANALYSIS, AGGREGATIONS, AND MISSPECIFICATIONS

**Introduction**

Research on multiple intelligences has expanded in recent years. Similar to emotional intelligence (EI), cultural intelligence (CQ) has emerged as a construct of interest in academic research. CQ is defined as “an individual’s capability to function and manage effectively in culturally diverse settings” (Ang et al. 2007, p. 336). CQ is composed of the four dimensions of metacognition, cognition, motivation, and behavior. It is particularly appealing considering that it allows individuals to successfully meet the challenges encountered in an increasingly international environment (Earley and Ang 2003).

The construct is well established in the international business, psychology, and management literature. Papers involving the construct are published in premier outlets such as *Journal of Applied Psychology*, *Journal of World Business*, and *Academy of Management Journal*. More recently, CQ has also gained increased interest from marketing scholars. For example, Magnusson et al. (2013) demonstrated that export managers high in metacognitive CQ may be more successful when adapting the marketing mix to the demands of a foreign market. Additionally, Chen et al. (2012) showed that real estate agents high in motivational CQ sold more houses to culturally-distinct clients compared to those with lower CQ. Although CQ seems

an appealing construct for various literature streams, its measurement and operationalization are controversial within the scholarly community.

To date, most CQ theory and empirical research has converged upon the the four components of CQ and has adopted the scale (CQS) developed by Ang et al. (2007) (Van Dyne et al. 2012). The popularity of the CQS is reflected in more than 500 academic citations (Google Scholar). The scale is a 20-item construct composed of the components of metacognition, cognition, motivation, and behavior. CQS depends on the self-evaluation of cultural competencies one possesses.

From a theoretical and empirical perspective, however, the scale has been challenged by questions surrounding its validity (e.g., Gabrenya et al. 2012). Conceptually, some authors question the theory underlying CQ and others struggle with the question of whether the CQS actually measures what it is presumed to measure (Gabrenya et al. 2012; Gabrenya et al. 2011). Empirically, there is even more dissonance. For example, some authors analyze the CQS as a one-dimensional 20-item model or a second-order construct; others employ a four-factor construct or rely on just one or two of the subcomponents. The challenges described, especially on the theoretical level, have resulted in various amendments of the scale or introductions of new CQ scales, such as those recently presented at the Academy of International Business 2014 and the Academy of International Business – South East 2014 (Alon et al. 2014; Thomas et al. 2014). However, the presented scales were not able to solve the original issues related to the CQS, nor were they able to penetrate the literature based on the wide acceptance of the original scale and practical issues of administrations.

The goal and contribution of this paper is not to develop and introduce yet another CQ scale, nor does it challenge the theoretical underpinning. Instead, it aims to provide theoretical

and empirical evidence and guidance of how to use and empirically apply the established scale. In particular, using a meta-analytic approach and the reanalysis of published CQ studies, we conceptually and empirically examine the nature of the relationships between the dimensions, outcomes, and antecedents. An accurate measurement approach is necessary in order to make precise inferences and generalizations of the examined antecedents and outcomes of CQ. Additionally, by comprehensively reviewing previous CQ literature, this paper is, to the best of our knowledge, the first attempt to provide a systematic overview of the empirical results derived from the application of the CQS. A comprehensive overview is particularly crucial for furthering CQ research given the multidisciplinary use of the construct and the resulting challenges, such as overlapping research questions and blindness towards advancements in other disciplines.

The remainder of this paper is composed of four sections. First, we present a literature review of CQ. Then, we discuss the CQS. We proceed by re-analyzing previous studies using the CQS from 2007 to 2014. Finally, we draw conclusions from the findings and provide suggestions on how to utilize the CQ scale for future research.

## **Literature Review of Cultural Intelligence**

### ***Definition of CQ***

CQ is a multifaceted individual difference that describes the effective adaptive behavior of a person in new cultural contexts (Earley and Ang 2003). CQ is suggested to have both process and content features as it allows for understanding and action (Earley and Ang 2003; Thomas 2006). In general, research in CQ seeks to understand (1) why some individuals are more effective than others when adapting to different cultural settings, and (2) where the higher intercultural competency stems from (Ng et al. 2012). Research in CQ has amplified since the

introduction of the seminal handbook, *Cultural Intelligence: Individual Interactions Across Cultures* by Earley and Ang (2003), which is cited today more than 1,000 times. Whereas early research can be found in books, academic research picked up with a special issue to the topic in *Group and Organizational Management* in 2006. Also, the special issue on to how to teach and train CQ in *Academy of Management Learning & Education* in 2013 further augmented the popularity of CQ.

The CQ concept is grounded in Gardner's (1993) theory of multiple intelligences and Sternberg and Detterman's (1986) multiple-loci framework of intelligences, which encompasses four distinct, but complementary, ways of conceptualizing intelligence: metacognition, cognition, motivation, and behavior. Metacognitive CQ reflects the information processing and awareness capability; cognitive CQ indicates the knowledge of cultural differences; motivational CQ refers to the desire to bridge those dissimilarities; and behavioral CQ signifies the ability to act upon behavioral cues. Metacognition, cognition, and motivation reflect mental capabilities with regards to cross-cultural interactions. The behavior-based CQ refers to the action domain and includes verbal and nonverbal capabilities (Earley and Ang 2003). Thus, CQ can be classified as a specific domain of intelligence which focuses on intercultural settings (Zhang 2012). The construct overlaps with emotional intelligence (EI), social intelligence (SQ), and general mental ability (GMA), so it complements intelligence (IQ). However, CQ is distinct from other forms of intelligences. EI, IQ, and SQ are culturally bound, as the ability to encode emotions and social situations does not inevitably transfer to unknown cultures (Cantor and Kihlstrom 1987; Earley and Ang 2003). Thus, CQ is considered culture-free and, as such, "acknowledges the practical realities of globalization" (Ang et al. 2006, p. 337).

### *CQ Components*

Some researchers group metacognitive and cognitive CQ in one component to represent mental ability (Ang et al. 2006). Others refer to meta-cognition, cognition, motivation, and behavior as mental and behavior competencies. However, in general, researchers agree upon the conceptualization of CQ as a four-dimensional construct (e.g., Ang et al. 2007; Mahembe and Engelbrecht 2014).

*Metacognition* refers to the knowledge and information processing capability (Earley and Ang 2003) and, thus, the control over cognition that results in deep information processing and the understanding of individuals' emotions, motives, and goals (Thomas 2006). The metacognitive facet is considered a higher-order dimension which encompasses the mental ability of consciousness and awareness before and during intercultural interactions (Ng et al. 2009). As such, the level of metacognitive CQ manifests itself in the ability to be cognizant of one's own cultural practices, question cultural assumptions, suspend judgment until enough data is available, and develop flexible coping mechanisms (Ng and Earley 2006; Triandis 2006). Social cognition processing, as well as a person's self-concept, are theories underlying the metacognitive ability. A person high in metacognition has a highly differentiated, flexible concept of self and others, which is used as a filter to understand novel situations and mentally adapt to new contexts. Moreover, high metacognitive individuals possess the social processing capability which enables them to understand the logic of their reasoning including self-monitoring, self-evaluation, and self-reaction (Bandura 1997; Earley and Ang 2003). Finally, individuals high in metacognitive CQ possess analogical and inductive reasoning. Analogical reasoning is important to transfer knowledge and experiences, whereas inductive reasoning helps

individuals to make sense of often ambiguous clues or misleading information (Earley and Ang 2003).

The *cognitive* aspect of CQ represents the actual possession of knowledge about the cultural environment and oneself (Earley and Ang 2003). Cognitive CQ is composed of universal facets of culture and culture-specific differences surrounding norms, practices, religious beliefs, arts and crafts, languages, and conventions (Ang et al. 2006). The specific facets of cultural knowledge include, furthermore, information about legal, economic, political, and social systems (Triandis 2006). Thus, individuals high in cognitive CQ understand differences, as well as similarities, across various aspects of universal and specific culture (Ang et al. 2007). In comparison to the other three CQ components, cognitive CQ is most similar with traditional definitions of intelligence (Earley and Ang 2003).

*Motivational CQ* involves an individual's capability to direct energy and attention to learning about, adapting to, and operating in a culturally diverse situation or setting (Ang et al. 2006; Earley and Ang 2003). The motivational facet describes the ability and the desire to actively cope with unfamiliar settings (Ng et al. 2009). Drawing on aspects of self-efficacy theory by Bandura (1997) and self-determination theory by Ryan and Deci (2000), the motivational component is suggested to include enhancement, efficacy, and consistency (Ang et al. 2006). Self-enhancement reflects the increased sensitivity to self-relevant stimuli as opposed to low relevance stimuli, which manifests itself in individuals' tendencies to misrepresent reality in order to preserve a positive self-image. On an individual level, high self-enhancement is related to a low CQ based on the argument that it restricts an individual from exploration of new situations, whereas on a collective level, high self-enhancement motives may be associated with high CQ such that high CQ people will engage others proactively for information (Earley and

Ang 2003). Self-efficacy relates to the task-specific confidence to adjust to new cross-cultural situations (Earley and Ang 2003; Van Dyne et al. 2012). The confidence in cross-cultural interactions may enhance the ability to focus on intrinsic motivation rather than instant gratifications, which may or may not be achievable in a foreign environment. Finally, self-consistency constitutes the resistance to new information and inability to adjust to novel context and is, thus, related to low CQ (Earley and Ang 2003).

*Behavioral CQ* reflects the action domain of the construct and, thus, the ability of an individual to commit to adaptive behavior and exhibit cultural appropriate verbal and non-verbal behaviors (Ang et al. 2007; Earley and Ang 2003). Individuals high in behavioral CQ are able to verbally and non-verbally master interactions, but they also have a sense of emotional exhibition and presence (Earley and Ang 2003). Thomas (2006) suggests that the behavior is grounded in the knowledge of the culture (metacognition and cognition) and integrates individual goals and motivations. Accordingly, the behavioral component is highly correlated with the metacognitive, cognitive, and motivational facets, and it is guided by the psychological framework of understanding, processing, and channeling the desire to act (Earley and Ang 2003).

Based on the definition of the CQ components, it is salient that the components, although interrelated, have different theoretical origins. Thus, the components are suggested to have distinctive impacts on cross-cultural outcomes and stem from different antecedents (Ang et al. 2007). The distinctiveness of the components has been to some extent empirically confirmed, although various authors continue to use CQ as an aggregated construct. In the following section, we first discuss the conceptualization of CQ as a multidimensional aggregated construct. Second, we provide an overview of the empirical research conducted with regards to the conceptual

distinctiveness of CQ, the relationships of the aggregated, unidimensional CQ, and the individual components with variables considered in current research.

### ***CQ Construct and Measurement***

Building on the conceptualization by Earley and Ang (2003), Ang et al. (2007) empirically validated a four-dimensional construct consisting of metacognitive, cognitive, motivational, and behavioral dimensions. As the four dimensions are different aspects of the overall ability, individuals high in CQ are suggested to use all four parts in union (e.g., Ang et al. 2007; Crowne 2013; Earley and Peterson 2004; Ng and Earley 2006). Furthermore, according to the authors, CQ is an aggregated multidimensional construct where the four dimensions are established at the same level as the original construct and the dimensions compose the overall construct (Ang et al. 2007). The CQ components may or may not correlate (Ang et al. 2007).

The CQS is the most commonly used measure of CQ. Based on the original conceptualization by Earley and Ang (2003), the CQS uses four to six self-report items to assess each of the four hypothesized components of CQ (see Table 2-1). Respondents are asked to evaluate themselves on a seven-point Likert-Scale ranging from “I totally disagree” to “I totally agree”. Sample items include: “I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds” for the metacognitive component; “I know the cultural values and religious beliefs of other cultures” for the cognitive component; “I am confident that I can socialize with locals in a culture that is unfamiliar to me” for the motivational component; and “I vary the rate of my speaking when a cross-cultural situation requires it” for the behavioral component. All items are positively worded in order to avoid methodological artifacts (Ng et al. 2012).

**TABLE 2-1**  
**The Cultural Intelligence Scale (CQS) (Ang et al. 2007)**

	<i>1= I totally disagree</i>	<i>7= I totally agree</i>
<b>Meta-Cognition</b>	I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	
	I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	
	I am conscious of the cultural knowledge I apply to cross-cultural interactions.	
	I check the accuracy of my cultural knowledge as I interact with people from different cultures.	
<b>Cognition</b>	I know the legal and economic systems of other cultures.	
	I know the rules (e.g. vocabulary, grammar) of other languages.	
	I know the cultural values and religious beliefs of other cultures.	
	I know the marriage systems of other cultures.	
	I know the arts and crafts of other cultures.	
	I know the rules for expressing non-verbal behaviors in other cultures.	
<b>Motivation</b>	I enjoy interacting with people from different cultures.	
	I am confident that I can socialize with locals in a culture that is unfamiliar to me.	
	I am sure I can deal with the stress of adjusting to a culture that is new to me.	
	I enjoy living in cultures that are unfamiliar to me.	
	I am confident that I can get accustomed to the shopping conditions in a different culture.	
<b>Behavior</b>	I change my verbal behavior (e.g. accent, tone) when a cross-cultural interaction requires it.	
	I use pause and silence differently to suit different cross-cultural situations.	
	I vary the rate of my speaking when a cross-cultural situation requires it.	
	I change my non-verbal behavior when a cross-cultural intersection requires it.	
	I alter my facial expressions when a cross-cultural interaction requires it.	

The scale was developed based on a comprehensive review of the intelligence literature, as well as executives with international work experience. The initial 53 items, with approximately 13 items evaluating each CQ dimension, were reduced to 20 items through exploratory factor analysis (EFA) and raters. The factor structure was established with confirmatory factor analysis (CFA) using two Singaporean student samples (Ang et al. 2007).

Prior research has demonstrated the predictive power of CQ on individuals, as well as organizational outcomes (Ng et al. 2012; Van Dyne et al. 2012). The scale also generalizes across countries, time, and samples as demonstrated with U.S. students and managers (e.g., Ang et al. 2007; Ward et al. 2011). The generalization of the scale has been demonstrated in more recent research by Khodadady and Ghahari (2011) in Iran, Moon (2010) in New Zealand, and Mahembe and Engelbrecht (2014) in South Africa. Research has also demonstrated the value and the validity of the CQS with regards to self-reports and observer-report versions (Kim and Van Dyne 2012).

### ***Conceptual Distinctiveness***

As discussed in the introduction of the CQ framework, CQ is related to, yet distinct from, other forms of intelligences. In particular, the discriminant validity to EI and GMA has been of interest for researchers. For example, Ang et al. (2007) provided evidence that CQ is distinct from EI and GMA. Crowne (2013) established that CQ, EI, and social intelligence (SI) are different, but related. In a study of 390 Korean students, Moon (2010) found that specific EI factors are related to specific CQ dimensions. Metacognitive CQ was positively related to EI self-awareness as those who have high self-awareness are better able to assess themselves in a different cultural environment and are able to process cultural cues. EI self-management was positively associated with metacognitive, cognitive, and behavioral CQ. The insignificant result

for the association between motivational CQ and self-management suggests that individuals may be high on self-management in their respective culture, but this commitment and drive does not equally translate into the motivation to adapt and manage the emotions in different settings. Finally, EI relationship management was positively associated with metacognitive, motivational, and behavioral CQ. Moon (2010) reasons that no significance was found for cognitive CQ as it is the least universal component of CQ. The knowledge of various countries' cultural norms and legal and political systems may not be sufficient enough to foster and manage specific relationships in foreign countries (Moon 2010). Ang et al. (2007) analyzed the responses of 235 US students and found that the EI components of mood regulation, appraisal, utilization, and social skills are significantly related to all four CQ components. The significant association between the CQ components and an overall EI score was confirmed by the authors in an additional study using 358 Singaporean students (Ang et al. 2007). The relationship between an aggregated EI and the four CQ components, as well as the aggregated CQ, was additionally established by Lin et al. (2012). EI, furthermore, moderated the relationship between CQ and cross-cultural adjustment, such that adjustment was stronger for those with, in addition to CQ, higher levels of EI. Results from a study of 126 Swiss military leaders and their peers showed a positive significant relationship between an aggregated EI and an aggregated CQ (Rockstuhl et al. 2011b). The authors suggest that EI and CQ are complementary as EI predicts general, but not cross-border, leadership, while CQ predicts cross-border, but not general, leadership effectiveness.

Besides EI, research has established that personality and CQ are different, but interconnected, constructs. Whereas personality characteristics are considered trait-like individual differences that describe unchanging predispositions, CQ is considered state-like and

malleable (Ang et al. 2006). Ang et al. (2007) and Ang et al. (2006) established the discriminant validity for the four CQ dimensions and the Big 5 personality traits, as well as meaningful associations between certain CQ and personality trait components. In the study of 338 students in Singapore, Ang et al. (2006) theoretically and empirically determined that openness to experience related to all four CQ components, conscientiousness related to metacognition, extraversion related to cognitive, motivational, and behavioral CQ, and agreeableness and emotional stability related to behavioral CQ. According to Ang et al. (2006), metacognitive CQ may be related to openness to experience as individuals high in openness adopt metacognitive strategies, and they are willing to change their mental modes and assumptions. Openness to experience may be related to cognitive CQ because open individuals are willing to learn, curious, and broad-minded about different cultures. Similarly, openness to experience and motivational CQ are related because both encompass the drive to experiment and discover new information and situations. Finally, openness and behavioral CQ are suggested to be related due to the fact that individuals who are willing to learn novel information should seek and act on new experiences. Similarly, Moody (2007) demonstrated that openness to experience predicted CQ the most, followed by conscientiousness. Other authors have confirmed the relationship between metacognitive CQ and openness to experience, cognitive CQ and openness to experience, motivational CQ and openness to openness to experience, and behavioral CQ openness to experience (Ang et al. 2007; Groves et al. 2014; Şahin et al. 2014). Besides openness to experience, extraversion may be an important personality trait with regards to CQ. Similar to individuals high in extroversion, individuals high in CQ have the self-confidence and efficacy to approach novel settings and people (Earley and Ang 2003). Thus, comparable to the relationship between openness to experience and CQ, which is grounded in the argument that both constructs

involve the experience of novel situations or contexts and the willingness to take risks (Ng et al. 2012), extroversion and CQ share common factors like self-confidence or efficacy in often unfamiliar settings. In various studies, authors established significant relationships between metacognitive CQ and extraversion, cognitive CQ and extraversion, motivational CQ and extraversion, and behavioral CQ and extraversion (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014; Huff et al. 2014; Şahin et al. 2014).

In conclusion, CQ is related to other forms of intelligence, as well as personality. The brief overview of published CQ studies, however, shows that the CQ subcomponents are distinctively associated with subcomponents of the personality or EI constructs. Appendix 2A provides an overview of studies linking CQ to personality and EI. In the table, we furthermore distinguish between the use of CQ as a unidimensional construct and the CQ subcomponents.

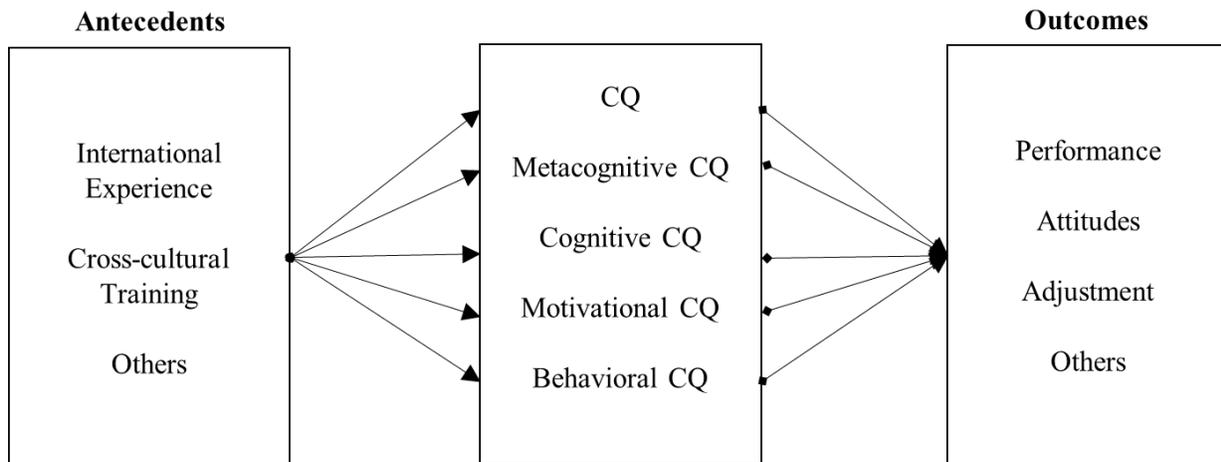
### ***Relationships***

Subsequently, we present and discuss the antecedents and outcomes of CQ and the CQ components (see Figure 2-1 for an overview of the major categories).

*Antecedents.* CQ is a capability that can be enhanced through training, experiences, and education (e.g., Crowne 2013; Earley and Peterson 2004; Eisenberg et al. 2013). Whereas some authors argue that training, experiences, and education enhance CQ as a whole, others see differential effects on each subcomponent of CQ. Crowne (2008), for example, found that the breadth (employment abroad, education abroad, vacation abroad, and other experiences abroad) and the depth (number of countries visited for employment, number of countries visited for education, number of countries visited for vacation and other purposes) of cultural exposure was related to CQ. Whereas CQ as a unidimensional construct related to breadth (employment abroad and education abroad) and depth (number of countries visited for employment and for

education), the relationship differed when the subcomponents were analyzed. For example, motivational CQ was increased by number of countries visited for vacation and other purposes, and cognitive CQ was enhanced by number of countries visited for employment and vacation. With regards to cultural breadth, metacognitive CQ was affected by employment abroad and education abroad, whereas cognitive CQ was only impacted by education abroad. In contrast, Tay et al. (2008) found that employment abroad only influenced cognitive CQ.

**FIGURE 2-1**  
**Antecedents and Outcomes of CQ and the CQ Components**



With regards to training, MacNab (2012) found that experiential training positively influenced the metacognitive, motivational, and behavioral aspects of CQ in an eight-week course. Eisenberg et al. (2013) extended the MacNab (2012) study and established that cross-cultural management courses using a traditional academic approach had stronger effects on metacognitive and cognitive CQ than on motivational or behavioral CQ. Prior international experience, furthermore, positively impacted the level of CQ. Rosenblatt et al. (2013) examined the relationship between participants' perception of optimal cross cultural contact and CQ

development, and they found that the relationship is mediated by the experience of expectancy disconfirmation. When a person experienced more disconfirmation, the individual had more metacognitive, cognitive, motivational, and behavioral CQ development. Taras et al. (2013), in their study of 6,000 students from 80 universities worldwide, discovered that students' overall CQ and comprehension of challenges related to global virtual collaboration advanced following the collaboration with students in global teams.

A comprehensive overview of the established antecedents of CQ, or CQ components, is provided in Appendix 2B.

*Outcomes.* With regards to the outcomes of CQ, previous empirical studies have demonstrated that CQ explains performance-related and affective outcomes in cross-cultural settings over and beyond other constructs (Ang et al. 2007). CQ is established as an important predictor for factors such as cultural adaptation or adjustment (Chen et al. 2014; Huff et al. 2014; Lee and Sukoco 2010; Lin et al. 2012; Moon 2010; Ramalu et al. 2010; Wu and Ang 2011), travel and job strain (Ramsey et al. 2011), performance (e.g., Chen et al. 2011), expatriate effectiveness (Rockstuhl et al. 2011b), innovation (Elenkov and Manev 2009), and job satisfaction (Bücker et al. 2014). However, CQ outcomes vary depending on whether CQ is used as a unidimensional or multidimensional construct. The differential impact of CQ on performance, work attitudes, and adjustment is discussed in the following section.

For example, with regards to performance and the use of a unidimensional aggregated CQ, Ramalu et al. (2012) studied 332 expatriates working in Malaysia and found that CQ affects job performance and that this relationship is mediated by international and work adjustment. Sampling 382 Philippine laborers, Chen et al. (2011) showed that CQ positively influenced job performance. Additionally cultural shock negatively mediated the relationship. Rose et al. (2010)

determined that CQ influenced job performance. In a more detailed analysis of the CQ components and task, contextual, and assignment-specific performance, the authors found that metacognitive CQ positively influenced contextual performance, and behavioral CQ impacted contextual and assignment-specific performance (Rose et al. 2010). Chen et al. (2012) demonstrated that motivational CQ is positively related to realtors' performance as measured in cultural sales. The relationship is enhanced by a motivational CQ climate inherent in a firm. Chen et al. (2010) studied 556 expatriates in 31 foreign subsidiaries and found that the level of motivational CQ is positively related to job performance and that expatriates' tendency to adjust to their work mediated the relationship. Based on survey data of 153 export managers, Magnusson et al. (2013) showed that export managers' metacognitive CQ positively influenced marketing-mix adaptation, and their motivational CQ positively influenced export performance. Ang et al. (2007) determined that task performance is related to metacognitive and motivational CQ. Whereas some authors establish a direct positive relationship between CQ and performance (e.g., Rose et al. 2010), other authors see performance as a "spillover" of adjustment or work attitudes derived through higher levels of CQ (Chen et al. 2010; Ramalu et al. 2012).

Considering work attitudes, Bücken et al. (2014) sampled 225 Chinese managers and found that CQ is imperative for decreasing anxiety and improving communication effectiveness and job satisfaction. Huff (2013), in contrast, demonstrated that metacognitive CQ is negatively related to job satisfaction, while behavioral and motivational CQ is positively related to it. Furthermore, the authors discovered that general adjustment and interactional adjustment were the results of the level of motivational CQ. Similarly, Morrell et al. (2013), in a study of 150 students, only found support for the effect of metacognitive and motivational CQ on academic satisfaction. Carranza and Egri (2010), using a sample of Canadian small businesses, suggested

that CQ positively influences employee commitment. Similarly, Helms et al. (2014) demonstrated with a sample of 142 university students that CQ is positively related to academic commitment. To the best of our knowledge, no research has yet identified the individual impact of CQ components on commitment.

With regards to adjustment or adaptation, the common rationale for the positive relationship between CQ and adjustment is based on the fact that individuals high in CQ have the ability to adapt effectively to different contexts, cope better with challenges associated with foreign environments or transition problems, experience less culture shock, and become psychologically comfortable dealing with novel assignments or tasks (Chen et al. 2010; Wu and Ang 2011). Support for cross-cultural adjustment, which can include general, work, or interactional adjustment, is generally found when researchers use the aggregated CQ construct or the motivational subcomponent. For example, cross-cultural adjustment has been related to overall CQ by various authors (Lee and Sukoco 2010; Lee et al. 2013; Lin et al. 2012; Ramalu et al. 2012). The theoretical rationale is hereby often based on the theoretical foundations of the motivational CQ component, such as self-efficacy to approach new situations, the direction of necessary personal resources to circumvent challenges, and the drive to adjust and experience new contexts (Chen et al. 2010; Ramalu et al. 2012). Thus, not surprisingly, a more fine-grained analysis of various adjustment components and the four CQ components suggests that adjustment is mostly a result of motivational CQ. For example, motivational CQ is related to interactional adjustment, work adjustment, and general adjustment (Ang et al. 2007; Huff 2013; Huff et al. 2014; Ramalu et al. 2010; Templer et al. 2006). Much less support, and even contradicting support, is found for the relationship between adjustment variables and the other three CQ components. For example, Ramalu et al. (2010) found a negative relationship between

behavioral CQ and general adjustment, whereas the association was positive for motivational and metacognitive CQ. The authors provided the argument that the relationship is negative if the expatriates mimic the appropriate behavior instead of adapt to it through understanding. A comprehensive overview of the established outcomes of CQ or CQ components using the CQS is provided in Appendix 2C.

In conclusion, CQ and its components are related to various other variables. The brief overview of some of the studies, however, suggests that the CQ components affect certain outcomes differently or are affected differently by other variables. The pattern concurrent with arguments provided in the literature review of the CQ construct suggest that the CQ components are rooted in different biological or cognitive bases and underlie distinct mechanisms and theoretical explanations (Rockstuhl et al. 2011a).

### *Criticism*

With rising popularity, researchers started to pay closer attention to the specifics of the scale and critiqued its conceptualization. First, researchers have criticized that the CQ components are mislabeled, inadequate to make accurate assessment, or do not adhere to conventional definitions of intelligence. For example, March (2005) notes that the four CQ components all represent different cognitive components instead of distinct facets. Thomas et al. (2008 p. 138) argued “...the retrospective self-reports of cognitive processes proposed elsewhere [i.e., the CQS] seem inadequate to make accurate assessments.” These authors suggest that behavioral observation would increase the accurateness of the measurement. In more recent work, Thomas et al. (2014) proposed that the motivational and behavioral components should not be part of the CQ assessment as motivation does not adhere to the general definition of intelligence. Subsequently, the authors developed a new scale that represents CQ as a single

latent factor consisting of three subordinate facets and focusing solely on metacognition and cognition.

Second, March (2005) suggests that the CQS lacks construct validity as individuals who appear high in CQ may be confident instead of actually possessing the cultural ability. He suggests that CQS may measure impression management, self-efficacy, and social desirability rather than an actual capability. In particular, the impact of self-efficacy was confirmed by Gabrenya et al. (2011) in the study of 210 international students. Gabrenya et al. (2011) examined the construct validity of CQS by analyzing the relationships of the four CQ components to antecedent constructs (cultural knowledge, experience, and attitudes), related constructs (personality, self-efficacy, and social competence), and adjustment and performance measures. The authors found that CQS “measures a combination of competency and related constructs, mainly through the operation of spurious third variables, so although it is often found to be related to criterion measures, it is not suitable as a research instrument. “A valid measure of CQ is still needed” (Gabrenya et al. 2012, p. 58). However, Earley and Mosakowski (2004) rejected the notion of the spurious effect of CQ. The authors empirically confirmed that CQ assesses neither impression management nor social desirability. In a more comprehensive assessment of the validity of the scale, Gabrenya et al. (2012) reviewed 33 cultural competencies scales with regards to face validity, construct validity, and criterion validity, and they suggest that the CQS lacks overall validity. In particular, the authors show evidence that the metacognitive subcomponent is operationalized incorrectly as the subscale assesses attitudes, self-confidence, and sociocultural adjustment rather than metacognitive facets (i.e., lack of face validity). The problem with the cognitive component is primarily the reliance on self-reports, which has been determined in various literature streams to be a weak measure of actual ability

(i.e., lack of face and content validity). Motivational CQ is deemed problematic as the component assesses attitudes, as well as sociocultural and psychological adjustment, instead of motivational facets (i.e., lack of face validity). Behavioral CQ focuses only on verbal and nonverbal behavior and, thus, reflects communication competencies instead of other action domains (i.e., lack of face and content validity). The authors also argue that CQS lacks overall construct validity (Gabrenya et al. 2011). Furthermore, the authors found mixed results for convergent, incremental, and criterion validity in a review of the relevant literature.

