The Role of Construal Level in Anxiety and Uncertainty Management: Exploring Patient-Provider Communication in a Cross-Cultural Context

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Abstract

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The Role of Construal Level in Anxiety and Uncertainty Management: Exploring Patient-Provider Communication in a Cross-Cultural Context

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Patient-provider communication is an important realm in health communication because it is an important predictor of health care outcomes and patient satisfaction. When examining patient-provider communication, culture should be taken into consideration, especially if patients and providers are from different cultures. As more and more immigrants come to the U.S. and they commonly experience anxiety and uncertainty because of cultural and structural barriers, optimizing patient-provider communication process to improve the cross-cultural health communication quality is crucial and necessary. Anxiety/Uncertainty Management (AUM) Theory explains how people achieve communication effectiveness when they are involved in intercultural encounters. Previous research on AUM shows that individual/social factors may lead to change in uncertainty and perceived communication effectiveness, such as ethnocentrism, personal similarity, and communication apprehension. In those studies, however, the AUM model of communication effectiveness has never been systematically tested, nor has it been applied to a health context. In addition, the concreteness/abstraction and temporal psychological distance in a message given by health providers may potentially have an impact on the relationship between anxiety/uncertainty and communication

effectiveness. Thus, the goal of this research is to a) test the AUM model in cross-cultural health communication context and b) parse out the effects of the message construal level on the relationship between anxiety/uncertainty and communication effectiveness. Results showed that AUM model can be applied to an intercultural health communication context. This research also found that mindfulness moderates the relationship between uncertainty and communication effectiveness and the AUM model does not significant differ when participants are exposed to different message construal levels. This research provides potentially useful insights on how messages can influence the management of anxiety and uncertainty to improve communication quality during intercultural patient-provider encounters.

Dedication

To all the immigrants who are experiencing anxiety and uncertainty when seeing a doctor.

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Table of Contents

Page

List of Tables

Page

List of Figures

Page

Chapter 1: Problem Statement

Often referred to as “the land of dreams” or “the melting pot”, the United States has been experiencing a wave of immigration for the past four decades (Camarota & Zeigler, 2016). According to the Immigration and Nationality Act (INA), an immigrant is defined as any alien in the United States, except one legally admitted under specific nonimmigrant categories (Homeland Security, 2017). Data from the U.S. Census Bureau showed that by the end of 2014, there were 42.4 million immigrants (legal and illegal) living in the United States, which is the highest percentage (13.3%) since 1910 (Camarota & Zeigler, 2016). Immigrants contribute to the population growth and cultural diversity of the US and are a main source of labor, especially in job areas where formal education is less required (Camarota & Zeigler, 2016). According to data from Centers for Immigration Studies, up to March 2015, the rates of work for immigrants and natives tend to be similar—about 70 percent of both immigrants and natives within the age range of 18 to 65 have a job. Yet, compared to 8 percent of natives, 28 percent of adult immigrants have not completed high school (Camarota & Zeigler, 2016). Immigrants’ realization of their dream in this new country is difficult because they face daily challenges such as maintaining legal immigration status, lack of stable income, social isolation, language barriers, cultural barriers, and health care, all of which may impede immigrants’ improvement of life quality and social wellbeing. Among these challenges, health care is one of the most salient (Derose, Escarce, & Lurie, 2007).

Problems in Immigrant Health Care

Identified as a "vulnerable population", immigrants are a group of people facing increasing risk of inadequate health care (Aday, 2002). Existing research has found immigrants have a lower quality of health care than U.S. born populations (e.g., Aday, 2002; Derose et al., 2007). The most commonly perceived barriers include health-related barriers (e.g. lack of and limitations in health insurance coverage, lack of affordable health care services) and other barriers that indirectly affect the health care experience (e.g., legal status and discrimination toward immigration identity, transportation concerns; Bustamante et al., 2012; Cristancho, Garces, Peters, & Mueller, 2008; Heyman, Núñez, & Talavera, 2009; Ku & Matani, 2001; Leclere, Jensen, & Biddlecom, 1994; Schneider & Freeman, 2000). For instance, a study about unauthorized immigrants (undocumented immigrants) in El Paso showed that immigrants are facing major problems that need to be overcome to reduce the health disparities, which include direct legal mandates (e.g., health insurance qualification), fear of authorities, interaction with unauthorized legal status, and hierarchical social interactions in a health care context (Heyman, Núñez, & Talavera, 2009). These problems are linked to negative outcomes such as stress breakdowns in complex diagnoses during long-term treatment and a lack of monitoring of chronic conditions (Camarota & Zeigler, 2016).

Structural and cultural barriers are compounded in patient-provider interactions because such barriers make it difficult to communicate important health information. Additionally, one of the main reasons for the lack of quality in immigrant health care,

which stands out as very pertinent to the field of communication studies, is communication barriers that influence the communication quality (Bauer, Rodriguez, Quiroga, & Flores-Ortiz, 2000; Flores, 2006; Kreps & Sparks, 2008). Because of limited language proficiency, immigrants have difficulties in adjusting to local cultures in their daily lives, especially when they are having health issues and need to see a doctor (Flores, 2006). For instance, patients who have communication barriers are less likely to have a usual source of medical care: they receive preventative services at reduced rates and are more likely to have an increased risk of nonadherence to medication (Flores, 2006). Meanwhile, from a sociopolitical perspective, shortly after immigrating, immigrants usually feel socially isolated and a lack of support from extended family (Keefe, Padilla, & Carlos, 1979). Moreover, difficulties in speaking and understanding of English add to their isolation and impediments in the health care setting.

Important to this study, some immigrants have a relatively high level of anxiety and uncertainty when seeing health providers, which can deteriorate communication effectiveness between immigrant patients and their health providers (Derose, Escarce, & Lurie, 2007). Research on Hispanic immigrants in the Midwest (of the United States) indicates that communication issues and inadequate medical interpretation services also impede healthcare improvement for immigrants (Cristancho et al., 2008). Language and cultural barriers complicate the ability of non-English speaking immigrants to understand and succeed in navigating healthcare systems which leads immigrants with low-English proficiency to have worse health than English-proficient immigrants and U.S. natives

(Cristancho et al., 2008). Even worse, a lack of availability of bilingual health providers and well-trained medical interpreters force immigrants to rely on their relatives, friends, and non-medical staff as interpreters, which results in more miscommunication regarding health information (Flores, 2006). For instance, untrained interpreters have been found to misinterpret or omit up to 50% of the providers' questions to their patients and can make mistakes that have clinical consequences (Flores, 2005). Hence, optimizing the communication process to improve the cross-cultural communication quality is crucial and necessary.

Patient-Provider Communication in a Cross-Cultural Context

Patient-provider communication is a salient topic in the field of medical care because it is an important predictor of health care outcomes and patient satisfaction (e.g., Burns, Baylor, Morris, McNalley, & Yorkston, 2012; Dutta-Bergman, 2005). Several factors that influence the quality of patient-provider communication include the skill level of the provider, the complexity and length of the interaction, the clinical environment, and patients' individual-level factors such as health literacy and language proficiency (Flores, 2006; Kreps & Sparks, 2008). Generally, even without considering the impact of culture, patient-provider communication already faces problems from multiple aspects. More importantly, mistrust in the U.S. health care system is also related to health-related quality of life and treatment adherence for patients (Nam, Chesla, Stotts, Kroon, & Janson, 2011; White et al., 2016). For instance, diabetes patients with higher self-reported mistrust in the health care system experience a lower quality of

communication with health providers (White et al., 2016). These patients tend to be less involved in their diabetes health care and view their providers as less interpersonally communicative (White et al., 2016). Thus, how to better communicate between patients and health providers is worthy of investigation.

When examining patient-provider communication, culture should be taken into consideration, especially when patients and providers are from different cultures. Because culture can influence what people perceive about the nature of illness and the way diseases should be treated, cultural differences pose more obstacles for an effective communication between patients and providers. Intercultural communication effectiveness is overwhelmingly important because it is a predictor of patient understanding of health providers' information, and the lack of intercultural communication effectiveness can have dire consequences, including intercultural conflict, wrong diagnoses, and worsening health disparities (Flores, 2006; Jecker, Carrese, Pearlman, 1995; Kagawa-Singer & Kassim-Lakha, 2003).

Unfortunately, when immigrants see their health-providers, they experience uncertainty and anxiety, which impacts patient-provider communication. A study examining the relationship between health providers' cultural sensitivity and providers' level of anxiety, and the findings of the study suggest health providers can reduce the situational stress and anxiety by improving their cultural sensitivity and abilities in coping with intercultural encounters (Ulrey & Amason, 2001). Nonetheless, there is little research that focuses on the anxiety and stress from the immigrant patient perspective and

how messages provided by health providers influence patients' understanding of the clinical experience and their perceptions of health communication effectiveness of their health providers. Anxiety and stress are common factors in intercultural encounters for many people, including people in health communication context (Ulrey & Amason, 2001). Hence, understanding the process in which patient manage their uncertainty and anxiety to achieve better communication effectiveness during their clinical visit is crucial to improve the quality of health care for immigrant patients.

To that end, this dissertation applies Anxiety/Uncertainty Management (AUM) Theory (Gudykunst, 2005) and Construal Level Theory (CLT; Trope & Liberman, 2010) to investigate the factors that influence immigrants' uncertainty and anxiety during interactions with their provider. It is hypothesized that anxiety and uncertainty in turn affect communication effectiveness, and that suggestive messages used by providers influence the relationship between anxiety/uncertainty and perceived communication effectiveness during a clinical visit. This study has three tasks to accomplish: first, to test the AUM model in cross-cultural health communication context; second, to test effects of mindfulness on the relationship between anxiety/uncertainty and communication effectiveness; third, to test the effects of the message construal level and temporal distance on the relationship between anxiety/uncertainty and communication effectiveness. This research provides potentially useful insights on how messages can help manage uncertainty and anxiety and improve communication quality in intercultural patient-provider encounters.

Chapter 2: Literature Review

Culture is important to our understanding of health and health communication. Scholars have suggested that more research is needed on cultural topics in the study of health (Brislin, 1993; Dutta, 2007 Resnicow, Braithwaite, Dilorio, & Glanz, 2002). Much research exists in the field such as intercultural communication, public health and global health, intercultural relations and psychology. Drawing from literature from these fields in order to provide more comprehensive theoretical frameworks can help to better understand cross-cultural health communication processes. The purpose of this chapter is to review perspectives of culture in health communication as well as constructs of Anxiety and Uncertainty Management (AUM) Theory and why it needs to be tested. To look at how message construal level influence anxiety/uncertainty management, Construal Level Theory (CLT) is introduced to incorporate construal levels and temporal distance of messages into AUM models, which explains potential influence of the construal level of messages and temporal distance on communication outcomes during intercultural encounters in health contexts.

Cultural Perspectives in Health Communication

In recent decades, scholars have underscored the importance of considering culture in health communication research (Brislin, 1993; Resnicow, Braithwaite, Dilorio, & Glanz, 2002). Integrating arguments from former research, two culture approaches in health communication are summarized as guidelines for health communication involving cultural diversities: the culture-centered approach and the cultural sensitivity approach

(Dutta, 2007). Although both the culture-centered approach and cultural sensitivity approach aim at incorporating culture in health communication efforts, they differ in their conceptualization of culture, their theoretical focus, and the way they apply the concept of culture in the practice of health communication (Dutta, 2007). Because the increasing population of immigrants in the United States, it is more common that patients and health providers are from different cultural background. Differences in cultural background can influence patient-provider communication outcomes during patients' clinical experience. This dissertation project will apply the perspective of cultural sensitivity approach for the following reasons. First, the AUM model being applied in this study conceptualizes cultural variables to predict desired communication effectiveness as the outcome. Additionally, in AUM theory, it is the researcher who determines the important cultural factors and issues during intercultural communication, which correspond with the core assumptions about the role of health providers and researchers in cultural sensitivity approach. The discussions of the implication and outcomes of the study will also be based on this approach. To understand differences between these two approaches, the following two paragraphs will briefly introduce both culture-centered and cultural sensitivity approaches.

The culture-centered approach views culture as a complex structure, which continues to change and interact with the social and structural processes surrounding culture (Dutta, 2007). This approach aims at focusing on the voice of underserved group whose voice has been rarely heard. It is constructed based on the theoretical perspective

of centralizing cultural voices in the articulation of health problems and solutions (Airhihenbuwa, 1995; Dutta-Bergman, 2004, 2005). In the practice of culture-centered approach, researchers and health practitioners identify health problems within the culture, wherein the members of the community would have a chance to actively participate in deciding the major problem of the community. Hence, in this approach, community is very crucial with respect to determining the definition of the problem and what would be effective practices.

The cultural sensitivity approach conceptualizes culture differently. It views culture as a cluster of shared values, beliefs, and behaviors (Brislin & Yoshida, 1994; (Ulrey & Amason, 2001). These cultural related aspects are conceptualized as variables built into models to have predictive values toward behavioral outcomes. Rather than using culture as the core of solution to cause changes at system and structural level, cultural sensitivity approach is directed toward the goal of producing interventions that incorporate culturally related factors (e.g., characteristics, values, beliefs, experiences, and norms of the aimed culture) of the targeted population of interventions and finally achieve effective outcomes. In terms of communication studies, it focuses much on creating effective messages that are responsive to the values and beliefs of the culture (Dutta, 2007). The theoretical perspective of this approach emphasizes that health communication should be culturally sensitive by taking cultural aspects into account in terms of the application of the theories. It requires researchers and health practitioners, instead of the people within the community, to determine the most important issue in the

community, consider the culturally salient factors, and build health communication interventions tailored to the cultural characteristics (Dutta, 2007). Models used in this approach would typically identify certain cultural variables and use them to predict a large variety of outcomes. For instance, when applying the Theory of Planned Behavior (TPB); (Ajzen, 1991) in a specific culture, subjective norms should be considered as being impacted by local cultures. An example would be the intention about breastfeeding in Hong Kong (Dodgson, Henly, Duckett, & Tarrant, 2003). Except for common demographic variables that influence the decision to breast feed, taking rest for the first month after birth ("doing the month"), a cultural norm uniquely hold within Chinese society, contributes significantly to the decision made by moms regarding breastfeeding.

To sum, the cultural sensitivity approach provides a sound theoretical perspective where AUM Theory can be applied to explain culturally related communication phenomenon. As a quantitative theory, AUM reflects the implication of cultural sensitivity approach that the researchers are the ones who determine the key problems for the community as well as the purpose of the theory, creating effectiveness communication, corresponds with the focus of cultural sensitivity approach. The cultural background variables in AUM Theory represent the adjustment of communication to fit culture, which corresponds with the core assumption of cultural sensitivity approach.

Anxiety and Uncertainty Management (AUM) Theory and Communication Effectiveness

Derived from Uncertainty Reduction Theory (URT); (Berger & Calabrese, 1975), Anxiety and Uncertainty Management (AUM) Theory was initially proposed to explain

how people achieve communication effectiveness and intercultural adjustment when they are involved in intercultural encounters (Gudykunst, 2005). This theory explains relationships between individual and social factors and communication effectiveness through the management of individual anxiety and uncertainty when strangers from different cultures communicate with each other. Gudykunst (2005) finalized the theory and illustrated it in a model that explains how individual and cultural variables can have an impact on effective communication through the mediating function of anxiety and uncertainty.

Specifically, AUM Theory of communication effectiveness posits when people with different cultural backgrounds meet, they will achieve effective communication by managing their levels of uncertainty and anxiety (Gudykunst, 1993, 2005). AUM Thoery extends URT to intergroup and intercultural contexts. The AUM model of communication effectiveness demonstrates the pathway to achieving effective communication (Gudykunst, 2005). In this theory, communication is viewed as "the exchange of messages and the creation of meaning" (Gudykunst, 2005, p.289), and effective communication is conceptualized as the extent to which each party involved in the communication process can maximize mutual understanding and minimize misunderstanding (Gudykunst, 1993, 1994, 1995). In health communication context, the health provider's effective communication is evaluated by their information giving and information verifying (Cegala, Coleman, & Turner, 1998), both of which contributes to the minimization of misunderstanding between patients and health providers.