Third, CQ encountered criticism because it may overlap with other constructs, such as global mindset, and other measures of cross-cultural competencies (Crowne, 2006). Ang et al. (2007) rejected the notion of overlaps by highlighting the unique foundation of CQ in the framework of multiple intelligences and the culture-free composition. Furthermore, they base the distinctiveness of the CQS on the fact that other cultural competencies scales mix personality and ability whereas the CQS solely focuses on malleable competencies. Thus, it avoids the fallacy of lack of validity and precision. In particular, the authors suggest that CQ is distinct from scales such as the “Cross-cultural Adaptability Inventory”, “Cross-cultural World Mindedness”, “Cultural Shock Inventory”, “Intercultural Adjustment Potential Scale”, “Intercultural Development Inventory”, and “Multicultural Awareness-Knowledge Skills Survey”. Referring to the overview of the assessment of 33 cultural competencies constructs by Gabrenya et al. (2012), we may suggest potential overlaps of the CQS, for example, with the “Behavioral Assessment Scale for Intercultural Communication Effectiveness” (BASIC) by Koester and Olebe (1988). Especially, the interaction behavior and management subscale shows content similarity with the behavioral CQ component. Similarly, the “Multicultural Personality Questionnaire” (MPQ) by Van Der Zee and Van Oudenhoven (2000), which was created to measure effectiveness in

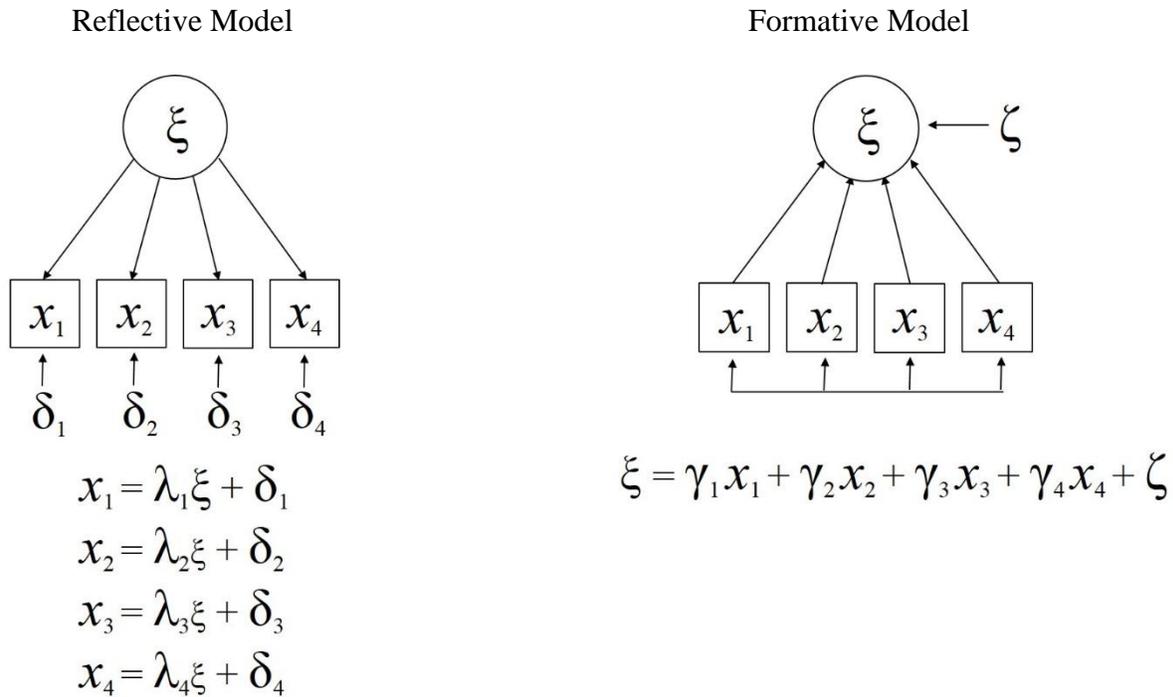
multicultural settings, may capture various aspects CQS attempts to measure. The MPQ scale, which is more comprehensive than CQS with 78 items, includes the subcomponents of cultural empathy, open mindedness, emotional stability, orientation action, adventurousness and curiosity, flexibility, and extraversion. Several of those aspects are captured in the CQ subcomponents of metacognition and motivation. Moreover, the “Sociocultural Adaption Scale” (SCAS) by Ward and Kennedy (1999), which is composed of a psychological domain and a sociocultural domain, contains various metacognitive and cognitive items similar to those of CQS, as well as behavioral adaptation components.

Fourth, given the vague conceptualization of the CQ construct and the distinct relationships of the CQ components with other variables, it is not clear if CQ should be treated as a reflective or formative model. Currently, the majority of CQ researchers take the reflective standpoint, generally without considering a formative alternative. The correct identification of the measure, however, is necessary to ascribe meaningful relationships in the structural model (Anderson and Gerbing 1988; Coltman et al. 2008). A reflective measure suggests that a change in the indicators reflects the change in the underlying latent factor. Thus, causality is directed from the construct to the indicators (Fornell and Bookstein 1982; Jarvis et al. 2003). The construct validity will not change when single indicators are removed because all components are suggested to represent the residual indicators (Bollen and Lennox 1991). In contrast, a formative measure is a composite of various indicators with causality directed from the indicators to the construct (Fornell and Bookstein 1982). Thus, changes in the components will cause changes in the latent factor (Jarvis et al. 2003). Unlike the reflective model, the formative model does not require correlations between the factors; thus, the factors may or may not be correlated (Jarvis et al. 2003). Dropping indicators from the construct may change the meaning

of the overall construct or restrict its domain (Coltman et al. 2008; Fornell and Bookstein 1982).

Figure 2-2 portrays the differences between reflective and formative measurement.

**FIGURE 2-2**  
**Reflective and Formative Measures**  
 (Figures adopted from Coltman et al. (2008))



Referring to the classification frameworks of Jarvis et al. (2003) and Coltman et al. (2008), we attempted to classify the CQS as a formative or reflective measure. The frameworks take into account, on a *theoretical level*, the nature of the construct, direction of causality from construct to measure, and characteristics of construct items (i.e., interchangeability of the construct items). *Empirically*, the frameworks take into account the item intercorrelations (i.e., covariation among the indicators) and the item relationships with construct antecedents and consequences (i.e., nomological net of the construct indicators). Table 2-2 provides an overview of the

classifications, which is based on citations of the original scale development paper by Ang et al. (2007) and other authors, as depicted in the literature review and our own observations.

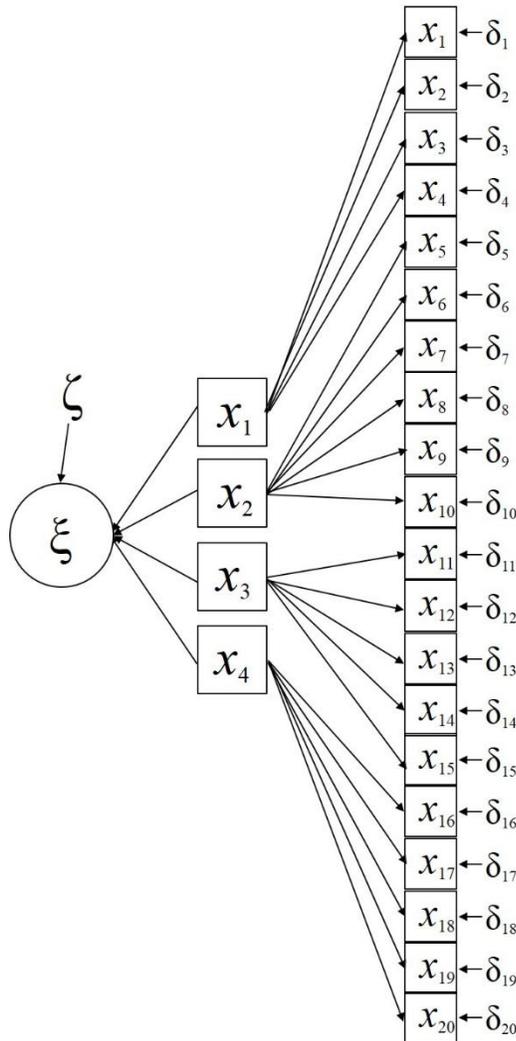
**TABLE 2-2**  
**Classification of the CQS**

<b>Consideration</b>	<b>CQS</b>	<b>Classification</b>
<b>Nature of the construct</b>	The CQ dimensions are qualitative different aspects of the overall CQ and individuals high in CQ use all four parts in union (Ang et al. 2007)	Reflective
	CQ is an aggregated multidimensional construct where the dimensions prevail at the same level as the original construct and the dimensions compose the overall construct (Ang et al. 2007)	Formative
<b>Direction of causality</b>		Reflective within components, formative on a component level
<b>Characteristics of items used to measure the construct</b>	Items share an uniform theme and are interchangeable within the dimension but not across	Reflective within components, formative on a component level
<b>Item intercorrelation</b>	Components of CQ may or may not correlate (Ang et al. 2007)	Formative
<b>Item relationship with construct antecedents and consequences</b>	The components have different theoretical origins. They are suggested to have distinctive impacts on cross-cultural outcomes and stem from different antecedents (Ang et al. 2007)	Formative

The endeavor to categorize CQS as a reflective or a formative measure produced inconsistent results. Whereas the nature of the construct seems to be either reflective or formative, the direction of causality, characteristics of the items used to measure the construct, and the relationship with other constructs suggests that CQS may be what Jarvis et al. (2003)

classify as a Type II model (see Figure 2-3). Such a model is composed of second-order factors with first order factors as formative indicators, and the first-order factors themselves possess reflective indicator (Jarvis et al. 2003).

**FIGURE 2-3**  
**CQS as Reflective First-Order, Formative Second-Order**



Finally, and most relevant for the following empirical part of the study, researchers have questioned the conceptualization and the subsequent analysis of the four components, or an overall CQ. The initial conceptualization regarded CQ as an aggregate of the four dimensions, and early empirical examination focused on the aggregated CQ construct (Magnusson et al.

2013). The aggregate CQ construct is still used in recent literature as authors argue that besides the low discriminant validity of the CQ components and the lack of empirical support for the use of the four components as separate constructs, current literature does not reach a consensus about the importance and strength of each dimension (Bücker et al. 2014; Chen et al. 2011). Other researchers, however, separately examine the four dimensions, and they often find distinct effects opposed to the aggregated CQ (Magnusson et al. 2013). For example, Ang et al. (2007) suggested that certain dimensions of CQ have more relevance for certain outcomes than others. Furthermore, Chen et al. (2011) advocate that it is critical to examine CQ as a multidimensional construct with specific and differentiated relationships. However, whereas these authors emphasize the separate use of CQ components, the subsequent studies have often focused attention on only one or two CQ components, in particular, metacognitive and motivational CQ. The use of only some components may seem counterintuitive to the theoretical argument that individuals high in CQ use all four parts in union (e.g., Ang et al. 2007; Crowne 2013; Earley and Peterson 2004; Ng and Earley 2006). The exclusion of factors is frequently justified by the fact that the operationalization of cognitive and behavioral CQ is not without weaknesses as respondents are asked to describe rather than demonstrate their cultural ability (Magnusson et al. 2013).

In conclusion, the CQS has been prone to criticism with regards to various forms of validity, overlap with other constructs, measurement specification, and the conceptualization and subsequent analysis as aggregated or multidimensional construct. We added to the theoretical discussion by providing an overview of the various issues related to the measurement construct, as well as highlighting the predicament with regards to the specification of the CQ model. Consequently, we analyzed the properties of the CQS as a formative or reflective measure. In the

following section, we will focus on the empirical assessment of the conceptualization of CQ as a unidimensional or multidimensional construct as highlighted in the latter part of the criticism section. The conceptualization issue, in particular, gives rise to the questions: How should the CQS scale be analyzed? Can generalizations and inferences be made when the aggregated scale is used? Do the CQ components measure the same thing? We attempt to answer these questions by re-analyzing previous CQ studies, discussing the results, and giving suggestions on how to apply the scale in future research.

## **Methods**

### ***Study Sample***

We collected published empirical studies and dissertations from 2007 till 2014 that used the CQS by Ang et al. (2007) to assess CQ. The starting point in 2007 was chosen based on the origination of the CQS development paper by Ang et al. (2007). The resources for the collection of the studies were Google Scholar, library resources, and the dissertation database ProQuest. The studies were selected based on the following key words: Cultural Intelligence, CQS, and correlation matrix. We required that the studies contain a correlation matrix in order to conduct further analysis. Studies that used different CQ scales were dismissed. In total, we collected 78 studies. Within these 78 studies the CQS was applied and specified in various different ways. Scholars used the four components of CQ as separate constructs to assess the relationships in 48.7% ( $n = 38$ ) of the studies (11 of these studies did not consider the correlation between the subcomponents during the analysis), the second-order or aggregated unidimensional construct in 37.2% ( $n = 29$ ), either one or two subcomponents in 11.5% ( $n = 9$ ), and, finally, CQ components as controls in 2.6% ( $n = 2$ ) of the studies.

Subsequently, we chose the studies that included all four components of CQ and at least one other variable (control variables, antecedents, or outcomes) in the correlation matrix for further analysis. A total of 33 studies met these criteria (24 published studies and nine dissertations). In four cases, the correlation matrices contained CQ data for two time periods. Subsequently, the correlation matrix was split, and the analysis was separately conducted for each time period. Furthermore, one paper contained three separate studies, and another paper contained two studies. We treated these studies separately. Overall, we analyzed 40 correlation matrices.

### *Analysis Descriptions*

We reanalyzed the selected studies using LISREL 8.80 and SAS 9.40. We copied the correlation matrix from the selected studies, formed the scales, and reproduced the measurement models in LISREL (see Figure 2-4 for an example of the measurement model set-up).

**FIGURE 2-4**  
**LISREL Input Example**

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Ang et al (2007) Study 1
DA NI=20 NO=235 MA=CM
LA; CJDM Iadj Well MC Cog Mot Beh IQ EI_Mood EI_App EI_Ut EI_Soc Consc Open Extra Agree Stab Age Gen ExpFor
!CQ dimensions first
SE; 4 5 6 7 1 2 3 8 9 10 11 12 13 14 15 16 17 18 19 20/

KM
1
0.13 1
0.14 0.49 1
0.27 0.23 0.36 1
0.21 0.13 0.25 0.37 1
0.18 0.29 0.30 0.45 0.42 1
0.13 0.25 0.30 0.42 0.51 0.33 1
0.17 0.07 0.10 0.06 -0.02 -0.10 0.00 1
0.15 0.35 0.52 0.41 0.19 0.34 0.19 0.01 1
0.12 0.17 0.31 0.30 0.26 0.23 0.20 0.11 0.51 1
0.19 0.09 0.34 0.40 0.26 0.24 0.25 0.15 0.55 0.42 1
0.11 0.41 0.45 0.38 0.18 0.30 0.22 0.03 0.70 0.51 0.59 1
-0.07 0.34 0.59 0.23 0.16 0.16 0.15 -0.04 0.43 0.21 0.22 0.38 1
0.28 0.15 0.16 0.27 0.23 0.23 0.28 0.19 0.24 0.22 0.35 0.27 0.01 1
0.01 0.35 0.47 0.20 0.05 0.19 0.01 0.06 0.48 0.28 0.26 0.59 0.44 0.13 1
-0.03 0.30 0.29 0.11 -0.08 0.04 0.05 0.10 0.34 0.28 0.16 0.40 0.31 0.10 0.50 1
0.05 0.29 0.50 0.18 0.10 0.18 0.05 0.03 0.48 0.23 0.12 0.27 0.48 0.04 0.49 0.33 1
0.09 -0.01 0.10 0.03 0.08 0.11 0.12 -0.04 -0.03 -0.07 0.09 -0.05 0.00 -0.10 -0.06 -0.10 -0.03 1
0.06 -0.16 -0.16 -0.03 0.02 0.06 0.01 -0.00 -0.05 -0.07 -0.10 -0.24 -0.09 -0.12 -0.22 -0.34 0.12 0.02 1
0.12 0.20 0.12 0.22 0.26 0.40 0.12 -0.10 0.14 0.12 0.06 0.18 0.09 0.07 0.14 -0.02 0.10 0.05 0.05 1

MO NX=20 NK=17 LX=FU,FI PH=ST TD=sy
FR LX 1 1 LX 2 1 LX 3 1 LX 4 1
!LX terms were misspecified.
FR LX 5 2 LX 6 3 LX 7 4 LX 8 5 LX 9 6 LX 10 7 LX 11 8 LX 12 9 LX 13 10 LX 14 11 LX 15 12 LX 16 13 LX 17 14 LX 18 15 LX 19 16 LX 20 17
FI TD 5 5 TD 6 6 TD 7 7 TD 8 8 TD 9 9 TD 10 10 TD 11 11 TD 12 12 TD 13 13 TD 14 14 TD 15 15 TD 16 16 TD 17 17 TD 18 18 TD 19 19 TD 20 20

!Model 1: parallel analysis
!Model 2: tau equivalent analysis, make eq td a comment
!Model 3: congeneric analysis, make eq lx and eq td a comment
eq lx 1 1 lx 2 1 lx 3 1 lx 4 1
eq td 1 1 td 2 2 td 3 3 td 4 4
!Model 2: CQ is a higher-order construct (make the previous statement a comment)

PD
OU MI ND=3 WP AD=OFF

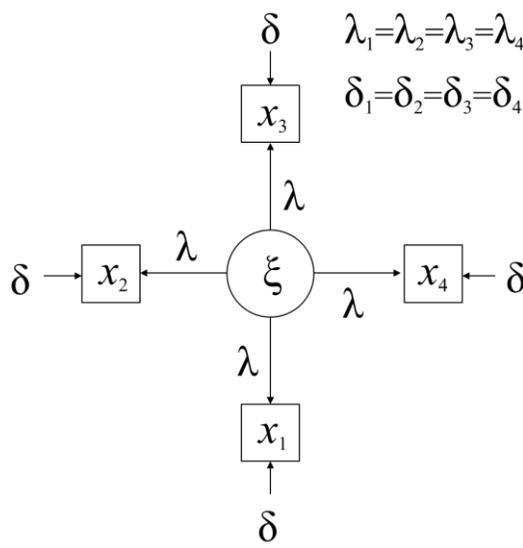
```

Following this setup, we proceeded in a three-step sequence, which involved assessing the dimensionality of the CQS using various indices, the analysis of modification indices (MIs), and, finally, the analysis of the impact of sample characteristics. A more detailed description of the steps is provided in the following section.

First, we conducted the dimensionality analysis of the CQS. We assessed the CQS as parallel (i.e., loadings and errors constrained equal), tau equivalent (i.e., loadings constrained equal), and congeneric (i.e., loadings and errors freely estimated), and we subsequently compared the three different models. A scale is parallel if the true score and the variances are the same for each item. It is tau-equivalent if the error variances vary, and it is congeneric if both the error variance and the true score vary (Jöreskog and Sörbom 1996). Thus, in our first step, we constrained the loadings, as well as the error terms, in order to create a parallel measurement. The constraint means that the loadings, as well as the error terms, are exactly the same for all factors (see Figure 2-5).

**FIGURE 2-5**

**Parallel Measurement** (based on figure by Jöreskog and Sörbom (1996, p. 124))

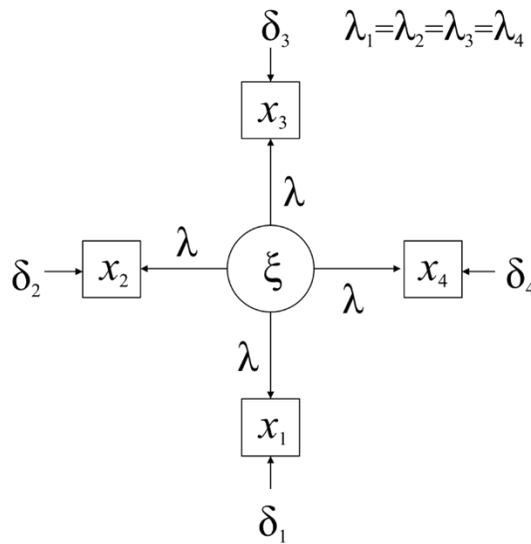


If the fit of the parallel measurement model is not significantly worse than for the tau equivalent and congeneric model, then the CQ components may be parallel (Kline 2011).

In the second step, we released one of the constraints used in the parallel measurement to achieve a tau equivalent measurement model (see Figure 2-6). In particular, we let the error vary freely while keeping the loadings of the four components constrained at the same value.

**FIGURE 2-6**

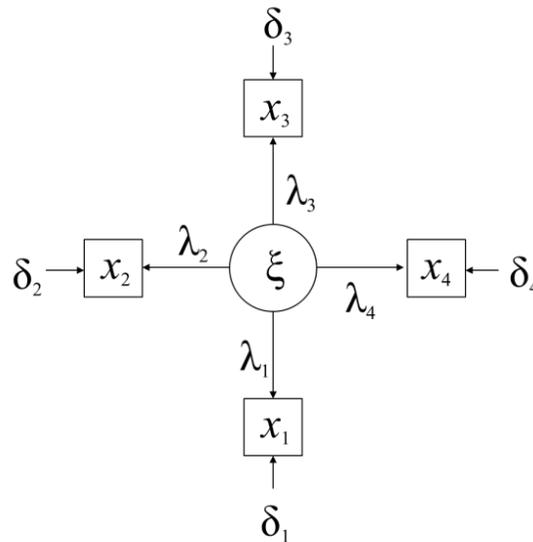
**Tau Equivalent Measurement** (based on figure by Jöreskog and Sörbom (1996, p. 124))



In the last step, we specified the congeneric measurement model in which the loadings, as well as the error terms, are freely estimated (Figure 2-7). In contrast to the constrained parallel and tau equivalent models, a good fitting congeneric model suggests that the factors measure the same construct, yet to a varying degree (Kline 2011).

**FIGURE 2-7**

**Congeneric Measurement** (based on figure by Jöreskog and Sörbom (1996, p. 124)).



For the initial assessment of convergence and fit, we focused on the average variances extracted (AVE), composite reliabilities (CR), absolute and incremental fit statistics, such as the comparative fit index (CFI), non-normed fit index (NNFI), root mean square error of approximation (RMSEA), and standardized root mean square residual (SRMR), as well as the average CQ factor loadings. The AVE and CR values represent the convergence and, thus, the similarity between the CQ components (Hair et al. 2006). The absolute fit indices assess how well the theoretical model fits the data by evaluating each model independently, whereas the incremental fit indices compare the fit of the model to a baseline model (Hair et al. 2006). RMSEA and SRMR belong to the absolute fit indices; CFI and NNFI are characterized as incremental fit indices. The size of the factor loadings is a sign of the magnitude of variation in each item explained by the latent factor. High loadings indicate the convergence of items on one latent factor (Hair et al. 2006). The studies that meet the constraints of each model would imply

whether it is safe to treat the four CQ dimensions as interchangeable (i.e., parallel) or as alternative measures of the same construct (i.e., tau equivalent and congeneric).

Second, once we assessed the four dimensions as interchangeable or not, we focused on what they lacked. Insufficiencies may be displayed by MIs. MIs generally offer remedies for differences between the proposed and estimated model, and they deliver an estimate of the expected chi square decrease from freeing a fixed parameter (Jöreskog and Sörbom 1996). MIs greater than 3.84 are considered significant and suggest improvements of measurement model fit by freeing a parameter (Hair et al. 2006). Furthermore, the greater the value of the MI, the greater the expected improvement of the overall fit when freeing a parameter in the model (Kline 2011). In the case of the current study, MIs emphasize relationships between CQ components, as well as CQ components and other variables that are not accounted for by a unidimensional or higher-order treatment of the CQ construct. Two different sets of MIs for the respective studies give information about the equivalence of the components: (1) correlated measurement errors within dimensions and (2) cross-loadings with other constructs, in terms of significant modification indices for either the path loadings or error variances.

Third, we assessed if certain variables may have impacted the results using SAS 9.4. Particularly, we analyzed sample characteristics, such as student/nonstudent samples and the country origin of the sample collected (Western or Eastern countries).

## **Results**

The results from the first step of our analysis revealed that it is not safe to treat the four CQ components as interchangeable or as alternative measures of the same construct. The results of the comparison of the parallel, tau equivalent, and congeneric analysis showed that analyzing

CQ in the forms of parallel, tau, or congeneric did not provide a measurement model that fit the data particularly well.

In general, the congeneric and, thus, the least restricted analysis represented the data best (see Table 2-3 for a comparison of the studies). The congeneric solution revealed that the four CQ components were similar and converged to an overall CQ in 30% of the studies ( $AVE > .50$ ; Fornell and Larcker 1981). Similarly, the composite reliability for CQ, which measures the consistency of similar but heterogeneous items, only met the criteria in 27.5% of the studies using a more stringent cut-off ( $CR > .80$ ), or in 60% of the studies with a more lenient threshold ( $CR > .70$ ; Bagozzi and Yi 1988). Whereas the AVE and CR results provided weak support for the treatment of CQ as unidimensional, or the components as alternative measures of the same construct, the fit indices described in the following section were inconclusive.

Whereas treating CQ as unidimensional resulted in 75% of studies in good model fit using the CFI criteria ( $CFI > .95$ ), only 37.5% of the studies showed good fit using the NNFI ( $NNFI > .95$ ) (Hu and Bentler 1999). The RMSEA captured that 55% of the studies fit the data acceptably ( $RMSEA < .08$ ) and 25% fit well ( $RMSEA < .05$ ), when representing the CQ components as alternative measures of the same construct (MacCallum et al. 1996). The SRMR showed that representing the CQ component as interchangeable resulted in 80% of the studies fitting the data with a more stringent threshold ( $SRMR < .06$ ) and in 97.5% of the studies with a more lenient cut-off ( $SRMR < .08$ ) (Hu and Bentler 1999). Finally, the assessment of the average loadings of the metacognitive, cognitive, motivational, and behavioral components revealed that the loadings can be considered significant with .63 for the parallel model, and ranging between .62 and .66 for the tau equivalent model, as well as .56 and .69 for the congeneric model. However, Kline (2011) notes that a CFA model should explain the majority of the variance of

each indicators. As none of the average loadings surpassed the threshold of .71, which is equivalent to an explained variance of 50%, more variance in the components is due to error variance than explained variance (Hair et al. 2006).

**TABLE 2-3**  
**Fit Statistics**

<b>Indices</b>	<b>Form of Analysis (% of Studies)</b>		
	Parallel (n=36)	Tau equivalent (n=36)	Congeneric (n=40)
AVE > .50	22.5%	22.5%	30.0%
CR > .70	55.0%	55.0%	60.0%
CR > .80	22.5%	22.5%	27.5%
CFI > .90	70.0%	75.0%	90.0%
CFI > .95	45.0%	47.5%	75.0%
NNFI > .90	52.5%	47.5%	70.0%
NNFI > .95	30.0%	30.0%	37.5%
SRMR < .06	57.5%	52.5%	80.0%
SRMR < .08	85.0%	82.5%	97.5%
RMSEA < .05	32.5%	30.0%	25.0%
RMSEA < .08	55.0%	55.0%	60.0%
Avg. Loading Mc	.63	.66	.69
Avg. Loading Cog	.63	.62	.56
Avg. Loading Mot	.63	.65	.65
Avg. Loading Beh	.63	.64	.65

Notes: AVE = average variances extracted, CR = composite reliabilities, CFI = comparative fit index, NNFI = non-normed fit index, RMSEA = root mean square error of approximation, SRMR = standardized root mean square residual, average CQ component loadings for Mc = metacognition, Cog = cognition, Mot = motivation, Beh = behavior.

In the second step, we examined the MIs between the CQ components, as well as between the CQ components and other variables. Other variables include related constructs (e.g., personality), antecedents (e.g., international experience), and outcomes (e.g., performance).

Significant MIs between the components suggest that the metacognitive, cognitive, motivational, and behavioral CQ cannot be treated as interchangeable or as alternative measures of the same construct. The existence of MIs, which are reflected in either the path loadings or the error variances, would stress that the respective CQ components impact different outcomes or stem from different antecedents. We decided to continue the described analysis using the congeneric measurement model because this model was superior to the parallel and tau equivalent models in the previous step of the analysis.

Results from the MI analysis between the CQ components revealed that, on average, 26% of the studies had significant modification indices between the components. The highest number of significant MIs could be found between metacognitive and behavioral (in 35% of the studies) and metacognitive and motivational CQ (in 33% of the studies). The results are presented in Table 2-4.

**TABLE 2-4**  
**Significant MIs between Components (% of Studies)**

	<b>Metacognition</b>	<b>Cognition</b>	<b>Motivation</b>	<b>Behavior</b>
<b>Metacognition</b>				
<b>Cognition</b>	<b>25%</b> (80% positive, 20% negative)			
<b>Motivation</b>	<b>33%</b> (30.77% positive, 69.23% negative)	<b>15%</b> (33.33% positive, 66.67% negative)		
<b>Behavior</b>	<b>35%</b> (85.71% positive, 14.29% negative)	<b>23%</b> (66.67% positive, 33.33% negative)	<b>20%</b> (25% positive, 75% negative)	

Notes:  $n = 40$ ; positive = positive significance of MIs, negative = negative significance of MIs

When considering the completely standardized expected change, the directionality of the significant MIs was not cohesive. This does not let us determine if the correlations between the components were understated or overstated. Positive significant MIs suggest that the correlation between the CQ components is understated, whereas negative significant MIs suggest that the correlation between the components is overstated. Although the directionality is somewhat ambiguous, the existence of MIs between the CQ components confirms the results from the first step of the analysis that the components are not alternative measures of the same construct. A unidimensional or higher-order treatment of CQ is, thus, not safe or recommended.

Following the analysis between the CQ components, we investigated the results between the CQ components and other variables. Overall, studies contained 76 distinct “other variables,” which resulted through the multiple use of some of the variables in various studies in 217 possible MIs (see Table 2-5). Considering all possibilities for MIs in the 40 correlation matrices analyzed, 19.59% of the CQ components showed significant MIs based on the path-loadings (lambda) and 15.78% for the error variances (theta-delta). Within the components, the amount of significant modification indices was particularly high for motivational CQ (lambda: 25.34%; theta-delta: 21.66%).

**TABLE 2-5**  
**Significant MIs between Components (% of possible MIs)**

	<b>Metacognition</b>	<b>Cognition</b>	<b>Motivation</b>	<b>Behavior</b>	<b>Overall</b>
<b>Lambda</b>	16.59%	19.82%	25.35%	16.59%	19.59%
<b>Theta-delta</b>	12.90%	14.29%	21.66%	14.29%	15.78%

Notes:  $n = 217$

Although the components showed different significant MIs with differentiated related constructs, outcomes, and antecedents, the majority of results were either only based on one

study using the specific variable or results did nullify based on negative and positive expected changes. The existence of a significant MI and the lack of coherent directionality of the expected change shows that the components affect, and are affected differently, but no generalization can be made for how and to what extent.

However, a few examples are conspicuous. Considering the MIs of the path loadings ( $\lambda$ ), 11 out of the 76 distinct variables had more than one significant MI with a respective CQ component and coherent directionality of the significance. An overview of the results for all 11 variables is provided in Table 2-6.

**TABLE 2-6**  
**Number of Significant MIs between Components and other Variables ( $\lambda$ )**

	<b>Metacognition</b>	<b>Cognition</b>	<b>Motivation</b>	<b>Behavior</b>
<b>Agreeableness</b>	-	3 (negative)	2 (positive)	-
<b>Openness</b>	-	2 (negative)	-	2 (negative)
<b>EI</b>			3 (positive)	
<b>Time Abroad</b>	2 (negative)	-	-	-
<b>Language</b>	-	5 (positive)	-	-
<b>IA</b>	2 (negative)	-	-	-
<b>GA</b>	-	-	3 (positive)	-
<b>Satisfaction</b>	-	-	2 (positive)	2 (negative)
<b>TP</b>	2 (negative)	-	-	-
<b>CP</b>	-	-	2 (positive)	-
<b>Gender</b>	2 (negative)	2 (positive)	3 (positive)	-

Notes:  $n = 217$ ; Variables are only presented if more than one MI was significant and directionality of the expected change was coherent; Directionality of expected change is presented in apprentices; EI = Emotional Intelligence, Time Abroad = time spent abroad, Language = foreign language fluency, IA = interactional adjustment, GA = general adjustment, Satisfaction = job satisfaction, TP = team performance, CP = cultural performance.

For example, MIs were significant between agreeableness and cognitive CQ (i.e., negative significance), as well as motivational CQ (i.e., positive significance), whereas openness to experience showed significant modification indices with cognitive CQ (i.e., negative significance) and behavioral CQ (i.e., negative significance). EI did seem most related to motivational CQ as represented by positive and significant MIs and the knowledge of the foreign language to cognitive CQ (i.e., positive significance).

With regards to the MIs of the error variances (i.e., theta-delta), seven of the 76 variables analyzed had more than one significant MI with a respective CQ component and coherent directionality of the significance. Similar to the results of the MIs of the path loadings, agreeableness seemed most related to cognitive (i.e., negative significance) and motivational CQ (i.e., positive significance), whereas motivational CQ was most related to EI. Language fluency may be associated more with cognitive CQ (i.e., positive significance) and motivational CQ (i.e., negative significance), and to a less extent with metacognitive CQ (i.e., negative significance). An overview of the results for the seven qualifying variables is provided in Table 2-7.

In our last step of the empirical analysis, we assessed if sample characteristics influenced the results. We chose the AVE as our measure of comparison. The moderation analyses did not reveal differences in the results with regards to the country origin of the sample (i.e., Eastern or Western culture) or the occupation (i.e., student or non-student). We weighted the t-test based on the sample size reported in the respective studies. The results from the weighted t-test suggest that the two regional groups do not significantly differ ( $t^* = -.72, p = .48$ ) when considering the AVEs. Similarly, there was no significant difference if the sample was composed of students or non-students ( $t^* = .74, p = .46$ ). Consequently, sample characteristics may not have influenced

the robustness of the results. Whether Eastern or Western samples were employed or students, it did not significantly affect the findings and the generalizations.

**TABLE 2-7**  
**Number of Significant MIs between Components and other Variables (theta-delta)**

	<b>Metacognition</b>	<b>Cognition</b>	<b>Motivation</b>	<b>Behavior</b>
<b>Agreeableness</b>	-	3 (negative)	2 (positive)	-
<b>Openness</b>	-	-	-	2 (negative)
<b>EI</b>	-	-	2 (positive)	-
<b>Experience</b>	-	-	2 (positive)	-
<b>Language</b>	2 (negative)	5 (positive)	4 (negative)	-
<b>GA</b>	-	2 (negative)	2 (positive)	-
<b>CD</b>	-	-	2 (positive)	-

Notes:  $n = 217$ ; Variables are only presented if more than one MI was significant and directionality of the expected change was coherent; Directionality of expected change is presented in apprentices; EI = Emotional Intelligence, Experience = foreign experience, Language = foreign language fluency, GA = general adjustment, CD = cultural distance.

## **Discussion**

This study aggregated theoretical and empirical evidence regarding the analysis of CQ as a unidimensional or multidimensional construct. The analysis was directed to uncover whether it is correct to treat the facets of CQ as parallel, alternative measures of the same construct (unidimensional or higher-order construct), or as separate constructs. The findings of our theoretical and empirical analysis revealed that it is generally not safe to treat the CQ construct as unidimensional or as a higher-order construct. In particular, it becomes apparent in our analysis that a unidimensional or higher-order CQ may not exist, but that specific forms of CQ are expressed through its dimensions. The theoretical and empirical implications are discussed in the following section including potential avenues for future research. In doing so, we hope to

foster a better understanding and application of the CQS, as well as provide future research with a way of handling the measurement of CQ.

### ***Theoretical Implications***

Theoretically, our review of the literature and the foundations captured that the CQ components affect and are affected by distinct outcome and antecedent variables, as well as explained by different theoretical lenses. Considering the variety of outcomes and antecedents, it seems nearly impossible for researchers to explain those through one unified CQ lens. Mental capabilities (i.e., metacognitive and cognitive CQ), as well as motivation and behavior, have distinct underlying mechanisms and need to be theorized accordingly.

The difficulties of theorizing when applying an aggregated CQ are noticeable in numerous reviewed studies. In particular, authors often rely heavily on the theoretical underpinning of one of the dimension while only referring to an overall CQ. Similarly, some researchers seem to utilize the theoretical mechanism of any of the dimensions depending on the ease of relating it to either the specific antecedents or outcomes. These procedures, however, dilute the CQ construct and the specific explanatory power of its dimensions for distinct outcomes. CQ is not, and cannot be, a general panacea for cross-cultural interactions and effectiveness. Thus, it should not be treated and theorized as one. In this line, Van Dyne et al. (2012) emphasized recently the importance of the distinctiveness of the CQ components by further delineating each of the four dimensions into sub-dimensions. The addition of sub-dimensions is suggested to help refine the conceptual space of each dimension, allow for a refinement of research on CQ, and provide more insights about the differences within sub-dimensions (Van Dyne et al. 2012).

Based upon our theoretical discussion, authors applying the CQS should focus on the relevant CQ dimensions instead of a unidimensional scale and derive meaningful relationships based on established theoretical foundations. With regards to future scale development, the study highlights the fact that CQ may not exist as a unity. Thus, it seems impossible to create a scale that captures all the distinct factors composing CQ. Researchers may focus instead on the specifics of the individual dimensions and broaden their scope.

Research opportunities, furthermore, abound using a broader approach to CQ. One of the most fertile areas for future analysis may be the application outside of the traditional CQ areas, such as international business, psychology, and management. So far there is a dearth of studies in marketing, although CQ may have important implications in consumer behavior, services, and sales. For example, marketing literature suggests that service failure may be due to dissimilarities between the service employee and customer (Zhang et al. 2008). Different cultural backgrounds, reflected in distinct beliefs, expectations, and behaviors, of the service provider and the customer may magnify the complexity of the interaction (Wang and Mattila 2010). The ability to conform to the cultural expectations may, thus, ensure the success of the service encounter (Zeithaml et al. 1993). Metacognitive CQ may be an important ability for service employees when dealing with a culturally diverse customer group as individuals high in metacognitive CQ can readjust their mental models and suppress previous experience to adequately serve the distinct customer needs. On the other hand, customers high in metacognitive and motivational CQ may experience satisfaction or gratitude if they recognize that a service or sales employee tries to adjust to their different cultural demands. Employee provision of personalized treatment in the form of customized service may serve as a positive signal to the customer with regards to their value, consideration, and importance (Connelly et al. 2011). This may lead to a situation in which the

customer: (1) is motivated to actively bridge perceived cultural differences (Earley and Ang 2003), (2) is aware of the efforts and cultural sensitivity of the employee (Sizoo et al. 2005), and (3) desires to reward and give back to the employee for considerate behavior (Morales 2005).

The different theoretical lenses underpinning the CQ components also open several directions for future research on key contingencies in disciplines, such as behavioral finance and accounting. For example, the level of motivational CQ of the chief financial officer or top management team may have important financial implications for stock returns following foreign direct investment decisions.

### ***Empirical Implications***

Empirically, the comparison of the CQS as parallel, tau equivalent, and congeneric measures, and the analysis of convergence, reliability, fit measures, and MIs, suggest that each CQ component measures a different part of the overall CQ construct while affecting different outcomes and being derived from distinct antecedents. Thus, as a composite, aggregated, or unidimensional construct, CQ contains less information than its distinct components. The various implications are discussed in the following section.

First, if researchers measure CQ as a unidimensional or higher-order factor, they are unaware of the impact of each of the four CQ dimensions. Whereas all components may potentially contribute to an outcome or are all affected by an antecedent, the CQ components will more likely have distinct impacts, or in some cases, only one or two components may drive the CQ construct to significance. Researchers employing an aggregated CQ may inadvertently hide the true driver(s) within the CQ construct leading to a specified outcome. Furthermore, researchers may be unaware of different directionalities of the CQ components. Huff (2013), for example, found a positive association between motivational CQ and job satisfaction, but a

negative relationship between metacognitive CQ and job satisfaction. A unidimensional view of CQ would not have revealed these differences, leading to misinterpretations of significance and a lack of generalizability of the result. Thus, the specification and treatment of CQ dimensions as separate constructs, and the selection of the theoretically relevant CQ dimensions, is necessary for accurate assessments and implications.

Second, if researchers find significant relationships when applying a unidimensional or higher-order CQ, the results may be spurious and based on Common Method Variance (CMV). CMV reflects the variance that is attributable to the method of measurement rather than to the constructs the measures are assumed to represent (Podsakoff et al. 2003). Researchers may mistakenly attribute significant findings to the impact of CQ and, thus, supposedly confirm the existence and the predictive power of a unidimensional CQ construct. The significant results may, however, be rather artificial than substantive as they stem from the fact that data for all items of the four CQ dimensions were collected through self-reports, at one point in time, and through the same method. Besides treating the CQ dimensions as distinct, researchers are advised to minimize the likelihood of inflated relationships, a priori, through careful study design and steps in line with Podsakoff and colleagues (Podsakoff et al. 2003; 2012). Furthermore, researchers may collect data from more than one source or collect data at different points in time in order to avoid misinterpretation of results due to spurious effects. With few exceptions (e.g., Magnusson et al. 2013), the use of multi-source data or longitudinal data tests are not commonly applied in CQ research, which may open avenues for future research.

Third, while collecting the data for the empirical study, we discovered that some authors acknowledged the differences between the CQ facets, yet analyzed them in individual analytic processes. This form of analysis assumes that the components are not correlated -although they

actually are- which may lead to misinterpretations or deteriorations of results. Arguments for this form of analysis were in general based on the potential of multicollinearity. Multicollinearity exists when there is a strong correlation between two or more predictor variables which may result in inaccurate estimates of coefficients, standards, and inference errors (Field 2013; Mason and Perreault 1991). Given our theoretical and empirical discussion, however, the CQ dimensions are not suggested to correlate at a strength that results in multicollinearity per se. Mason and Perreault (1991) suggest that multicollinearity may actually be less of a problem than insufficient power and a too small sample. Furthermore, an analysis of outliers may be beneficial as outliers can create deteriorations in the results and untrustworthy coefficients. Thus, before conducting a study using all or some of the CQ dimensions, authors are advised to conduct a power analysis, check for outliers, and collect a sufficient sample. Post-hoc, researchers can detect the existence of multicollinearity using the variance inflation factor (VIF), the eigenvalue of the scale, un-centered cross-product matrix, the condition index, and the variance proportion (Field 2013). If existent, numerous approaches and remedies have been introduced to manage multicollinearity, such as dropping an indicator or using a suppressor variable (Mason and Perreault 1991).

Finally, with regards to the discussion of CQ as a formative or reflective model, the theoretical analysis suggested that CQS meets some of the criteria of the formative and reflective perspective. However, the empirical analysis supported the necessity to analyze the CQ dimensions as reflective. In particular, the numerous significant MIs and cross-loadings confirmed reflective model. Thus, based on the results of the theoretical and empirical analysis, we suggest that it is not safe to treat the CQS as formative and researchers should analyze each CQ component as a reflective scale. For example, this means that the construct validity will not

change when single indicators of one of the CQ components are removed due to low loadings because all components are suggested to represent the residual indicators (Bollen and Lennox 1991).

Overall, this study identified a number of important issues surrounding the CQS and the appropriateness of the application of its measurement. Misspecifying CQ as unidimensional may lead to loss of valuable information, theoretical misinterpretations, inappropriate indications of significance, and a lack of generalizability of the results. Based on the results of the theoretical and empirical analysis and the respective implications, researchers are advised to hypothesize and analyze the CQ components as distinct constructs with different antecedents and outcomes.

### **Limitations and Directions for Future Research**

The current study is not without limitations, which may be future avenues for research. First, we may not have been able to include all non-published findings using the CQS. However, the meta-analytic approach attempted to avoid publication or file drawer bias by conducting a comprehensive search in Google Scholar and the ProQuest dissertation database of published and non-published findings using the CQS. Thus, we were able to not only include published articles in our analysis, but we also referred to dissertations and conference proceedings. Further, we do not expect that there is a bias by editors or reviewers with regards to publishing various forms of assessment of the CQS.

Second, although we found 78 empirical studies using the CQS, we were only able to analyze 40 correlation matrices. Thus, although we intended to capture the results of CQ studies since the existence of the measure, the presentation of the data in the accessed papers often did not allow for a more comprehensive review. Nonetheless, because we did not find distinctive

features between published and non-published studies, we do not expect that excluded studies will significantly alter the presented results.

Finally, results from the empirical analysis should be considered with caution. Inferences and generalizations based on the current study may be weak due to the relatively small number of studies analyzed. This is particularly true for the moderation analysis. Sample characteristics, such as region of origin (i.e., East or West) and profession (i.e., student or laborer), although not significant in our current analysis, may have impacted the results. The small sample, thus, may have resulted in low power of finding significant results. More research can be directed to uncovering possible moderators of the results.

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## Appendix 2A: Overview of CQ and Related Constructs

	<b>Emotional Intelligence</b>	<b>Personality</b>
<b>CQ</b>	EI (Groves et al, 2014; Groves and Feyerherm 2011; Lin et al. 2012; Rockstuhl et al. 2011b; Ward et al. 2008)	Openness to Experience (Groves et al. 2014) Extraversion (Groves et al. 2014)
<b>Metacognitive CQ</b>	EI (Groves et al. 2014; Groves and Feyerherm 2011; Lin et al. 2012; Rockstuhl et al. 2011b; Ward et al. 2008) EI Self Management (Moon 2010) EI Relationship Management (Moon 2010) EI Mood Regulation (Ang et al. 2007) EI Appraisal (Ang et al. 2007) EI Utilization (Ang et al. 2007) EI Social Skills (Ang et al. 2007)	Openness to Experience (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014; Huff et al. 2014; Şahin et al. 2014) Extraversion (Ang et al. 2007; Groves et al. 2014; Huff et al. 2014; Şahin et al. 2014) Conscientiousness (Ang et al. 2006; Ang et al. 2007) Agreeableness (Huff et al. 2014; Şahin et al. 2014) Emotional Stability (Ang et al. 2007) Intellect (Huff et al. 2014)
<b>Cognitive CQ</b>	EI (Groves et al. 2014; Groves and Feyerherm 2011; Lin et al. 2012; Rockstuhl et al. 2011b; Ward et al. 2008) EI Self Management (Moon 2010) EI Mood Regulation (Ang et al. 2007) EI Appraisal (Ang et al. 2007) EI Utilization (Ang et al. 2007) EI Social Skills (Ang et al. 2007)	Openness to Experience (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014) Extraversion (Ang et al. 2006; Groves et al. 2014) Conscientiousness (Ang et al. 2007) Intellect (Huff et al. 2014)
<b>Motivational CQ</b>	EI (Groves et al, 2014; Groves and Feyerherm 2011; Lin et al. 2012; Rockstuhl et al. 2011b; Ward et al. 2008) EI Social Awareness (Moon 2010) EI Self Awareness (Moon 2010) EI Relationship Management (Moon 2010) EI Mood Regulation (Ang et al. 2007) EI Appraisal (Ang et al. 2007) EI Utilization (Ang et al. 2007) EI Social Skills (Ang et al. 2007)	Openness to Experience (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014; Şahin et al. 2014) Extraversion (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014; Huff et al. 2014; Şahin et al. 2014) Conscientiousness (Ang et al. 2007; Huff et al. 2014) Agreeableness (Huff et al. 2014; Şahin et al. 2014) Emotional Stability (Ang et al. 2007) Intellect (Huff et al. 2014) Neuroticism (Huff et al. 2014)

<p><b>Behavioral CQ</b></p>	<p>EI (Groves et al. 2014; Groves and Feyerherm 2011; Lin et al. 2012; Rockstuhl et al. 2011b; Ward et al. 2008)  EI Social Awareness (Moon 2010)  EI Self Awareness (Moon 2010)  EI Relationship Management (Moon 2010)  EI Mood Regulation (Ang et al. 2007)  EI Appraisal (Ang et al. 2007)  EI Utilization (Ang et al. 2007)  EI Social Skills (Ang et al. 2007)</p>	<p>Openness to Experience (Ang et al. 2006; Ang et al. 2007; Groves et al. 2014; Şahin et al. 2014)  Extraversion (Ang et al. 2006; Groves et al. 2014; Huff et al. 2014; Sahin et al. 2014)  Agreeableness (Ang et al. 2006; Huff et al. 2014)  Emotional Stability (Ang et al. 2006)  Neuroticism (Şahin et al. 2014)</p>
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## Appendix 2B: Overview of Antecedents of CQ

	<b>International Experience</b>	<b>Training</b>	<b>Others</b>
<b>CQ</b>	International Experiences (Crowne 2008; Helms et al. 2014; Li et al. 2012) Prior International Contact (Kim and Van Dyne 2012) Cultural Exposure (Crowne 2013) Breath of Cultural Exposure (Crowne 2013) Depth of Cultural Exposure (Crowne 2013)	Cross-cultural Training (Eisenberg et al. 2013; Ramsey and Lorenz 2016)	Global Teamwork (Taras et al. 2013)
<b>Metacognitive CQ</b>	International Experience (Crowne 2008; Eisenberg et al. 2013; Morrell et al. 2013; Şahin et al. 2014) International Work Experience (Koo Moon et al. 2012) International nonwork experience (Koo Moon et al. 2012) Previous Work Experience with Foreigners (Koo Moon et al. 2013)	Cross-cultural Training (Eisenberg et al. 2013; Koo Moon et al. 2012; Rehg et al. 2012) Experiential Learning (MacNab 2012)	Self-Monitoring (Koo Moon et al. 2013) Perceived Promotion Opportunity (Koo Moon et al. 2013) Expectancy of Disconfirmation (Rosenblatt et al. 2013) Need for Control (Tay et al. 2008)
<b>Cognitive CQ</b>	International Experience (Crowne 2008; Eisenberg et al. 2013; Morrell et al. 2013; Şahin et al. 2014; Tay et al. 2008) International Work Experience (Koo Moon et al. 2012) International Nonwork Experience (Koo Moon et al. 2012) Previous Work Experience in	Cross-cultural Training (Eisenberg et al. 2013; Koo Moon et al. 2012)	Self-Monitoring (Koo Moon et al. 2013) Expectancy of Disconfirmation (Rosenblatt et al. 2013) Need for Control (Tay et al. 2008)

	Overseas Departments (Koo Moon et al. 2013)		
<b>Motivational CQ</b>	International Experience (Crowne 2008; Eisenberg et al. 2013; Morrell et al. 2013; Şahin et al. 2014) International Nonwork Experience (Koo Moon et al. 2012)	Cross-cultural Training (Koo Moon et al. 2012; Rehg et al. 2012) Experiential Learning (MacNab 2012)	Self-Monitoring (Koo Moon et al. 2013) Perceived Promotion Opportunity (Koo Moon et al. 2013)
<b>Behavioral CQ</b>	International Experience (Crowne 2008; Morrell et al. 2013; Şahin et al. 2014) International Nonwork Experience (Koo Moon et al. 2012)	Cross-cultural Training (Koo Moon et al. 2012; Rehg et al. 2012) Experiential Learning (MacNab 2012)	Self-Monitoring (Koo Moon et al. 2013) Expectancy of Disconfirmation (Rosenblatt et al. 2013)

### Appendix 2C: Overview of Outcomes of CQ

	<b>Performance</b>	<b>Attitudes</b>	<b>Adjustment</b>	<b>Other Outcomes</b>
<b>CQ</b>	Job Performance (Chen et al. 2011; Lee et al. 2013; Ramalu et al. 2012; Rose et al. 2010) Leader Performance (Groves and Feyerherm 2011) Team Performance (Groves and Feyerherm 2011; Moon 2013) Bank Performance (Darvish et al. 2013) Export Performance (Charoensukmongkol 2016) Cultural Effectiveness (Lee and Sukoco 2010) Cross-border leadership effectiveness (Rockstuhl et al. 2011b)	Job Satisfaction (Bücker et al. 2014) Employee Commitment (Carranza and Egri 2010) Psychological Contract (Lee and Sukoco 2010) Academic Commitment (Helms et al. 2014; Ramsey and Lorenz 2016) Academic Satisfaction (Ramsey and Lorenz 2016)	Cross-cultural Adjustment (Lee and Sukoco 2010; Lee et al. 2013; Lin et al. 2012; Ramalu et al. 2012) Work Adjustment (Chen et al. 2014; Ramalu et al. 2012) Interactional Adjustment (Chen et al. 2014; Ramalu et al. 2012) Culture Shock (Chen et al. 2011) Anxiety (Bücker et al. 2014)	Corporate Reputation (Carranza and Egri 2010) Communication Effectiveness (Bücker et al. 2014) International Knowledge Acquisition (Charoensukmongkol 2016) International Leadership Potential (Kim and Van Dyne 2012) Transformational Leadership (Elenkov and Manev 2009) Travel and Job Strain (Ramsey et al. 2011)