Gudykunst (2005) explains that people have some level of uncertainty and anxiety during encounters with strangers from another culture. To communication effectively, uncertainty and anxiety need to be managed to be within a certain range. When individuals experience anxiety/uncertainty during intercultural encounters, they should keep their level of uncertainty within the minimum and maximum thresholds. The minimum threshold of uncertainty is the lowest amount of uncertainty a person can experience without being unmotivated or overconfident about predicting the strangers' behavior during communication. The maximum threshold of uncertainty is the highest amount of uncertainty individuals can experience while they still believe they can predict a strangers' behavior and feel comfortable communicating (Gudykunst, 2005). Likewise, individuals should also manage their level of anxiety within a certain range. The minimum threshold of anxiety is the lowest amount of anxiety individuals have and still care about their interaction with strangers. The maximum threshold of anxiety is the highest amount of anxiety individuals experience without being uneasy to communicate with strangers. Rather than investigating the thresholds of anxiety and uncertainty level, this study assumes the level of anxiety and uncertainty needs to be within a range where effective communication activity can happen. Hence, uncertainty and anxiety are two core factors in the model, which explain the function of individual and cultural factors on effective communication. In the following paragraphs, I am going to explain the construct of AUM Theory in intercultural communication context and its possible extension to health communication context. Because background variables are about individual states

that stay consistent across different context, hypotheses of original AUM Theory Model will be proposed and tested in this study.

Anxiety

Gudykunst (1994) proposed that "anxiety is the feeling of being uneasy, tense, worried, or apprehensive about what might happen" (p. 21). AUM assumes that people experience anxiety any time they communicate with others in general, and people will be more likely to experience anxiety when communicating with others, especially when the strangers are from different countries (Gudykunst, 2005). The theory also suggests if the anxiety level is too high, people may not be motivated enough to communicate. AUM postulates people are fearful when they experience anxiety because they may worry about four types of negative consequence of their performance during communication: negative effects on their self-concept, negative behavioral consequences, negative evaluations by members of other groups, and negative evaluations by members of ingroups (Stephan & Stephan, 1985). In healthcare interactions, patient fears about communication can also affect health communication processes and the patient's willingness to actively seek or provide health information (Booth-Butterfield, Chory, & Beynon, 1997). For instance, individuals whose first language is not English may be anxious about communication with doctors, and thus are less willing to provide information or ask for clarification, less able to adequately describe their symptoms and health conditions, and less able to interpret and translate information (Guntzviller, Jensen, King, & Davis, 2011). Additionally, much AUM based research only examines state anxiety (e.g., Gudykunst &

Nishida, 2001; Hammer, 1998). Study showed that in health settings people's anxiety may be higher compared to a general situation, because the presence of them will motivate treatment-seeking behaviors, yet effects of trait anxiety on patient-provider communication effectiveness is unclear (Logan et al., 2016). Thus, this study is going to examine effects of anxiety on communication effectiveness. Regarding the relationship between anxiety and communication effectiveness, I posit:

H1: Anxiety is negatively related to communication effectiveness during intercultural patient-provider interactions.

Uncertainty

According to AUM, when people are unsure about a situation and/or lack the information for them to make a confident judgement, they are likely to have uncertainty (Gudykunst, 1994). It is a common cognitive phenomenon that affects what people think about strangers and situations (Gudykunst, 2005). Individuals may be more likely to have uncertainty when they encounter people from other cultures or ethnic groups because they do not have shared norms and rules guiding their behavior and interactions with them. In response, it is reasonable that individuals seek to reduce their uncertainty when interacting with people from a different culture (Gudykunst, 1994). Notably, Gudykunst (1994) points out individuals may not be conscious of their attempts to reduce uncertainty, which shows that the reduction of uncertainty sometimes is not the goal of people's communication and to some extent dispels the criticism received by URT.

According to URT, AUM suggests there are two types of uncertainty existing during our communication with strangers: predictive uncertainty and explanatory uncertainty (Berger & Calabrese, 1975). Predictive uncertainty is the uncertainty individuals have about predicting others' attitudes, feelings, beliefs, values, and behavior (Gudykunst, 1994). For instance, we need to know about strangers' basic cultural norms to avoid offending them. Explanatory uncertainty is the uncertainty we have about the explanations of strangers' behavior (Gudykunst, 1994). For instance, if nodding one's head means approval or confirmation ("Yes") in the strangers' culture, we might be caught into misunderstanding if we do not understand this connotation (assuming our culture considers it as "No"). In daily communication, reducing these two types of uncertainty will help people mitigate misunderstandings and improve communication quality (Berger & Calabrese, 1975; Gudykunst, 2005). One possible reason may be that reducing uncertainty during intercultural communication may reduce individual's intercultural communication apprehension, which is defined as the fears or anxiety associated with communication with people from different cultures (Neuliep, 2012). Also, reducing uncertainty about strangers helps people to better understand others' perspectives assuming people obtain more information to predict others' behavior and interpret their thoughts (Gudykunst, 2005). In this study, when viewing uncertainty in cross-cultural patient-provider interaction, uncertainty is contextualized within intercultural health encounters, and it is composed of predictive uncertainty (i.e., what health providers will do per their cultural norms; what the health provider will suggest to

the patients) and explanatory uncertainty (i.e., why the health provider gives certain suggestions or explanations). Although there have been studies investigating the effects of uncertainty on willingness to interact and active information seeking in intercultural communication context (Logan, Steel, & Hunt, 2014; Logan, Steel, & Hunt, 2015), few have examined how uncertainty affects communication effectiveness. If immigrant patients feel uncertain about how to communicate with health provider from a different cultural background, or they are unsure about the information provided by the health provider, they are unlikely to have satisfying communication outcomes when seeing health provider. Moreover, although Gudykunst (2005) assumes a correlation between anxiety and uncertainty in AUM because he views anxiety as emotional equivalent of uncertainty, in fact, increasing in uncertainty will mostly cause the increase in anxiety, but not vice versa. Afifi (2004)'s Theory of Motivated Information Management generalizes from existing studies about uncertainty predicting anxiety and posits that uncertainty discrepancy predicts anxiety when people are in uncertain situations. In this study, rather than examining whether there is a correlation between anxiety and uncertainty, I will specifically investigate whether uncertainty can predict anxiety in the context of cross-cultural health communication. Thus, I put forth the following hypothesis:

> H2: Uncertainty is negatively related to communication effectiveness during intercultural patient-provider interactions.

H3: Uncertainty positively predicts anxiety, such that the more uncertain immigrants are, the more anxious they will be.

Background Variables

AUM theory also hypothesizes that background variables, conceptualized as individual differences, influence the level of anxiety and uncertainty, which in turn has an impact on communication effectiveness. These background variables include: self-concept, motivation to interact, reactions to strangers, social categorization of strangers, situational processes, connections with strangers, and ethical interactions. In the following paragraphs, each of these variables will be discussed in terms of their definition, sub-categorical variables, and their relationships with anxiety/uncertainty management.

Self-concept. Self-concept is defined as people's stable views of themselves (Gudykunst, 2005). Individuals put themselves in categories with others who are similar to them in some dimensions (Turner, Hogg, Oakes, Reicher, & Wetherell, 1987). It consists of social identities, personal identities, and collective self-esteem. Social identities are the "part of an individual's self-concept which derives from his knowledge of his membership of a social group (or groups) together with the emotional significance attached to that membership" (Tajfel, 1974, p.69). Personal identities are defined as the way that people think who they are as a self-categorization (Ellemers & Haslam, 2012). Self-esteem is the positive or negative feelings people have about themselves (Rosenberg, 1979). People formulate their self-concept by applying social categorization to

themselves and others to clarify their perception of the social environment and the position they are in. It is proposed in AUM theory that social identity, personal identities, and collective self-esteem will negatively predict the level of anxiety and uncertainty during intercultural communication between strangers. This is because communication between individuals and strangers will be more meaningful and predictable if they have a more developed self-concept and they are less uncertain and anxious during the interaction (Grieve & Hogg, 1999; Gudykunst, 2005). However, in health communication contexts, high patients' self-concept can make them more self-conscious and more aware of the differences between strangers and themselves, which enhances the influence of their social identities, personal identities, and self-esteem on uncertainty and anxiety level, as the result it can have an impact on patient-provider communication effectiveness. For instance, patients are less willing to interact with health providers when they are more ethnocentric, meaning if they are more conscious about their self-concepts (social identities, personal identities, and self-esteem) and value them over other people's, they will be reluctant to actively seek for information from health providers (Logan et al., 2014). Additionally, research has found that if patients think themselves as more independent (as a type of personal identity) from their social and cultural identity, they will be more motivated to communicate verbally with a physician (Kim, Klingle, Sharkey, Park, Smith, & Cai, 2000), and are less concerned about uncertainty. Therefore, it is reasonable that immigrant patients will experience more anxiety and uncertainty

when their self-concept is salient, which in turn has a negative effect on communication effectiveness. Thus,

H4: There is a negative indirect effect of self-concept on communication effectiveness through anxiety and uncertainty.

Motivation to interact. Motivation to interact is conceptualized as an individual's desires to interact with strangers. People are motivated to interact with others because of their needs for predictability (other's behaviors are predictable), group inclusion (feeling involved in the relationship with strangers), and self-concept conformation (being sure about one's self-concept); (Gudykunst, 2005). AUM theory postulates that having high needs for predictability, group inclusion, and self-concept confirmation would induce uncertainty and anxiety. This is because when individuals feel others' behaviors are unpredictable, they feel excluded from a group, less belonging, insecure self-concept, less confident in their communication, and more isolated as an out-group. Patients' motivation to interact in terms of active information seeking, for example, can influence their anxiety and uncertainty because they will be more proactive to manage their anxiety and uncertainty to have more predictability, group inclusion, and self-concept confirmation they need, which in turn has an impact on communication effectiveness. In health communication contexts, if patients are more motivated to interact with health providers, they will feel more confident and secure during the interaction and consequently less uncertain and anxious during the communication process, which may in the end will yield better communication effectiveness. For

instance, when patients are motivated and actively seek information during their visit with health providers, they have more necessary information about their health status and the outcomes of the treatment are better (Mayer, Terrin, Kreps, Menon, McCance, Parsons, & Mooney, 2007). Therefore, I predict:

H5: There is a positive indirect effect of motivation to interact on communication effectiveness through anxiety and uncertainty.

Reaction to strangers. Reactions to strangers refers to the way individuals perceive strangers, their effective responses to strangers, and the way they behave toward strangers (Gudykunst, 2005). It encompasses individual reactions such as openness of attitude, tolerance for ambiguity, and level of empathy. Openness of attitude enables people to look at things from a diverse perspective and to seek for alternative explanation for strangers' behavior (Gudykunst, 2005). People's tolerance of ambiguity affects their information gathering, such that higher tolerance of ambiguity makes people feel calm and relative secure in an uncertain situation, and people will feel less anxious when they can tolerate ambiguity (Gudykunst, 2005). Empathy facilitates people's anxiety and uncertainty management. An empathic person will feel others' experiences and emotions more easily, which results in a better understanding of others' perspectives. If individuals are more open to the differences in culture, they will be less uncertain and less anxious during intercultural encounters. Similarly, if individuals can treat vague information as a normal phenomenon, and be empathetic to other people, they will be more relaxed during the communication processes. In that way, people will feel more

comfortable to communicate with strangers and they will achieve better communication effectiveness. In patient-provider communication in cross-cultural context, research shows close-mindedness such as ethnocentrism could have negative effects on cross-cultural communication and reduce patient willingness to interact with intercultural professionals because of the increase in stress and uncertainty, which is adversely related to communication effectiveness (Logan et al., 2016). Thus, the following hypothesis is proposed:

H6: There is a positive indirect effect of reactions to strangers on communication effectiveness through anxiety and uncertainty.

Social categorizations. Social categorizations refer to the way individuals organize social environments by sorting people into categories that are interpretable to them (Gudykunst, 2005). It is comprised of three related concepts: positive expectations, perceived personal similarities, understanding group difference. When individuals have positive expectations toward strangers, according to the self-fulfilling prophecy (Merton, 1948), they will act in a way to facilitate the realization of that expectation (Biggs, 2009). Hence, they will feel less uncertain and less anxious in communicating with strangers when they have positive expectations of strangers. Likewise, when people think a stranger has more similarities and when they are more open to group differences, they will think that the communication with the stranger is more predictable and will be more comfortable during the interaction with the strangers. Therefore, AUM theory proposes that positive expectations, perceived personal similarities, and understanding group

differences negatively predict the level of uncertainty and anxiety during the communication with strangers (Gudykunst, 2005). In cross-cultural health communication contexts, if patients have positive expectations toward their clinical experience, they will possibly have less uncertainty and anxiety when seeing health providers. Additionally, if they happen to find personal similarities with health providers (e.g., hobbies, neighborhood where they live), they may be more actively involving in communication with health provider. For instance, patients whose expectations for explanations are met by the health providers will have higher satisfaction and compliance level. On the contrary, if providers do not give good explanations that meet patients' expectation, patients will be likely to withdraw from the interaction (Roter, 1977). Thus, when immigrant patients have positive expectations toward health providers, share more personal similarities, and understand group differences, it is likely that they will be more actively involved in interactions with health-providers, with less anxiety and uncertainty. Therefore,

H7: There is a positive indirect effect of social categorization on communication effectiveness, through anxiety and uncertainty.

Situational processes. Situational processes represent the context in which individuals are communicating with the strangers (Gudykunst, 2005). It is related to intercultural competence concepts such as the level of cooperation in the task, presence of in-group members, and perceived power over strangers. Good cooperation in the task leads to positive feelings toward people working in the cooperative task, which in turn

leads to less uncertainty and anxiety in communication process. More importantly, the more in-group members present in the situation, the less people will feel alone because of the security in numbers of people with similar identity. Also, the more power individuals are perceived to have, the less anxious and uncertain people will feel (Gudykunst, 2005). Hence, these variables negatively predict individuals' level of anxiety and uncertainty. From cross-cultural patient-provider communication perspective, the communication dynamics is changing in modern clinics comparing with non-modern patient-provider relationship in terms of multiple aspects such as professional ethics, patient empowerment, and level of cooperativeness (Barr et al., 2015; Buetow, Jutel, & Hoare, 2009). Although health-providers are generally perceived to be authoritative by immigrant patients (Heyman, Núñez, & Talavera, 2009), immigrant patients' perception of level of cooperativeness may also vary because of their language and cultural competencies, which can affect the communication effectiveness between immigrant patients and health providers. Therefore, regarding intercultural communication context, I posit:

H8: There is a positive indirect effect of situational processes on communication effectiveness, through anxiety and uncertainty.

Connection with strangers. This factor is conceptualized as a relational factor and refers to the development of relationships with strangers (Gudykunst, 2005). Connection with strangers includes attraction to strangers, independence with strangers in the specific situation, and intimacy of the relationships with strangers. The extent to

which individuals are attracted to strangers can influence strangers' reactions to the individuals during communication. The more strangers are attracted to the individuals, the better their communication will be. Similarly, the more interdependent people are with the strangers, the more cooperative they will be to achieve the same goal; and the more intimate individuals are with the strangers, the more they will feel comfortable in communication with the strangers (Gudykunst, 2005). All these leads to more confident and less uncertain and anxious when involving in the interaction—the better connections that individuals have with strangers, the less anxiety and uncertainty they will experience during the interaction with strangers. In clinical visit, patients and physicians can develop mutual liking, which may result in positive outcome such as better communication between patients and doctors, better patient health, and better affective state after the visit (Hall, Horgan, Stein, & Roter, 2002), which can result in a better evaluation of communication effectiveness between patients and health providers. Thus, I propose the following hypothesis:

H9: There is a positive indirect effect of connection with strangers on communication effectiveness, through anxiety and uncertainty.

Ethical interactions. Treating strangers ethically will also affect individuals' anxiety and uncertainty level, according to AUM Theory (Gudykunst, 2005). Gudykunst (2005) asserted communication effectively means maintaining of dignity, bringing more inclusiveness, and being respect to strangers. If the mutual respect maintains the dignity of individuals and strangers, they will feel more ease during their interaction. In addition,

when individuals respect strangers, they will treat the strangers in a morally inclusive way. It means that strangers are perceived as inside the boundary where moral values, rules, and considerations of fairness apply (Optow, 1990). In this way, strangers will feel protected and more secure during the interpersonal encounter (Gudykunst, 2005). Thus, ethical interactions are negatively related to the individuals' level of anxiety and uncertainty when communicating with strangers from other cultures. Moreover, because the professional context of health communication between patients and health providers requires health providers to be ethical during the communication with patients, ethical interactions also play a significant role in patient-provider communication. For instance, patients highly value health providers who show respect to them and who form individual relationship with them (Wright, Holcombe, & Salmon, 2004). As a result, they will trust the health provider more and be more likely to be willing to communicate with their health provider feel more secure and less uncertainty, which will lead to better communication outcomes. Thus, I propose:

H10: There is a positive indirect effect of ethical interactions on communication effectiveness, through anxiety and uncertainty.

AUM theory suggests that mindfulness moderates the relationships between anxiety/uncertainty and communication effectiveness. In AUM Theory, mindfulness is conceptualized as the awareness of individuals' own behavior, and it involves three aspects: 1) creation of new categories, 2) openness to new information, and 3) awareness of more than one perspective (Gudykunst, 2005). When individuals are mindful, they will

deliberately try to understand strangers' meanings and try to make sure strangers understand their meanings (Gudykunst, 2005). The more mindful individuals are during their communication with strangers, the more positive feedback they will have from strangers (Gudykunst, 2005). Because communication at an intercultural level essentially encompasses interpersonal communication (Doise & Mapstone, 1986), the reciprocity during interpersonal interaction will make individuals feel more comfortable in interacting with strangers, which in turn affects the extent to which individual anxiety and uncertainty influence communication effectiveness. In cross-cultural patient-provider communication contexts, mindfulness of providers has been frequently examined and is proven to be effective in terms of refine patient-provider communication (e.g., Hausmann, Hannon, Kresevic, Hanusa, Kwoh, & Ibrahim, 2011; Smedley, Stith, & Nelson, 2003). Yet the effects of mindfulness of patients on patient-provider communication has rarely been studied. As study found African American patients with higher perception of discrimination (stereotype) in health care will think their health provider less warm and respectful, which requires providers to have more mindfulness training to improve their affective tone (Hausmann et al., 2011). However, if mutual understanding can be established between patients and health providers, as patients are more mindful and less stereotypical toward patient-provider communication, patients' uncertainty and anxiety may have a reduced impact on the patient-provider communication effectiveness. Thus, I predict:

H11: Uncertainty and anxiety negatively influence communication effectiveness more for individuals who are less mindful than those who are more mindful.

AUM theory provides a theoretical framework for the explanations for both central pathways and indirect factors (background variables) that predict communication effectiveness in intercultural encounters (Ni & Wang, 2011). However, the model delineated in the theory has neither been systematically tested due to the difficulty in operationalization of the measurements, nor has the application of the model been much investigated (for exceptions, see Hammer et al., 1998). Although AUM model is adaptable to multiple contexts where intercultural encounters happen, AUM theory has been rarely applied in the health communication context, especially regarding how uncertainty can influence the communication outcomes in healthcare encounters. Communication effectiveness in health care interactions may be affected by patients' background variables. For instance, but also by the providers' message themselves. Instructions from health providers are crucial for patients to improve their health conditions and to help with recovering (Heszen-Klemens & Lapińska, 1984). As such, the level of concreteness of messages from health providers will influence the compliance and satisfaction of patients, which in turn affects the outcomes of treatment. Construal Level Theory (Trope & Liberman, 2010) attends to the concreteness/abstractness of the messages and how it affects people's experiences with the presentations of objects, including communication. In healthcare interactions, CLT explains the association

between construal level and psychological distances, and how this association can affect individuals' perceptions, such as the communication effectiveness of their provider.

Construal Level, Psychological Distance, Human Perception and Decision Making

In communication research, more emphases are needed on the effects of messages at different construal levels on communication outcomes, since much current health research has been paying attention to the explanations of behavioral outcomes resulting from the construal levels of messages and psychological distances, but few studies focused on communication processes. Individuals are capable of thinking about the future, the past, a remote location, and other people's perspectives, although their experiences are always existing here and now (Trope & Liberman, 2010). The reason why people are able do this can be explained by the fact that people are forming abstract mental construals of distal objects, while forming concrete mental construal of close objects (Trope & Liberman, 2010). This is the core assumption of Construal Level Theory (CLT) (Liberman & Trope, 2008; Trope & Liberman, 2003, 2010), which illustrates the association between messages abstraction/concreteness (construal level) and psychological distance. This explains how human beings can transcend the here and now to include distal entities. According to CLT, people will use high level construal to describe a distal object when they think about the object (e.g. temporally distal or spatially distal) and people will perceive the object more distal if they see the high-level construal of that object (Trope & Liberman, 2010).

Trope and Liberman (2010) explain high-level construals as "relative abstract, coherent, and superordinate mental representations" (p. 2), while low-level construals are more concrete, discrete, and more subordinate mental representations. When moving from the concrete representations to more abstract representations of an object, the central features of the object are retained while detailed features are omitted (Trope & Liberman, 2010). For instance, when moving from representing an object as a "young student" to representing it as a "person", we omit age and occupation; when moving from representing an activity as "biking to the park this Sunday" to representing it as "having fun on Sunday", we omit the way of transportation. The concrete representation typically has multiple abstractions and the abstract representation is selected based on one's goals (Trope & Liberman, 2010).

Two criteria can be used to distinguish which features of an object are at higher level construal and which features are at lower level (Trope & Liberman, 2010). The first one is centrality, meaning that changing a higher-level feature will have greater impact than changing a lower-level feature. For example, a colloquium will change more when the presenter of the colloquium is changed than when the room where the colloquium is held is changed (Trope & Liberman, 2010). In this case, the presenter of the colloquium is a higher-level construal and the room where the colloquium is held is a lower-level construal. The second criterion is subordination, which means that low-level features depend on high-level features more than vice versa. For example, when being informed about a forthcoming guest speech, the location would become important only if the topic

is interesting. If the topic is not interesting, people might not even consider attending the speech. On the other hand, the topic of the speech would be important whether the location is convenient or not (Trope & Liberman, 2010). In this case, details about location are subordinated to detail about topic, and thus make up a lower level of construal. Because a high-level construal is more likely to remain unchanged as an individual gets closer or further away from the object (temporally, spatially, socially, and hypothetically), CLT proposes that people use increasingly higher levels of construal to represent an object as the psychological distance increases. For instance, people may describe spending good time with their friends as "having fun" if it will happen in the distal future, yet they would represent it as "watching movie" if they are representing an event that is happening relatively soon, such as tomorrow, especially when the event is already part of the plan.

As psychological distance increases, the construal level becomes more abstract, and vice versa (Trope & Liberman, 2010). Although the construal level and psychological distance are related, they are different concepts. The construal level is about the perception of what will occur, which emphasizes the representation of the event itself; psychological distance refers to "the perception of when an event occurs, where it occurs, to whom it occurs, and whether it occurs" (Trope & Liberman, 2010, p.4), and it consists of four types of distance: temporal distance, spatial distance, social distance, and hypothetical distance. For the purposes of this study, I am going to focus on temporal distances, because as I detail next, temporal distance is the most relevant to healthcare

encounters, yet other three types of psychological distances will also be explained to clarify the reason why they are not included in this study.

Temporal distance. Temporal distance indicates whether certain objects are close or far away in a time frame (Trope & Liberman, 2010). As stated, a higher-level construal will lead to perceptions of distant future, as supported by numerous studies. For instance, Liberman, Sagristano, and Trope (2002) examined temporal differences in construal. Participants in the study were asked to imagine a set of scenarios that will occur in either near or distant future. Then they were group a set of related objects (e.g., tent, ball, snorkel) into as many groups as they considered appropriate. The result turned out to be consistent with the researchers' predictions/CLT: participants thinking about the scenario occurring in the distant future categorized the objects in more superordinate, abstract terms, and they created fewer groups for the objects than participants in the near future condition. Research has examined how temporal construal perspective can influence people's salient beliefs regarding changing to a healthier diet (Lutchyn & Yzer, 2011). Research finds that people generate more feasibility beliefs, which means they think more about whether they have the good condition and are possible to carry out the behaviors, if they think about proximal behaviors. On the contrary, people have more desirability beliefs when they believe that their diet changing behavior is distal (Herzog, Hansen, & Wänke, 2007; Lutchyn & Yzer, 2011; Orbell & Hagger, 2006). This affects people's perception of persuasive message and the effect of persuasion when they are exposed to message with positive or negative future consequence (Orbell & Hagger,

2006). These findings have implications about how health providers can apply different temporal construal to encourage either desirability beliefs or feasibility beliefs of patients; these beliefs could affect individual's decision about whether to comply or not.

Spatial distance. Spatial distance deals with perceptions of whether the objects or representations is physically proximal or further away. Spatial distance is also associated with levels of construal. For instance, Fuijta and colleagues (2006) examined students at NYU's Washington Square campus to see the influence of spatial distance on mental construal. The students were asked to imagine helping a friend moving into a new apartment as described "outside of New York City, about 3 miles away from here" (Spatially near condition) or "outside of Los Angeles, about 3,000 miles away from here" (Spatially distant condition). Then students were required to imagine some behaviors related to this scenario. Students in the spatially distant condition had stronger preferences for high construal level actions (securing the house) than participants in the spatially near condition, who had stronger preferences for low construal level actions (locking the door). Thus, it is evident that spatial distance can have an impact on the level of construals in people's perception. Nonetheless, because patient-provider communication in clinics happens in a face-to-face context, the scenario in this study will be set in a face to face context. Thus, spatial distance is less relevant and will not be controlled in the experimental scenarios.

Social distance. Social distance refers to how similar people see themselves in relation to others. The more similar, the more socially proximal they usually seem.

Liviatan, Trope, and Liberman (2008) conducted a study about social distance, in which participants were asked to read about a person who either attended similar or different classes as themselves. Then they imagined the student engaging in a variety of activities. For each activity, participants were asked to choose between a subordinate action identification (description focusing on how the action is performed—low level construal) and a superordinate action identification (description focusing on why the action is performed—high level construal). Results show that superordinate relative to subordinate action identifications were great for a dissimilar rather than similar target, if the dissimilar target's actions were represented in higher level terms than similar the target's actions (Liviatan, Trope, & Liberman, 2008).

In the field of communication studies, social distance may affect the persuasiveness of messages on shaping people's mental representations of the message. In a study, Nan (2007) found interactive effects of social distance and gain-loss framing on persuasion, in which the persuasive impact of a grain frame increases when people make judgements from a socially distant entity compared with a social proximal entity, and on the contrary, the persuasive impact of a loss frame decreases when people make judgements from a socially distant entity compared with a socially proximal one. Based on these studies, it is reasonable to conclude that suggestions and instructions given by health providers could be treated differently by patients when the doctor is from a different culture versus the same culture due to differences in perceived social distance. In this study, social distance between immigrant patients and health providers is high

because patients and health providers are from different cultural background. Thus, social distance is not considered to be a variable condition in this study.

Hypothetical distance. Hypothetical distance refers to the probability that certain events will occur. An event that does not seem to happen will seem more distant than an event that is very likely to happen. In other words, the lower the probability of the event, the greater its psychological distance (Wakslak, Trope, Liberman, & Alony, 2006). For instance, when asked to group objects related to each of four scenarios (hosting a friend in New York City, going on a campaign trip, moving apartments, and having a yard sale) into as many groups as they thought appropriate, participants should imagine in which scenario they were either highly likely or highly unlikely to engage. The result demonstrated participants in the high-likelihood scenario created more categories in classifying objects than those in the low-likelihood scenario (Wakslak et al., 2006), demonstrating that high hypothetical distance (event is unlike to happen) is associated with high construal level (less categories) and vice versa. However, because of the emotional concern for the patients, especially when the patients have severe illness, health providers will usually choose not to provide an estimate of patient health condition or any consequence (Lamont & Christakis, 2001), which means health provider tend to provide more accurate information to patients than an estimation. Thus, hypothetical distance will not be assessed in this study.

Research demonstrates the contribution of CLT and psychological distances on explanation of human prediction and evaluation, which shows potential impact on

communication process. For instance, according to CLT, predictions about the future should be based on high-level rather than low-level construal, since superordinate characteristics of an event would not change much as the level of distance changes. Thus, research has found individuals will have more confidence in their prediction of distant future events based on the high-level construal than the low-level construal (Nussbaum, Liberman, & Trope, 2006). It would be expected that patients will be more confident about improving health conditions (high construal) than taking a walk for two hours daily (low construal) because there are much more aspects that may disrupt the plan when considering the low construal construct. In addition, psychological distance also influences people's evaluations of future events and behaviors. Much research indicates that being near or distant in different distance dimensions may determine the main concern when people are making decisions (e.g., Liberman & Trope, 1998; Todorov, Goren, & Trope, 2007; Trope & Liberman, 2000). For instance, when considering psychologically distant objects, people will more likely to focus on the primary features than the secondary features. When people were asked to imagine buying a radio either the next day or in one year for listening to morning programs, they think about the purchase in the distant future express more satisfaction when the sound quality (central feature) was good rather than when the clock on the radio (peripheral feature) was good (Trope & Liberman, 2000). Similar effects apply to desirability and feasibility concerns when people evaluate goal-directed action (Trope, Liberman, & Wakslak, 2007), such that high-level construals of an activity should emphasize desirability concerns (whether

people want to take action) whereas low-level construals of an activity should emphasize feasibility concerns (whether the condition is good for taking action). Liberman and Trope (1998) examined this prediction in the dimension of temporal distance and found out when the outcomes were desirable but hard to obtain, attractiveness of the outcome increased over time; whereas when outcomes were less desirable but easy to obtain, attractiveness decreased over time.

The research using CLT and psychological distance on human perception and cognitive activity has important implications for applying CLT with AUM Theory. CLT explains effects of messages used by health providers on patients' anxiety and uncertainty management process during patient-provider communication. The management of anxiety and uncertainty is a cognitive process (Gudykusnt, 2005), wherein there is much information that forms people's perceptions. CLT is a good supplement to AUM Theory because it examines the cognitive mechanism of how people transcend themselves from here and now to a spatial and temporal distant place. In the context of health communication, health-providers may give instructions for patients to better comply for the treatments and recommendations. The expected outcome medication compliance will manifest as either the proximal or distant future, which will have an impact on patients' perception of the instruction and whether they have easy access to the concrete details of the instructions. Additionally, in intercultural health communication context, patients and health providers are from different cultural context, indicating that the social distance between patients and health providers relatively higher than it is when patients and health

providers are from the same culture. This could possibly amplify the experience of anxiety and uncertainty during patients' clinical visit. Moreover, due to the complicated nature of uncertainty in health communication, there are multiple aspects where psychological distance can influence the experience of uncertainty, which finally affect communication between patients and health providers. For instance, whether a disease is acute or chronic corresponds with proximal/distal temporal distance. According to CLT, patients with acute health issues will have more feasibility concerns (e.g., time, money etc.) when it comes to rehabilitation plan while patients with chronic disease will concern more about their desirability (Trope, Liberman, & Wakslak, 2007; Lutchyn & Yzer, 2011). These conditions may possibly affect patients' understanding of health-providers' educational or instructional message, which may further influence patient-provider communication effectiveness, even patient adherence. Thus, the current study is going to examine the effect of construal levels and temporal distance on patients' anxiety and uncertainty management.