<b>Metacognitive CQ</b>	Task Performance (Ang et al. 2007) Job Performance (Chen et al. 2011) Export Performance (Magnusson et al. 2013) Contextual Performance (Rose et al. 2010)	Job Satisfaction (Huff 2013) Academic Satisfaction (Morrell et al. 2013)	Cross-cultural Adjustment (Lin et al. 2012) Interactional Adjustment (Ang et al. 2007; Ramalu et al. 2010) General Adjustment (Ramalu et al. 2010) Culture Shock (Chen et al. 2011) Burnout (Tay et al. 2008)	Schedule Autonomy (Tay et al. 2008) CJDM (Ang et al. 2007) Shared Values in Teams (Adair et al. 2013) Team Knowledge Sharing (Chen and Lin 2013) Negotiation Behavior (Groves et al. 2014) Perceived Team Efficacy (Chen and Lin 2013)

<b>Cognitive CQ</b>	Negotiation Performance (Groves et al. 2014) Job Performance (Chen et al. 2011)		Cross-cultural Adjustment (Lin et al. 2012) Interactional Adjustment (Ramalu et al. 2010) Work Adjustment (Koo Moon et al. 2012) Culture Shock (Chen et al. 2011)	Life Satisfaction (Huff 2013) CJDM (Ang et al. 2007) Team Knowledge Sharing (Chen and Lin 2013) Negotiation Behavior (Groves et al. 2014)
<b>Motivational CQ</b>	Task Performance (Ang et al. 2007) Job Performance (Chen et al. 2011; Chen et al. 2010) Sales Performance (Chen et al. 2012) Bank Performance (Darvish et al. 2013)	Job Satisfaction (Huff 2013) Academic Satisfaction (Morrell et al. 2013) Intent to Stay (Huff 2013)	Cross-cultural Adjustment (Lin et al. 2012) Interactional Adjustment (Ang et al. 2007; Huff 2013; Huff et al. 2014; Ramalu et al. 2010; Templer et al. 2006) Work Adjustment (Ang et al. 2007; Chen et al. 2010; Huff 2013; Huff et al. 2014; Koo Moon et al. 2012; Ramalu et al. 2010; Templer et al. 2006)  General Adjustment (Ang et al. 2007; Huff 2013; Huff et al. 2014; Koo Moon et al. 2012; Ramalu et al. 2010; Templer et al. 2006) Wellbeing (Ang et al. 2007) Psychological Symptoms (Ward et al. 2011)	Schedule Autonomy (Tay et al. 2008) Marketing-Mix Adaptation (Magnusson et al. 2013) Life Satisfaction (Huff 2013; Ward et al. 2008) Shared Values in Teams (Adair et al. 2013) Team Knowledge Sharing (Chen and Lin 2013)

			Socio-cultural Adaptation (Ward et al. 2008) Culture Shock (Chen et al. 2011) Burnout (Tay et al. 2008)	
<b>Behavioral CQ</b>	Task Performance (Ang et al. 2007) Job Performance (Chen et al. 2011) Negotiation Performance (Groves et al. 2014) Assignment-specific Performance (Rose et al. 2010) Contextual Performance (Rose et al. 2010)	Job Satisfaction (Huff 2013)	Cross-cultural Adjustment (Lin et al. 2012) Interactional Adjustment (Ang et al. 2007) Work Adjustment (Ang et al. 2007; Koo Moon et al. 2012) General Adjustment (Ramalu et al. 2010) Culture Shock (Chen et al. 2011) Burnout (Tay et al. 2008)	Schedule Autonomy (Tay et al. 2008) Life Satisfaction (Huff 2013) Shared Values in Teams (Adair et al. 2013) Negotiation Behavior (Groves et al. 2014) Perceived Team Efficacy (Chen and Lin 2013)

## CHAPTER III – ESSAY 2:

### OPPORTUNITY RECOGNITION AND INNOVATION IN FOREIGN MARKETS: THE ROLE OF CULTURAL INTELLIGENCE AND KNOWLEDGE SHARING

#### **Introduction**

With increasing access to new markets and rapid geographical expansion, multinational enterprises (MNEs) are exposed to a greater need for cultural diversity than ever before. In the quest for competitive advantage and higher performance, firms need to adjust their strategy and actions to the numerous cultures in which they operate to overcome geographical, psychological, economic, administrative, and cultural differences (Ghemawat 2001; Sousa and Bradley 2006). Firms that can manage and leverage cultural diversity are consequently expected to outperform firms that are less culturally intelligent (Ang and Inkpen 2008). Considering that the long-term performance of firms engaging in global markets may be contingent, at least partially, upon their capacity to innovate (Hitt et al. 1997; Porter 2011), the ability to understand, and more importantly *take advantage* of, cross-cultural settings might be particularly salient for MNEs' innovativeness.

Cultural Intelligence (CQ) is defined as “an individual’s capability to function and manage effectively in culturally diverse settings” (Ang et al. 2007, p. 336). It has been proposed as a capability enabling individuals to leverage cultural diversity (Earley et al. 2006) and as a key element of successful interactions in international markets (Alon and Higgins 2005). It is also positively related to other individual-level outcomes, such as cultural adaption (Lee and Sukoco

2010; Moon 2010; Templer et al. 2006) and job performance (e.g., Chen et al. 2011), and it is, therefore, suggested to be a source of competitive advantage for MNEs (Earley et al. 2006).

Given the theoretical and empirical importance of possessing cultural skills, one might ask *if* and *how* individuals' levels of CQ may drive outcomes such as innovation, which is often the source of a firm's competitive advantage in the global marketplace.

Currently, there is very limited research on CQ as a driver of innovation. To the best of our knowledge, only one study has identified that CQ may play a moderating role in the transformational leadership and innovation adaptation relationship (Elenkov and Manev 2009). This is somewhat surprising, as innovation is seen as a key for successful performance and, in particular, in achieving sustainable competitive advantages (e.g., Damanpour and Gopalakrishnan 2001; Hitt et al. 1997; Ireland and Hitt 1999). It has been shown that access to local knowledge may lead to innovative outcomes (Bartlett and Ghoshal 1989), learning from local markets may create a competitive advantage (Özsomer and Gençtürk 2003), and international opportunities are more difficult to discover as the cognitive identification mechanism in the domestic market does not translate easily in the dynamic global environment (Zahra 2005). As such, employing individuals with a capability that allows for recognizing, processing, and subsequently capitalizing on cross-cultural differences by discovering business opportunities may be a strategic imperative for MNEs. Furthermore, key individuals high in CQ may facilitate the challenge of leveraging innovative potential dispersed across multinational country markets (Birkinshaw 1997).

In this study, we draw upon the Theory of Planned Behavior (TPB) (Ajzen 1991) and the cognitive lens of opportunity recognition in order to identify how an individual's cultural competencies may lead to innovative outcomes. The international business literature has

provided substantial insights into the role of expatriates in value creation and performance (e.g., Chang et al. 2012), but one factor that has received limited attention is the role of expatriates in the discovery of opportunities resulting in potential innovations. This is somewhat surprising, given the centrality of the expatriate in knowledge brokerage and, thus, the expatriate's access to novel and idiosyncratic information (Ghoshal and Bartlett 1988; Minbaeva and Michailova 2004). Applying the cognitive lens of opportunity recognition, we suggest that discovering opportunities is the underlying process through which expatriates' cultural capabilities enable innovations. Integrating the ability concept of knowledge transfer (Argote et al. 2003), we further propose that the mediation effect is moderated by the knowledge sharing ability of the expatriate: expatriate mental cultural intelligence (metacognitive and cognitive CQ) has a stronger indirect effect on innovative performance when their knowledge sharing ability is higher. We selected knowledge sharing ability because of the prominent role of expatriates as knowledge brokers and the subsequent positive effect through traditional or reverse transfer on headquarter and subsidiary performance (e.g., Chang et al. 2012; Eden 2009; Minbaeva et al. 2003).

Our study advances knowledge by making three contributions. First, we go beyond the emphasis of expatriates as pure knowledge brokers by identifying their potential to discover opportunities if they possess cross-cultural skills. Thereby, we address recent calls for a better understanding of opportunity recognition in an international context (see JIBS call for a special issue on the topic of international opportunity recognition for November 2015). Our focus on cultural competencies as antecedents to opportunity recognition contributes to research on the predictive power of cultural competencies, antecedents of international opportunity recognition, and the value of expatriation.

Second, we test the idea that opportunity recognition mediates the relationship between CQ and innovative outcomes. In an international context, international opportunity recognition may be a mechanism that enables successful and value creating innovation activities as MNE's personnel without cultural competencies might not discover opportunities abroad for innovative products, services, and processes. Furthermore, the lack of cultural competencies (i.e., CQ) may result in a lack of cultural appropriateness of the innovation and, thus, a failure to meet the demands of diverse international markets. Thus, we suggest that international opportunity recognition is not an end in itself, but leads to innovative outcomes if exploited. For example, an expatriate high in CQ may recognize the potential for a new modified product in the foreign market and helps to exploit the opportunity by facilitating the production, introduction, or marketing of the product. By linking competencies to innovative performance through opportunity recognition, we advance research on innovation-inducing factors for MNEs. Third, we extend the mediating relationship by showing that expatriates' competencies in knowledge transfer moderate the indirect effect of cultural competencies on innovative outcomes. We propose that the ability to share knowledge will strengthen the process between the opportunity recognition and the actual exploitation resulting in innovations. Generally, we contribute to the literature of innovation management and entrepreneurial actions in international markets. Finally, the findings offer potentially important guidance for MNEs as they strive to grow through innovations, as well as provide practical guidance for firms intending to develop and recruit expatriates (e.g., CQ training).

We proceed by reviewing the foundations of international opportunity recognition, the potential role of the expatriate as an intrapreneur (i.e., an entrepreneur within a well-established organization (Cavusgil and Knight 2015)), and CQ. We then discuss why the theoretical

framework of the TPB may be applied to the international opportunity recognition context from which the hypotheses evolve. Next, we present the empirical setting and study results. These are followed with a discussion on the findings and their implications for theory and practice. Finally, we conclude by noting some limitations which may result in future research opportunities.

## **Literature Review**

### ***International Opportunity Recognition***

Opportunity recognition is a central topic in the field of entrepreneurship and concerns “the scholarly examination of how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited” (Shane and Venkataraman 2000, p. 218). Classic economics and entrepreneurship literatures conceptualize an opportunity as an individual’s chance to meet customer and market demand through a combination of resources (Schumpeter 1934). Neoclassical economists describe an opportunity as an object waiting for someone to discover (Kihlstrom and Laffont 1979). Sarasvathy et al. (2003, p. 142) refer to opportunities as a “set of ideas, beliefs, and actions that enable the creation of future goods and services.” Hence, opportunities may arise from perceptions and behaviors (Mainela et al. 2014). Hereby, the recognition of opportunities refers, in general, to the initial phase of discovery or identification, which is distinct from the active efforts to develop those through new ventures, products, or services (Ardichvili et al. 2003).

On a domestic level, research about how opportunities are discovered is diverse. First, opportunity recognition may be a result of an individual’s prior knowledge and the level of synthesis of relevant information (e.g., Fiet 2007; Shane and Venkataraman 2000). Without related prior knowledge, entrepreneurs lack the understanding necessary to envision new, value-creating combinations of resources. Second, according to the Austrian view, it is assumed that

people have different “idiosyncratic” information, which leads to some, but not others, discovering opportunities (Hayek, 1945). Related to this is the concept of entrepreneurial alertness, a cognitive framework that assists entrepreneurs in the opportunity recognition process. It is defined as “the ability to notice without search opportunities that have hitherto been overlooked” (Kirzner 1979, p. 48).

Another large area of inquiry is based on the cognitive abilities of entrepreneurs (Baron 2006). Research within the cognitive perspective has identified that entrepreneurs have distinct cognitive abilities and pattern recognition abilities (Baron and Ensley 2006; Busenitz and Barney 1997). Different individuals have different abilities to “connect the dots” between unrelated information (Baron 2006). This is consistent with findings by Gaglio (2004) showing that counterfactual thinking and mental simulations enable entrepreneurs to think creatively and to develop opportunity recognition abilities. This may be because individuals with greater general cognitive abilities learn faster, benefit more from experience, and acquire knowledge more quickly and deeply (Jensen 1998). Similarly, Shane (2000) suggests that capacities, such as high intelligence and creativity, increase entrepreneurial alertness and the identification of opportunities.

On a global level, international entrepreneurship “remains void of research that examines the processes and mechanisms related to opportunities” (Chandra et al. 2015, p. 200), although various unprecedented opportunities exist in the complex, ambiguous, and interdependent international environment (Lane et al. 2004). International opportunities are exceedingly difficult to discover as the cognitive identification mechanism in the domestic market does not translate easily in the dynamic global environment (Zahra 2005). Because cognitive process and the creation of new ideas are closely linked to the environment in which individuals are embedded

(e.g., Chua et al. 2015; Morris and Leung 2010; Wang 2011), deep-rooted experiences and prior knowledge acquired in the domestic environment may create biases and hamper effective scanning of the international environment (Mathews and Zander 2007).

Furthermore, entrepreneurial behaviors beneficial for opportunity identification (e.g., networking) may be culture-bound and, thus, may be negatively affected by cultural differences (Marino et al. 2002). As it is generally expected that discovery and creation are based on the individual's perception and sense making of the environment, culture may also be reflective in individuals' cognitive scripts, biases, and heuristics (Baron 2004; Muzychenko 2008). Cultural differences, due to a greater knowledge gap, make it more difficult for individuals to be innovative and discover novel opportunities (Chua et al. 2015). Thus, for international entrepreneurs to be able to discover opportunities in a cross-cultural setting, they have to either be culturally aligned (Chua et al. 2015) or have developed competencies that extend their perspective and cognitive abilities beyond the home environment and embrace similarities and leverage differences in culture and practices (Muzychenko 2008). We suggest that an individual high in CQ may have the knowledge, skills, and abilities to exploit these similarities and differences.

### ***The Expatriate as International Intrapreneur***

Expatriates are generally referred to as individuals who are sent by a company to work for a period of time in a foreign subsidiary (Vance 2005). They are seen as a link between the headquarters and the subsidiary (Riusala and Suutari 2004), or agents that transfer corporate culture to the subsidiary (Kostova and Roth 2002; Peng and Beamish 2014). Furthermore, MNEs employ expatriates overseas to exercise control when local talent is not available or to develop management (Edström and Galbraith 1977; Elenkov and Manev 2009; Harzing 2002). While

expatriate research has traditionally focused on selection, adjustment, motivation, and training (Riusala and Suutari 2004), other areas have emphasized the value creation of expatriates. Knowledge dissemination and the positive effect on headquarters and subsidiary performance have gained increasing attention from scholars (e.g., Chang et al. 2012). Expatriates who accumulate experience in utilizing the headquarters' knowledge base are seen as valuable assets for knowledge transfer (e.g., Hébert et al. 2005), whereas others emphasize the expatriates' ability to share knowledge and the absorptive capacity of the subsidiary (Chang et al. 2012). Finally, transformational leadership competencies of expatriates have been established as stimulating innovations in the subsidiary, which can, in turn, enhance competitiveness of the MNE (Elenkov and Manev 2009).

However, expatriates may not only be useful as knowledge brokers or transformational leaders; they may also play a more proactive role by discovering opportunities leading to innovative outcomes. Expatriates are at the forefront of international markets. They possess distinct information due to experience with a heterogeneous knowledge base (e.g., Fang et al. 2010), which allows them to discover opportunities not accessible for other individuals. Their opportunity recognition is enhanced by the positive impact of multicultural experience on the perception of novel ideas and creative performance (Maddux et al. 2010).

Expatriates who discover opportunities may be seen as intrapreneurs. Intrapreneurship, in a broad sense, is entrepreneurship within an organization (Antoncic and Hisrich 2001). Intrapreneurship involves thinking out of the box, as well as taking risks and initiative (Morianio et al. 2014). Based on the concept of entrepreneurship, intrapreneurial opportunity recognition is described as “the process of uncovering and developing an opportunity to create value through innovation and seizing that opportunity without regard to either resources (human and capital) or

the location of the entrepreneur – in a new or existing company” (Churchill 1992, p. 586). It is in line with the Schumpeterian innovation concept as the quest for creative and novel responses to challenges encountered by firms (including the development or improvement of products, services, markets, administrative processes, and technology) (Antoncic and Hisrich 2001). Thus, intrapreneurship underlies similar processes, required inputs, and potential outputs (Moriano et al. 2014), but may be distinguished in terms of risks, personal rewards, and the amount of freedom and control to exercise in decision-making (e.g., Pinchot, 1985). As part of organizational innovativeness, discovery through intrapreneurs is linked to new product and service development, product and service improvements, and new product methods and procedures (Knight 1997; Zahra 1993).<sup>1</sup>

Based on the challenges described above of discovering opportunities in international markets, and the need to develop competencies that go beyond the home environment, we will next discuss CQ, a cultural competency for expatriates, in the following section.

### ***Cultural Intelligence***

As aforementioned, CQ is conceptualized as “an individual’s capability to function effectively in culturally diverse settings” (Ang et al. 2007, p. 336). It is derived from the theory of multiple intelligences (Sternberg and Detterman 1986) and is similar, but distinct from other forms of intelligences. Whereas CQ is considered culture-free and is not related to one’s cultural background (Ang et al. 2007), emotional intelligence and social intelligence are culturally bound, as interpreting emotions and social situations does not translate to unfamiliar cultures (Cantor and Kihlstrom 1987; Earley and Ang 2003). CQ is theorized and measured as consisting of the

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<sup>1</sup> As theoretical underpinnings are nearly identical, we will continue to refer in the hypotheses development to “entrepreneurial” instead of “intrapreneurial” actions, while keeping in mind that the discovery is conducted within the organization and in an international context.

four dimensions of metacognition, cognition, motivation, and behavior (Earley and Ang 2003). Metacognitive CQ captures the mental processing and awareness capability, cognitive CQ the knowledge of cultural differences with regards to norms and practices in diverse settings, motivational CQ the drive to adjust and bridge cultural dissimilarities, and behavioral CQ the ability to exhibit appropriate behaviors and actions (Earley and Ang 2003).

Whereas some researchers group metacognitive and cognitive CQ in one component to represent mental ability (Ang et al. 2006) or analyze the CQ as a unidimensional or higher-order construct, more recent research generally agrees upon the conceptualization of CQ as a four-dimensional construct (e.g., Ang et al. 2007; Mahembe and Engelbrecht 2014). These four components of CQ have distinctive effects on various outcomes (Chen et al. 2012; Chua et al. 2012; Magnusson et al. 2013). The separate use of the CQ components is furthermore supported by a current review and assessment of the CQ scale (Lorenz and Franke 2015). The authors conclude, by reviewing and reanalyzing previous studies, that CQ should not be treated as unidimensional or as a higher-order construct. Misspecifying CQ may lead to loss of valuable information, theoretical misinterpretations, inappropriate indications of significance, and a lack of generalizability of the results. Each CQ dimension, although related, should be considered theoretically and empirically distinct from the other subcomponents. Following, only the relevant CQ components are theorized, and the omission of dimensions of less relevance is acceptable. Other authors have confirmed this notion in their theoretical argumentation (Chua et al. 2012; Magnusson et al. 2013).

Within the components of CQ, authors have generally focused on the metacognitive and/or the motivational CQ component in explaining performance or adjustment outcomes in cross-cultural settings (e.g., Chen et al. 2012; Magnusson et al. 2013). For example, Chen et al.

(2012), analyzing 305 real estate agents, found that a high level of motivational CQ results in more cultural sales. Magnusson et al. (2013) established that export managers' level of motivational CQ positively influences marketing-mix adaptation and the level of metacognitive CQ impacts export performance.

## **Theory and Hypothesis Development**

### ***Application of the Theory of Planned Behavior (TPB)***

An expatriate uses specific behaviors in order to recognize international opportunities. The expatriate connects dots in unfamiliar situations, interacts with different actors, and gains access to heterogeneous knowledge. Yet these actions are not performed extemporaneously; rather, they are the result of attitudes and beliefs that induce deliberate action (Ajzen 1991). Thus, recognizing and exploiting opportunities could be considered an intentional process (Muzychenko and Liesch 2015).

The TPB (Ajzen 1991) may describe how cross-cultural attitudes and beliefs stimulate the recognition of opportunities in an international context. The theory suggests that behavioral intentions and, consequently, behaviors are a function of three cognitive factors: attitudes, subjective norms, and perceived behavioral control (Ajzen 1991). Attitudes refer to an individual's evaluation of anticipated consequences and the valence of his/her behavior. Subjective norms reflect the anticipated pressure from the social environment to execute the behavior. Finally, perceived behavioral control determines the perceived degree of challenge in performing the behavior based on past experience and future expectations (Ajzen 1991).

Although the application of the TPB in the international entrepreneurship literature is relatively new, it has been recently used in an exploratory case study by Muzychenko and Liesch (2015). The authors found that attitudes, such as building a world class enterprise and passion for

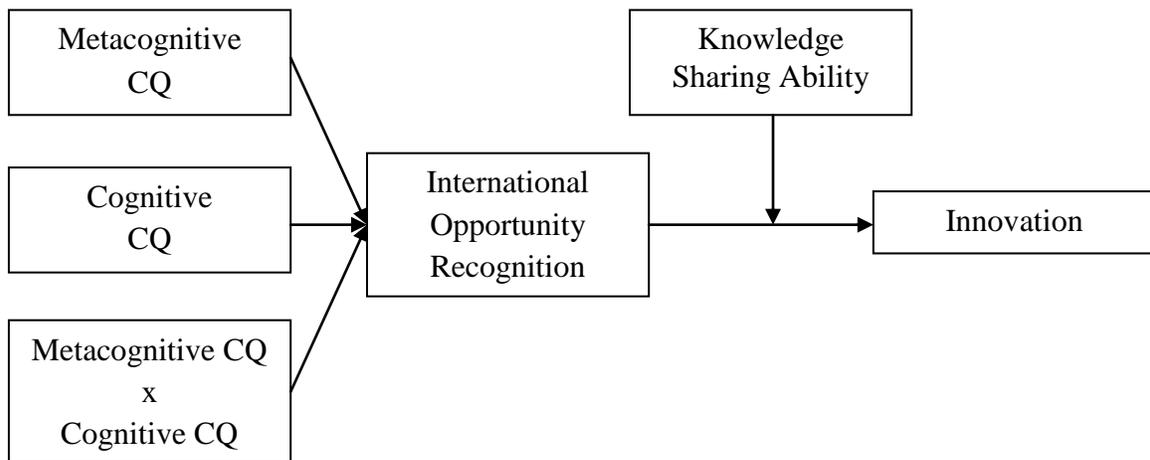
international encounters, as well as perceived behavioral controls including self-efficacy, in the international opportunity recognition process and cross-cultural encounters stimulated opportunity recognition and exploitation (Muzychenko and Liesch 2015). In order to extend the Muzychenko and Liesch (2015) qualitative study, we suggest that the TPB can help explain how an expatriate's cultural intelligence increases the behavioral intent to recognize opportunities in an international context. In particular, we posit that out of the four CQ components, metacognitive and cognitive CQ are the mental capabilities which allow expatriates in cross-cultural settings to exhibit entrepreneurial behaviors.

The perceived behavioral control component of the TPB may be reflected in the metacognitive CQ component. Metacognitive CQ allows expatriates to be cognizant of cross-cultural actions, reassess assumptions and beliefs, make calculated and objective decisions, and selectively use prior experience without bias (Ang et al. 2015). The attitude component of the TPB is based on what is believed or known, and could be attributed to both the cognitive and metacognitive CQ components. Expatriates high in cognitive CQ have knowledge of the foreign market and the related cultural environment (Earley and Ang 2003). The cross-cultural knowledge allows them to better predict and anticipate the consequences of the behavior resulting in the formation of attitudes towards the behavior. Additionally, metacognitive CQ may influence attitudes and, consequently, behavioral intent based on its association with openness to experience, adjustment, and cultural learning. Attitudes have been suggested to drive international opportunity recognition (Muzychenko and Liesch 2015). Subjective norms should not heavily influence an expatriate's behavior due to the relative lack of external pressure. In the context of an international assignment, expatriates have a high locus of control because they

usually have a lot of power. In summary, we suggest that the metacognitive and cognitive CQ components are related to the perceived behavioral control and attitudes elements of the TPB.

Based on the literature review and the theoretical foundations of the TPB, we will next develop the hypotheses in the following section (see Figure 3-1). Consistent with our research focus, we first emphasize the relationship between metacognitive and cognitive CQ and their influence on opportunity recognition. Then, we examine the mediating effect of opportunity recognition and the moderating impact of knowledge sharing on innovative performance.

**FIGURE 3-1**  
**Theoretical Model**



### ***Metacognitive CQ and Opportunity Recognition***

Metacognitive CQ reflects “the processes individuals use to acquire and understand cultural knowledge” (Ang et al. 2006, p. 101). Thus, metacognition captures the knowledge and information processing capability (Earley and Ang 2003). It has the perceived control over cognition that results in deep information processing and the understanding of individuals’ emotions, motives, and goals (Thomas 2006). The metacognitive facet is considered a higher-order dimension which encompasses the mental ability of consciousness and awareness before

and during intercultural interactions (Ng et al. 2009). Based on the tenants of the TPB, metacognition is an integral part of expatriates' perceived behavioral control and attitude formation. It relates to opportunity recognition in the following five ways. First, referring to opportunity recognition as cognitive processes through which individuals conclude that they have identified an opportunity (Baron 2004b), emphasis is placed on the distinctive cognitive abilities of individuals. In order to discover opportunities, individuals do not only have to know markets and industry, they also have to possess the cognitive abilities to synthesize necessary information (Shane and Venkataraman 2000). Given the complexity of the international environment and the heterogeneity of the information, previous domestic experience and cognitive patterns may be ineffective or even create biases (Mathews and Zander 2007). A person high in metacognition has a highly differentiated, flexible concept of self and others which is used as a filter to understand novel situations. It also allows individuals to mentally adapt to new contexts and create the potential through the synthesis to discover opportunities (Earley and Ang 2003). Mental adaptability and flexibility, furthermore, enable the discriminative use of schemas and scripts based on changing cultural expectations (Klafehn et al. 2008), an inevitable component in the recognition of international opportunities. Moreover, high metacognitive individuals possess the social processing capability which enables them to understand the logic of their reasoning including self-monitoring, self-evaluation, and self-reaction (Bandura 1997; Earley and Ang 2003). Thus, the level of metacognitive CQ manifests itself in the ability to be cognizant of one's own cultural practices, question cultural assumption, and suspend judgment until enough data is available (Ng and Earley 2006; Triandis 2006). As the heuristics developed in previous life experience may, consequently, not create bias towards

new information, individuals high in metacognition can utilize their cognitive ability to discover novel opportunities.

Second, research on pattern recognition emphasizes the importance of cognitive frameworks acquired through experience (e.g., prototypes) in the opportunity recognition process. These frameworks enable individuals to identify connections between events or trends (e.g., developments in technology, shifts in markets, modifications in government policies) and to detect meaningful patterns in these connections, leading to ideas for novel products and services (Baron 2006; Baron and Ensley 2006). Individuals high in metacognitive CQ possess analogical and inductive reasoning (Ang et al. 2007). Analogical reasoning is important for transferring knowledge and experiences, whereas inductive reasoning helps individuals to make sense of often ambiguous clues or misleading information based on the differences between the domestic and the foreign environment (Earley and Ang 2003). This processing power may not only prevent individuals from trying to approach novel situations from a domestic perspective as discussed in the preceding paragraph, but by comparing previous experience and assumptions to novel information, individuals high in metacognition are able to identify ideas and opportunities not accessible for individuals without the capability. For example, an individual low in metacognitive CQ may equate existing customer needs in one market to a culturally different market and introduce products or services that are not demanded by the consumer or appropriate for the respective market.

Third, openness to new experience and extraversion have long been seen as important inputs for creative actions, behaving entrepreneurially in organizations, and discovering new opportunities (Leutner et al. 2014). Similarly, metacognitive CQ has been related by researchers as openness to experience and extraversion (Ang et al. 2007; Groves et al. 2014; Huff et al. 2014;

Şahin et al. 2014). Thus, in cross-cultural situations, individuals with metacognitive abilities have a higher propensity to discover opportunities as they are open to changing their mental modes and assumptions and to accepting the risk of failure inherent in novel situations (Ang et al. 2006). The openness to experience and, thus, the willingness to accept the risk to fail may, furthermore, stimulate the recognition of opportunities. This is in particular likely as Kirzner (1979) argues that opportunities, in the absence of new information, could be the result of the actors' mistakes in the market place. Expatriates, for example, may be willing to take chances and pioneer ideas based on their awareness of potential needs in products or process, which may prove to be a poor fit as the market evolves or may create consumer and organizational resistance due to the unwillingness to change. The higher risk acceptance and the related higher propensity to discover opportunities may be attributable, at least to some extent, to the temporary employment in the subsidiary and, thus, less accountability for failure.

Fourth, research on creativity and the discovering of novel ideas has accentuated that creativity is a social process which goes beyond the central actor and includes the social environment (e.g., Burt 2004; Perry-Smith 2014; Zhou et al. 2009). Similarly, entrepreneurship literature has highlighted that one's social network can serve as a source for new ideas and, subsequently, affect the number of perceived opportunities (Singh et al. 1999). Empirical findings also suggest that individuals who have access to a large and diverse network with nonredundant ties and heterogeneous knowledge are more creative (Baer 2010; Burt 2004). Expatriates may, thus, be able to tap into diverse knowledge pools through their interaction with the headquarters, but also with other expatriates around the world and local stakeholders. Perry-Smith (2014) showed not only that information received through networks facilitates creativity, but also that the individual's cognitive frame, which includes interpretation and sense making,

may play an even more important role in stipulating the creative processes. Metacognitive CQ may be a competence that facilitates individuals to connect with actors in a cross-cultural environment who otherwise are disconnected, receive novel information, and process and recombine that information with existing knowledge in new ways. Research on metacognitive CQ supports the argument of creating ideas and exchanging information through improved network, collaboration, and interaction possibilities. For example, Chua et al. (2012) found that metacognitive CQ was critical for creative collaborative relations. Chen and Lin (2013) demonstrated that metacognitive CQ, compared to the other CQ dimensions, had the strongest impact on the willingness to share knowledge in teams.

Finally, if individuals are exposed to an unfamiliar cultural environment, they may experience stress and withdrawal symptoms, and find their psychological feelings and well-being negatively impacted (Shaffer et al. 2006). Empirical findings on cross-cultural encounters highlight the importance of cultural adjustment or adaptation for individuals' well-being and subsequently effectiveness (Bhaskar-Shrinivas et al. 2005). Cross-cultural adjustment represents an affective outcome which reflects how people see and face new cultural challenges (Black et al. 1991; Shaffer et al. 2006). Various authors have supported the positive effect of the level of metacognitive CQ on cross-cultural adjustment (Lin et al. 2012), interactional adjustment (Ang et al. 2007; Ramalu et al. 2010), general adjustment (Ramalu et al. 2010), and job satisfaction (Huff 2013). Furthermore, high metacognitive CQ has been linked to a lower chance of culture shock (Chen et al. 2011) and burnout (Tay et al. 2008). Thus, individuals with high metacognitive CQ are able to better adjust to unfamiliar settings and experience less negative feelings or outcomes, as they are able to adjust their mental models. Positive affect, an emotional state encompassing feelings of happiness and alertness (Watson et al. 1993), and self-efficacy,

the belief in one's capability to achieve success in a distinct situation (Bandura 1982), are important drivers of creative activities and the discovering of new opportunities (e.g., Baas et al. 2008). Positive affect increases creativity because it activates cognitive process and enhances cognitive flexibility. Bledow et al. (2013), furthermore, suggest that the emergence of novel ideas and recognized opportunities is preceded by a phase of negative affect that is followed by positive affect. The experience of negative and positive affect may be, in particular, salient for expatriates, as metacognitive CQ may help individuals to better overcome culture shock (negative affect) and to facilitate adjustment in a novel environment. Thus, high metacognitive CQ may be an important antecedent to the discovery of new opportunities through the enablement of positive affect. Based on the argumentation provided, we suggest that:

*H1a:* Metacognitive CQ is positively related to an individual's propensity to recognize opportunities abroad, such that individuals with high metacognitive CQ recognize more opportunities.

### ***Cognitive CQ and Opportunity Recognition***

The cognitive aspect of CQ represents the actual knowledge and the knowledge structure of the cultural environment (Earley and Ang 2003). Knowledge in the opportunity recognition context can be described as a body of information directly applicable to tasks through understanding of principles, facts, and processes. According to Ployhart and Moliterno (2011, p. 134), knowledge is "usually clustered within domains such as those learned through formal education and/or experience." Various evidence suggest that information and experience collected throughout the lifetime of an individual can be a significant advantage in terms of recognizing potentially profitable opportunities (Baron, 2006).