To sum, CLT asserts that psychological distance from an object or an event should be more closely related to time and social distance than to its inherent properties, while the construal level of object or event should be more closely related to its inherent properties (the occurrence of the objects and issues in a scenario verses the characteristics of objects and issues). Moreover, different psychological distances are inter-related and can influence one another. For instance, people use spatial metaphors to represent temporal distance, the spatial distance can also serve as the indicators of social distance,

such as choosing a more distant seat from a stranger is reflecting social distancing from that person (Trope & Liberman, 2010). Different dimensions of psychological distance and different construal levels co-construct the whole picture of individual's perception of almost anything in the world.

In this study, effects of high or low construal levels will be examined within the context of temporal distance messages for the following reasons. First, among four dimensions of psychological distance, time is a key factor when health provider is giving suggestions for patient recovery, which will influence patient's adherence (Reach, 2009a). More importantly, compared with temporal distance, social distance is relatively high in cross-cultural health context, and spatial and hypothetical distance are less closely related to the fixed space of clinical settings and procedural interaction between patients and health-providers. Additionally, temporality of messages is important since time is the element that is unavoidable during interpersonal encounters. For example, when discussing educational programs using short-term rewards by individuals to prevent long-term complications of chronic disease, scholars found that the concept of "prevention" disseminated by the health-providers belongs a high-level construal because of its abstract and timely remote character. High construal features influence the efficiency of patients' understanding of health providers' message that could decrease patient compliance in long-term complication prevention (Reach, 2009a). Studies based on CLT also found out that abstract long-term goals will help patients build higher goal because people tend to assign higher-level goal to remote event, and more practical and lower-

level goal to an event in the near future (Reach, 2009b). The effects of high-level construal message and low-level construal message are different: high-level construal and temporally remote goal increases patient confidence so that they will be more likely to comply; low-level construal and temporally close goal provides more instructions and facilitates the actual action patients take (Reach, 2009b). Because effects of confidence brought by further temporal distance is associated with higher level construal of messages, and behavioral practicability (guideline of certain action) from lower level construal of message on communication effectiveness is unknown, this study is going to examine effects of the construal level of messages (high/low) with different temporal distance (proximal/distal) on the relationship between anxiety/uncertainty and communication effectiveness. Thus, in intercultural health communication context, the following hypothesis combing AUM and CLT is postulated.

H12: There is a significant difference in the strength of relationship between variables in the model among immigrants who are exposed to different message conditions (High construal level vs Low construal level).

The hypothesized model is shown in Figure 1. In next chapter, methods used in this study will be introduced, including the design of pilot study and main study, sample recruitment, manipulation check, measurement for each variable, and statistical analysis used in this study.

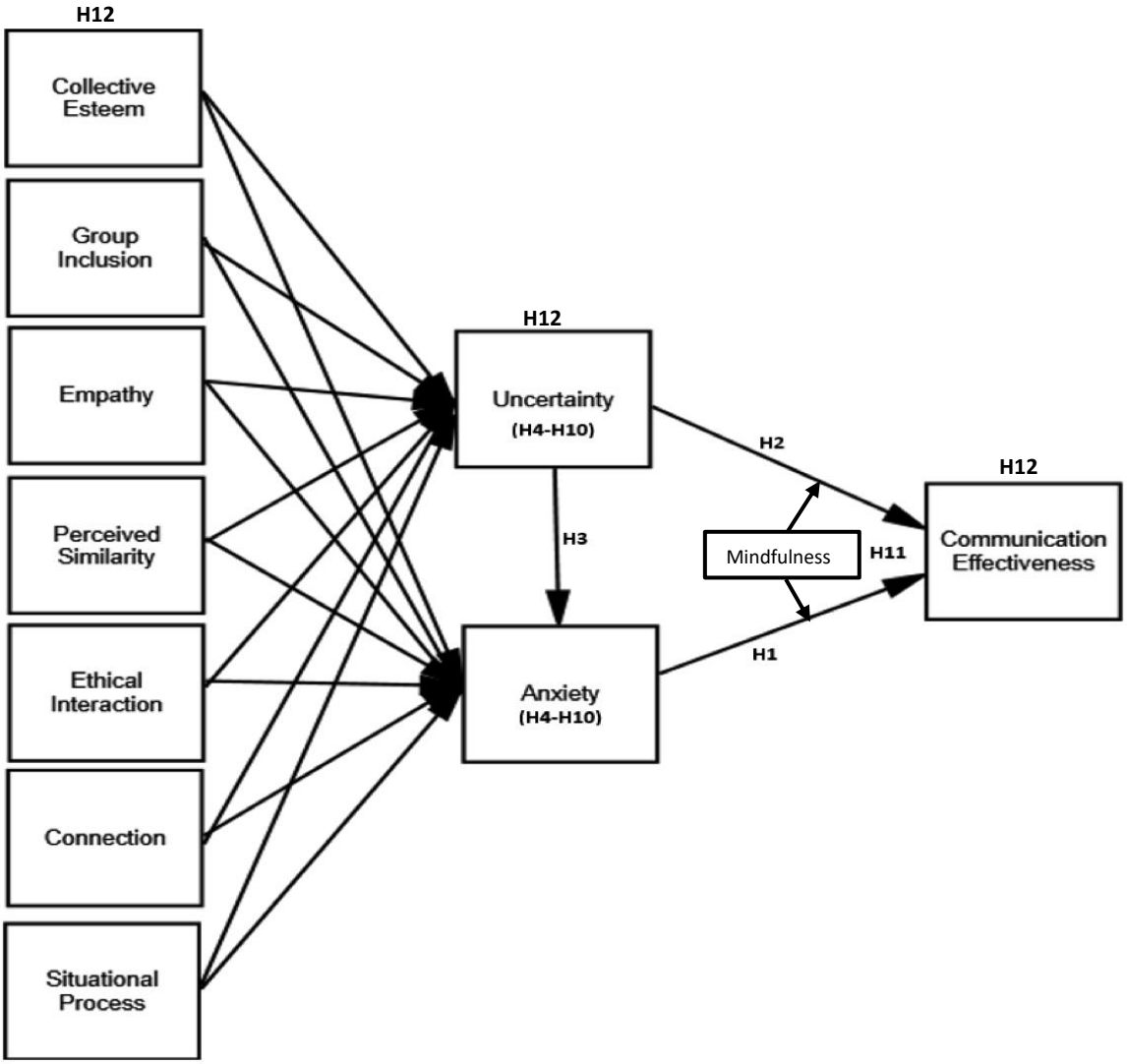

Figure 1. *The hypothesized AUM model*

Chapter 3: Pilot Study Methods and Results

The goal of this study is to examine the model of Anxiety and Uncertainty Management Theory (AUM) under different message conditions of construal level and psychological distance. The methods used for this dissertation project included experimental design and causal modeling (path model). The study tested AUM model in a cross-cultural health context and under different message conditions to see the effects of these messages. To make sure the messages used in this study can be distinguished by participants based on the message construal level and temporal distance, a pilot study was conducted to verify the participants' understanding of the message. This chapter will explain the methods used for the pilot study and the results.

Pilot Study Design

To test whether participants can recognize differences between experimental scenarios, 100 participants were recruited from Amazon Mechanic Turk (M-Turk). M-Turk is an internet platform that enables the crowdsourcing of human intelligence to perform tasks requested by customers. Human intelligence task (HIT) workers receive monetary compensation upon the completion of tasks. I expected that participants assigned would be able to tell the differences between the high construal message and the low construal message, the proximal temporality and the distal temporality. In order to participate in the research, participants should meet the following criteria: 1) have visited their health care provider within the last six months, 2) English is not their first language, and 3) Non-US citizen. Participants were paid $1 for their participation and had access to

the study via the link I provided. Survey questions were created using the Qualtrics survey website. Participants were randomized to one of the four message conditions: 1) High construal with proximal temporality, 2) High construal with distal temporality, 3) Low construal with proximal temporality, and 4) Low construal with distal temporality. To make sure participants spent enough time reading the message conditions, the timer option was applied for each of the scenarios. After participants were assigned to the scenario, they had to remain in the scenario for at least 45 seconds and could not skip the scenario to answer the questions. During these 45 seconds, participants' mouse cursor clicking frequencies were recorded to keep track of their survey-taking activities. After 45 seconds, participants could proceed to the survey questions about their perceptions of the message construal level and the temporal distance using seven-point bipolar items.

Measures

The participants' understanding of message construal level and temporal distance were measured by seven-point bipolar scales I created based on Constural Level Theory (CLT) literature. According to the definition of construal level and temporal distance, four groups of antonyms were used to construct bipolar items for construal level and temporal distance, respectively. Each item started with the prompt: "You think the doctor's suggestion you just read is/will …" and is followed with descriptive antonymous words: concrete/abstract, specific/nonspecific, temporally close/temporally far-away, and happen soon/ happen in the far future. Participants marked on the seven-point bipolar scale to assess their perceptions of the message they received from the physician in the

scenario. I conducted an exploratory factor analysis (EFA) using principle axis factoring technique and varimax rotation to assess whether the measure created were measured on one factor. Guidelines for determining number of factors were: eigenvalues greater than one and factor loading greater than .60, but not greater than .40 for any other factor. I also conducted a confirmatory factor analysis using AMOS 21.0 to confirm the single factor construct of the measure. Scores for participants' understanding of each message condition was calculated as the average of these items, with a higher value representing higher construal level and more distal temporality of the message.

Data Analysis

Independent t-test was conducted to compare the differences in participants' understanding of construal level and temporal distance. Data were combined to yield two groups in order to test the understanding of high/low construal level and proximal/distal temporal distance, respectively. The grouping variable of participants randomization (from group 1 to group 4) was automatically generated by Qualtrics. Data were downloaded from Qualtrics and cleaned to remove unqualified participants from the study. The final number of participants was 83 who were assigned in four different message conditions (Group 1 = 20, Group 2 = 21, Group 3 = 20, Group 4 = 22). Most of the participants were originally from India (n = 59), Europe (n = 5), Mexico (n = 5), and China (n = 5). The grouping variable was coded to conduct independent t-test (high construal versus low construal; proximal temporality versus distal temporality).

Results

The EFA showed that all four items loaded on one factor respectively for either construal level (KMO = .77) or temporal distance (KMO = .66). The confirmatory factor analysis also showed a good factor loading of each item. I then proceeded to create combined measures of construal level and temporal distance to conduct the independent *t*-tests. The results of the *t*-tests showed that there is a significant difference between participants' understanding of construal levels of messages, $t = 2.64$, $df = 81$, $p = .01$. Descriptive statistics were shown in Table 2. This result indicated that participants could distinguish the high construal message from the low construal message. However, there was no significant difference in participants' understanding of the proximal temporality and the distal temporality. This finding indicated that participants were not able to tell the difference between the proximal and distal temporal distances. Further evidence in the results showed that participants perceived the proximal temporality condition as very similar to the distal temporality condition (Proximal temporality: $M = 3.56$, Distal temporality: $M = 3.73$).

There are several explanations for these findings. Although CLT states that the construal level is associated with all four types of psychological distances, including the temporal distance, little research has crossed or combined the temporal distance and the construal level in a single message. It is likely that that effects of construal level of the message outweighs the influence of temporality on people's understanding. Because research on construal level and temporal distance are correlation-based studies (Trope &

Liberman, 2010), which always investigate construal level and temporality separately, and participants cannot distinguish the differences between temporal distances, message conditions were modified to remove the descriptions of temporal distances and only construal levels were kept in the messages in the main study (high construal message versus low construal message).

Chapter 4: Main Study Methods

This chapter explains the methods for the main study including study design and procedure, sample size, message conditions, measures for variables in the AUM model, and statistical analyses that were applied.

Design and Procedure

Similar to the recruitment in pilot study, participants were recruited from Amazon Mechanic Turk (M-Turk) and were paid $1 for their participation. Upon providing consent, participants were asked several pre-screening questions to make sure they met the criteria of the study. Criteria that participants should meet to participate in the study were the same as in the pilot study. Specifically: 1) participants must have visited their health care providers within the last six months; 2) English is not their first language; 3) they are non-US citizens. Participants who did not meet the any of the above criterion were directed to end their research participation. Participants who met the criteria and continued on were first presented with a series of measures regarding their individual psychological factors including self-concept, motivation to interact, reactions to strangers, social categorization, situational processes, ethical interactions, and perception of mindfulness. Then, participants were randomly assigned to one of two groups to read one of two messages regarding a health provider's advice within different construal levels: high construal message and low construal message (Message scenarios are listed in Appendix C). In the messages, temporal distances were controlled for by using proximal temporality in both message conditions. When reading the message, participants

were asked to imagine they are communicating with a health provider who is from a culture different to theirs. Similar to the survey setting in the pilot study, participants were required to stay on the message page for at least 45 seconds to make sure the participants read the message. Then they were directed to a series of measures about the connections with the health provider, state anxiety about the communication, uncertainty levels with the health provider, and perceived communication effectiveness regarding the health provider from the scenario given. Last, participants were asked to report their demographic information (i.e., sex, national origin, age, educational background, etc.). The study procedures are shown in Figure 2.