Three major knowledge sources have been regarded as important for the discovery of opportunities: knowledge of markets, knowledge of ways to serve the market, and knowledge of

customers (Shane and Venkataraman 2000). The existing knowledge base is generally cultural-bound and the cognition constrained by individuals' external cultural, institutional, political, and technological environment (Thomas and Mueller 2000). Thus, in order to discover opportunities in a cross-cultural context, individuals need to be able to understand the informal and formal environment in the foreign country in addition to their home market. This is particularly important as opportunities may emerge through changes in these environments and, thus, the knowledge and the subsequent reception of these changes is crucial. For example, a change in the formal environment, such as new regulations in research and use of stem cells, may provide opportunities for new services in the subsidiary market. However, individuals with low cognitive CQ may be unaware of the existence of the regulations and business practices, the regulative differences to the domestic market, as well as the potential for an innovation, as they rely on their bounded domestic knowledge where these business practices are not the norm or are even prohibited.

Next, cognitive CQ may help the expatriate understand ways to serve the market by knowing the universal facets of culture and culture-specific differences surrounding norms, practices, religious beliefs, arts and crafts, languages, and conventions (Ang et al. 2006). The specific facets of cultural knowledge include information about legal, economic, political, and social systems (Triandis 2006). The broader the knowledge base, the more and better opportunities an individual tends to recognize (Baron, 2006). This is coherent with research on creativity cognition as sufficient knowledge is seen as necessary resource to engage in generating new ideas (Chua et al. 2015).

Third, individuals with a broad sense of various cultures (high cognitive CQ) are better able to make sense of their customers. Culturally different customers may necessitate different

innovation approaches as the success of an opportunity is dependent on the consumers' receptivity of the novel idea (Mueller et al. 2012). Whereas in highly individualistic and short-term oriented cultures consumers are more favorably disposed to radical innovations and novel products and services, collectivistic and long-term oriented cultures may favor product and service adaptations (Eisingerich and Rubera 2010). As individuals high in cognitive CQ are willing to learn about their customers, are curious, and are broad-minded about different cultures (Ang et al. 2006), high cognitive CQ may help the expatriate to match the customer with the right innovation approach.

Finally, experience with foreign cultures may further increase the propensity for new ideas through diverse knowledge of an expatriate's customers accumulated during his/her life span (Maddux and Galinsky 2009). Experienced individuals recognize opportunities by relating external factors into a meaningful pattern (Baron 2006). Along with foreign experience comes the exposure to heterogeneous knowledge. Access to disparate elements of knowledge and the recombination of existing knowledge is suggested to nurture and sustain entrepreneurial action and creativity (Rodan and Galunic 2004). The realization and leverage of the differences between cultures may be contingent on intercultural learning (Maddux et al. 2010). Prior international entrepreneurship literature has highlighted the importance of international learning for foreign market performance (De Clercq and Zhou 2014). Ang et al. (2006) suggest that individuals high in cognitive CQ are willing to learn and are broad-minded about different cultures. Thus, individuals high in cognitive CQ are able to successfully apply their collected and diverse knowledge of their customers and recombine it in the pursuit of opportunities. Therefore, we propose:

*H1b:* Cognitive CQ is positively related to an individual's propensity to recognize opportunities abroad, such that individuals with high cognitive CQ recognize more opportunities.

### ***Interaction of Metacognitive and Cognitive CQ and Opportunity Recognition***

Having argued that metacognitive and cognitive CQ increase an individual's chance to recognize opportunities, we suggest that the accumulated knowledge about different cultural environments and the access to new information (high cognitive CQ) enables the highly metacognitive individual to recognize more opportunities. Individuals with more and diversified knowledge can better utilize their metacognitive ability to connect unrelated information, as cognitive frameworks are more clearly defined (Baron and Ensley 2006; Shane and Venkataraman 2000). Following this, experienced and knowledgeable individuals recognize opportunities by relating external factors into a meaningful pattern through the use of their metacognitive abilities. Further, knowledge of a particular market or industry facilitates the individual's pursuit for novel patterns that advocate business opportunities (Baron 2006). Cultural knowledge may further expedite adjustment, social interactions, and networking, augmenting the positive effect of metacognitive CQ on the propensity to discover opportunities. Hence, in extension to our earlier argument that each individual CQ competency can be positively associated with opportunity recognition, the interaction of both amplifies the effect and the individual's propensity to recognize opportunities. Individuals who accumulate knowledge and information through education or experience, and possess the necessary cognitive abilities to synthesize information and "connect the dots," will be the ones most likely to recognize opportunities. The gestalt of the produced arguments suggests a positive interaction of metacognitive and cognitive CQ, in the recognition of opportunities. In this notion, we hypothesize:

*H1c:* The interaction of metacognitive and cognitive CQ increases the respective singular effects of each component on individual's propensity to recognize opportunities abroad, such that individuals' high in metacognitive and cognitive CQ will recognize more opportunities.

### *Innovation and Cultural Intelligence*

International opportunity recognition is not an end in itself as opportunities only add to the firm's value if they are exploited (Gregoire and Shepherd 2012; Zahra 2005). Thus, identifying opportunities is necessary, but insufficient, for entrepreneurial action (Shane and Venkataraman 2000). Following the discovery of an opportunity, individuals have to evaluate whether or not to act based on the value, resources, and the consequences of the action (e.g., Wood and Williams 2014). Only upon exploitation can the exposure to new international opportunities improve the innovative performance of the firm (Autio et al. 2011).

What actually constitutes an innovation varies in the literature (Jiménez-Jiménez and Sanz-Valle 2011). Innovation can be a process or an outcome, as well as an individual-level concept ranging from innovativeness to creativity or a macro-level construct capturing innovative performance, diffusion or adaptation (Damanpour and Gopalakrishnan 1998; Knight 1967). The stage of adaption is another form of distinguishing different conceptualizations of innovation. On one hand, innovation may refer to the initiation including perception of the idea, gathering of information, and evaluation or, on the other hand, to the implementation stage containing production, modification, and utilization of the innovation (Damanpour 1991). Further, innovations can be classified by their impact as radical or incremental innovations. Radical innovations reflect a clear departure from existing structures and practice and, thus, produce fundamental change. In contrast, incremental innovations result in a lesser degree of departure, such as adaptations or near imitations (Damanpour 1991). Generally, innovation constitutes the adoption of a novel idea and the subsequent market introduction of something novel, including products, services, processes, or technology (Hage 1999). In our particular case, we emphasize the contribution of the individual to the innovative performance of the subsidiary.

Theoretically and empirically, innovation has been proposed as the key driver for MNEs' success (Buckley and Casson 1976), competitiveness and performance (Dunning 1994; Ghoshal and Bartlett 1988; Hitt et al. 1997; Phene and Almeida 2008; Vives et al. 2010), as well as an important factor in achieving sustainable competitive advantage in many global markets (Damanpour and Gopalakrishnan 2001; Hitt et al. 1997; Porter 2011). Individual, organization, and environmental factors capture the groups of precursors of innovation. Innovative performance may be based on individuals who demonstrate creativity, try to change a given situation, or have novel ideas (Goepel et al. 2012). Although keeping in mind the influence of the external and internal environment on innovative performance, in this study, we are primarily concerned with the impact of the individual.

In this paper, we suggest that an expatriate's metacognitive and cognitive CQ competencies will increase the propensity to discover opportunities, which, in turn, will contribute to and enhance innovative performance. Thus, we suggest that expatriate capabilities are not sufficient for innovative performance. Only through a discovery and evaluation process can the expatriate exploit the opportunities in order to add to the innovative performance of the subsidiary. In the following, we first discuss the mediating effect of opportunity recognition for the metacognitive CQ and innovation relationship. We conclude by explaining the role opportunity recognition plays in the cognitive CQ and innovation relationship.

*Metacognitive CQ and Innovation.* First, research in opportunity evaluation suggests that individuals, after discovering opportunities, develop decision templates to act upon, or refrain from, novel ideas related to demand-side considerations (Wood and Williams 2014). Having high metacognitive CQ does not only foster the discovery of opportunities, it secures a company from costly innovation failures of generalized and country-unspecific approaches (Ang and

Inkpen 2008; Moon 2010). Metacognitive CQ is seen as an ever present process (Van Dyne et al. 2012) and is involved in both stages of the innovation initiation (opportunity discovery) and the adaption process (innovation implementation). Consequently, we expect that individuals high in metacognitive CQ not only discover novel opportunities, but by going through the evaluation process, they also make effective decisions regarding which ideas to implement and avoid. This is particularly important, as specific cultural environments require specific actions, and individuals have to have the knowledge to anticipate how a market and customers might receive a new product or service regardless of own prior assumptions.

Moreover, once opportunities are recognized, individuals are seldom able to pursue them by themselves and need support from their followers. This aspect may refer to an individual's supply-side consideration in the evaluation of an opportunity, which includes resource availability and efficiency (Wood and Williams 2014). Human resources, in the form of co-workers or followers, may be of particular importance for innovative outcomes. However, the cultural diversity in teams is not only significantly related to innovative performance (Cox and Blake 1991), but may also create issues in how to leverage employees' collaborative potential. For example, employees high in uncertainty avoidance or power-distance might need different hierarchical structures to work effectively. Further, inter-organizational teamwork might be difficult in a culturally diverse setting or with a diverse workforce, as the meaning and the norms of teamwork may vary across cultures (Ang and Inkpen 2008). Teamwork difficulties do not only become apparent in highly distant cultures, but also in seemingly proximate cultures as described in an example in one of the earliest works on CQ:

An American expatriate manager . . . was serving on a design team that included two German engineers. As other team members floated their ideas, the engineers condemned them repeatedly as stunted or immature or worse. The manager concluded that Germans in general are rude and aggressive. A modicum of cultural intelligence would have helped

the American realize he was mistakenly equating the merit of an idea with the merit of the person presenting it and that the Germans were able to make a sharp distinction between the two. . . . Without being able to tell how much of the engineers' behavior was idiosyncratic and how much was culturally determined, he or she would not have known how to influence their actions or how easy it would be to do that (Earley and Mosakowski 2004, p. 140).

Given that multicultural teamwork leads to innovative outcomes (Gassmann 2001; Stahl et al. 2010), knowing how to structure an environment for highly innovative activity and foster collaborations might depend, at least to some extent, on expatriates' level of metacognition (Elenkov and Manev 2009). Thus, we propose:

*H2a:* Opportunity recognition mediates the relationship between metacognitive CQ and innovative performance, such that high metacognitive CQ has a positive indirect effect on innovative performance through opportunity recognition.

*Cognitive CQ and Innovation.* Individuals high in cognitive CQ will only pursue the exploitation of discovered opportunities if it is in line with customer demands. Because cultural norms might impact the interface between a company and its customers (Moon 2010), some cultures exhibit high demand for novel products and easily adapt new brands, whereas others favor incremental innovations and are hesitant to buy highly differentiated products. Further, economic, legal and institutional country-level criteria, language, intellectual property, and privacy are different from country to country.

The lack of this appropriate culture-general knowledge might pose a potential threat for new products and services (Vargas-Hernández et al. 2010). Expatriates have to filter out, understand, and utilize the information about customer demands and cultural environments that might clash with the discovered opportunities and is culturally different from existing assumptions. In doing so, individuals have to be culturally sensitive to adopt the right innovative approaches (Glynn 1996). Expatriates high in cognitive CQ may possess the knowledge about

how to innovate in diverse cultural markets which significantly determines the success of innovation. Advantages might be created in the form of knowledge about the external cultural environment, customer demands, as well as employee needs. Following the argumentation, we hypothesize:

*H2b*: Opportunity recognition mediates the relationship between cognitive CQ and innovative performance, such that high cognitive CQ has a positive indirect effect on innovative performance through opportunity recognition.

### ***The Impact of Knowledge Sharing Ability***

The capability to transfer knowledge from the headquarters to the subsidiary or vice versa is a vital component of a subsidiary's and MNE's performance (e.g., Chang et al. 2012; Eden 2009; Minbaeva et al. 2003; Rabbiosi and Santangelo 2013). Knowledge transfer takes into account direct collaborative relationships between actors of entities within the MNE and includes creation, transfer, and exchange of valuable knowledge and information (Gnyawali and Singal 2009). Besides the impact on performance, information and knowledge sharing has long been acknowledged as critical elements of innovation, as well as intrapreneurial initiation and implementation (Kanter 1984; Zahra 1993). Thus, we expect that the relationship between opportunity recognition and an individual's contribution to innovative performance is moderated by an individual's knowledge sharing capability.

To ensure knowledge transfer, MNEs often employ expatriates as agents between the headquarters and the subsidiary (Fey and Furu 2008). However, whereas expatriates seem to be valuable moderators and sources of knowledge, they might also be the cause of difficulties in the transfer within the organization (Chang et al. 2012; Szulanski 1996). Research has identified the difficulties in knowledge transfer as "internal stickiness" (Szulanski 1996). "Internal stickiness" caused by expatriates has various reasons. It may be related, for example, to the tacit nature of

knowledge which is dependent on the expatriate's personal experience, the challenge of cultural differences which hinder the diffusion of knowledge, and/or the expatriate's resistance to share knowledge with the subsidiary due to the fear of loss or control upon successful transfer (Argote et al. 2003; Szulanski 1996). More recently, researchers have found that individual-level factors, such as expatriates' ability, motivation, opportunity seeking, and expatriation experience, may also play an important role in knowledge transfer (Chang et al. 2012; Choi and Johanson 2012; Szulanski 1996). Ability captures the experiences and skills needed to transfer knowledge between different actors, for example in the headquarters or subsidiary (Chang et al. 2012). By including the knowledge sharing ability, we suggest that innovative performance is facilitated in two ways.

First, as previously mentioned, discovered opportunities are subject to various forms of evaluations because individuals have incomplete knowledge of the potential consequences of their actions (Wood and Williams 2014). Individuals who are able to share information with subsidiary employees may increase the degree of certainty for a successful innovation due to the more specific local knowledge of the employees including demand-side considerations. Furthermore, due to the high uncertainty of innovation, various skills are needed for the evaluation (Rodan and Galunic 2004). Through the sharing of novel ideas, individuals are able to receive feedback and expertise from a variety of sources.

Second, we suggest that individuals discovering opportunities within the organization (intrapreneurs) differ from entrepreneurs with regards to risk, personal rewards, and the amount of freedom, and control to exercise (e.g., Pinchot, 1985). Thus, sharing the novel ideas with subsidiary employees may be important in order to achieve the buy-in and support to exploit the opportunities (Rodan and Galunic 2004). Furthermore, the sharing of information increases the

legitimacy and credibility of the idea and may be necessary to generate the organizational action necessary to pursue the opportunity (Zahra 2005). Accordingly, we present the final hypothesis:

*H3: Knowledge sharing positively moderates the relationship between opportunity recognition and the individual's contribution to innovative performance, such that the relationship is stronger for individuals who are able to share knowledge.*

## **Methods**

### ***Data and Sample***

The hypotheses were examined using a data set of expatriates working in the U.S. Participants were recruited through an online panel service (Survata) and participated for a monetary incentive in the anonymous academic study. After providing the questionnaire, the online panel service company administered the survey to their panelists and delivered the raw results. The Institutional Review Board (IRB) approved of this study in September 2015. See the Appendix 3A for document IRB # 15-OR-293.

Various measures were taken to minimize bias and increase the quality of the survey. Besides the specification of expatriates as the targeted sample, participants had to pass screening questions concerning the assignment, the position, and the time spent abroad to qualify for the survey. Furthermore, measures, such as attention filters, "speeder", "straightliner", and job title checks, were employed to ensure the quality and validity of the sample (Schoenherr et al. 2015). Failure to meet the screening requirements resulted in the redirection to a new page and no incentive. To avoid missing and incomplete data, each item was set to "force response." Only when each question was answered did the software allow the respondent to move to the next set of questions and only completed questionnaires were delivered through the online panel service.

Accordingly, 220 usable responses were received, which constitutes a company reported response rate of 40.24 %. Participants were on average 33 years, female (59%), and worked for six years for their current company. Participants were employed in various positions (e.g., Sales Manager, IT Manager, Consultant, and Engineer) in predominantly service firms (e.g., IT, Business and Financial Operations, Consulting, and Healthcare). On average, the expatriates have been on three expatriate assignments (including the current one). Furthermore, participants were highly educated and from numerous countries around the world. Key demographics regarding nationality, education, and expatriate assignment are provided in Table 3-1. All other demographics can be found in Table 3-3.

**TABLE 3-1**  
**Demographics**

<b>Nationality (only most frequent ones)</b>		<b>Assignment Duration</b>	
India	10.9%	3 to less than 6 months	9.5%
Germany	7.3%	6 to less than 9 months	25.5%
Australia	6.4%	9 to less than 12 months	22.3%
China	5.5%	12 to less than 15 months	12.7%
United Kingdom	5.5%	15 to less than 18 months	8.6%
Canada	5.0%	18 to less than 21 months	4.1%
France	5.0%	21 to less than 24 months	6.8%
Argentina	4.5%	24 or more months	10.5%
Mexico	4.1%		
<b>Education</b>			
High School or less	10.0%		
2-year College Degree	7.3%		
4-year College Degree	41.8%		
Master's Degree	34.1%		
Doctoral Degree	6.8%		

## *Measures*

Each construct was measured with multiple items, and established scales were used. All measures were anchored on 7-point Likert-type scales, and respondents were asked to evaluate statements ranging from 1 (strongly disagree) to 7 (strongly agree). The scale items for the innovation scale ranged from 1 (never) to 7 (very frequently).

We measured *metacognitive* and *cognitive CQ* with the multidimensional cultural intelligence scale developed by Ang et al. (2007). The subcomponents of the scale, as opposed to the overall CQ construct, have been increasingly used independently due to their distinctive impacts in cross-cultural settings (Chen et al. 2012; Magnusson et al. 2013). Metacognitive CQ is composed of four items, such as “I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.” Cognitive CQ is composed of six items, such as “I know the legal and economic systems of other cultures.”

In line with previous research on *opportunity recognition* (Ma et al. 2011), we measure this construct with a three-item scale adapted from Ozgen and Baron (2007). The scale assesses the ability to recognize opportunities, the identification, and the alertness to opportunities. A sample item includes: “While going about day-to-day activities, I see potential new ideas (e.g., on new products, new markets, new processes, and new ways of organizing firms all around me).”

*Innovation* constitutes the introduction of something novel, including products, processes, services, or managerial practice. In the entrepreneurial setting, innovation represents the process of exploiting opportunities to create new products, services, processes (Van de Ven 1986). In this study, innovation was measured with a slight adaptation of the three-item scale by Subramaniam and Youndt (2005) to the expatriate context. Respondents are asked to rate how frequently they worked on or contributed to the innovativeness of new processes, products or services their firms

have developed during the time of expatriation. In particular, respondents are asked to rate innovations (1) that improve existing products, services, and processes; (2) that improve the existing expertise in processes, products, and services; and (3) that improve how the company currently competes. Prior studies utilizing the scale have found that innovation is, for example, an outcome of entrepreneurial alertness (Tang et al. 2012).

We measured expatriates' *ability to share knowledge* with the three-item scale by Liu and Liu (2011). In particular, the scale focuses on the individuals' assessment of their capabilities and skills to share knowledge, as well as their ability to overcome potential difficulties. Sample items include: "I believe I can overcome difficulties in knowledge sharing" or "I believe in my capability to share knowledge".

Based on past CQ and opportunity recognition research and to minimize spuriousness impacts on our results, respondent demographics (age, gender, education, tenure, nationality), firm (industry) and assignment demographics (duration of assignment, position) were also initially included in the analysis as *control variables* (Chen et al. 2012; Tang et al. 2012). However, following prior recommendations by Becker (2005), we only contained the control variables which are significantly correlated to the dependent variables in the final model analysis, as impotent control variables can deter the results. As can be seen in the subsequent analysis (i.e., Table 3-3), only nationality is significantly correlated with innovation, and no control variable is significantly related to opportunity recognition. Thus, nationality is included as a control variable in the final structural equation estimation.

### ***Confirmatory Factor Analysis, Validity, and Reliability***

Confirmatory factor analysis (CFA) was performed to verify the factor structure of the established scales using Mplus 7 (Muthén and Muthén 2012). All items loaded on their intended

factors, and the model fit statistics were in line with current thresholds ( $\chi^2 (142) = 203.19, p < .001$ ; SRMR = .04; CFI = .98; TLI = .97; RMSEA = .04).

To evaluate the validity and reliability of each construct, we further examined the factor loadings, composite reliability (CR), and the average variance extracted (AVE). First, the factor loadings of all constructs exceeded the threshold of .70, which indicated that the variance between the construct and its indicator is greater than the error (Carmines and Zeller 1979). The loadings suggested to retain all items. Second, all hypothesized constructs reflected internal consistency (AVE > .50) (Fornell and Larcker 1981) and reliability (CRs > .80) (Bagozzi and Yi 1988; Nunnally and Bernstein 1978). Finally, we established the discriminant validity of the constructs because the square root of the average variance extracted by each construct exceeded the correlation between all pairs of constructs (Fornell and Larcker 1981). Table 3-2 presents the factor loadings, AVEs, and reliabilities; the discriminant validity is reported in the correlation matrix in Table 3-3.

**TABLE 3-2**  
**Scale Items, Factor Loadings, AVEs, and CRs**

<b>Scales</b>	<b>Standardized Loadings</b>
<b>Metacognitive CQ (AVE = .68; CR = .89)</b>	
I am conscious of the cultural knowledge I use when interacting with people with different cultural backgrounds.	.801
I adjust my cultural knowledge as I interact with people from a culture that is unfamiliar to me.	.863
I am conscious of the cultural knowledge I apply to cross-cultural interactions.	.833
I check the accuracy of my cultural knowledge as I interact with people from different cultures.	.792
<b>Cognitive CQ (AVE = .59; CR = .90)</b>	
I know the legal and economic systems of other cultures.	.781
I know the rules (e.g., vocabulary, grammar) of other languages.	.767
I know the cultural values and religious beliefs of other cultures.	.787
I know the marriage systems of other cultures.	.742
I know the arts and crafts of other cultures.	.736
I know the rules for expressing non-verbal behaviors in other cultures.	.785
<b>Opportunity Recognition (AVE = .68; CR = .86)</b>	
While going about day-to-day activities, I see potential new ideas (e.g., on new products and services, new markets, and new ways of organizing firms all around me).	.779
I have a special alertness or sensitivity toward new opportunities (e.g., about new products and services, new markets, and new ways of organizing the firm).	.816
Seeing potential new opportunities (e.g., about new products and services, new markets, and new ways of organizing the firm) comes very naturally to me.	.872
<b>Knowledge Sharing Ability (AVE = .74; CR = .90)</b>	
I believe in my capability to share knowledge.	.852
I believe in my skills to share knowledge.	.883
I believe I can overcome difficulties in knowledge sharing.	.847
<b>Innovation (AVE = .72; CR = .89)</b>	
Innovations that improve the existing products, services, or processes.	.868
Innovations that improve the existing expertise in current products, services, or processes.	.848
Innovations that improve how your company currently competes.	.833

**TABLE 3-3**  
**Means, Standard Deviations, and Correlations**

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14
1. Metacognitive CQ	<b>(.85)</b>													
2. Cognitive CQ	.60***	<b>(.82)</b>												
3. OR	.50***	.49***	<b>(.82)</b>											
4. KS	.53***	.41***	.64***	<b>(.77)</b>										
5. Innovation	.51***	.46***	.66***	.60***	<b>(.86)</b>									
6. Gender	-.19**	-.06	-.08	-.11	-.08									
7. Age	.12	.08	.08	.13*	.08	.07								
8. Education	.03	.10	.05	.08	.06	.04	.18**							
9. Duration	.13	-.05	.10	.21***	.10	.03	.06	.13						
10. Tenure	-.01	-.07	-.01	.04	.12	-.03	.16*	.16*	-.01					
11. Position	-.03	.02	-.09	-.17**	-.08	-.05	-.14*	-.09	-.14*	-.05				
12. Experience	-.12	.05	.06	.07	.00	-.01	.24***	.06	-.14*	.19**	-.07			
13. Industry	.05	-.06	.09	-.03	-.02	.07	.00	-.01	.07	.05	-.12	.02		
14. Nationality	.06	.16*	.05	.15*	.15*	-.02	-.01	.04	.19**	-.05	-.15*	-.07	-.08	
<b>Mean</b>	5.26	4.82	5.01	5.26	4.92	.41	33.25	3.20	3.77	6.00	.28	3.30	.17	.11
<b>Std Dev</b>	1.27	1.22	1.27	1.41	1.36	.49	8.19	1.02	2.15	4.75	.45	3.00	.37	.31

Notes:  $n = 220$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ , SQRT AVEs on diagonal, OR = Opportunity Recognition, KS = Knowledge Sharing Ability, Gender (0 = male, 1 = female), Education (1 = high school or less, 2 = 2 year degree, 3 = 4 year degree, 4 = master's degree, 5 = doctoral degree), Duration = Duration of the expatriate assignment in months, Tenure = tenure with the current company in years, Position = most frequent position (0= others, 1 = Sales Manager/Director), Experience = number of expatriate experiences, Industry = Industry category (0 = Services, 1 = Manufacturing), Nationality = most frequent nationality (0= others, 1 = India).

### ***Common Method Variance (CMV)***

Due to the cross-sectional nature of our data collection, the constructs used in our model are susceptible to common method bias (CMB) (Conway and Lance 2010; Podsakoff et al. 2003). Although the risk of conflated relationships was present, we limited it a priori due to careful study design and post-hoc assessed the impact of CMB, as it was not serious enough to threaten our hypothesis testing. The procedures are described in the following.

*A priori*, CMB was minimized through the selection of a qualified sample population. They were qualified to participate in the study due to knowledge of cultural factors, education, and position. Respondents were pre-screened through the online survey company, as well as assessed at the beginning of the survey. If the respondents did not meet the qualification criteria, they were dismissed from the participation. Moreover, the unambiguity and short length of the survey, the use of reliable measurement constructs, the reverse causal order of dependent and independent variables in the questionnaire, and the randomization of items within scales should have aided in reducing the effect of CMB (Podsakoff et al. 2012).

*Post-hoc*, we examined the potential effect of CMB. First, we established a measurement model with the substantive constructs (metacognitive CQ, cognitive CQ, opportunity recognition, knowledge sharing ability, innovation). Second, we added a common method variance (CMV) latent factor to the measurement model. In this model, we allowed all items to load on their latent constructs, as well as on the CMV factor; the CMV factor was not permitted to correlate with any substantive construct. Then, we examined how much variance was due to the substantive constructs, and how much could be attributed to the method factor. Results revealed that the difference between the models ( $\Delta\chi^2 (19) = 50.01, p < .001$ ) was significant, thus, suggesting the existence of CMB. Although CMB was present, there was evidence that it

was not a pervasive problem in the data. First, we did not observe differences in the significance level of the correlations between the study variables in the models with or without the CMV factor. Second, the CMV method factor accounted for 11% of the variance in the data, which is less than the 25% threshold established by Williams, Cote, and Buckley (1989). In conclusion, while we found evidence of the existence of CMB, the bias was not prevalent enough to greatly threaten our hypotheses testing. Therefore, we believe that the relationships observed represent substantive, rather than artificial, effects.

### ***Structural Model Estimation***

A latent moderated mediation method for structural equation models including the comparison of various nested models was implemented to test the hypothesized model using Mplus 7. This approach has been demonstrated to be effective for testing moderated relationships (e.g., Klein and Moosbrugger 2000). The chosen process is described in the following.

First, the linear mediation model is created to assess the relationships that do not involve interactions. Specifically, this model examines the relationship between metacognitive CQ and opportunity recognition (*H1a*), cognitive CQ and opportunity recognition (*H1b*), the relationship between opportunity recognition and innovation, and the mediating effect of opportunity recognition on the relationships between metacognitive (*H2a*) and cognitive CQ (*H2b*) and innovation.

Second, once the best fitting linear model is established, the next step is to test the hypothesized model, including the interactions between metacognitive and cognitive CQ (*H1c*), as well as between opportunity recognition and knowledge sharing (*H3*). If the interaction model is significantly better than the linear effects model, it demonstrates that the hypothesized

moderations should be included in the final model (e.g., Cortina et al. 2001). The final model is then used to interpret the results.

## Results

To test the linear mediation model, we compared a full mediation model, which did not have direct paths between metacognitive CQ and innovation and cognitive CQ and innovation, with a partial mediation model, in which we added the two paths from the CQ components to the outcome variable. The data indicated good fit for both the full mediation model ( $\chi^2 (163) = 266.59, p < .001; RMSEA = .05; CFI = .96; TLI = .96; SRMR = .06$ ), as well as the partial mediation model ( $\chi^2 (161) = 263.38, p < .001; RMSEA = .05; CFI = .96; TLI = .96; SRMR = .06$ ). However, the  $\chi^2$  difference between the models was not significant ( $\Delta\chi^2 (2) = 3.21, p > .20$ ). Additionally we compared models which assume a partial mediation between metacognitive CQ and innovation and a full mediation between cognitive CQ and innovation ( $\chi^2 (162) = 263.56, p < .001; RMSEA = .05; CFI = .96; TLI = .96; SRMR = .06$ ), as well as a full mediation between metacognitive CQ and innovation and a partial mediation between cognitive CQ and innovation ( $\chi^2 (162) = 264.32, p < .001; RMSEA = .05; RMSEA = .05; CFI = .96; TLI = .96; SRMR = .06$ ). However, these models did not show better fit than the model which assumes full mediation for both independent variables with the outcome variable. Thus, as the full mediation model better represents the relationships, it is retained for further analysis.

Second, we ran a series of nested models including the latent interaction term(s). We examined the Akaike's Information Criterion (AIC) and the log likelihood (LL) value because model comparisons, as integration procedures, in Mplus do not provide standard fit indices. The AIC is a comparative measure of fit, and the smallest AIC value is preferred when comparing

multiple models. The  $-2 \times \log$  likelihood (LL) ratio, which is distributed as a Chi-Square statistic, is used to compute a p-value (Muthén 2012). The p-value allows us to determine whether the inclusion of the interactions constitute a significant improvement over the linear model (Marsh et al. 2004). If the difference is significant, then the less restricted model is suggested to fit the data significantly better than the more restrictive model (the linear model). The linear effects model produced a  $-2 \times \text{LL}$  statistic of 12,399.06 and an AIC of 12,529.07 (Model 1). In comparison, the hypothesized model produced a  $-2 \times \text{LL}$  statistic of 12,398.36 and an AIC of 12,532.36 (Model 2). Because the AIC value for the linear effects model is less than the AIC for the hypothesized model, the linear model is the preferred model. Furthermore, the  $-2 \times \text{LL}$  statistics difference test between the two models was not significant suggesting that the hypothesized interactions should not be included in the final model ( $\Delta \text{LL} = .70, \Delta df = 2, p = .70$ ). Table 3-4 presents the estimated models.