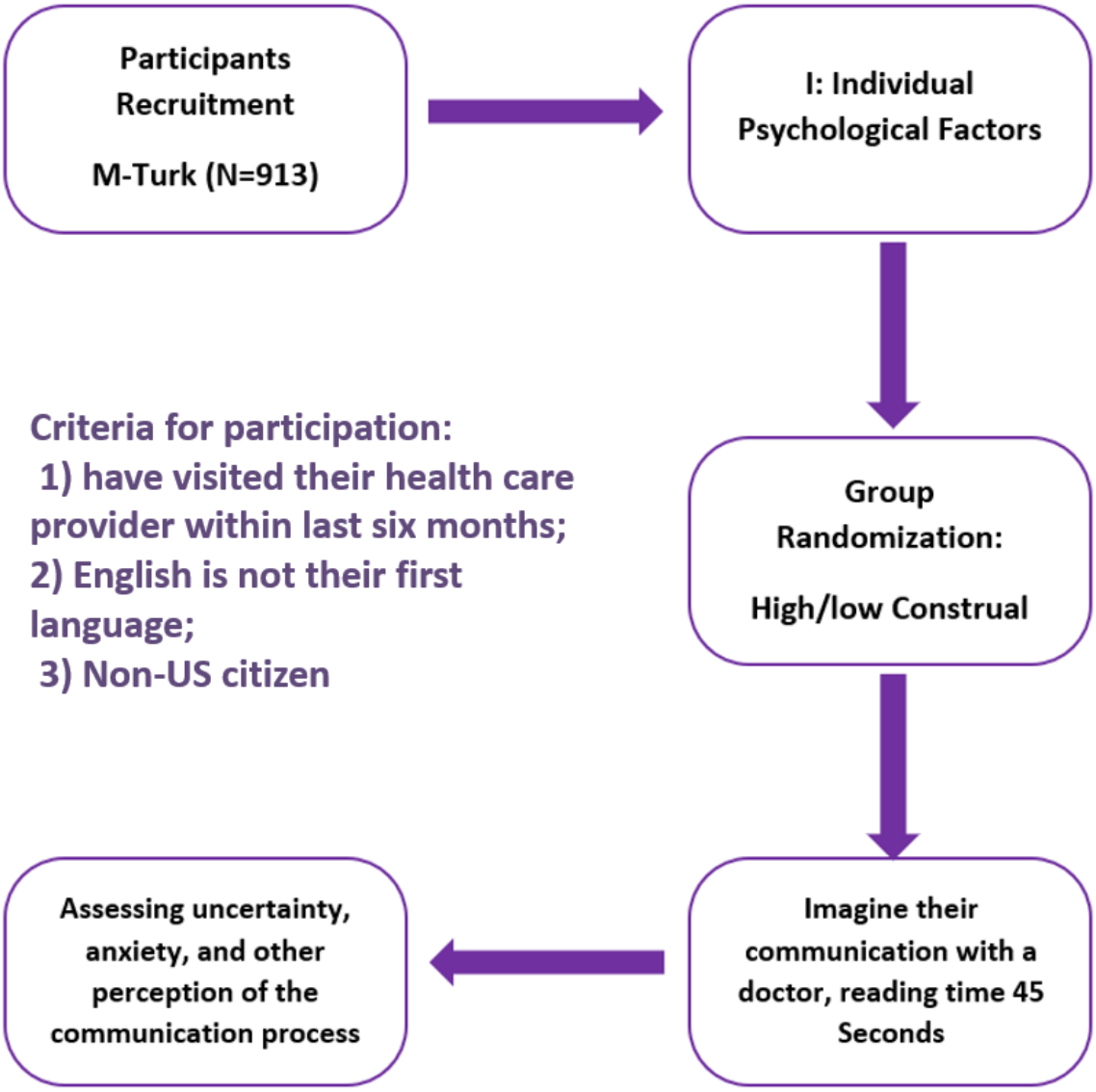

Figure 2. *Study Design*

Sample Size

The application of SEM requires large samples (Kline, 2015). There is no consensus on a general rule of thumb about how large the sample size should be. This is because sample size in SEM is determined by multiple factors such as the complexity of the model, whether outcome variables are continuous or not, score reliability, and the type of models (Kline, 2015). However, Kline (2015) suggests Jackson's (2003) *N:q rule* for latent variable models (the path model is a special case of SEM) in which all outcomes are continuous and normally distributed and the estimation method is maximum likelihood. That is, researchers determine the minimum sample size in terms of the ratio of number of cases (N) to the number of model parameters (q) required for statistical estimates. For instance, if a model contains $q = 10$ parameters required for statistical estimates, then a minimum sample size would be $20q$ which is 200 (Kline, 2015). There were 32 parameters to estimate in this study, thus requiring at least 640 participants according to the *N:q rule.* Considering some cases may be excluded from the final analysis due to errors in response or poor data quality, I planned to recruit 1000 participants in the main phase of the study for the quality of analysis. In total, 913 participants, who met the recruitment criteria, completed the whole process of the study, which generally met the estimated sample size.

Messages

Message scenarios were designed in a context of nutritional counseling (Holli & Beto, 2014). According to H12, messages should be a 2 × 2 factorial design in terms of

different combinations of construal levels and temporal distances (high construal and close temporality, high construal and distal temporality, low construal and proximal temporality, low construal and distal temporality). However, based on the results of the pilot study, only construal level (high versus low) was kept. Participants were randomly presented with one of the two scenarios (See Appendix C) before they proceeded to answer the survey questions that followed. In both scenarios, participants were asked to imagine they have problems with their weight management, thus they visit Dr. Smith, who is from a different cultural background than the participants. Dr. Smith provides suggestions on physical activity and diet that they should follow. Overweight was selected as the health issue participants have because these health issues are well-known and easier to understand. Exercises and diet suggestions were created according to a guidebook of nutrition assessment (Charney & Malone, 2016).

Measures

The following sections introduce measures used in the present study. Means, standard deviations, reliability, and correlations among the variables in the model were shown in Table 1.

Anxiety. State anxiety was assessed using a modified version of the Intergroup Anxiety Scale (Stephan & Stephan, 1985; Stephan et al., 2002), that measures emotional responses experienced when interacting with people from another cultural group. This scale consisted of 10 items measured by a 10-point Likert-type scale (1 = *Not at all*, 10 = *Extremely*). For each item, the participants were asked: "Imagine you were

communicating with Dr. Smith, how would you feel compared to occasions when you are interacting with health providers from your own cultural/ethnic group?" The participants should determine to what extent they would feel awkward, self-conscious, happy, accepted, confident, irritated, impatient, defensive, suspicious, and careful when interacting with their health providers from another culture. Scores were calculated as the average of these items.

Uncertainty. Predictive uncertainty was measured using a Gudykunst scale of Behavioral Uncertainty in an intercultural context (Gudykunst, 1994). The scale consisted of ten items measured using a five-point Likert-scale (1 = *Almost never*, 5 = *Almost always*). Items were reworded to reflect the uncertainty patients have about their communication with the health provider described in the experimental scenarios (e.g., "I am not confident when I communicate with Dr. Smith," "I can interpret Dr. Smith's behaviors when we communicate"). This scale contained items for both predictive uncertainty (e.g. "I am not able to predict Dr. Smith's behaviors when we communication.") and explanatory uncertainty (e.g., "I can explain Dr. Smith's behaviors when we communicate."). Scores were calculated as the average of these items.

Background variables. In the original AUM model, Gudykunst (2005) treated background variables as latent variables measured by several observed variables and he asserted that researchers could add and take off variables to fit different research contexts. In this dissertation project, each background variable was operationalized as

one observed variable. The measurement Cronbach's alpha for each scale is shown in Table 1.

Self-concept. Self-concept was operationalized by measuring collective self-esteem. The collective self-esteem scale by Luhtanen and Crocker (1992) was used in the present study. The scale consisted of 16 items about four aspects of collective self-esteem—membership, private, public, and identity—measured by a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Items were reworded to reflect cultural aspects of self-esteem (e.g., "I am a worthy member of the cultural group I belong to," "In general, I'm glad to be a member of the culture I belong to," "Overall, my cultural groups are considered good by others," and "Overall, my cultural/ethnic group membership has very little to do with how I feel about myself"). Scores were calculated as the average of these items.

Motivation to interact. Motivation to interact was operationalized by measuring perceived group inclusion. Perceived group inclusion was measured by using the Perceived Group Inclusion Scale (Jansen, Otten, van der Zee, & Jans, 2014). It reflects people's perception of to what extent they are included in a group. This scale consisted of 16 items measured by using a five-point Likert-type scale (1 = *Strongly disagree*, 5 = *Strongly agree*). Items were reworded to reflect the perception of inclusion in the U.S. (e.g., "This country gives me the feeling that I belong," "This country gives me the feeling that I fit in", etc.). Scores were calculated as the average of these items.

Reaction to strangers. Reaction to strangers was operationalized by measuring the level of empathy. The cultural empathy scale, a short form of the Multicultural Personality Questionnaire, was used to measure the level of empathy (Van der Zee, Van Oudenhoven, Ponterotto, & Fietzer, 2013). The scale is composed of eight items measured by using a five-point Likert-type scale (1 = *Strongly disagree*, 5 = *Strongly agree*). Participants were asked to assess their cultural empathy by rating how they agree with descriptions such as "I pay attention to the emotion of others," "I will get to know others profoundly". Scores were calculated as the average of these items.

Social categorizations. In this project, social categorizations were operationalized by measuring perceived personal similarities. Perceived personal similarities were measured by using the Perceived Personal Similarities Measures (Street, O'Malley, Cooper, & Haidet, 2008). This scale consisted of four items measured by a seven-point Likert-type scale (1= *Very similar*, 7 = *Very different*). Items in this measure demonstrate the ethnic similarities and personal similarities perceived by patients (e.g., "The way others and I speak is…", "The way others and I reason about problems is…"). Scores were calculated as the average of these items.

Situational processes. Because intercultural communication competence reflects power dynamics that influence communication between intercultural dyads (Rathje, 2007), situational processes were operationalized by measuring the intercultural communication competence (ICC). ICC was measured by the Intercultural Communication Competence Scale (ICCS; Arasaratnam, 2009). This scale consisted of

ten items measured by a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Participants were asked to assess statements regarding their intercultural communication competence such as "I often find it difficult to differentiate between similar cultures", "I feel that people from other cultures have many valuable things to teach me", and "I usually look for opportunities to interact with people from other cultures" etc.). Scores were calculated as the average of these items.

Connection with strangers. Connection with strangers was operationalized by measuring interpersonal attraction. Interpersonal attraction was measured using the social attraction scale in McKroskey and McCain's (1974) Interpersonal Attraction Scale. This scale is composed of 10 items measured using a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Participants were asked to assess statements regarding their attraction level to Dr. Smith (e.g., "I think he (she) could be a friend of mine," "I would like to have a friendly chat with him (her)" etc.). Scores were calculated as the average of these items.

Ethical interactions. Ethical interactions were operationalized by measuring perceived cultural inclusiveness. Cultural inclusiveness has been shown to have a positive association with intercultural attitude, which reflects the attitude toward communication and relationships between sojourners and natives (Tawagi & Mak, 2015). Perceived cultural inclusiveness was measured by a seven-item, five-point Likert-type scale (1 = *Strongly disagree*, 5 = *Strongly agree*; Tawagi & Mak, 2015) adapted from Ward and Masgoret (2004). Items were reworded to reflect intercultural communication between

strangers (e.g., “I feel cultural differences are respected in this country,” “I feel included in this country”, etc.). Score were calculated as the average of these items.

Mindfulness. Mindfulness was measured using the Langer Mindfulness/Mindlessness Scale (MMS; Haigh, Moore, Kashdan, & Fresco, 2011). This scale contains nine items measured by a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*). Items reflect the mindfulness regarding openness to new categories and active awareness (e.g., “I attend to the big picture”, “I like to figure out how things work”). Scores were calculated as the average of these items.

Communication effectiveness. Communication effectiveness was operationalized as a latent variable composed of two observed variables: information giving and information verifying. Because communication effectiveness is defined as minimization of misunderstanding during patient-provider communication and the scenarios provided in this study are about provider’s communication, sub-scales of patients’ perception of providers’ information giving and information verifying from the Medical Communication Competence Scale (MCCS, Cegala, Coleman, & Turner, 1998) were used to correspond with the definition of communication effectiveness. The scale of information giving consisted of four items and the scale of information verifying consisted of five items. Both scales were measured by using a seven-point Likert-type scale (1 = *Strongly disagree*, 7 = *Strongly agree*). A prompt was provided for participants before they took the survey: “Imagine your communication with Dr. Smith, who is from a cultural background different to yours, and based on the scenario you read, to what extent

will you agree with the following statements?" Participants assessed statements such as "Dr. Smith explained what I could do to get better to my satisfaction", "Dr. Smith did a good job of making sure I understood his/her directions". Scores were calculated as the average of these items for each observed variable.

Table 1. *Means, standard deviation, reliability, and correlations among the variables in the AUM model*

Variable	*M (SD)*	α	1	2	3	4	5	6	7	8	9	10	11
1. Communication Effectiveness	5.28 (1.00)	.91	--										
2. Situational Processes	2.39 (.79)	.80	-.32**	--									
3. Collective Esteem	4.74 (.90)	.86	.17**	-.01	--								
4. Group Inclusion	3.47 (.82)	.96	.35**	-.20**	.00	--							
5. Level of Empathy	3.95 (.54)	.80	.50**	-.31**	.29**	.28**	--						
6. Perceived Similarity	4.38 (1.40)	.87	.11**	-.25**	-.32**	.11**	.11**	--					
7. Ethical Interactions	3.56 (.72)	.88	.46**	-.36**	.01	.70**	.37**	.14**	--				
8. Mindfulness	5.59 (.87)	.90	.57**	-.29**	.28**	.31**	.71**	.10**	.39**	--			
9. Connection with Strangers	4.63 (.86)	.72	.35**	.09**	.58**	.04	.31**	-.28**	.11**	.29**	--		
10. Uncertainty	2.52 (.58)	.75	-.26**	-.13**	-.63**	-.01	-.31**	.34**	-.02	-.31**	-.71**	--	
11. Anxiety	4.61 (1.63)	.82	-.17**	-.17**	-.50**	.02	-.22**	.33**	.03	-.20**	-.62**	.66*	--

Note: *p<.05, **p<.01, ***p<.001

Chapter 5: Main Study Results

This chapter reports the results of this project. The purpose of this study was to validate the model of Anxiety/Uncertainty Management in the context of cross-cultural patient-provider communication and explore whether message construal level played a role in influencing anxiety/uncertainty management. This chapter will introduce sample demographics of the main study and more importantly, the findings regarding the testing of the AUM model, moderating effect of mindfulness, and the role of the message construal level.

Participants Demographics

Data from 913 participants were recorded as valid for this study (63.4% male and 36.0% female). Participants are originally from 66 countries worldwide. Specifically, 579 of the participants were from India, 31 were from Mexico, 28 were from China, 14 were from Venezuela, and 10 were from Philippines. None of the other countries had 10 or more than 10 participants (less than 1% of the total sample). On average, participants stayed in the United States for a little more than 4 years. Of the participants, 56.7% had attended college and 29.7% had master's degree. The majority of participants (80%) had an annual income less than $70,000 and many participants (36.3%) had an annual income less than $30,000. Descriptive statistics for participant demographic information are reported in Table 2.

Table 2. *Descriptive statistics of participant demographics*

Variable	*N* = 913
Participants	*M* Age (*SD*) = 21.93 (8.02)
Sex	
Females	36.1%
Males	63.5%
National Origins	
India	63.4%
Mexico	3.40%
China	3.07%
Venezuela	1.53%
Philippines	1.10%
Years in the U.S.	
1-3 years	66.3%
3-5 years	13.8%
5-10 years	9.2%
>10 years	10.7%
Educational Level	
High school	9.5%
Bachelor's Degree	56.8%
Master's Degree	29.7%
Doctoral Degree	2.6%
Annual Income	
Less than 30000	36.5%
$30000-$50000	29.7%
$50000-$70000	17.3%
$70000-$90000	10.4%
$90000-$110000	4.1%
>$110000	2.1%

Analysis I: Model of Anxiety/Uncertainty Management—Mediation Effects

To test the hypothesized model, the overarching model fit was assessed using IBM AMOS 21.0. Multiple imputation technique was used to generate multiple files without missing data and then the means of imputed missing values were used to generate final, single imputed data. The final data was entered into the model created in AMOS to analyze parameters using maximum likelihood procedures. Model fit was assessed using four guidelines: 1) the model's Chi-square should be non-significant; 2) the model's comparative fit index (CFI) should exceed .95; 3) the standardized root mean square residual (SRMR); and 4) the root mean square error of approximation (RMSEA) should not exceed .08 (Kline, 2016). To obtain the confidence intervals for total effects, direct effects, and indirect effects, a bias-correcting bootstrap with Monte Carlo approach simulation was applied with 10000 times of replication. The result showed that the Model of Anxiety/Uncertainty Management fit poorly to the data, $\chi^2 = 429.92$, $df = 7$, $p < .001$, CFI = .88, SRMR = .11, RMSEA = .26. To improve the model fit, according to the trimming guidelines from Kline (2015), non-significant paths were trimmed one by one to improve the global model fit, starting from the most non-significant one. The final model of AUM showed good fit to the data, $\chi^2 = 2.72$, $df = 2$, $p < .257$, CFI = 1.00, SRMR = .005, RMSEA = .02. The final model is shown in Figure 3.

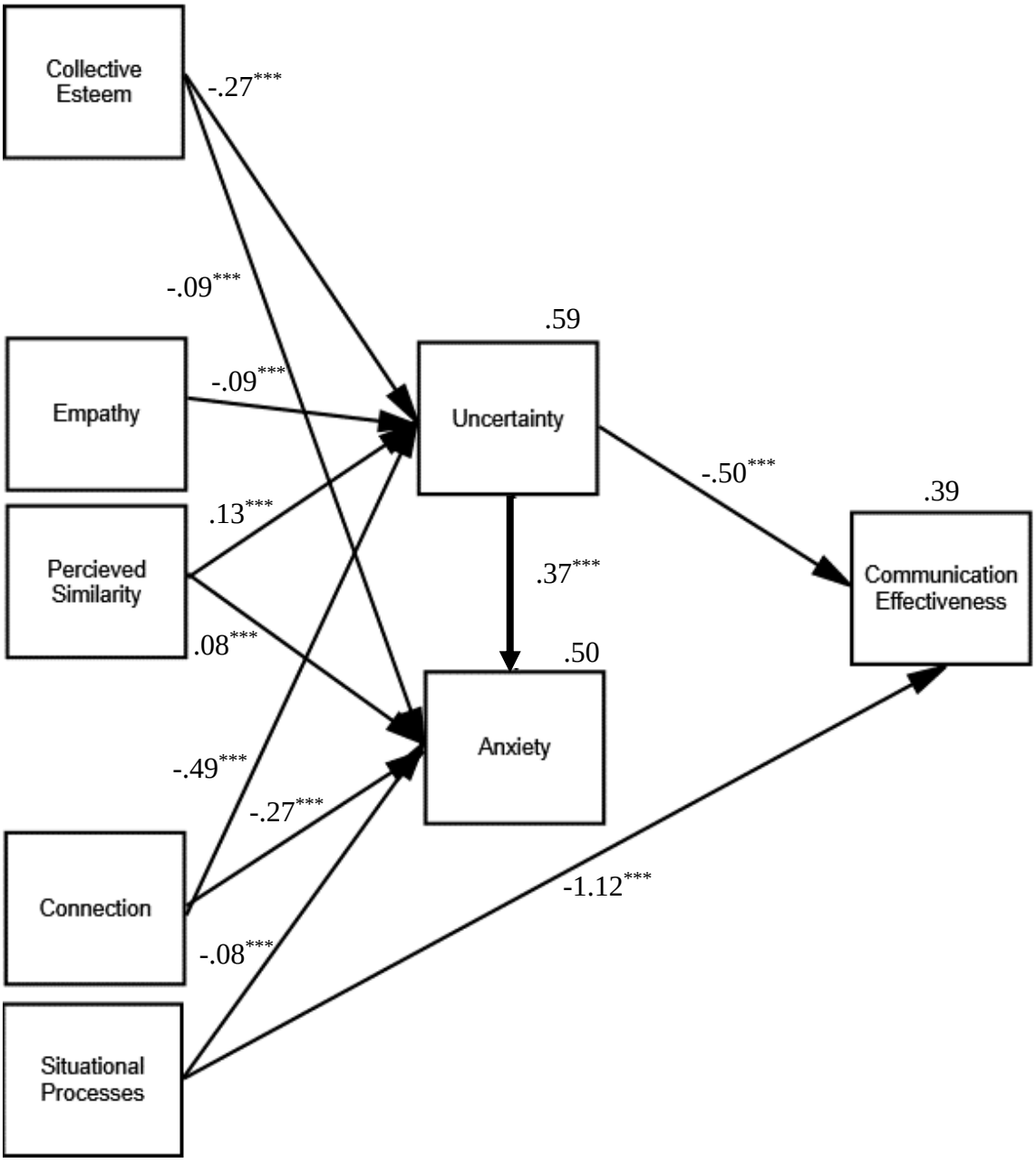

Figure 3. Final AUM model in the context of cross-cultural patient-provider communication

Note: Values above each path are standardized coefficients; values above anxiety, uncertainty, and communication effectiveness are squared multiple correlations (R^2)

H1 proposed that anxiety is negatively related to communication effectiveness during intercultural patient-provider interactions. Results showed that anxiety does not significantly predict communication effectiveness during intercultural patient-provider communication (the path between anxiety and communication effectiveness has been removed). Thus, H1 was not supported.

H2 proposed that uncertainty is negatively related to communication effectiveness during intercultural patient-provider interactions. According to the final model testing output, uncertainty significantly predicted communication effectiveness, β = -.50, p < .001. Thus, H2 was supported.

H3 proposed that uncertainty positively predicts anxiety, such that the more uncertain people are, the more anxious they will be during their communication with health providers from a different cultural background. The results showed that uncertainty was positively related to anxiety, β = .37, p < .001. Thus, H3 was supported.

H4 stated that there is a negative indirect effect of self-concept on communication effectiveness through anxiety and uncertainty. Self-concept was operationalized as collective self-esteem in this study. The model analysis output showed that the indirect effect of collective self-esteem on communication effectiveness was significantly positive, β = .14, p < .001, 95% CI = [.09, 19]. This was in the opposite direction of the hypothesis. Thus, H4 was not supported.

H5 stated that there is a positive indirect effect of motivation to interact on communication effectiveness through anxiety and uncertainty. Motivation to interact was

operationalized as group inclusion in this study. The model analysis output showed that group inclusion was excluded from the model during the model trimming processes, indicating that the model with group inclusion did not fit well to the data. Therefore, H5 was not supported.

H6 stated that there is a positive indirect effect of reactions to strangers on communication effectiveness through anxiety and uncertainty. Reactions to strangers was operationalized as level of empathy in this study. The model analysis output showed that the indirect effect of level of empathy was significantly positive, $\beta = .04$, $p < .001$, 95% CI = [.02, .07]. Since the indirect effect was only through uncertainty but not anxiety, H6 was partially supported.

H7 proposed that there is a positive indirect effect of social categorization on communication effectiveness, through anxiety and uncertainty. Social categorization was operationalized as perceived similarity in this study. The final model analysis output showed that opposite of predictions, the indirect effect of perceived similarity on communication effectiveness was significantly negative, $\beta = -.06$, $p < .001$, 95% CI = [-.10, -.04]. Thus, H7 was not supported.

H8 stated that there is a positive indirect effect of situational processes on communication effectiveness, through anxiety and uncertainty. Situational processes were operationalized as intercultural communication competence in this study. The final model analysis output showed that situational processes were excluded from the model during the model trimming processes. Thus, H8 was not supported.

H9 proposed that there is a positive indirect effect of connection with strangers on communication effectiveness, through anxiety and uncertainty. Connection with strangers was operationalized as interpersonal attraction in this study. The final model analysis showed there was a significant positive indirect effect of connection with strangers only through uncertainty on communication effectiveness, $\beta = .25$, $p < .001$, 95% CI = [.16, .33]. Thus, H9 was partially supported.

H10 proposed that there is a positive indirect effect of ethical interactions on communication effectiveness, through anxiety and uncertainty. Ethical interactions were operationalized as perceived cultural inclusiveness in the present study. The final model analysis showed ethical interaction was not related to uncertainty. Thus, H10 was not supported. As a whole, the AUM model accounted for 59% of the variance in uncertainty and 39% of the variance in communication effectiveness. All of the significant indirect effects, direct effects, and total effects are shown in Table 3.

Table 3. *Indirect effects, direct effects, and total effects*

Background Variable	Indirect Effects	Direct Effects (on Uncertainty)	Total Effects
Collective esteem	.14 [.09, .19]	-.27 [-.33, -.22]	.14 [.09, .19]
Level of empathy	.04 [.02, .07]	-.09 [-.14, -.04]	.04 [.02, .07]
Perceived similarity	-.06 [-.10, -.04]	.13 [.08, .17]	-.06 [-.10, -.03]
Connection with strangers	.25 [.16, .33]	-.49 [-.54, -.42]	.25 [.16, .33]

Analysis II: Interaction Effects between Mindfulness and Anxiety/Uncertainty

The AUM model also explains the role of mindfulness in intercultural encounters. H11 proposed that uncertainty and anxiety negatively influence communication effectiveness more for immigrants who are less mindful than for those who are more mindful. Since adding mindfulness to the existing model required further modification to the final model to achieve good model fit, the interaction effects between mindfulness and anxiety/uncertainty were analyzed using PROCESS V3.0, which has the established model templates to simplify the analysis (Hayes, 2017). Model 14 was selected as the conceptual diagram template for the analysis (Figure 4) as significant background paths were taken into consideration (moderated mediations). -1 SD, mean, +1 SD of mindfulness were selected as conditioning values to examining the significance of mediation effects of each background variable at different level of mindfulness. The results showed that there was a significant interaction between mindfulness and uncertainty when the background variable is collective self-esteem, level of empathy, perceived similarity, and connection with strangers, respectively, indicating that when people are less mindful during the communication processes, uncertainty has a stronger negative impact on communication effectiveness than when people are more mindful. Because anxiety was not significantly related to communication effectiveness, H11 was partially supported. Noticeably, results also showed that when examined independently instead of in the whole model, uncertainty did not significantly mediate the relationship between reactions to strangers (level of empathy), social categorization (perceived

similarity), connections with strangers (interpersonal attraction), and communication effectiveness. Model indices of interaction terms and indices of moderated mediation with 95% confidence interval for each variable are shown in Table 4.

Table 4. *Model indices in model considering interaction effects of mindfulness on communication effectiveness*

Background Variable	β	t	F	R^2	Moderated Mediation Index	Direct Effect	Indirect Effect (-1 *SD*, Mean, +1 *SD*)
Collective Esteem	0.20	3.53	582.52	0.34	-.08 [-.13, -.03]	-.06 [-.14, .01]	.18 [.09, .27]
							.11 [-.39, -.15]
							.04 [-.03, .11]
Level of Empathy	0.19	3.35	94.49	0.35	-.06 [-.10, -.02]	.31 [.18, .45]	.11 [.05, .18]
							.06 [.02, .11]
							.01 [-.04, .05]
Perceived Similarity	0.19	3.31	123.85	0.35	.03 [.01, .04]	.07 [.03, .11]	-.06 [-.09, -.03]
							-.04 [-.06, -.02]
							-.02 [-.04, .00]
Connection with Strangers	0.21	3.84	134.75	0.37	-.10 [-.16, -.05]	.31 [.22, .39]	.04 [-.06, .14]
							-.05 [-.12, .03]
							-.13 [-.21, -.06]

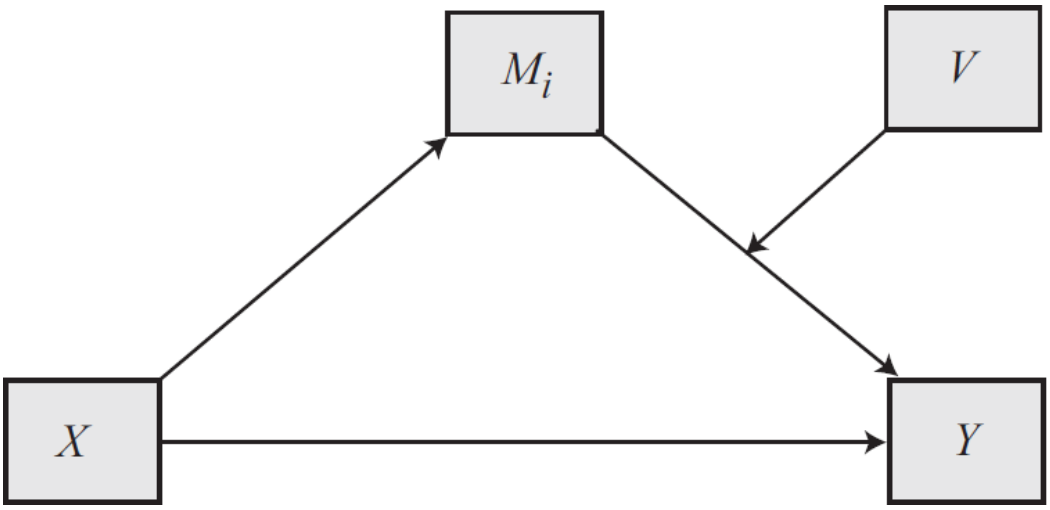

Figure 4. Model 14 in PROCESS V 3.0

Analysis III: Effects of Construal Level on Anxiety/Uncertainty Management

To parse out the effects of message construal level on the AUM model, H12 proposed that there is a significant difference in the strength of relationships between variables in the model among immigrants who are exposed to different message conditions (high construal versus low construal). To find whether there are effects of construal level on the relationships between variables in the model, multi-group path model analysis was conducted on AMOS 21.0 with the original model and the final model after model modification. The construal level was identified as the grouping variable in the analysis. The results for both the original model and the final model showed that only the path between collective self-esteem and uncertainty was significantly different ($p < .01$) between high construal group ($\beta = -.36$, 95% CI = [-.36, -.23]) and low construal group ($\beta = -.19$, 95% CI = [-.19, -.12]). The rest of these results indicated that most of the relationships between variables in the model did not vary when

participants were exposed to different message conditions. Thus, H12 was not fully supported (Figure 5a and Figure 5b). The background variables in grey boxes represent variables removed from the model but are retained to compare with the hypothesized model.

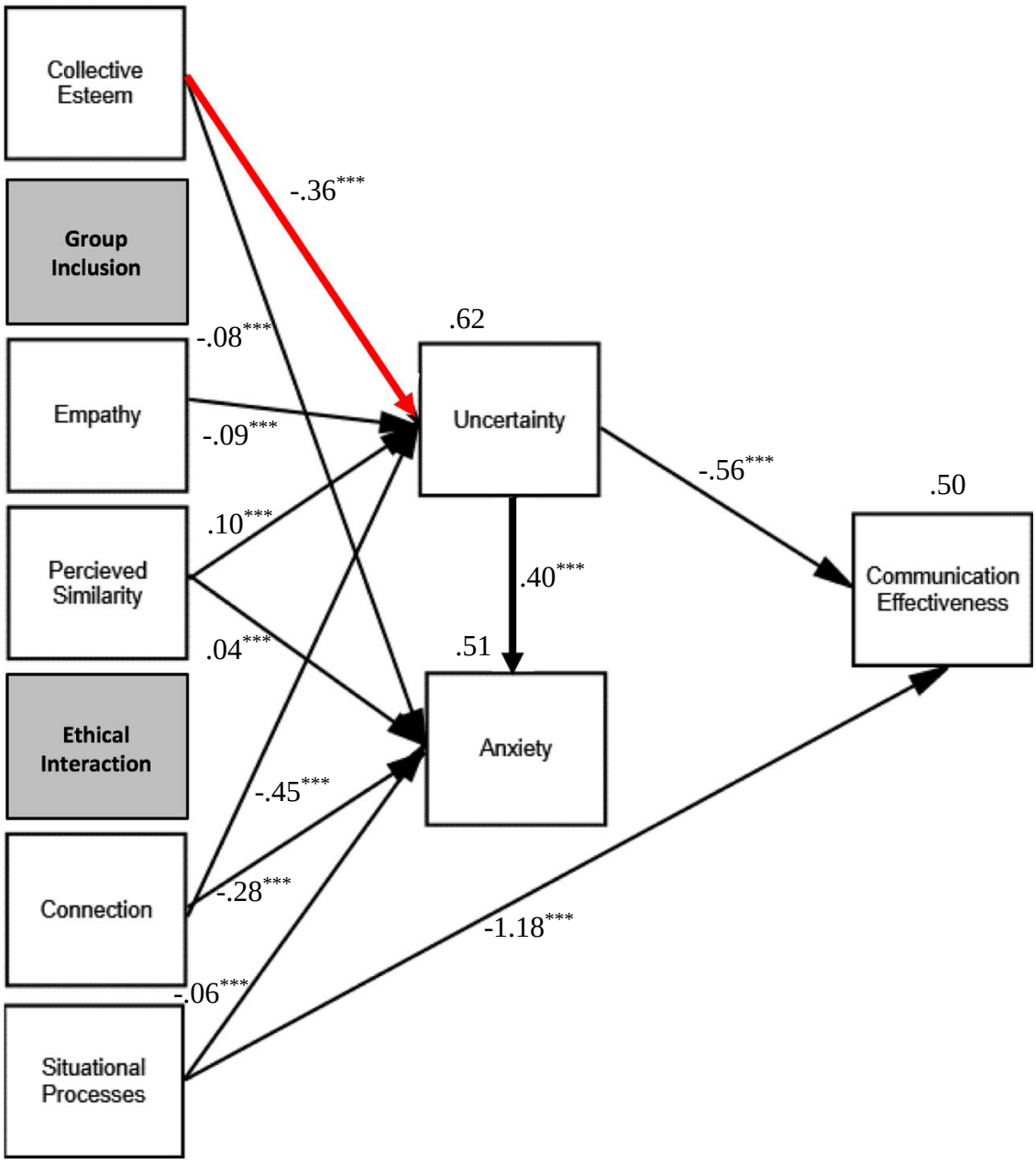

Figure 5a. Effects of construal level (high) on the AUM model
Note: The arrow in red represents the path that is significantly different across groups. Values above each path are standardized coefficients; values above anxiety, uncertainty, and communication effectiveness are squared multiple correlations (R^2)