**TABLE 3-4**  
**Model Comparisons**

<b>Models</b>	<b>AIC</b>	<b><math>\Delta</math> AIC</b>	<b>-2 LL</b>	<b><math>\Delta</math> LL</b>	<b><math>\Delta</math> df</b>	<b>p</b>
Linear Model	12529.07		12399.06			
Hypothesized Model	12532.36	3.29	12398.36	-.70	2	.70
Interaction between CQ components added	12530.79	1.72	12398.78	.42	1	.52
Interaction between Opportunity Recognition and Knowledge Sharing added	12530.58	1.51	12398.58	-.20	1	.65

Given that the linear model is better than the hypothesized model with the two interactions, we explored whether a single interaction explained the variance in the dependent variable better than the linear model. Accordingly, we ran two additional models (Model 3 and Model 4) in which we entered one interaction at a time. However, the separate inclusion of the

moderators did not improve the model fit, which let us determine that the linear model is the best model. Consequently, the hypotheses are interpreted using the results from the linear model (Model 1).

Examining the outcomes in the linear model (Model 1), metacognitive CQ has a significant effect on opportunity recognition (path estimate = .67,  $\beta = .68$ ,  $p < .001$ ), supporting *H1a*. In contrast, cognitive CQ does not significantly impact opportunity recognition (path estimate = .03,  $\beta = .03$ ,  $p > .05$ ), leading to the rejecting of *H1b*. The interaction effect of metacognitive and cognitive CQ is not supported because the linear model fits better than the model with the interaction. Thus, *H1c* was rejected. The analysis of the indirect effect of opportunity recognition on the relationship between metacognitive CQ and innovation was significant (path estimate = .41,  $\beta = .33$ ,  $p < .001$ ) and confirmed by the 5,000 bootstrap confidence interval that did not include zero (99% CI [.33; .47]). Consequently, *H2a* was supported showing that international opportunity recognition is the underlying mechanism that converts metacognitive CQ into innovation. The indirect effect of opportunity recognition on the relationship between cognitive CQ and innovation was insignificant, and *H2b* was rejected (path estimate = .02,  $\beta = .01$ ,  $p > .05$ , 99% CI [-.06; .10]). Finally, the moderating effect of knowledge sharing on the relationship between opportunity recognition and innovation was not supported due to the superior fit of the linear model, which let us reject *H3*. Table 3-5 presents the results from the hypotheses testing.

**TABLE 3-5**  
**Hypotheses Testing**

<b>Hypotheses</b>	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>
<b>H1:</b> Metacognitive CQ $\Rightarrow$ OR	.67***	.66***	.66***	.66***
<b>H2:</b> Cognitive CQ $\Rightarrow$ OR	.03	.03	.03	.03
Metacognitive CQ $\Rightarrow$ Innovation	---	---	---	---
Cognitive CQ $\Rightarrow$ Innovation	---	---	---	---
<b>H3:</b> Metacognitive CQ x Cognitive CQ $\Rightarrow$ OR	---	-.02	-.03	
<b>H4a:</b> Metacognitive CQ $\Rightarrow$ OR $\Rightarrow$ Innovation	0.40*** CI [.33; .47]	---	---	---
<b>H4b:</b> Cognitive CQ $\Rightarrow$ OR $\Rightarrow$ Innovation	.02 CI [-.06; .10]	---	---	---
OR $\Rightarrow$ Innovation	.69***	.68***	.69***	.69***
KS $\Rightarrow$ Innovation	.31***	.39***	.31***	.39***
<b>H5:</b> OR x KS $\Rightarrow$ Innovation	---	-.04	---	-.04
Nationality $\Rightarrow$ Innovation	.33	.32	.33	.35

Notes:  $n = 220$ ; \* $p < .05$ ; \*\* $p < .01$ ; \*\*\* $p < .001$ ; all values are path estimates; OR = Opportunity Recognition; KS = Knowledge Sharing Ability; CI = Bootstrap Confidence Interval

### Discussion

The purpose of this project was to address gaps in the international entrepreneurship and marketing literature by increasing our understanding of the role of the expatriate and cultural intelligence in the processes of opportunity recognition and innovation. As such, we investigated the influence of expatriates' metacognitive and cognitive CQ on opportunity recognition, the mediating impact of opportunity recognition on innovation, and the moderating effect of knowledge sharing on innovation. The partial support of our hypotheses provides various insights of both theoretical and practical relevance by extending the international marketing, entrepreneurship, and expatriate literatures.

### *Theoretical Implications*

This paper applies the TPB to theoretically understand why metacognitive and cognitive CQ help expatriates discover opportunities abroad, leading to innovative outcomes. Empirically, however, we can only confirm the importance of metacognitive CQ for opportunity recognition and innovation. Expatriates high in metacognitive CQ are able to overcome pre-existing and culturally bound schemata, which would otherwise hinder their attempt to discover opportunities in the new environment. Instead of relying on automatic cognitive process, expatriates can think deliberately without the constraints of their culture (DiMaggio 1997). They can override programmed modes of thoughts, reassess assumptions, and learn from failures of “old” thinking patterns. In general, deliberate thinking is activated when a person is motivated, attentive to new situations, and has experienced schemata failure (DiMaggio 1997). Expatriates frequently have schemata failure because they are constantly exposed to new cultural environments that they know little about. Yet, expatriates with a high metacognitive CQ use the failure to their advantage by being attentive to new situations, developing new thinking patterns, and connecting information not accessible to other individuals without the cultural competency.

The importance of metacognitive CQ for opportunity recognition is also supported by social cognitive theory (Bandura 1986). In his theory, Bandura (1986) emphasizes the fundamental role of cognitive, self-regulatory, and self-reflective processes in human adaptation. Our results show that the possession of metacognitive CQ increases the self-reflective and self-regulating processes in expatriates’ cognition and, thus, reduces the effect of prior experiences, heuristics, learned behaviors, and environmental forces. Expatriates are free and open to explore the new environment and discover opportunities. They also can acquire knowledge more easily by observing others within the backdrop of social experiences and interactions.

Furthermore, the different strengths of metacognitive and cognitive CQ and the partial support of metacognitive CQ, but not cognitive CQ, on the propensity to discover opportunities confirms prior research which manifests metacognitive CQ as a higher-order mental capability necessary to analyze, control, and understand cultural knowledge (Ng et al. 2012). Expatriates high in metacognitive CQ are better able to use and apply their cultural knowledge. Thus, a boundary condition in the CQ literature may be that an expatriate must have metacognitive CQ in order to utilize his/her cognitive CQ. Specifically, a high cognitive CQ, without the existence of metacognitive CQ, may not be sufficient for opportunity recognition.

Besides the fact that metacognitive CQ may theoretically overshadow the importance of cognitive CQ, one may also consider other explanations for the nonsignificant findings. For example, we believe that the measurement of cognitive CQ is problematic. Cognitive CQ is the only component which may be interpreted by respondents in a culture-specific way and, thus, opposes the culture-free definition of the CQ construct. Furthermore, high correlations between the metacognitive and cognitive CQ may have deteriorated the results. The use of suppressor variables and controls may have increased the reliability of the outcomes and reduced multicollinearity. Similarly, the interaction between the two CQ components did not prove to increase expatriates' propensity to discover opportunities, due to the high explanatory power of metacognitive CQ. In conclusion, our significant findings of metacognitive CQ, but not cognitive CQ, as antecedent to opportunity recognition does not only extend the rich CQ literature on expatriates, but also shows the differentiated impact of the CQ components on outcomes, such as opportunity recognition and innovation.

Regarding the mediating effects, we confirm the notion that opportunity recognition mediates the relationship between metacognitive CQ and innovative outcomes. In an

international context, opportunity recognition may be a mechanism that enables value creating innovation activities. Expatriates without metacognitive CQ might not discover opportunities abroad for innovative products, services, and processes. Furthermore, the lack of CQ may result in a lack of cultural appropriateness of the innovation and, thus, fail to meet the demands of diverse international markets. By linking competencies to innovative performance through opportunity recognition, we advance research on innovative-inducing factors for MNEs. Similar to the previous hypothesis, we could not find a significant indirect effect of opportunity recognition on the relationship between cognitive CQ and innovation. These results again confirm the importance of metacognitive CQ over cognitive CQ. However, while multicollinearity can be expected in a mediational analysis, the high correlations and the proximity of the variables may have influenced the results.

Finally, opposed to our theorizing, expatriates' ability to share knowledge did not strengthen the relationship between opportunity recognition and innovation. While the ability to share knowledge may be important, it may be more important that the expatriate is willing and motivated to share knowledge. Prior literature has demonstrated the salience of expatriates' willingness to share knowledge in overcoming potential difficulties entailed in a cross-cultural setting and fear of losing power and control when sharing knowledge (Chang et al. 2012). As expatriates' career development is based on successes in their international assignments, many expatriates may be hesitant to build trust and share knowledge with subsidiary employees due to the limited duration of their assignment and the risk of not being credited for recognized opportunities.

### ***Practical Implications***

Our study also has important managerial implications. The findings provide important guidance for MNEs as they strive to grow by innovating. Before an expatriate can innovate, he/she must discover an opportunity in a foreign country. Our results suggest that expatriates high in metacognitive CQ possess the cultural competencies necessary for opportunity recognition and subsequently innovation.

Given the importance of innovation to achieve a competitive advantage, firms should strive to ensure that expatriates possess metacognitive CQ before they start their international assignment. Thus, a metacognitive CQ assessment should be part of the recruiting and selection process when deciding whom to expatriate. In addition to selecting expatriate candidates based on their existing CQ, firms can provide training that enhances potential expatriates' CQ. As prior research has shown that CQ is a malleable competence that can be increased through experiential training, nurturing expatriates' CQ may be a strategic imperative for firms (MacNab 2012).

Although we did not find support for the cognitive CQ component, it does not mean that increasing cognitive CQ is not of practical value for a firm. Having knowledge about cultural environments may enable expatriates to process information more accurately and, thus, allow them to more efficiently use the metacognitive component. Furthermore, prior literature has demonstrated that cognitive CQ can be increased through academic training (Eisenberg et al. 2013) which MNEs can relatively easy and cost-efficiently implement.

### **Limitations and Directions for Future Research**

Our study should be interpreted in light of some limitations that may provide avenues for future research. First, our research relied on self-reports and, therefore, may be subject to social

desirability. Future studies could include other reports or external measures for opportunity recognition and innovation.

Second, our study focused on expatriates working in the U.S. While we chose to study the specifics of these expatriates, it also limits the generalizability of the results. Future studies could examine the boundary conditions of our findings by surveying expatriates working in different countries. For example, it might be interesting to look at the opportunity recognition abilities of expatriates working in India because that country is focused on the high technology industries.

Third, the scope of the study was also limited to the impact of metacognitive and cognitive CQ on a general opportunity recognition construct. Especially given the insignificant results of cognitive CQ, it would be interesting to develop a theoretical rationale to explore in more detail the distinct impact of motivational and behavioral CQ components on the various opportunity recognition process stages.

Fourth, given the insignificant results for the moderating effect of the expatriate's knowledge sharing ability, one may employ a different ability scale. Future studies may use a less general scale to assess different forms of abilities necessary to transfer knowledge.

Finally, although we controlled for various key variables, we did not measure cognitive ability, emotional intelligence, or the Big Five personality traits. All of these variables have been shown to interact with CQ (Ang et al. 2015). We specifically left these and other controls out of the survey due to the time constraints of our respondents. Future research should add these controls in order to demonstrate incremental explanatory power of CQ in cross-cultural situations.

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## Appendix 3A: IRB # 15-OR-293

Office for Research  
Institutional Review Board for the  
Protection of Human Subjects

THE UNIVERSITY OF  
**ALABAMA**  
R E S E A R C H

September 28, 2015

Melanie P. Lorenz  
Doctoral Candidate Marketing and International Business  
Culverhouse College of Commerce & Business Administration  
University of Alabama  
Box 870225

Re: IRB # 15-OR-293 "Opportunity Recognition and Innovation in Foreign Markets: The Role of Cultural Intelligence and Knowledge Sharing"

Dear Ms. Lorenz:

The University of Alabama Institutional Review Board has granted approval for your proposed research. You have also been granted the requested waiver of one element of informed consent as well as a waiver of documentation of informed consent. Approval has been given under expedited review category 7 as outlined below:

*(7) Research on individual or group characteristics or behavior (including, but not limited to, research on perception, cognition, motivation, identity, language, communication, cultural beliefs or practices, and social behavior) or research employing survey, interview, oral history, focus group, program evaluation, human factors evaluation, or quality assurance methodologies.*

Your application will expire on September 27, 2016. If your research will continue beyond this date, complete the relevant portions of the IRB Renewal Application. If you wish to modify the application, complete the Modification of an Approved Protocol Form. Changes in this study cannot be initiated without IRB approval, except when necessary to eliminate apparent immediate hazards to participants. When the study closes, complete the appropriate portions of the IRB Study Closure Form.

Please use reproductions of the IRB approved informed consent form to obtain consent from your participants.

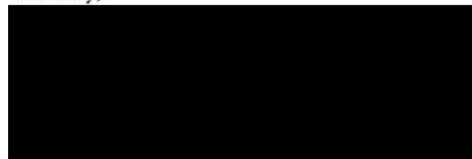
Should you need to submit any further correspondence regarding this proposal, please include the above application number.

Good luck with your research.

Sincerely,



358 Rose Administration Building  
Box 870127  
Tuscaloosa, Alabama 35487-0127  
(205) 348-8461  
FAX (205) 348-7189  
TOLL FREE (877) 820-3066



CHAPTER IV – ESSAY 3:  
THINKING OUTSIDE THE BOX:  
INCREASING DISTANCE IN ORDER TO INNOVATE

**Introduction**

Shorter product life cycles, increased cost pressures, and intense global competition have made it more difficult than ever for multinational enterprises (MNEs) to grow and remain competitive. Innovation in this context has become a buzzword and a reflection of companies' success and long-term survivability (Damanpour and Gopalakrishnan 2001; Hitt et al. 1997; Porter 2011). However, how can innovativeness on a global scale be achieved, and what hinders companies from being innovative?

Most innovation research today has focused either on internal organizational factors such as firm structure and processes (Damanpour and Schneider 2006), absorptive capacity (Chen et al. 2009; Cohen and Levinthal 1990; Lichtenthaler 2009), and organizational learning (Hurley and Hult 1998; Jiménez-Jiménez and Sanz-Valle 2011), or external innovation-inducing factors such as the competition and market climate (Damanpour 2010), economic environment (Damanpour and Schneider 2006), government actions (More 2011), environmental dynamism (Baron and Tang 2011; Jansen et al. 2006), and environmental uncertainty (York and Venkataraman 2010). One aspect that all of these innovation-inducing factors have in common is that they can be, to varying degrees, influenced or formed by institutions. Institutions are structures and mechanisms that govern behaviors in a given society and can be either categorized

as formal institutions (i.e., regulatory and legal, political, and economic institutions) or informal institutions (i.e., norms and culture). In general, it is assumed that the better the institutional environment of an organization, the better its innovative performance.

*Institutional distance* (ID) is one of the most discussed constructs in the international business literature (Zaheer et al. 2012). Distance does not apply to geographical distance between countries, but to the differences in formal institutions (rules, laws, and political institutions) and informal values (culture and norms) that guide the behavior of economic actors within each country. To date, the vast majority of the thousands of papers employing the distance metaphor within the institutional theory literature have focused on the negative effects of distance on various organizational or even individual outcomes (e.g., Ghemawat 2001; Shenkar et al. 2008). Despite this overwhelming focus on the negative effects of ID as a force that increases an MNE's *liability of foreignness* (LOF) and, thus, harms performance, it seems intuitive that organizations operating in less munificent (i.e., innovation-impeding) environments and firms that believe institutional complementarities abroad may spur further innovation may consider moving parts of their value chain to more munificent or complementary institutional environments – even if this means *consciously increasing distance* (Clampit et al. 2015; Nachum 2003; Zaheer et al. 2012). In other words, while institutional theory suggests the reduction of distance for improved performance, organizations may, in fact, be perfectly willing to take the risks associated with operating in more foreign, institutionally distant environments in order to increase their chances of innovation.

In addition to seeking munificence and complementarities, distance itself may *intrinsically* enhance positive performance. For example, research has proposed the positive effect of cultural diversity on a variety of outcomes including creativity and innovation (Stahl et

al. 2010). Researchers have found that a higher degree of divergence between cultures creates an attention stimulus for decision-makers which shapes attention and reduces bounded rationality with expected positive firm outcomes (Peeters et al. 2015). Similarly, awareness of distance has been suggested to enable firms to mitigate its negative effects, proactively take counter measures, or even capitalize on these (Hutzschenreuter et al. 2014).

Often, however, it is impossible to move the headquarters or the operations of a global company to more innovative environments or to utilize complementary resources. Offshoring – the global sourcing of value-creating and innovative functions (Schmeisser 2013) – may thus be the prudent solution and a way to create or leverage positive ID. Offshoring activity, particularly in the 1990s and 2000s, has often been characterized as a simplistic decision to relocate parts of an MNE's value chain to lower cost locales. Today, however, scholars note that the strategic decision to offshore has evolved beyond mere cost-saving functions to include more sophisticated and high value-added activities such as research and development (R&D), marketing, and product development (Lewin et al. 2009; Nieto and Rodríguez 2011). Thus, a company that is escaping to better institutional environments or searching for complementarity by creating ID through offshoring may be more innovative than firms who are not taking advantage of these opportunities.

These recent advances in offshoring research may, then, serve as a useful lens to help investigate the nature of innovation through distance creation. While ID is presumed to negatively affect firm performance, offshoring research has shown that sourcing from abroad, often in quite distant countries, may lead to beneficial firm outcomes including increased innovative performance (Nieto and Rodríguez 2011; Peeters et al. 2015). This tension between the ID literature's dominant theme of distance as a negative force and the offshoring literature's

claim that global sourcing is beneficial prompts us to study distance with regards to ID between MNE headquarters and offshoring locales.

Using comprehensive primary data from the Offshoring Research Network (ORN) as well as secondary data from the Fraser institute on economic freedom and Hofstede's cultural value survey, we show with a sample of 371 offshoring ventures that ID may, under certain circumstances, be related to innovation. We also demonstrate that traditional measures of ID that aggregate often theoretically dissimilar elements may be too blunt to effectively uncover the effects of distance on innovation. For example, why should scholars suspect, by default, that elements such as individualism and uncertainty avoidance will be intrinsically related to and/or affect outcome variables in the same way? Perhaps some forms of ID (formal and informal) are positive while others are negative, with formative constructions combining elements that cancel each other out and mask true effects. We thus suggest a more nuanced approach, employing finer grained models of distance that break these aggregates down into their constituent components in order to avoid the mistakes of generalization and methodological fallacies inherent in much of the distance-oriented research (Franke et al. 2011; Zaheer et al. 2012).

Our findings contribute to the literature in three important ways. First, we take initial steps in opening the black box of distance by studying the differential effect of its dimensions (Peeters et al. 2015). While previous literature has often relied on aggregated measures or exploring either formal or informal distance by itself, we consider the individual components of both major distance forms in the attempt to understand the potentially distinct directionalities. Second, we contribute to an emerging stream of literature which considers the potential positive effects of ID. We thereby move away from the dominant perception of distance as "something negative" (Ambos and Håkanson 2014; Peeters et al. 2015). Third, we also introduce ID as an

innovation-inducing factor to the innovation literature, thus extending research on innovation antecedents. By unbundling the confounding formative construction of distance measures, eschewing the assumption that distance is always negative, and applying theories specific to the application of distinct institutional logics to a specific value enhancing business activity (i.e., innovation) these three contributions help reconcile institutional theory with both an empirical record that often fails to find what it predicts and with competing predictions from the diversity literature. And on a more general level, these findings have important implications for strategic offshoring decisions and the competitiveness of firms.

We begin by discussing the foundations of institutions and ID, the offshoring of innovation, and the impact of formal and informal distance on innovation. We then integrate insights from these literatures to develop associated hypotheses before presenting the empirical setting and study results. Next, we discuss the findings and their implications. We conclude by noting limitations which may result in prospects for future research.

## **Theoretical Background**

### ***Institutions***

Institutions are structures and mechanisms that govern behaviors in a given community and can be categorized as either formal institutions (i.e., regulatory and legal, political, and economic institutions) or informal institutions (i.e., norms and culture) (North 1990). Institutions are created through social actors that influence and control resources and activities in the economy (Whitley 1999), provide “the rules of the game in a society” (North 1990, p. 3), and adapt those rules in a co-evolutionary process with regards to a society’s economy (Volberda and Lewin 2003). Recent work on institutions emphasizes the institutions’ critical influence not only

on a country's economy but also on specific firm outcomes and strategic positions (Holmes et al. 2013; Peng et al. 2009).

Firms may be affected by formal and informal institutions in the country in which they are located (home country) but also by the institutional environment of other country markets in which they are operating (host country). The formal and informal distance between a company's home and host country institutions – the focus of the current study – causes a potential source of friction and liability of foreignness or, in a more recent view, creates opportunities to be leveraged (Kostova and Zaheer 1999; Zaheer et al. 2012). As research has highlighted (1) the dearth of work that considers both formal and informal distance and their interplay (Leung and Ang 2009), and (2) the importance of considering the effects of various forms of distance on firm outcomes as ID does not simply equate to cultural distance (Cantwell et al. 2010), we will review in detail both formal and informal institutions and the related distances.

### ***Formal Institutions and Formal Distance***

Formal institutions reflect structures of codified and tangible rules, standards, and norms that form and influence interactions between social actors in a society (North 1990). They are in place and created through human agency, often as a solution for a problem in society (DiMaggio 1988), to promote stability and order, or to regulate and provide guidelines for behaviors (Scott 2008). Once individual members of a society conform to the rules, standards, and norms and accept them as binding they are diffused and become routines that are taken for granted (DiMaggio and Powell 1991). Subsequently, once society adapts and recognizes them they become formal institutions (Witt and Redding 2009).

The formal institutional environment is complex and encompasses several institutions. Formal institutions manifest themselves in legal and regulative decisions, political rules, and

economic standards (Holmes et al. 2013; Peng 2000; Schwens et al. 2011). Legal and regulative institutions establish rules and laws to decrease uncertainty through the standardization of practices and codify societal expectations with regards to power and autonomy (Scott 2008). As such, legal and regulative institutions may, for example, determine the nature of property rights (Peng 2000). Political institutions reflect the rules and standards through which governments and citizens establish and alter formal institutions that can range depending on the power distribution from democratic to autocratic institutions (DiMaggio and Powell 1991; Ross 2001). Finally, economic institutions regulate a country's monetary and fiscal policy and as such embody rules and standards with regards to the access and value of financial resources (Peng 2000). Although often considered as background conditions when companies make decisions for foreign market entry, more recent research has highlighted the importance of formal institutions for firms' entry mode and the subsequent impact on strategy for competitive advantage (Ingram and Silverman 2002; Meyer et al. 2009). When companies are faced with favorable and strong institutional environments, firm performance is suggested to increase since strong institutions are thought to support effective market mechanisms, as opposed to weak institutional contexts (Chao and Kumar 2010; Meyer et al. 2009). A lack of supporting institutions, also referred to as institutional voids, is suggested to increase transaction costs and complexity in general (Khanna et al. 2005), and to amplify costs associated with market entry and liability of foreignness due to uncertainty, unclear regulations, and weak rule enforcement (Chao and Kumar 2010).

Accordingly, formal distance refers to the divergence between countries with regards to their political, economic, and regulatory environment including legal, constitutional, and property rights (Chao and Kumar 2010). Formal distance may result in restraints and risks from insufficiently developed market support institutions or less advanced political, economic, and

legal institutions in the home or host country (Meyer et al. 2009; Schwens et al. 2011). Based on the differences in formal rules, the costs of engaging in faraway markets are relatively higher than in more similar markets (Peng et al. 2009), information asymmetry and partner-related risks may be magnified (Meyer 2001), frictions with local stakeholders increase (Gooris and Peeters 2014), and information search is more costly (Tong et al. 2008). For example, Chao and Kumar (2010) found that regulative distance showed the highest impediment, compared to other distances and external influences, on companies' operations in foreign countries.

### ***Informal Institutions and Informal Distance***

Informal institutions are structures of shared understanding and meaning that illustrate a socially constructed reality that regulates and shapes the interactions between members of a society (Scott 2008). In contrast to formal institutions, informal institutions are not codified or explicit but depend instead on values, codes of conduct, and behavioral norms acquired through a process of socialization. Informal institutions are reflected in the culture and are considered durable and relatively stable (North 1990). With regards to the conceptualization by Scott (2008), informal institutions may include normative and cognitive dimensions (Kostova and Zaheer 1999).

Thus, based on the primarily cultural background of informal institutions, informal institutional distance can be captured as the cultural differences between a home and a host country (Kogut and Singh 1988; Schwens et al. 2011). The study of differences in national cultures between the home country and the country of operations is one of the most widely discussed constructs in international business research and related disciplines (Tihanyi et al. 2005). Although the definition of culture is challenging and often not agreed upon (Triandis 1994), culture may be conceptualized as a homogeneous set of values and norms that

differentiates one group from another (Hofstede 1980; Trompenaars and Hampden-Turner 1998), regularly on a national or country level (Kogut and Singh 1988; Kostova and Zaheer 1999). Differences between national cultures have been frequently studied regarding MNEs strategies, decisions, and outcomes (e.g., Brouthers and Brouthers 2001; Tihanyi et al. 2005; Zaheer et al. 2012). When operating abroad, MNEs often experience a so called *liability of foreignness* (LOF) created through the distance between the host and the home country (Zaheer 1995). Thus, with increasing distance, companies are often unable or only imperfectly able to adjust to the new environments which results in lack of legitimacy and effectiveness compared to local firms (Kostova and Zaheer 1999; Xu and Shenkar 2002).

Consequently, when analyzing cultural distance, it is assumed that distance results in challenges or negative effects such as increased cost of entry, decreased efficiencies and operational benefits, increased complexity and uncertainty, and an impediment to learning as well as the transfer of core competencies and knowledge to foreign markets (e.g., Beugelsdijk et al. 2014; Palich and Gomez-Mejia 1999; Shane et al. 1995). Prior research has, however, produced mixed results with regards to its influence on organizational outcomes (e.g., Drogendijk and Zander 2010; Magnusson et al. 2008; Reus and Rottig 2009; Tihanyi et al. 2005). Although when entering informally-distant countries firms are challenged to overcome divergences between the home and host country market (Cuervo-Cazurra and Genc 2011; Estrin et al. 2009), only recently have researchers started to pay attention to the positive effects of cultural distance. For example, Zaheer et al. (2012) conceptually proposed the potential to leverage cultural distance in the pursuit of opportunities through arbitrage and access to complementary assets, and Peeters et al. (2015) suggest that cultural distance creates an attention stimulus which positively impacts the cost attainment of outsourcing decisions.

Research on the potential positive influence ID (formal and informal) can create is rare, and the potential for ID positively affecting *innovation outcomes* has not, to our knowledge, been explored at all. As much of the evidence for the potentially positive effect of distance has been found studying offshoring ventures, we next review the offshoring literature and its impact on innovation.

### ***Offshoring***

The idea of finding a better internal or external environment in order to increase innovativeness is not new. Companies have frequently decided to outsource R&D activities or offshore R&D to various places abroad (Grimpe and Kaiser 2010). Offshoring refers hereby to the process of (re)locating a company's value chain activities to locations abroad (Lewin et al. 2009). It is intended to create advantages particularly with regards to a company's input market side rather than sales activities (Lewin et al. 2009; Schmeisser 2013).

Research has increasingly focused on offshoring with regards to its antecedents and outcomes. For example, numerous articles emphasize internal and firm-specific characteristics affecting the propensity of a company to engage in offshoring. Organizational factors may be firm size (Roza et al. 2011), access to talent (Lewin et al. 2009), international strategy, or existing technological capabilities systems (Martínez-Noya and García-Canal 2011). Other researchers have accentuated the firm environment and institutional factors. For example, Chung and Yeaple (2008) suggest that industry similarity with regards to technology as well as a relative knowledge-surplus in the host country determine the offshoring choices of companies. Kshetri and Dholakia (2009) found that the existence of professional and trade organizations stimulates offshore activities. According to Kshetri (2007) a lack of strict rule of laws in the host country de-incentivizes inflow of offshoring activities. The author furthermore suggests that the

strength of cultural compatibility between the home and host country may determine the amount of offshoring activities. Clampit et al. (2015) describe how the degree of cultural complementarity affects processes related to the implementation of offshoring strategies and consequently the satisfaction or dissatisfaction with offshoring partnerships. In contrast to the commonly discussed negative effects of cultural distance, the authors suggest that cultural complementarity highlights the strategic fit between the home and the host country. Finally, Martínez-Noya and García-Canal (2011) found support for the idea that the home country's IPR systems determine offshoring decisions.

With regards to the outcomes of offshoring decisions, consequences can be categorized as either sales and profit or resource and capability related (Schmeisser 2013). Global competitiveness and survival (Coucke and Sleuwaegen 2008), and export performance (Bertrand 2011) have reflected “gains” from offshoring, whereas the effect on overall firm performance is ambiguous (Funk et al. 2010; Schmeisser 2013). Besides exploiting already existing knowledge and firm-specific advantages, offshoring of especially knowledge-intensive activities may also lead to the exploration of new strategic resources, capabilities, and knowledge which is dispersed globally (Schmeisser 2013).