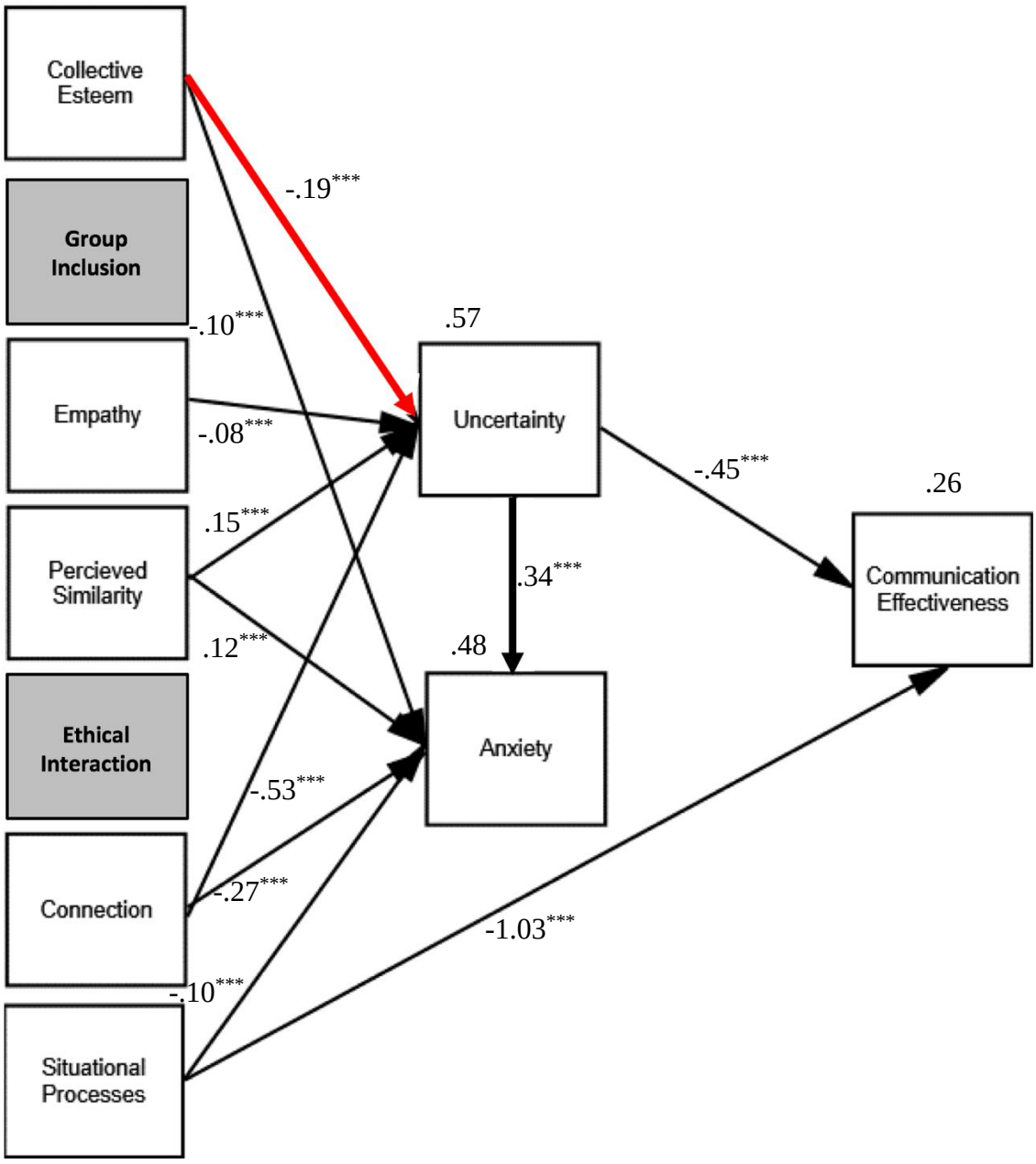

Figure 5b. Effects of construal level (low) on the AUM model
Note: The arrow in red represents the path that is significantly different across groups. Values above each path are standardized coefficients; values above anxiety, uncertainty, and communication effectiveness are squared multiple correlations (R^2)

Chapter 6: Discussion and Conclusion

The AUM theory has been applied mainly in intercultural communication contexts where people try to build intercultural relationships, especially friendships, with strangers (Gudykunst, 1983, 2005; Neuliep, 2012). This study had three goals: 1) to test the AUM model in a cross-cultural patient-provider communication context; 2) to test the moderating effect of mindfulness on the relationship between anxiety/uncertainty and communication effectiveness, and 3) to test the effects of message construal level on the relationships between variables in the AUM model. In this chapter, results concerning the mediation effects in the final model, moderation role of mindfulness in the relationship between uncertainty and communication effectiveness, and effects of message construal level on the AUM model as a whole are discussed.

AUM Theory and Model Fit

This study tested whether the AUM model can be applied to a patient-provider communication in a cross-cultural context. The initial model testing results showed that the AUM model had a poor fit to the data collected. However, after re-specification and modification of the model, a good model fit was yielded. Gudykunst (2005) postulated that although some background variables were listed in his original theoretical framework, future researchers had the flexibility to choose the background variables of interest for their research. For the past few decades, scholars have applied the AUM theory in interpersonal and intercultural communication contexts, explaining relationship development between sojourners and strangers who were from different cultures

(Gudykunst, 1983, 1993, 2005; Logan, Steel, & Hunt, 2015; Neuliep, 2012). A limited number of studies have addressed the anxiety and uncertainty people experienced and the influence of anxiety and uncertainty on patient compliance and patient satisfaction (Logan & Hunt, 2014; Logan, Steel, & Hunt, 2016). In those studies, ethnocentrism, language proficiency, and intercultural communication apprehension were the variables of interest and that had significant relationships with willingness to communicate and communication effectiveness (Chen, 2010; Logan, Steel, & Hunt, 2015; Neuliep, 2012). Due to the diverse group of individual background variables and the capacity of anxiety/uncertainty as mediators in most interpersonal/intercultural communication contexts, the result that the final model did fit to the data provides evidence that the AUM model has the flexibility to fit to diverse communication contexts.

Mediation Effects in the Final AUM Model

H1 – H10 predicted simple linear and mediation relationships between variables in the model that represent the core axioms proposed by Gudykunst (2005) in the original AUM model. The result of the analyses showed that not all relationships hypothesized in this study were significant. Of the two mediators in the AUM model, only uncertainty was significantly related to communication effectiveness, while anxiety did not significantly predict communication effectiveness. The following paragraphs discuss the results of each hypothesis.

The relationship between anxiety, uncertainty, and communication effectiveness. H1 proposed that anxiety is negatively related to communication

effectiveness during intercultural patient-provider interactions. The results showed anxiety does not predict communication effectiveness based on the data collected. This is contradictory to the original hypothesis in the AUM model (Gudykunst, 2005) and some pre-existing research findings (Gudykunst & Nishida, 2001; Logan, Steel, & Hunt, 2016). Gudykunst (2005) agreed with Stephan and Stephan's (1985) argument that anticipation of negative consequence motivates people's anxiety, and most of the time people feel socially anxious because they cannot present themselves as they expect during interaction (Gudykunst, 2005). Moreover, a lack of communication effectiveness can be attributed to patient anxiety. Hence, there may be reciprocal influence between patient anxiety and communication effectiveness (Simpson et al., 1991), which contributes to the non-significant findings. Further, Gudykunst (2005) considered anxiety as "the affective (emotional) equivalent" of uncertainty" (p. 287) and in the original model, anxiety was considered as the second mediator between background variables and communication effectiveness. Statistically, it is plausible that because anxiety shares a large overlap of the variance explained in communication effectiveness with those background variables and uncertainty and also uncertainty and background variables explain a significant portion of variance in anxiety (49%), the predictability of anxiety does not appear salient when anxiety co-exists with uncertainty in the model. Important to theory, the results of this study do not seem to support the AUM model, as anxiety was not significantly related to communication effectiveness in an intercultural health communication context. Instead, the results showed a "UM" model would be more appropriate. Since Gudykunst

(2005) offered flexibility in applying the model, future applications of the model should re-assess the role of uncertainty and anxiety in the model, conceptualizing when and how they are related to one another within the model.

H2 proposed that uncertainty during cross-cultural patient-provider communication is negatively related to communication effectiveness and it was supported by the model testing result. The findings in the present study are consistent with the original model and findings in other studies that investigated interpersonal and intergroup communication using AUM Theory (Gudykunst, 2005; Gudykunst & Nishida, 2001). Although there is research in health communication context finding the opposite relationship between uncertainty and willingness to communicate (Logan, Steel, & Hunt, 2016), uncertainty in that research was operationalized as tolerance of ambiguity, which is not conceptually similar to the measurement of uncertainty used in the present study. In that study, uncertainty was not context specific (i.e., items were about general uncertainty such as "Uncertainty stops me from living a full life"). It is possible that participants can have a high tolerance of ambiguity generally, but still have uncertainty regarding their communication with health providers given the uncertain nature of health compared to daily life. The findings in the present study regarding the negative relationship between uncertainty and communication effectiveness provides additional evidence for the core axiom of the AUM Theory.

Mediation effects of uncertainty. Since anxiety is not significantly related to communication effectiveness, the following discussion of the mediation effects focuses

only on uncertainty as the mediator. The final AUM model in the present study indicated that self-concept, reactions to strangers (level of empathy), and connection with strangers have significant positive indirect effects on communication effectiveness, while social categorization (perceived similarity) has a significant negative indirect effect on communication effectiveness. The indirect effects of reaction to strangers and connections with strangers on communication effectiveness were expected in the hypotheses (H6 and H9), while the indirect effects of self-concept and social categorization yielded inversed conclusions against the hypotheses (H4 and H7).

Reactions to strangers has rarely been considered and explored by former studies that applied AUM as the theoretical framework. As one of the most salient indicators of individual reactions to strangers, empathy plays an important role in cross-cultural interpersonal communication in the management of anxiety and uncertainty. Many studies in health communication, especially cross-cultural health communication emphasize the beneficial functions of provider empathy. Smedley, Stith, and Nelson (2003) stated that empathy is crucial to effective communication regardless of whether the patient and the provider are from different cultural background. Other research found that lack of empathy in resident physician makes physicians' communication less patient-centered (Passalacqua & Segrin, 2012), thereby further decreasing patient communication satisfaction. However, former research seldom looks into the influence of patient empathy. As a dyadic communicative process, patient empathy should also be taken into account by research when considering patient-provider communication. The results of the

present study provide meaningful insight regarding the function of patient empathy: when patients are more understanding toward the health providers from another culture, they will feel less uncertainty about the process because they may be active in seeking information that helps them to understand their current situation and their providers' concerns. They may also be more forgiving and tolerant of any miscommunication that can be attributed to cultural differences between them and their providers. This finding in the present study highlights the importance of patient empathy in cross-cultural patient-provider communication and provide a good addition to the research literature on patient empathy in patient-provider communication.

The findings showed that uncertainty also mediates the positive relationship between connection with strangers and communication effectiveness. Connection with strangers is operationalized as interpersonal attraction. Interpersonal attraction can be defined as interpersonal liking when people have encounters at different stage of their relationships (Berger & Calabrese, 1975). Liking is considered having a negative association with uncertainty during people's interaction (Berger & Calabrese, 1975). The more the patients think their health providers are likeable people, the less uncertainty they are going to experience in the communication with health providers. Both research outside and inside the field of health supports the function of interpersonal connection during interpersonal relationship. Existing research in marketing has found that the interpersonal attraction of service providers is an important factor that motivates customers to have a subsequent relationship with the providers and may result in better

service experience (Bendapudi & Berry, 1997). In the field of health professionals, more likable personnel could bring patient less uncertainty and have better patient compliance as a general outcome (Rodin & Janis, 1979). As patients view provider as approachable and with greater referent power, they will be more likely to comply with relevant health measures that could reduce their uncertainty, anxiety, and depression about their current health conditions. This is also a demonstration of effective using of social power among health providers that may help to make a change of the relationship between patients and health providers (Rodin & Janis, 1979).

Opposite to the hypothesis, immigrants' self-concept had a positive indirect effect on communication effectiveness through a loss in uncertainty during communication with health providers. According to social identity theory (SIT; Tajfel, 1974), individuals feel more secure to identify themselves in a social group when their presentation of self is implicated in a group. Additionally, categorizations constructed by individuals to distinguish between social groups result in people's motivation to emphasize and enhance the outstanding values within their social group (Ellemers & Haslam, 2011). Research has found that categorizations in social identity would reduce uncertainty and elevate positive identification of their social group, when individuals' subjective uncertainty is relatively high (Hogg & Grieve, 1999). In other words, individuals appear to be more confident if they have clear categorizations of identity and are proud of their self-concept. Immigrants in the United States are facing relatively high level of uncertainty when seeing the health providers (Derose, Escarce, & Lurie, 2007). When they have a strong

feeling of self-concept and pride of their cultural group, it is more likely that they will have less uncertainty and be more confident when seeing the health provider. Moreover, self-esteem was found positively related to confidence and appeared to have a reciprocal effect with confidence—when individuals have a high self-esteem they tend to be more confident and their confidence further strengthens the self-esteem (Campbell, 1990). In this sense, immigrant patients who have higher self-esteem may be more confident about their communication with health providers who are from a different culture, which in turn result in higher perceived communication effectiveness.

Social categorization failed to explain communication effectiveness through the decreases in uncertainty. Contrary to self-concept, increase in social categorization will increase the level of uncertainty that people experience during the communication presented in this study instead of reducing it, which in turn yielded a less effective communication. Social categorization is operationalized as perceived similarities in the present study. According to uncertainty reduction theory, the more similar people find with each other, the more they will feel comfortable to interact during their interpersonal during their interpersonal encounters, the less uncertainty they will experience (Berger & Calabrese, 1975). Surprisingly, in the present study, the results showed a weak negative indirect effect between perceived similarities and communication effectiveness. Although to date little research has found the same results, there are some explanations for why uncertainty does not positively mediate the relationship between social categorization and communication effectiveness. It is common that people feel more intimate and less

uncertainty toward individuals with whom they perceive to have more similarities (see Secord & Backman, 1964). However, this perception may be influenced by other factors such that the extent to which perceived similarity influences uncertainty, and ultimately communication effectiveness, could vary. For instance, research has found that people have more uncertainty when communicating with culturally similar friends than when they are communicating with culturally dissimilar friends (Gudykunst, 1985). In this study, it is likely that the occupation of people with whom immigrants communicate has an impact on the relationship between their perceived similarity and communication effectiveness. It may be because immigrant patients think their health providers act in a similar way as they do, they do not consider the health provider as credible, which may hinder perceptions of their providers' communication effectiveness.