### ***Offshoring and Innovation***

Research on offshoring reveals that there are various risks and disadvantages involved when outsourcing or decentralizing activities such as loss of strategic orientation, loss of efficiencies, “hollowing out” the corporation, loss of existing knowledge base and a decrease of organizational learning, lack of control over activities and processes, and a reduction of innovation activities (Cummings 2003; Hoetker 2005; Mukherjee et al. 2013). The latter described risk to reduce innovative performance can however also be seen as a potential gain for

corporations. In general, companies “are increasingly refuting the received wisdom that innovation must be an internally driven, homegrown affair by offshore outsourcing research and development (R&D), with important implications for innovativeness and strategy” (Bertrand and Mol 2013, p. 751). Thus, various authors have identified prospective innovative advantages.

Taking a knowledge-based point of view, Nieto and Rodríguez (2011) determined that offshoring R&D is positively related to innovative performance. The relationship is steeper for product than process innovations as well for captive as opposed to offshore outsourcing. The higher impact of offshoring on product innovations is suggested to be based on the more explicit, more easily transferable, and more easily specified and codified knowledge input required to achieve these kind of innovations, whereas the knowledge input needed for process innovation is more tacit, complicated, and dependent on internal personnel. The described characteristics of process innovations lead to in-house sourcing rather than offshoring.

Similarly, Bertrand and Mol (2013) examining French companies between 1995 and 2004 found that offshore outsourcing, but not domestic outsourcing, positively impacted innovative outcomes. The authors argue that product innovations in particular were driven by the access to heterogeneous knowledge abroad and thus the cognitive distance between the focal firm and its R&D suppliers. Offshoring is suggested to be less important to driving process than product innovations because process innovations may require less heterogeneous knowledge inputs due to a higher global standardization of processes. On a similar note, Bryce and Useem (1998) argue that offshoring companies can create value by accessing the diverse expertise of an offshoring provider, focusing on its core competencies, developing new innovation capabilities, and increasing product market performance.

Mihalache et al. (2012) examined how offshoring of business functions that provide knowledge inputs for innovation, such as production, R&D, and engineering, influences firms' innovativeness. The authors found that offshoring has an inverted U-shaped relationship with innovativeness and that this relationship is stronger for firms with higher top management team informational diversity and for firms with low top management team shared vision. Likewise, Grimpe and Kaiser (2010), in their study of German companies, found an inverted U-shaped relationship between R&D outsourcing and innovative performance. Thus, the R&D outsourcing will affect innovative performance first positively, yet the returns will decrease and finally become negative with increased outsourcing. Furthermore, the companies' engagement in internal R&D and the breadth of formal R&D collaborations positively affect the effectiveness of R&D outsourcing (increase in innovative performance). Lewin et al. (2009) suggest that firms increasingly offshore innovative activities to search for and access labor pools globally. Besides access to global talents as strategic drivers for offshoring, the authors also found positive impacts of increased speed to market and cost reduction on the offshore decision.

In summary, arguments for a positive relationship between offshoring/outsourcing and innovation performance are based on access to complementary location-specific advantages which are not easily available at home, increased diversity, obtaining or improving inputs and resources salient for innovations, access to highly qualified personnel, the need for greater firm efficiency, and flexibility in the innovative process.

## **Theoretical Development**

### ***Formal Distance and Innovation***

The capacity of an organization to innovate is closely linked to the formal institutional context in which it is embedded. Whereas most literature focuses on firm behavior to explain

determinants of innovative performance, innovation is also a result of the interaction of various institutional actors (Coriat and Weinstein 2002). In particular, the modes of appropriation and distribution of rents a firm gains from being innovative is based on the institutional environment including property rights, capital and labor markets, economic structure including the flow of international trade, and knowledge infrastructure (Coriat and Weinstein 2002; Furman et al. 2002). Most often, institutions are recognized by companies as constraints, but they may, on the other hand, also act as opportunities and resources for the creation of innovation. The variance may be attributable to the respective strategic orientation and goals of an organization (Coriat and Weinstein 2002).

On an international level, the unique institutional contexts of each country determine the nature and amount of innovations within its borders (Nelson 1993). Prior research has pointed out the distinct effects of institutional differences leading to cross-country disparities in innovative activity (Furman et al. 2002). Certain conditions relating to the institutional environment may facilitate or prevent firms from pursuing exploratory or exploitative innovation (Mueller et al. 2013). However, in general it is assumed that greater formal distance results in a higher LOF and an increase in the complexity of the innovation process (e.g., difficulties in transferring innovation from the headquarters to the subsidiary) (Dellestrand and Kappen 2012). Yet in contradiction to the ID literature, we suggest a more nuanced picture with respect to how formal distance can impact innovative performance. Drawing on research in offshoring, we argue that sometimes the positive effects of formal distance outweigh the negative effects of LOF, resulting in an increase of companies' innovation activities. At other times, though, it is likely that the positive effects are either lacking or are too small for firms to overcome LOF; in this

case, we expect innovation performance to suffer in a manner consistent with the predictions of ID theory.

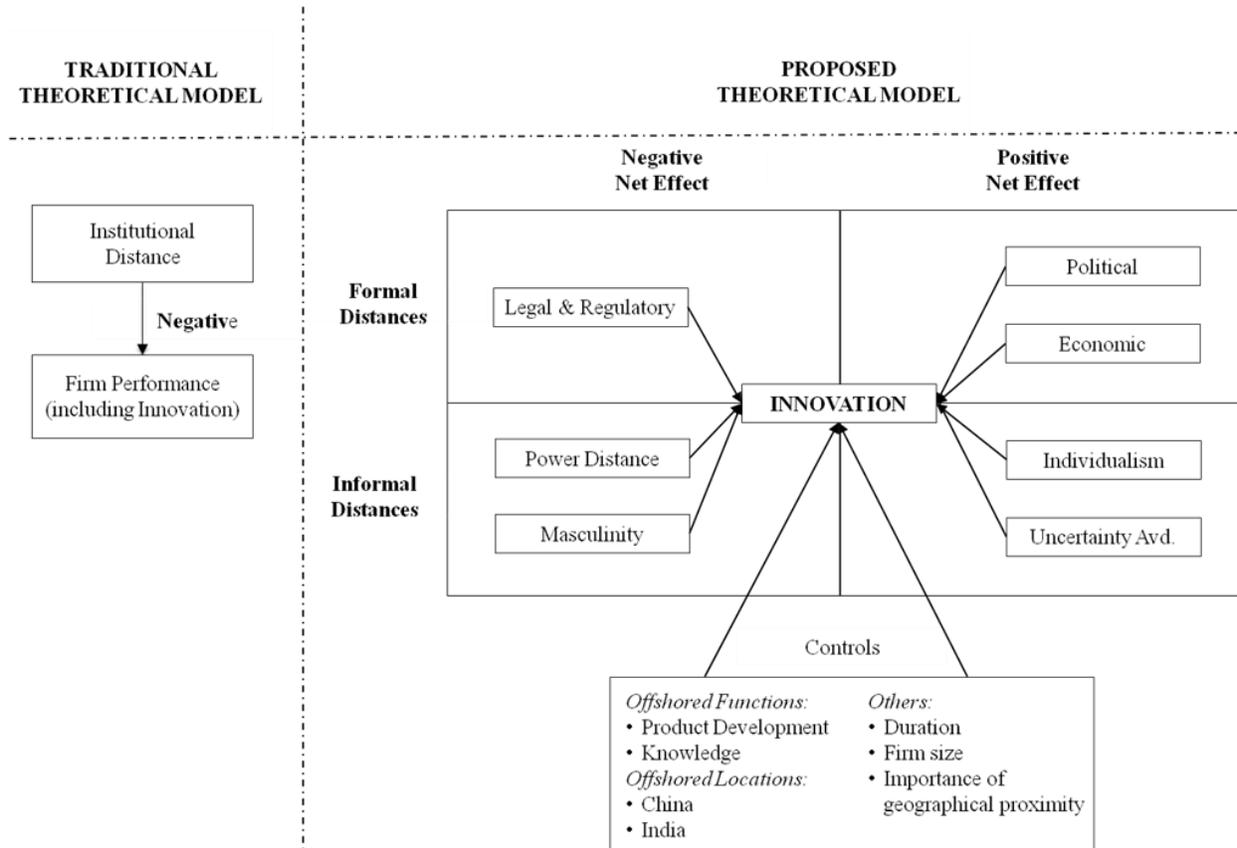
For example, a firm whose home country lacks innovation-enhancing political institutions and related factors such as infrastructure and financial resources or human factors (e.g., labor quality including education levels that are high enough and specialized enough to produce technically skilled employees) may be willing to move operations to a location with more beneficial political institutions, even if this means accepting the possibility of negative performance effects due to LOF concerns. In short, firms will purposely move to an institutionally distant locale in order to discover environments that are more conducive to innovation. In line with the previous argument, we also suggest that companies may purposely use different economic environments for arbitrage opportunities in the innovation process as potential gains in distant markets may outweigh negative effects. Although we suggest that formal distance in the form of political and economic distance may be positive because of the suggested munificence and economic opportunities, we also consider the possibility of the negative effect of formal distance. In particular, we hypothesize that in the case of legal and regulatory distance the negative effects of LOF may dominate. Here, the potential positive effects of distance may be comparatively small, as the primary effect of legal and regulatory distance is an increase in uncertainty and risk, which thus hinders innovative outcomes.

To help illustrate the diverse impacts of formal distance on innovation, we describe and hypothesize the impact of political, economic, as well as legal and regulatory distance in what follows (see Figure 4-1 for an overview of the Theoretical Model).

In this context it may be also interesting to note that, contrary to general assumptions, innovative environments cannot only and always be found in the countries with the highest

institutional quality. Sometimes institutions in less developed countries are more conducive for innovation, or sometimes the interaction between different institutions foster innovative activities (e.g., through arbitrage and diversity).

**FIGURE 4-1**  
**Theoretical Model of Institutional Distance and Innovation**



*Political Distance and Innovation.* Political institutions reflect the rules and standards through which governments and citizens establish and alter formal institutions (DiMaggio and Powell 1991; Ross 2001). The strength of political institutions also indicates the extent to which a country depends on political processes to allocate resources, goods, and services. The less developed a country’s political institutions are, the more likely they are to depend upon political, rather than market, mechanisms for allocation (Gwartney et al. 2013). While this is normally

linked to slower economic growth, it does also mean that governments can, via decree, mobilize and aim resources and services towards goals that attract firms, such as investments that further the education standards of the country and/or stimulate the competitiveness of the industry and workforce (Gwartney et al. 2013).

Whereas many scholars equate “less developed political institutions” with a dominance of LOF effects, we suggest that instead of focusing on the fact that a country has less developed political institutions, organizations may instead see opportunity: specifically, the opportunity for institutional arbitrage. Firms may thus be willing to purposely increase political distance to take advantage of innovation-friendly environmental outcomes of political processes in such nations.

For example, drawing on insights from offshoring research we suggest that political distance may have an overall positive effect on innovation because of the potential for labor arbitrage. Low munificence with respect to human factors in the home market, as compared to the foreign market, may be the driver for organizations to increase formal distance. Innovation inputs such as skilled labor, educational advancements (especially on the university level), technological specializations, and a country’s knowledge stocks are suggested to account for a significant amount of variation across countries with regards to their national innovative capacity (Furman et al. 2002). Thus, despite having weaker political institutional frameworks than the U.S., India and China have become hubs for science and engineering talent due to improvements and large investments in their educational systems. Their large pools of talent are seen as attractive targets for western organizations whose R&D efforts face growth constraints due to talent scarcity in their domestic markets (Lewin et al. 2009). Lewin et al. (2009) found that companies increasingly offshore innovation activities in order to access science and engineering talents not accessible in the domestic market. In contrast, access to cheap labor for innovative

activities did not prove to be significant. Similarly, Doh et al. (2009) suggest that the educational level of the workers in the host country, especially for innovative functions, was more important than labor cost savings.

Second, the negative effects of political distance associated with LOF may be outweighed by new opportunities abroad and learning advantages associated with an organization's participation in industry clusters. Industry clusters may constitute advanced factors that do not exist, are less supported, or are difficult to access (due to stiff competition) in their home country. Governments in countries with less developed political institutions are less beholden to market forces in the short run and can completely bypass weak, or nonexistent, electorates in order to foster the development of industry clusters as a policy tool designed to increase their global competitiveness, support regional development, and enhance their country's innovation capacity (Furman et al. 2002). Lai et al. (2014) found that industry clusters positively affect innovative performance of firms through access to resources, knowledge spillovers, and reduced costs. However, industry clusters may not always exist in markets with the most formal proximity, for instance, for organizations located in Western cultures. For example the 2014-2015 Global Competitiveness report highlights that China and Taiwan take the second position worldwide in cluster development, preceded only by Italy. Thus, the ability to access foreign clusters (when local clusters do not exist, are not accessible, or are too competitive) may outweigh the negative effect of distance in the pursuit of innovative performance. In short, the benefits associated with political distance may consequently outweigh the potential costs.

Consequently, based on the possibility of arbitrage and new opportunities through access to clusters between politically distant countries, we suggest that:

*H1a:* Political distance positively impacts innovation, such that the greater the political distance, the higher will be the impact on MNEs innovativeness.

*Economic Distance and Innovation.* While we noted that offshoring motivations today have expanded well beyond the simple desire to reduce expenses via the relocation of value chain activities from high- to low-cost locales, the benefits of these cost savings are still important. Companies may accordingly choose to increase economic distance in order to capitalize on economic differences that afford these cost saving opportunities in the innovation process. This reasoning is supported from an economics perspective, as economic actors reason from equilibrium and respond to actual changes at the margin. Thus, while, for example, economic institutions in China and India might be less developed than in the U.S., these institutions have been improving. The improvement creates the possibility that companies are able to exploit economic opportunities in the innovation process stemming from labor costs, interest and inflation rates, exchange rates, access to financing, and proximity to markets and consumers.

We further suggest that the economic opportunities may outweigh the potential risks and costs of economic distance. Prior literature has suggested that business activities can be more easily transferred to countries with similar economic institutions and development (e.g., Ghemawat 2001). Economic differences, on the other hand, may introduce higher costs, coordination, and uncertainty into MNE transactions (Hutzschenreuter et al. 2014). However, given that economic distance may be one of the most visible and weakest of the distance forms, we suggest that rather than hamper it will buoy innovativeness (Hutzschenreuter et al. 2014). The more a company is aware of differences, the more likely it will be able and willing to mitigate the associated negative effects (Håkanson and Ambos 2010). Cost advantages or pioneering advantages may arise that outweigh the increased complexity and costs. For example, Hutzschenreuter et al. (2014) found economic distance had no negative effect on firm

performance and even suggested that a company can realize cost advantages through increased distance. Research in the offshoring literature supports the notion that efficiencies of innovation processes due to lower costs can be achieved in formally distant countries (Lewin et al. 2009). In short, firms may expect to have some success at minimizing the negative impact of LOF due to increased levels of awareness, while simultaneously reaping economic advantages and efficiencies that outweigh any potential residual costs or risks.

Based on the arguments provided above, we hypothesize:

*H1b*: Economic distance positively impacts innovation, such that the greater the political distance, the higher will be the impact on MNEs innovativeness.

*Legal and Regulatory Distance and Innovation.* The strength of the legal system is measured on the rule and enforcement of law, security of property rights, and an independent judiciary (Gwartney et al. 2013). Furthermore, a country's laws and regulatory institutions are in place to ameliorate risk and uncertainty by introducing legal boundary conditions for economic transactions and rewards for productive risk taking (Krahmer 2014). Innovations are particularly prone to risk and uncertainty which subsequently surges transaction costs (Van Waarden 2001). Thus, strong legal systems and regulations are often seen as innovation enhancing (e.g., Allred and Park 2007), whereas a lack of legal protections increases uncertainty regarding legitimate returns and property rights (Delios and Henisz 2000).

While we proposed that the positive effects of distance may outweigh the negative effects of LOF in the case of political and economic differences, large legal and regulatory distance may actually reduce MNE innovativeness. In contrast to political institutions and economic institutions and their associated distances, legal and regulatory institutions are relatively less visible and more highly complex. Hundreds of thousands of convoluted laws and regulations

exist per country, each with its own heterogeneous enforcement mechanisms. In addition to complexity, the lack of laws and regulations, particularly intellectual property rights, may increase uncertainty and risk for firms, thus hampering innovation activities. Instead of arbitrage opportunities, LOF may prevail, increasing costs, complexity, and risk for companies choosing to increase legal and regulatory distance. Similarity and proximity of legal and regulatory environments may be organizations' preferred strategic location decision instead of choosing distant countries.

For example, companies may be hesitant to offshore their innovation activities to a legally and regulatory distant country whose ability or resolve to protect intellectual property rights, patents, copyrights, and trade secrets is weak or simply unknown. Infringements may lead to the loss of innovation ideas, resources, and financial returns. India, for instance, has been a prime example of infringements, particularly in the pharmaceutical industry, by allowing local companies to produce generics of products developed and patented by organizations from foreign countries (Krahmer 2014). The potential for infringement and lack of legal guidelines has been shown not only to discourage foreign investors from innovating but also local innovations (Krahmer 2014; Van Waarden 2001). Thus, the larger the legal distance, the more difficult and risky it may be for MNEs to operate and efficiently coordinate innovation activities (Roy and Oliver 2009).

The potential negative effect of legal and regulatory distance is also supported by recent research in offshoring. In this line, Gooris and Peeters (2014) demonstrated that regulative distance enhances external uncertainty through institutional voids that lead companies to contract functions out to third party providers, rather than operating them themselves. Regulative frictions and conflict with local stakeholders may, thus, be avoided in the attempt to comply with the legal

system of the host country. Hernández and Nieto (2015) found that regulative and legal distance facilitate companies' propensity to increase their resource commitments only if they choose markets with stronger legal and regulatory environments than their home markets. The better conditions in the host country may fill the institutional voids for successful innovation activities and thus counterbalance the risks and uncertainties related to distance (Hernández and Nieto 2015).

In conclusion, we suggest that in contrast to political and economic distance, which spurs potential for arbitrage in the innovation process, arbitrage is less likely to occur regarding legal and regulative distance. In the particular case of distance between the legal and regulative environment, the potential advantages of distance may not outweigh the negative LOF effects and firms' innovative performance may be hampered.

We therefore state the following hypothesis:

*H1c:* Legal and regulatory distance negatively impacts innovation, such that the greater the legal and regulatory distance, the higher will be the impact on MNEs innovativeness.

### ***Informal Distance and Innovation***

As with formal distance, the great majority of informal distance research (generally operationalized as cultural distance) has overwhelmingly focused on its negative effects on firm performance outcomes such as innovation (Kogut & Singh, 1988), while the offshoring literature has highlighted the potentials for success (e.g., Nieto and Rodríguez 2011). However, in contrast to formal distance, environmental munificence and opportunities for arbitrage may not be the main drivers of increasing distance. Instead, informal distance, *per se*, may offer *intrinsic* complementarities that encourage innovative outcomes. Thus, if cultural complementarity between the home and the foreign markets outweighs the negative effects of informal distance,

organizations may be inclined to overcome complexity, costs, and the risk of hollowing out core competencies in the pursuit of innovation. To help illustrate this, we first offer examples of complementarities that arise as a direct response to the heterogeneity of team members. We then offer a detailed description of the specific and differentiated effects on innovation of the four distinct components that constitute the most common measure of informal distance (i.e., cultural distance): individualism, uncertainty avoidance, power distance, and masculinity.

Literature on the effect of teams has suggested that cultural distance may be an innovation-inducing factor, as research on cultural diversity and multicultural teamwork has shown that these factors increase creativity and innovation (Gassmann 2001; Stahl et al. 2010). A diverse team offers heterogeneity of knowledge, perspectives and solutions, resulting in increased creativity, novel ideas, the ability to overcome groupthink, and enhanced innovativeness (e.g., Ancona and Caldwell 1992). Furthermore, diverse groups have access to diverse networks, and thus enhance the positive effect of an individual's diverse network on creativity (Baer 2010; Burt 2004). Whereas general diversity has been associated with creativity and innovativeness (Cox, 1991), cultural diversity is thought to magnify the positive impact. This is based on the assumption that cultural difference reflects divergent cognitive models, approaches, perspectives and thus is important for creativity (Hofstede 2001; Stahl et al. 2010). In line with this argumentation, Mihalache et al. (2012) found that a diversified top management team increases the positive affect between offshoring and innovation performance. The authors suggest that diversity increases innovativeness due to a lack of strategic inertia, enhanced information capacity, and improved interpretation of foreign cultural environments.

The counter-argument to this view favors similarity or homogeneity of team members, because of its potential for efficiencies, better communication, easier social integration, fewer

frictions and process losses, reduced role conflicts, and better team performance (Jackson et al. 2003; Schippers et al. 2003; Stahl et al. 2010). However, despite the advantages of similarity, cultural diversity may pay off in the long-run and surpass the short-term positive effects of similarity. For example, Watson et al. (1993) found that sufficient time was needed to adapt in heterogeneous teams. Whereas the homogeneous teams encountered higher process effectiveness and performance than the heterogeneous teams during the early task periods, the diverse groups increased effectiveness on the task elements of identifying problem perspectives and generating solution alternatives at the end of the study (17 weeks). Thus, possible process losses may be offset by gains such as enhanced creativity in the long-run.

Similar to the fact that diversity outcomes evolve over time (Jehn and Mannix 2001), offshoring – the contextual factor in this study - in distant locations takes time for organizations to capitalize on the specific effects. Previous literature has suggested that the time to reach expected service levels and cost savings through offshoring is between six to twelve months. Limited experience, lack of publicly available knowledge, cultural distance and cultural difference further prolong the process (Hutzschenreuter et al. 2011). Likewise, research on cost attainment in offshoring decisions suggests that in the average offshoring project cost attainment was reached was around 7.4 months (Larsen et al. 2013). Over time, the offshoring partners in the home and host market gain experience and trust in working together and thus create mutual benefits (Vivek et al. 2009). Thus, under conditions of increased distance through offshoring and a medium to long time frame, the negative effects of added complexity of cultural diversity may be outweighed by the positive effects as the different cultures complement each other in the pursuit of innovative activities.

Examples of the complementarity of cultures and, thus, the potential advantages of multicultural teams and knowledge sharing can be found in innovation research with regards to cultural values. Cultural values impact if and how creativity and innovation are endorsed and cultivated (Hofstede 2001; Schwartz 1999) and distinct cultural traits found in distant countries may complement each other in the quest for innovation (Nakata and Sivakumar 1996). Similar to the discussion of formal distances, we do not assume that informal distance is generally good or bad. In order to provide a disaggregated discussion of the impact of informal distance on innovation, we dismantle the cultural distance construct and consider both the presented views of cultural complementarities and cultural similarities, and their impacts on innovation. Particularly, we pay attention to the cultural values and the potential distinct effects of individualism, uncertainty avoidance, power distance, and masculinity. These four cultural categories by Hofstede (1980) have been shown in prior literature to be pertinent to innovation (e.g., Shane et al. 1995; Van Der Vegt et al. 2005).

*Individualism Distance and Innovation.* Individualism represents the "relationship between the individual and the collectivity which prevails in a given society" (Hofstede 1980, p. 213). Whereas individualism emphasizes self-interest and loose ties, collectivism is characterized by group interests.

The divergence between collectivism and individualism has been widely studied to understand the respective impact on creativity and innovation (Eisenberg 1999). Research, however, provided mixed results (Rosenbusch et al. 2011). Whereas individualism has commonly been related to innovativeness (e.g., Shane 1993; Williams and McGuire 2010), others have emphasized the positive effect of collectivism (e.g., Rosenbusch et al. 2011). Individualism and collectivism may, thus, be important for different tasks and domains whose

influence may be more or less dominant at different stages in the innovation process (Sternberg and Lubart 1996). For example, Tiessen (1997) found that individualistic orientation is associated with breakthrough innovation through nonconforming thinking and creativity spurs, collectivistic orientation enhances innovation from the pooled capacities of multiple individuals. Similarly, Taylor and Wilson (2012) in their analysis of 62 countries demonstrated that individualism strongly impacts innovativeness and that certain types of collectivism do not harm, but foster innovation on the national level. In a recent meta-analysis, Černe et al. (2013) demonstrated that individualism and collectivism are important at different stages in the innovation process. Whereas individualism promotes new product and process development at the initiation stage, collectivism fosters commercialization of the innovation. Individualism is, thus, related to unconformity, trying out new things and explore, whereas collectivism promotes social interaction and team behavior necessary in the implementation stage. Consequently, organizations from an individualistic home market may strive to find complementarity in distant markets in order to better commercialize the creative ideas, and vice versa.

Therefore, we hypothesize:

*H2a:* Informal distance in the form of individualism-collectivism positively impacts innovation, such that the greater the individualism-collectivism distance, the higher will be the impact on MNEs innovativeness.

*Uncertainty Avoidance Distance and Innovation.* Uncertainty avoidance reflects the propensity to which a society feels comfortable with ambiguity, risk, change, and uncertainty (Hofstede 1980).

Similar to the individualism-collectivism relationship, different values of uncertainty avoidance may show the complementarity of distinct cultures in the quest for innovative performance. Whereas high uncertainty avoidance is generally seen as hampering innovations

(Shane 1995), other authors demonstrate that the degree of uncertainty avoidance differently predicts creativity and innovation (Sundqvist et al. 2005).

On the one hand, low uncertainty avoidance has been suggested to positively influence creativity and the collection of novel ideas through higher risk taking and minimal planning and controls (Nakata and Sivakumar 1996). Furthermore, individuals from low uncertainty avoidance countries have been linked to a higher propensity to support innovation initiatives and overcome organizational hierarchies and norms to initiate innovations (Shane 1995). On the other hand, the refinement and the implementation of the idea may be more effective in high uncertainty avoidant countries characterized by precision, planning, collaboration, and the avoidance of unnecessary risk (Hofstede 2001; Nakata and Sivakumar 1996; Sundqvist et al. 2005; Van Everdingen and Waarts 2003). In particular, it is suggested that high uncertainty avoidance leads organizations to avoid expensive mistakes by facilitating and implementing only innovations with high potential for success (Nakata and Sivakumar 1996; Van Everdingen and Waarts 2003).

With individualism distance, we hypothesized that firms would proactively attempt to take advantage of cultural complementarities, as both high and low individualism settings can aid innovation, albeit in different ways. We suggest that the same logic applies to uncertainty avoidance distance, i.e., that high and low uncertainty avoidance positively impacts innovation in different ways and at different stages of the innovation process.

Based on the arguments provided above, we hypothesize:

*H2b:* Informal distance in the form of uncertainty avoidance positively impacts innovation, such that the greater the individualism-collectivism distance, the higher will be the impact on MNEs innovativeness.

*Power Distance and Innovation.* Power distance (PD) signifies the degree that less powerful members of society accept that power is unequally distributed (Hofstede 1980).

While the distances of uncertainty avoidance and individualism may support innovation, a high PD distance (i.e., one country is high in PD while the other is low in PD) may actually hamper it. Prior literature has demonstrated support for the negative relationship between high power distance and innovation (e.g., Rinne et al. 2012; Shane 1993). In general it is suggested that high PD is associated with limited opportunities for advancement, resistance to change, strict social hierarchy, and little possibilities to reap the rewards for ideas or innovations (Hofstede 2001). Low PD, meanwhile, has been shown to stimulate innovations, as societies low in PD celebrate change and favor individual rewards and cross-collaboration across hierarchies. For example, Van Der Vegt et al. (2005) found that diversity within organizations, which we positioned in the paper as innovation-inducing due to complementarities, was negatively related to innovative climate in high PD locations whereas it was positively related to innovative climate in low PD countries. The authors argue that diversity affects communication and innovative behavior. Consequently, in low PD locations, diversity stimulates discussion, sharing different viewpoints, challenging of traditional ways of doing things, learning from others, and searching for innovative solutions. In locations of high power distance, however, diversity may hinder innovation, as lower-status members are not able, based on the social hierarchy, to disagree with ideas proposed by high-status members. Also, they are not likely to give their opinions or introduce their own ideas (Van Der Vegt et al. 2005).

On the other hand, support for the positive impact of high PD on innovation is relatively rare. Generally, studies have focused on innovation consequences instead of the actual innovation initiation or implementation by the company. For example, Grinstein (2008) demonstrated that consumers in high PD societies adopt innovations faster and are innovative because they match innovative consumption behaviors of superiors.

Based on the provided arguments, we suggest that there is less complementarity between high PD and low PD cultures and the LOF effects associated with distance cannot be offset. Additionally, offshoring - and, accordingly, our sample - typically involves firms moving from developed to less developed countries. This usually means that firms move from more liberal cultures (where PD is low) to countries with more traditional hierarchical cultures (where PD is high). Adding higher PD to a situation where a lack of known complementarities allows LOF effects to dominate, compounds the potentially negative forces a firm faces. Thus, the effects of moving from to a culturally different country, in this case, will be negative, and the distance between countries on the power distance component may actually hamper innovation.

We therefore state the following hypothesis:

*H2c: Informal distance in the form of power distance negatively impacts innovation, such that the greater the power distance, the higher will be the impact on MNEs innovativeness.*

*Masculinity and Innovation.* Finally, the dimension of masculinity-femininity represents the degree to which a society prefers achievement, heroism, and rewards for success. Whereas masculine cultures value achievement, heroism, and performance, feminine cultures emphasize relationships, helping behaviors, and sharing (Hofstede 1980).

Masculinity is believed to increase companies' innovativeness through formalization and purposefulness (Nakata and Sivakumar 1996). Formalization of goals, roles, and tasks increases information processing and efficiency by decreasing conflict, confusion, and redundancy. Purposefulness stimulates ambition, stretching capabilities, and ensuring that everybody is aligned and working for the common end. There are also some possible innovation-inducing factors from feminine cultures that may be taken into account; feminine cultures may stimulate innovation implementation by providing a supportive innovation climate where idea sharing is

encouraged (Nakata and Sivakumar 1996). However, empirical support for the impact of masculinity is weak. For example, Shane (1993) did not find support for the effect of masculinity on the number of trademarks registered by a country. Similarly, Williams and McGuire (2010) could not establish a significant relationship between masculinity and the economic creativity of a country.

Although it is possible that, similar to individualism and collectivism, masculinity and femininity enhance each other (masculinity drives the innovation initiation stage through championing of ideas, whereas femininity fosters the subsequent implementation through teamwork and relationship building), empirical evidence does not support the impact of masculinity or femininity on innovation. In this case, potential complementarities may be low or non-existent, leading us to conclude that this form of distance does not intrinsically stimulate positive outcomes. Thus, similar to the argument provided for the PD distance, we propose that the generally negative effects of LOF such as frictions, complexity, and difficulties in team work and communication will dominate over the potential positive effects.

Hence, we propose:

*H2d:* Informal distance in the form of masculinity negatively impacts innovation, such that the greater the individualism-collectivism distance, the higher will be the impact on MNEs innovativeness.

## **Methods**

### ***Data and Sample***

We used the global Offshoring Research Network (ORN) database to empirically test the hypothesized model. The ORN is an international network of scholars that collects primary data related to companies' global sourcing strategies and experiences. The ORN database contains information from surveys of managers with strategic decision-making authority in over 3,000

small, medium, and large firms headquartered in the United States, Europe (e.g., the Netherlands, Germany, Belgium, Spain, and the UK), and Australia. The survey was conducted on a regular basis from 2005 to 2012 (Gooris and Peeters 2014; Hutzschenreuter et al. 2011; Larsen et al. 2013; Lewin et al. 2009; Peeters et al. 2015). We chose the data subset from the years 2009 – 2012 because it allowed us to collect sufficient data on innovation outcomes as well as location choices. Furthermore, we selected only companies that were actively outsourcing at the time of the survey. In addition to company-specific information about the global sourcing initiatives, the database also includes data on home and host countries. Based on these country information we are able to supplement the database with external measures for the formal (Fraser Institute's Economic Freedom of the World Indices) and informal institutions (Hofstede's cultural framework). The combination of survey data with secondary sources helps us address the common method variance issue which could lead to conflated relationships (Podsakoff et al. 2012).

The data set used for this study contains 122 firms from primarily developed countries (countries with relatively higher institutional strengths than developing countries). Of those companies, 57.9% are based in the United States and Canada, 28% in Europe (Switzerland, Germany, Austria, Denmark, France, the Netherlands, Luxembourg, Belgium, Spain, Norway, and Italy), and 8.3% in Australia. These firms are active in the following industries: for example financial and insurance services (30.7%), software and IT services (16.2%), manufacturing (8.6%), banking and capital markets (7.5%), professional services (including leasing, real estate, and scientific services) (6.2%), retail and consumer goods (5.7%), aerospace and defense (5.7%), and biotech and pharmaceutical (4%). 46.72% of the companies are large (> 10,000 employees), 26.23% of the companies are medium size (500 – 10,000 employees), and 27.05% are small (< 500 employees).

These firms reported 371 offshoring implementations, averaging 3.04 implementations per company. Offshoring implementations, the unit of analysis for the current study, are the assignment of tasks to a location outside the home country (Larsen et al. 2013). 38.52% of the companies had one offshoring implementation, 22.13% had two implementations, and the remaining companies accounted for three to twenty implementations (39.35%). Offshored tasks included various services and these were offshored primarily, with a few exceptions, to developing countries (countries with relatively lower institutional strength than developed countries). Table 4-1 presents an overview of the offshored tasks and locations.

### ***Variable Construction***

Our data on *formal institutions* comes from indices created by the Fraser Institute's annual survey of institutional quality around the world. The institute publishes annual measures of economic freedom in the areas of (1) government, (2) legal system and property rights, (3) sound money, (4) freedom to trade internationally, and (5) regulation. The index reports values between 1 (non-market economy) and 10 (fully functional market economy). Prior studies have utilized the measure and its subcomponents to account for factors such as strength of institutions, institutional development, or economic freedom distance (Arslan et al. 2015; Aybar and Ficici 2009; Surroca et al. 2013). For the context of this study, we use the government index to represent the political distance, an average of the legal system and property rights and regulation index to denote the legal and regulatory distance, and the index for sound money to reflect the economic distance.

**TABLE 4-1**  
**Overview of Offshored Tasks and Locations**

<b>Offshored Tasks</b>	<b>%</b>
Administrative services (e.g., human resources, legal and finance)	19.7
Software development	17.5
IT services	16.2
Knowledge functions	14.0
Call centers	13.5
Product development	7.0
Procurement	3.0
Marketing and sales	2.7
Others	6.0
<hr/>	
<b>Offshoring Locations</b>	<b>%</b>
India	50.9
China	10.5
Philippines	6.5
United States	4.3
Poland	2.4
Germany	2.2
Mexico	2.2
Slovakia	1.9
Costa Rica	1.6
Australia	1.6
Argentina	1.3
Russia	1.1
South Africa	1.1
Canada	1.1
Indonesia	1.1
Singapore, Romania, Colombia, Hungary, Jamaica, Malaysia, Turkey, Italy, Brazil, Lithuania, Estonia, Ireland, Chile, and Vietnam	< 1.0

Our data for *informal institutions* is derived from Hofstede's measures of cultural dimensions: power distance, individualism, masculinity, and uncertainty avoidance (Hofstede 2001). These four cultural dimensions have been utilized in prior literature to understand the impact of cultural values on innovation (Shane 1993). Similar to other studies, we chose the

dimensions by Hofstede over the GLOBE cultural values by House et al. (2004) due to the more extensive country coverage (e.g., Gooris and Peeters 2014). Furthermore, in contrast to the majority of studies using the distance metaphor, we decided refrain from the use of an aggregated distance construct, such as the Kogut and Singh (1988) index, in order to assess the distance for the informal and formal sub-dimensions separately. To gain more detailed information, and based on more recent literature (Gooris and Peeters 2014; Peeters et al. 2015), we created bilateral distance measures for each cultural component analysis and obtained four indicators of informal distance.

*Innovation* is measured with regards to products, processes, and knowledge innovation. Data on these three items is collected in the ORN survey by asking the respondents to assess the extent to which the initiative has led to the radical process improvements, new product developments, and novel knowledge innovations. The questions are measured on a five-point Likert type scale (1= strongly disagree; 5 = strongly agree).

Since innovative performance can be influenced by elements other than the formal and informal distance between the home and the host countries, we included *control* variables for country, offshoring initiative, and organization level. In line with previous offshoring studies (e.g., Gooris and Peeters 2014; Larsen et al. 2013; Lewin et al. 2009), we also control for offshored functions (as certain functions are more directly related to innovation outcomes such as product development and knowledge functions), company size (as size may be related to the extent of international commitment), host country (as certain countries are less likely than others to attract innovation offshoring projects), duration of the offshoring activity (as positive offshoring outcomes take time), and the importance of geographical proximity. Table 4-2 summarizes the construction of the different variables.

**TABLE 4-2**  
**Overview of Variables**

Variable	
<b><i>Dependent</i></b>	
Innovation	Measured on a 3-item, 5-point Likert Scale (1= strongly disagree; 5 = strongly agree); Alpha: 0.86. <i>Source:</i> ORN Data Respondents assessed the extent the offshoring initiative has led to breakthrough process improvements, main product innovations, and knowledge innovations
<b><i>Independent</i></b>	
Formal Distances	Absolut values of the home-host country scores differences of the Fraser Institute's Economic Freedom of the World dimensions (Government, Legal and Property Rights and Regulations, and Sound Money) <i>Source:</i> Own calculation based on Economic Freedom of the World Indices (Frasier Institute, 2014)
Informal Distances	Absolute values of Hofstede's cultural dimensions (individualism, uncertainty avoidance, power distance, and masculinity) <i>Source:</i> Own calculations based on Hofstede (2001)
<b><i>Controls</i></b>	
Offshoring Functions	Binary variables demonstrating the form of offshore function: product development or knowledge functions. <i>Source:</i> ORN data
Offshoring Locations	Binary variables indicating the type of offshore location: India or China. <i>Source:</i> ORN data
Offshoring Duration	Years since implementation of offshoring activity. <i>Source:</i> Own calculation based on ORN data
Company Size	Employees world-wide. <i>Source:</i> ORN Data
Geographical Proximity	Measured on a 5-point Likert Scale (1= strongly disagree; 5 = strongly agree). <i>Source:</i> ORN Data Respondents assessed the extent the offshoring location was primarily chosen based on geographical proximity.

### ***Model Estimation***

The correlation matrix and descriptive data are presented in Table 4-3. In order to detect the potential of multicollinearity, we paid closer attention to the independent variables in the model. None of the correlations between the substantive independent variables are above the usual threshold of 0.50, thus reducing the possibility of multicollinearity (Hair et al. 2006). However, the economic distance variable shows high correlations with one of the control variables (location choice India). Subsequently, we tested the model with and without the control variable. Based on the high variance inflation factors (VIFs) if both variables are included (5.95 and 6.03 respectively), we decided to eliminate the control variable to avoid a deterioration of the results (see Table 4-4, Model 1 and Model 2 for the final model estimation). Furthermore, deleting the control variable did not qualitatively change the significance of the results (see Table 4-4, Model 3 and Model 4 for the model estimation including India as control). After removing the control variable all VIF values were below 2, suggesting that multicollinearity does not threaten our hypothesis testing.

Furthermore, since the offshoring implementations may be nested within the contextual unit of the industry, we tested the data for potential multilevel effects. Using HLM 7.0 (Hierarchical Linear and Nonlinear Modeling), we ran a random coefficient model with innovation as the dependent variable and industry as the group variable. The random effects of the intercept at the between levels in the null model obtained a Chi-Square value that was insignificant ( $\chi^2(20) = 32.95, p > .05$ ), suggesting that there is not sufficient variance at the group level. This was further confirmed by the intra class coefficient of .04, indicating that only 4% of the variation in innovation might be explained by factors at the industry level.

**TABLE 4-3**  
**Means, Standard Deviations, and Correlations**

Variable	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1. Political Dist.															
2. Economic Dist.	-.25***														
3. Legal & Regulatory Dist.	.17***	.35***													
4. Individualism Dist.	.05	.15**	.32***												
5. Uncertainty A. Dist.	.29***	-.10	.16**	.09											
6. Power Dist.	.08	.26***	.47***	.43***	-.12*										
7. Masculinity Dist.	.15**	-.04	.21***	-.05	.26***	.05									
8. Innovation	.13*	-.21***	-.17***	.14*	.01	-.20***	.05								
9. Knowledge Function	.00	-.04	.00	-.06	-.05	.07	-.08	-.05							
10. Product Function	.13*	-.09	-.04	-.01	.02	-.11*	.05	.29***	-.13*						
11. India	-.33***	.83***	.16**	-.05	-.34***	.28***	-.19***	-.22***	.01	-.11*					
12. China	.25***	-.09	.02	.22***	.10	.04	-.01	.09	-.04	.03	-.27***				
13. Company Size	-.11*	.17***	.15**	.08	.02	.07	.05	.03	.03	-.10*	.14**	-.08			
14. Offshoring Duration	.05	-.16**	-.18***	-.12*	.00	-.18***	.04	.20***	-.12*	.18***	-.12*	-.08	-.07		
15. Geographical Proximity	.04	-.31***	.02	-.15**	.12*	-.29***	.00	.12*	-.01	.05	-.28***	-.03	-.07	.05	
<b>Mean</b>	.97	1.69	1.34	37.91	15.03	32.66	10.65	2.57	.14	.09	.51	.10	35824.12	5.29	2.86
<b>Std Dev</b>	.83	1.16	.60	18.60	14.05	17.22	11.72	1.09	.35	.29	.50	.25	59558.76	3.91	1.63

Notes:  $n = 371$ ; \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq .001$ , Dist. = Distance, Uncertainty A. = Uncertainty Avoidance.

## Results

The results of the hierarchical regression analysis in SPSS 22 are presented in Table 4-4. Model 1 includes the control variables. In Model 2, we added the explanatory variables for the formal and informal distances.

Two out of the seven hypothesized variables concerning the innovation outcomes are significant and have the expected positive coefficients. These results support *H1a* and *H2a*, suggesting that political distance ( $\beta = .11, p < .05$ ) and distance between individualistic and collectivistic countries ( $\beta = .19, p < .01$ ) positively affect innovation outcomes. On the other hand, as hypothesized, the potential positive effects of legal and regulatory distance ( $\beta = -.13, p < .05$ ) and PD distance ( $\beta = -.18, p < .01$ ) do not outweigh the negative effects. These results indicate that innovative outcomes are actually hampered through these forms of distances, supporting *H1c* and *H2c*. Unexpectedly, the impacts of economic distance ( $\beta = -.07, p > .05$ ), uncertainty avoidance distance ( $\beta = -.09, p > .05$ ), and masculinity distance ( $\beta = .08, p > .05$ ) are not significant on innovative performance, which lets us reject *H1b*, *H2b*, and *H2d*. Thus, in the case of these variables distance may not play a role when companies decided to offshore in order to be innovative.

Among the control variables, as expected, the function of product development is highly significant in predicting innovative performance through offshoring initiatives ( $\beta = .23, p < .001$ ). Firms that offshore product development (should) expect innovative outcome to increase. However, no significant effect could be found for the offshored knowledge function ( $\beta = .02, p > .05$ ). The nonsignificant findings may be based on the fact that most firms do not classify novel knowledge or ideas as innovative outcomes. Company size is positively and significantly related to innovation through offshoring, suggesting that larger companies may be able to better

**TABLE 4-4**  
**Hierarchical Linear Regression on Innovation**

	<b>Model 1</b>	<b>Model 2</b>	<b>Model 3</b>	<b>Model 4</b>	<b>Model 5</b>	<b>Model 6</b>
<b>Step 1: Controls</b>						
Knowledge Function	.01	.02	0	.02	0	.02
Product Dev. Function	.26***	.23***	.25***	.23***	.26***	.23***
Offshoring Location China	.10*	.04	.06	.04	/	/
Offshoring Location India	/	/	-.18**	-.02	/	/
Company Size	.09†	.11*	.10*	.11*	.08	.11*
Offshoring Duration	.16**	.11*	.14**	.11*	.15**	.11*
Geographical Proximity	.10*	.07	.06	.07	.10*	.07
<b>Step 2: Independent Variables</b>						
Political Distance		.11*		.11*		.12*
Economic Distance		-.07		-.05		-.07
Legal and Regulatory Distance		-.13*		-.14*		-.14*
Individualism Distance		.19**		.19**		.20***
Uncertainty A. Distance		-.09†		-.09		-.09
Power Distance		-.18**		-.18**		-.18**
Masculinity Distance		.08		.08		.08
<b>R<sup>2</sup></b>	.11	.17	.13	.17	.11	.17
<b>ΔR<sup>2</sup></b>		0.06		0.04		0.06
<b>F</b>		6.90***		6.39***		7.43***

Notes: N = 371; †p ≤ .10, \*p ≤ .05, \*\*p ≤ .01, \*\*\*p ≤ .00, all entries are standardized beta coefficients, R<sup>2</sup> is adjusted.

leverage innovation capabilities abroad or can rely on economies of scales in the innovation process through offshoring ( $\beta = .11, p < .05$ ). Similarly, the duration of the offshoring implementation positively impacts the innovation outcome ( $\beta = .12, p < .05$ ). As discussed in prior sections, creating positive outcomes through offshoring takes time. This may be especially the case for sensitive and highly competitive outcomes such as innovation. Over time, the offshoring partners in the home and host market gain experience and trust in working together and thus create mutual benefits (Vivek et al. 2009).

To confirm the validity of our inferences, we conducted a series of robustness checks (additional hierarchical regressions with several alternative configurations). First, we aimed to confirm that the impact of the formal distances on innovative performance occurs irrespective of the inclusion of the informal distance dimensions and vice versa. The results of both hierarchical regressions confirm that our findings still hold up when the other form of distance is removed. Secondly, we tested if the exclusion of China and India as location choice may alter the results (Table 4-3, Models 5 and 6). Again, the findings for the reduced model were consistent with the full model that included location choices.

Overall, these results provide the impression that distance is neither generally bad nor good but that the various forms of formal and informal distances have distinct impacts (or no impact) on innovation through offshoring. Table 4-5 provides an overview of the hypotheses and the empirical results.

## **Discussion**

Distance, both formal and informal, has often been associated with negative effects on performance, costs, processes, and resources. Empirical support for this association, however, is mixed at best (e.g., Drogendijk and Zander 2010; Magnusson et al. 2008; Reus and Rottig 2009;

Tihanyi et al. 2005). The innovation literature, meanwhile, suggests that diversity (among agents working together towards a common goal) is associated with positive innovation outcomes (e.g., Stahl et al. 2010).

**TABLE 4-5**  
**Overview of Results**

<b>Hyp.</b>	<b>Distance</b>	<b>Mechanism</b>	<b>Pred.</b>	<b>Act.</b>	<b>Sig.</b>
<i><b>Formal Institutional Distance</b></i>					
<i><b>H1a</b></i>	Political	Arbitrage and innovation opportunities (Access to qualified workers and clusters outweighs LOF)	+	+	.05
<i><b>H1b</b></i>	Economical	Cheap labor and savings in the innovation process outweigh LOF	+	-	ns
<i><b>H1c</b></i>	Legal	Poor host property rights, legal and regulatory differences, and high uncertainty compound negative LOF	-	-	.05
<i><b>Informal Institutional Distance</b></i>					
<i><b>H2a</b></i>	Individualism	Differences stimulate innovation (e.g., reduced groupthink), individualism and collectivism benefit different stages of innovation	+	+	.01
<i><b>H2b</b></i>	Uncertainty Avoidance	Differences stimulate innovation (e.g., reduced groupthink), high and low uncertainty avoidance benefit different stages of innovation process	+	-	.10
<i><b>H2c</b></i>	PD	No intrinsic benefit to distance and limited complementarities, so LOF effects dominate	-	-	.01
<i><b>H2d</b></i>	Masculinity	No intrinsic benefit to distance and limited complementarities, so LOF effects dominate	-	+	ns

Notes: Hyp. = hypothesis, Pred. = predicted directionality, Act. = actual directionality.

In this paper, we attempt to reconcile differences between theoretical predictions and empirical findings within the ID literature, and between theoretical predictions of the ID literature versus the innovation literature. To do so, we have argued that different forms of distance may have distinctive effects on innovation outcomes. In particular, we have suggested that the generally suggested negative effects of distance can, in certain circumstances, be outweighed by certain positive effects. Bundling these positive and negative effects together for

many types of distances, in effect creating a formative mass of theoretically unrelated influences, may serve to artificially convert real signals into jumbled noise, as real but theoretically unrelated effects, in aggregate, cancel each other out. Unpacking coarse distance constructs into their constituent components allows us to more meaningfully apply theory, logic, and context in a manner specifically tailored to each component's fit with innovation between various country dyads. This allows us to, in effect, extract signal from noise and examine theoretically and empirically, on a component-by-component basis, whether a specific form of distance is likely to yield positive effects that outweigh the negative.

We have studied the phenomenon of the distinct positive and negative impacts of distance in the context of offshoring of knowledge, product development, manufacturing, and administrative functions. The recent advances in offshoring research have served as a useful lens through which to investigate the nature of innovation through distance creation. While ID is presumed to negatively affect firm performance, offshoring research has shown that sourcing from abroad, often in quite distant countries, may lead to beneficial firm outcomes including increased innovative performance (Nieto and Rodríguez 2011; Peeters et al. 2015).

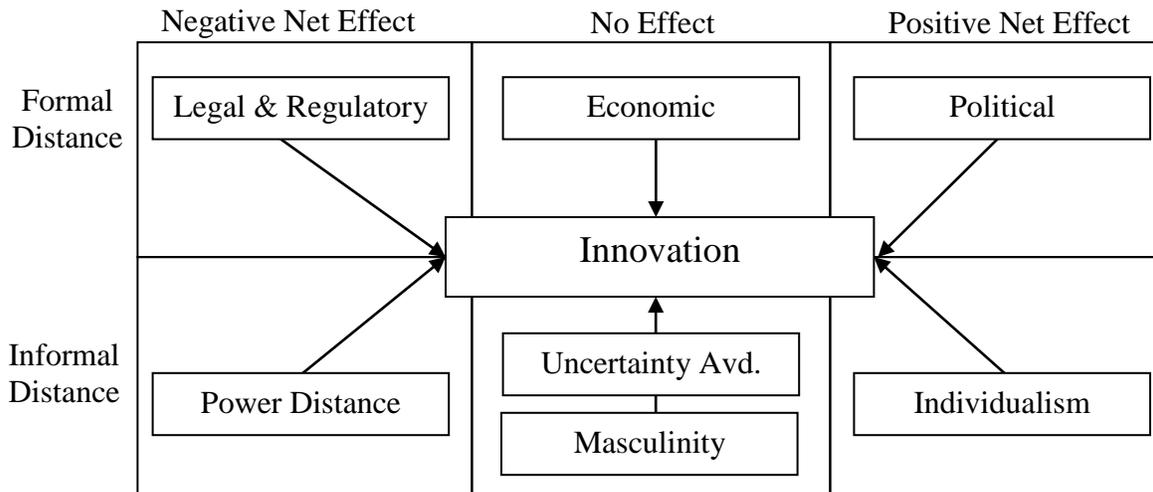
Firms offshore activities for a number of reasons: reduction of costs, acquisition of resources, and gaining access to new markets (e.g., Hutzschenreuter et al. 2014; Lewin et al. 2009). However, research on offshoring to increase the innovative capacity is still relatively rare, and the inclusion of ID distance in this context not yet explored. Accordingly, we have argued that companies are willing to take on certain risks and costs associated with LOF and offshore activities to innovate if arbitrage opportunities and complementarities arise in the distant locations. Based on the comprehensive data from the ORN, we have developed a model of distance and innovation which goes far beyond the traditional assumption of distance as

overwhelmingly bad. Whereas in some cases the positive effect of formal and informal distances outweigh the negative effects stimulating innovation, in other cases the negative effects of distance may be too strong and actually hamper innovation. Finally, in some cases distance may not have an impact on innovation outcomes at all.

In general, we find empirical support for the positive effect of political distance (*H1a*) and individualism distance (*H2a*) on innovation. As hypothesized, the negative effect of distance on innovation can be confirmed for legal and regulatory distance (*H1c*) and PD distance (*H2c*). We were not able to confirm the hypothesized positive effect of economic distance on innovation outcome, rejecting *H1b*. Although slightly negative, we conclude that economic distance may neither positively or negatively impact innovation. Alternatively, the opposing negative and positive effects may also cancel each other out. On the one hand, companies may increase economic distance in their innovation attempts to gain access to industry clusters or talent; on the other hand the economic conditions in more proximate and more similar markets may generate more exploitable ideas or provide better infrastructures and resources to exploit ideas. The effect of masculinity distance on innovation is positive but not significant, letting us reject *H2d*. The nonsignificant findings are not surprising based on the relative weak theoretical foundation as opposed to other informal culture values. Thus, masculinity and femininity may neither significantly complement nor hamper each other when a company pursues innovation activities abroad. While we suggested that the distance between uncertainty avoidance and uncertainty appraising countries may stimulate innovative performance, rather the opposite may be the case. Although not significant at the .05 level, uncertainty avoidance distance indicates an overall negative effect on innovation. The positive effect of distances concerning uncertainty avoidance may not mitigate or outweigh the potential negative ones. For a better overview of the results, the

theoretical model presented at the beginning of this study was adjusted to the empirical results (see Figure 4-2).

**FIGURE 4-2**  
**Results Model of Institutional Distance and Innovation**



***Theoretical Implications***

The theoretical implications of our study are threefold. First, we demonstrate the need for studying distance at a more disaggregated level in order to unpack the distinct impact of various formal and informal distances on innovative outcomes. Employing a finer grained model that breaks the generally aggregated constructs of formal and informal distance into its constituent components allowed us to theoretically avoid the mistakes of generalization and empirically circumvent the methodological fallacies inherent in much distance-oriented research (Franke et al. 2011; Zaheer et al. 2012). By doing so, our study takes a first step in opening the black box of distance by studying the differential effects of its dimensions (Peeters et al. 2015), while exploring ID as a holistic concept since there is a dearth of work considering both formal and informal distance (or multiple distances in general) and their interplay (Ambos and Håkanson 2014; Leung and Ang 2009).

Second, this study illustrates that distance is highly complex and that it cannot be described as overwhelmingly bad or good. Depending on the context and the outcome of the research, distance can have various impacts or even may not impact the variables in question at all. Consequently, while distance has generally been conceptualized as negative, our findings contribute to an emerging, and often still conceptual, stream of literature which considers the potential positive effects of ID (e.g., Peeters et al. 2015). While previous studies have provided initial and individual support for the positive or non-negative effect of distance on various firm outcomes, the distance measures have been operationalized on an aggregated level or have been analyzed in a vacuum (either formal or informal distance). For example, Hutzschenreuter et al. (2014) showed that economic distance had no significantly negative but slight positive effect on firm performance (Hutzschenreuter et al. 2014) whereas Peeters et al. (2015) demonstrated that cultural distance positively increases the attainment of cost savings through offshoring. Thus, our paper contributes to the distance literature by providing a rational and empirical support for the positive effect of a formal and informal distance component on the important firm outcome of innovation. Furthermore, we also provide evidence and explanation for contexts where distance may have negative or no effects. In doing so, we suggest that firms with a strategic approach to offshoring decisions are not only aware of the potential negative effects (LOF) of distance but are also opportunistic in taking advantages of positive effects of distance. By showing the potential positive effect of distance, we also introduce ID as a potential innovation-inducing factor to the innovation literature, thus extending research on innovation antecedents. In this context it may also be interesting to note that, contrary to general assumptions, innovative environments cannot only and always be found in the countries with the highest institutional quality. Sometimes institutions in less developed countries are more conducive to innovation, or

sometimes the interaction between different institutions foster innovative activities (e.g., through arbitrage and diversity).

Finally, a better understanding of distance highlights that we need theories that can capture the distinct and often opposing impacts. Institutional theory, which generally proposes the negative consequences of distance, in particular LOF, may not be able to describe the phenomenon discovered in this study.

### ***Practical Implications***

The insights generated in this study also have implications for practice. In particular, they enhance our understanding of the determinants of innovative performance through offshoring in distant locales. Indeed, the current findings and theoretical developments enable us to present managers with a reference framework for strategic decision making when using offshoring abroad to increase innovativeness of the firm.

Traditionally, studies utilizing the distance metaphor highlight the negative effects for the firm but also that managers who know about the potential effects of distance are in a better strategizing position to circumvent complexity and risk inherent in distance. Our findings confirm the importance for management to consider distance, but indicate that distance can have various distinct or even opposing effects on innovation. Thus, firms and management should look beyond distance as overwhelmingly bad or a situation to be avoided but as a strategic way for improving the innovative performance of firms. The internationalization of functions that enhance innovation is still a small but growing area, especially once management becomes aware of the potential advantages beyond simple cost savings. Firms can access valuable resources, explore arbitrage opportunities, and access local talent and skilled workers abroad in the quest for innovation. Furthermore, by being aware of the different facets of distance and their distinct

consequences for innovation activities, firms are able to manage risks and uncertainty inherent in distance creation through offshoring or refraining from offshoring activities that rather hamper than foster innovations.

### **Limitations and Directions for Future Research**

No single study can embrace all aspects of distance, one of the most researched topics in the international business literature. Although this paper sheds new light on the impact of formal and informal distances on innovative performance, it also bears a number of limitations that should be considered when interpreting the results and exploring new avenues for expanding this line of research. First, we argued that the impact of distance on innovation may depend on factors such as environmental munificence (e.g., labor quality, education standards, and industry clusters). As our research goal was focused on providing first insights into the distinct impacts of the various distance forms, we reduced complexity by leaving the detailed study of these potential moderating and mediating effects for future research.

Second, recent research has suggested the distinct impact of distance on firm strategies and outcomes if the directionality and magnitude of distance is considered (Hernández and Nieto 2015). While it would have been interesting to account for different directionalities and asymmetrical relationships between country dyads, the current study was not set out to take these into account. Our data was overwhelmingly composed of companies from developed countries with high formal institutions offshoring activities to developing countries with lower formal institutions. Additionally, the firms' home countries were based predominantly in western culture, whereas the host countries were based in eastern culture. Thus, future studies may focus on finer grained models and account for directionalities.

Third, the generalizability of the study may be limited due to the nature of the sample, which was made up of public companies. It could be true that the findings may not be transferrable to privately owned companies. Furthermore, while the addition of secondary data from the Fraser Institute's Economic Freedom of the World dimensions prevented the potential for common method bias, it also may have decreased the validity of what we attempted to measure. Other indexes, such as the Index of Economic Freedom by the Heritage Foundation or the Global Competitiveness Report, may have provided more precise information on individual factors.

Lastly, the concept of distance is difficult to measure and the concept constantly raises question of validity and reliability (see a comprehensive discussion about the methodological issues with distance in Franke et al. (2011)). In this paper, we followed the approach of bilateral distance used in current publications in international business research's premier journals. Future studies may incorporate and compare other ways of measuring and analyzing distance to increase the reliability of the results.

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## CHAPTER V: OVERALL CONCLUSION

### **Conclusion of the Dissertation**

This dissertation serves as an in-depth examination of the positive effects of differences on individual- as well as firm-level outcomes operating in a global environment. In all three essays, we focused on important cross-disciplinary phenomena in the realm of marketing, international business, international entrepreneurship, and innovation management, and hypothesized and established well-supported but controversial insights.

While the first chapter provided an overview of the research areas and the content of the essays, Chapter II presented *Essay 1*, the main goal of which was the theoretical and empirical assessment of the CQS and providing guidance on how to apply the construct. In Chapter III, *Essay 2* applied the knowledge gained in *Essay 1* to the context of the expatriate who is using CQ in the search for international opportunities and innovation. Chapter IV presented *Essay 3*, which provided insights into the potential positive effect of ID on innovative performance of MNEs. This closing chapter focuses on the implications from each section and areas for extending the streams of research.

### **Essay 1 Implications**

The biggest contribution of *Essay 1* is to provide theoretical and empirical evidence and guidance of how to use and empirically apply the established CQS. An accurate measurement approach is necessary in order to make precise inferences and generalizations of the examined

antecedents and outcomes of CQ. The findings are in particular relevant as misspecifying CQ as unidimensional may lead to a loss of valuable information, theoretical misinterpretations, inappropriate indications of significance, and a lack of generalizability of the results. Based on the results of the theoretical and empirical analysis and the respective implications, researchers are advised to hypothesize and analyze the CQ components as distinct constructs with different antecedents and outcomes.

We also contribute to current research by providing a comprehensive nomological network for the CQ construct. This is particularly crucial for furthering CQ research given the multidisciplinary use of the construct and the resulting challenges, such as overlapping research questions and blindness towards advancements in other disciplines. By doing so, we also suggest new directions for future research on key contingencies in disciplines outside the traditional CQ areas (international business, psychology, and management). For example, so far there is a dearth of studies in marketing, although CQ may have important implications in consumer behavior, services, and sales research.

### **Essay 2 Implications**

*Essay 2* advances knowledge by making two contributions. First, the study goes beyond the emphasis of expatriates as pure knowledge brokers by identifying their potential to discover opportunities if they possess cross-cultural skills. Drawing on the TPB, we address recent calls for a better understanding of how and by whom opportunities in an international context are recognized. In particular, metacognitive CQ seems to be a valuable ability. Expatriates high in metacognitive CQ can overcome pre-existing and culturally bound schemata, which would otherwise hinder their attempt to discover opportunities in the new environment.

We also contribute by advancing research on innovative performance by linking metacognitive CQ to innovative performance through opportunity recognition. Thus, we demonstrate that international opportunity recognition is not an end itself, but leads to innovative outcomes if exploited. Expatriates without metacognitive CQ might not discover opportunities abroad for innovative products, services, and processes. Furthermore, the lack of metacognitive CQ may result in a lack of cultural appropriateness of the innovation and, thus, fail to meet the demands of diverse international markets.

The findings of *Essay 2* provide various avenues for future research. While we explored the impact of CQ on international opportunity recognition, we did not break the opportunity process out into its constituent components (collecting information, connecting and assimilating information, and evaluating opportunities). Future studies may explore when and which forms of CQ may be important throughout the process. Furthermore, our study focused on expatriates working in the U.S. While we chose to study the specifics of these expatriates, it also limits the generalizability of the results. Future studies could examine the boundary conditions of our findings by surveying expatriates working in different countries.

### **Essay 3 Implications**

*Essay 3* contributes by taking initial steps to open the black box of ID. While previous literature has often relied on aggregated measures or exploring either formal or informal distance by itself, we unbundle the confounding formative construction of distance measures and consider the individual components of both major distance forms in an attempt to understand the potentially distinct directionalities.

This study also illustrates that distance is highly complex and that it cannot be described as overwhelmingly negative. Depending on the context and the outcome of the research, distance

can have various impacts or even may not impact the variables in question at all. In the particular case of our study, we demonstrated that distance through offshoring can, in some circumstances, increase the innovative performance of the MNE. By doing so, we also introduce ID as an innovation-inducing factor to the innovation literature and extend research on innovation antecedents.

Although *Essay 3* sheds new light on the impact of formal and informal distances on innovative performance it also opens new avenues for expanding on this line of research. As the research goal was focused on providing first insights into the distinct impacts of distances, we avoided key complications to the model and difficulties of interpretation by leaving the systematic study of these potential moderating and mediating effects for future research. Furthermore, future studies may account for different directionalities and asymmetrical relationships between country dyads.

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