Motivation to interact and ethical interactions, operationalized as group inclusion and cultural inclusiveness, respectively, did not predict uncertainty in the present study. Therefore, they did not have indirect effects on communication effectiveness. The conceptualization of group inclusion and cultural inclusiveness are very similar, both of which are about whether the immigrant or sojourner feels welcomed, included, or treated as an insider in another culture. Gudykunst (2005) argued that when individuals' needs are not met, they are not motivated to communicate, and their uncertainty will increase. However, it is likely that individuals who feel included in a cultural group has a less uncertainty discrepancy (i.e. the actual uncertainty level is lower than the desired uncertainty level), so that they are not actively seeking for more information to alleviate

the anxious desire of easing their uncertainty (Afifi, 2004). To this end, it seems plausible that motivation to interact does not appear to be the direct predictor of uncertainty. Heuristically, a higher level of intention to interact or an actual interactional behavior may be a more direct psychological and behavioral outcome of motivation to interact, which explains the relationship between motivation to interact and individual level of uncertainty.

The findings also suggest that situational processes do not predict uncertainty, although it does predict individual anxiety. Situational processes were operationalized as intercultural communication competence (ICC) in the presentation study. Several explanations account for why individual intercultural communication competence as situational processes fail to predict the level of uncertainty in a cross-cultural patient-provider communication. First, because intercultural communication competence conceptually shared some similar definition of being empathy, which is another background variable in the AUM model, it is possible that its shared of explained variance in uncertainty was accounted by empathy. Moreover, research found that intercultural communication competence tends to be a weaker predictor of communication stress when the people are from more collective cultures (Redmond, 2000). The demographics in this study showed that nearly 70% of the participants are from collective cultures. It is likely that cultural dimension moderates the relationship between intercultural communication competence and uncertainty, which buffers the predictability of intercultural communication when people are from collective culture.

Uncertainty, Mindfulness, and Communication Effectiveness

The current research found that although there are significant mediation effects of uncertainty on the relationship between background variables and communication effectiveness, when the background variables are examined independently, only the relationship between self-concept and communication effectiveness was mediated by uncertainty. It may be that mindfulness as a moderator shared some variance in communication effectiveness explained by the reactions to strangers, perceived similarity, and connections with strangers. The findings suggested that the influence of individual uncertainty on communication effectiveness varies when individuals vary in mindfulness. Several explanations account for why the moderation effects of mindfulness exists. It is required that individuals are mindful in order to understand a stranger's perspective (Gudykunst, 2005). Being mindful means individuals develop new ways to learn about and communication with strangers (Gudykunst, 2005). If individuals can be open to strangers' perspectives and try to understand their culture when communicating with them, they will have less bias and more objectivity that are helpful to reducing uncertainty. Much existing research investigates the effects of health provider's mindfulness on stress reduction and perceived health care quality (Beach et al., 2013; Irving, Dobkin, & Park, 2009). For instance, research found that being mindful by "observing the phenomena without evaluating their truth, importance or value without trying to escape, avoid, or change them (Huss & Baer, 2007, p. 17)" may result in the reduction of burn-out and stress level of healthcare providers, which in turn improve

health care quality (Irving et al., 2009). Another study found that physicians who are more mindful will use more patient-centered communication and their patients will be more satisfied with the health communication processes (Beach et al, 2013). These studies focus on the health providers' perspective. According to uncertainty reduction theory, the more reciprocity established among people, the less uncertainty they are going to experience during the communication (Berger & Calabrese, 1975). Thus, when immigrant patients are more mindful about their communication with health providers who are from a different culture, they will be more tolerant about the uncertainty they experience during the interaction and would possibly experience less uncertainty compared to people are less mindful. This indicates that it would be meaningful for future research to take patient's mindfulness into consideration. Thus, the findings regarding the moderation effects of mindfulness in this study provides useful insights for patient-provider communication when the patient and the provider are from different cultures.

Message Construal Level and Patient-Provider Communication

The present study hypothesized that the construal level of messages provided by health providers will influence the strength of relationships between variables in the AUM model. In other words, message construal level moderates paths in the AUM model. Results show that there is no significant different in the whole AUM model, regardless of the message construal level the participants were assigned to. When it comes to specific paths, only the association between self-concept and uncertainty was different between the high construal level group and low construal level group.

Nonetheless, no other paths were significantly different between two message groups. This finding failed to support the original hypothesis. However, it highlights the importance of self-concept in AUM model when it is explored under message conditions with different construal levels.

Self-concept appears to affect uncertainty more when immigrant patient patients are provided with high construal level messages. Since collective self-esteem is a key component of self-concept, self-concept is operationalized as collective self-esteem in the present study. Collective self-esteem is closely related to individual's cultural affiliation and how people feel about their culture (Gudykunst, 2005). As Gudykunst (2005) indicated, people with higher general collective self-esteem would be more biased toward their own cultural groups and less objective when making predictions and understand the behaviors from another culture. The findings in this study were in the opposite direction and several explanations can be made accounting for these unexpected findings. Individual psychological and social factors have a more salient influence on people's communication illustrated in AUM model compared to the message construl level. This explains why the original and final AUM models were not significantly different between high construal message group and low construal message group. However, message construal level has influence on the relationships between self-concept and uncertainty when immigrants are exposed to different message construal levels. It may be that people with higher collective self-esteem appeared to be more self-efficacious and have more confidence about their communication with health providers who are from different

cultures. Collective self-esteem is conceptually closely related to ethnocentrism, which was used to describe a person who have rigid attitudinal and behavior biases toward people from outgroups (Neuliep & McCroskey, 1997a, 1997b). Neuliep (2012) has found out that ethnocentrism was negatively correlated with uncertainty during individual's experience of intercultural communication. Although most research has criticized the negative consequence of ethnocentrism, such as stereotyping, not being mindful, and perception clouds (Neuliep, 2012; Neuliep & McCroskey, 1997a), the findings in this study provides a different view. Similar to ethnocentrism, collective self-esteem presents individual's perception of pride regarding their own cultural group and ethnicity, according to the items in the measurement (Luhtanen & Crocker, 1992). If people consider their cultural group as positive and have higher in-group collective self-esteem, it is likely that they will have lower uncertainty and a more accurate prediction of stranger's behavior during communication (Gudykunst, 2005). People tend to have more confidence in their behavior when they are exposed to high construal message comparing with when they are provided with low construal message (Trope & Liberman, 2010). In other words, if individuals are confident in their culture, they may feel more comfortable and less uncertainty with messages that are high construal. Therefore, it is plausible that collective self-esteem will reduce uncertainty more when individuals are receiving high construal messages than when they are receiving low construal messages.

Theoretical and Practical Implications

The AUM theory postulates that when individuals are communicating with strangers from another culture, the communication effectiveness will be influenced through anxiety/uncertainty by individual and social psychological factors including self-concept, motivation to interact, reactions to strangers, social categorization, situational processes, connection with strangers, and ethical interaction. Not all the hypotheses in the AUM theory were supported in this study: anxiety did not predict communication effectiveness; motivation to interact and ethical interaction were not included in the final model. The findings of the present study suggest that in cross-cultural patient-provider communication, reducing uncertainty should be a more important emphasis to improve the communication effectiveness between patients and health providers. Individual psychological and social factors such as self-concept, reactions to strangers, social categorization, and connections with strangers will influence communication effectiveness through their impact on uncertainty. Specifically, individuals who have higher collective self-esteem, are more empathic, share less similarities, and feel more attracted to the health provider will have a more effective communication with the health provider. Uncertainty in this study predicted anxiety, which is different from the correlational relationship proposed in the original model. The relationship between uncertainty and anxiety should be reconsidered in the AUM model. In the AUM model, anxiety was seen as the emotional equivalence to uncertainty. However, other theoretical perspectives such as Theory of Motivated Information Management (TMIM) suggested

that the unmet level of desired uncertainty would stimulate information seeking behavior and anxiety of this undesirable status (Afifi, 2004). Borrowing from this perspective, it may be that in intercultural health communication context, uncertainty leads to anxiety, which is different from the case in the original AUM model wherein they exist in tandem. Individuals feel anxious and start information seeking when there is uncertainty discrepancy existing (Afifi, 2004).

Different from daily interpersonal communication in an intercultural context, anxiety does not play a significant role as assumed in original AUM model. Gudykunst (2005) was trying to include more background variables to make the model as comprehensive, meanwhile, the model became more specified and complicated. The low parsimony makes it difficult for the AUM model to fit to different data in various context. Thus, the generalizability of the theory was weakened. This was evident from the fact that much existing research would choose to explore the functions of one or two background variables on anxiety/uncertainty management process instead of systematically testing the whole model/theory. The final AUM model in the present study indicates that various individual variables can play significant role in predicting uncertainty, anxiety, and communication effectiveness. This final AUM model in health communication context provides evidence and a group of factors for future research focusing on cross-cultural patient provider communications. The findings also suggested that mindfulness may explain individual differences in managing uncertainty and communication effectiveness. Moreover, the present study took into account health

communication as a parallel context intersect with intercultural communication, which extends the range of contexts where AUM theory can be applied.

The findings of this study also provide practical implications. Given that the finding suggested that some individual psychological factors can have an impact on communication effectiveness through uncertainty and immigrant patients are most likely to experience uncertainty during their visit with health providers (Ulrey & Amason, 2001), a crucial question arises: How do all related agencies optimize the anxiety/uncertainty management processes to improve communication effectiveness? As the findings in this study suggested, immigrant collective self-esteem may aid in effective communication with health providers. Improving both patients' and health providers' communication competence would optimize the patient-provider communication (Cegala et al., 2004). Health providers should constantly apply empathic listening to understand patients' perspective, especially when the patient is from a different culture. This way not only can reduce the anxiety and uncertainty in patients, but also can make the health providers less anxious (Urley & Amason, 2001). Moreover, because patient-provider communication is a mutual process that requires mutual efforts from both health providers and patients, immigrant patients can also improve their communication skills to achieve a better outcome during patient-provider interaction (Cegala, McClure, Marinelli, & Post, 2000). Cultural adaptation and medical communication workshops may help immigrants to understand more about the new culture they face and learn more about the social norms they should follow, which would be beneficial for immigrants to accept new

perspectives and become more mindful during their interaction with strangers from the new culture, including health providers (Cegala, Marinelli, & Post, 2000; Cegala et al., 2000). As higher mindfulness in health providers may result in better communication experience in patients and higher patient satisfaction (Beach et al., 2013), when the mutual understanding becomes possible between immigrant patients and health providers, the outcome of their communication would be more optimistic.

Limitations and Future Directions

The theoretical and practical implications of this study should be viewed along with its limitations. First, the designing of experimental messages needs to be improved to further distinguish between high construal and low construal levels. In the present study, although participants can tell the high construal level message from the low construal level message, the perceived difference is not statistically different to have an impact as predicted. Future studies should make the different between construal levels more noticeable to the participants, by exaggerating the abstractness/concreteness in high/low construal messages. Moreover, noticeably, many participants (66.7%) have been in the U.S. between 1-3 years, it is likely that some of them have become acculturated locally, which is evident from the finding that group inclusiveness did not appear as a big concern to the participants.

The sample in this study is a relatively convenient sample that does not correspond with the immigrant demographics in the United States. The sample in this study are generally young (*M* age = 21), Indian, and well-educated (more than 90% have

at least a college-level degree). Although English was not participants' first language, this criterion for participation may have created bias in interpreting the results. It may be that our educated sample could easily interpret the message, or they may have had difficulty understanding the message because English is not their first language. In the future, the selection of sample should be closer to immigrants nationwide by recruiting more Hispanic participants and immigrants with different levels of education. Furthermore, English proficiency should be assessed and controlled for in future studies.

The schematic representation of the theory proposed by Gudykunst (2005) modeled all background variables as latent. It makes the original model too complex and impractical to study at once (it requires very large sample sizes and makes model fit difficult with too many parameters to estimate). In this dissertation study, each background variable was represented by one observed variable to make the study manageable. Although doing this simplified the testing process and made this study more practical, the path model analysis used in this study ignores measurement error, which always exists when applying structural equation modeling. Future studies should consider using latent variables to yield a more comprehensive operationalization of the background, given that samples are sufficient.

Additionally, text-based experimental stimuli can be improved to create a more interactive cross-cultural patient-provider communication scenario that is close to reality. The experimental messages in the current study is presented in a paragraph. Participants have to imagine their communication with the health provide based on the scenario

provided in the experiment, which lacks interactive communication experience and not all participants may feel the same as when they are actually seeing a health provider. Visual message form such as visual metaphor was found to have the ability to attract audience attention (Lazard, Bamgbade, Sontag, & Brown, 2016), which would help improve participants attention by making the experimental scenario vivid. Future research can focus on improving the message design by using multi-channel messages, including audio messages, video messages, and interactive artificial intelligence and incorporating translations of different languages from which participants can choose. To achieve even better effects, health care professionals can be trained to incorporate the experimental messages and have simulated conversation with immigrant participants. Moreover, the selection of health condition in this study could attribute to the significance of the results. In the present study, weight management is the health issue discussed in the experimental scenario. This health issue may not be as inherently uncertain as other health issues, such as pancreatic cancer, cardiovascular diseases, and mood disorder. It may be that weight management does not evoke much uncertainty in the participants' perception so that the findings of relationships between variables in the model were mostly weak, if not non-significant. Further research about other health issues with more inherent uncertainty is needed to explore the influence of health conditions on AUM model in cross-cultural health communication context.

This study planned to test the effects of temporal distance on AUM model. However, the actual experiment took out temporality as a variable due to the failure in

recognizing differences of temporal distance in experimental messages. It was assumed that construal level has a larger influence on participants perception on the message than temporal distance, but the reason why this failure occurred remained unknown. Future research can focus on parsing out the impact of construal level and temporal distance on individual's perceptual attention, and how other psychological distances (spatial distance, social distance, and hypothetical distance) may play a role in AUM model. Further, structural equation modeling requires accurate measures in order to yield a solid testing results of the model (Kline, 2017). However, the background variables in the AUM model were conceptually broad and the flexibility in choosing background variable made it relatively difficult to choose the most accurate measurements for variables in the model. Thus, further research needs to construct measurements of variables in the AUM model to fit specifically to intercultural patient-provider communication.

Conclusion

This present study had three goals: 1) to test the AUM model in a cross-cultural health communication context, 2) to test the moderating effect of mindfulness on the relationship between anxiety/uncertainty and communication effectiveness, and 3) explore how construal level of message influence the AUM model in the aforementioned context. The findings indicated that AUM model has the potential to be applied outside the intercultural interpersonal communication context, but modification of background variables is needed. Results also showed that message construal level does not affect the AUM model, except for the relationship between self-concept and uncertainty. This

present study provides theoretical explanations regarding anxiety/uncertainty experiences in the process of immigrant patient communication with their health care providers, including why communication effectiveness may be achieved and how individuals can have a better communicative experience with their provider. This study also provides practical implications as to how health communication provider and minority community center can have psychological intervention in assisting immigrant patients to improve their communication effectiveness during a clinical visit in the cross-cultural context.

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Appendix A: Recruitment and Consent Information

Welcome to the study! You are being asked to participate in research. For you to be able to decide whether you want to participate in this project, you should understand what the project is about, as well as the possible risks and benefits in order to make an informed decision. This process is known as informed consent. This form describes the purpose, procedures, possible benefits, and risks. It also explains how your personal information will be used and protected. Once you have read this form and your questions about the study are answered, you will be asked to participate in this study. You may print a copy of this document to take with you.

Explanation of Study

This project is going to examine the management of anxiety and uncertainty between immigrant patients and health providers who are from different cultural background and how individual culturally-related factors can have an impact on the dyadic communication effectiveness through anxiety/uncertainty.

If you agree to participate, you will be asked to answer a series of questions regarding individual differences. And then read a scenario description about meeting with a doctor from a culture different to yours. Finally, you will be required to complete a series of survey questions related to the scenario you read.

You should not participate in this study if you will not be 18 years old before November 7, 2017.

You should not participate in this study if English is your first language.

You should be a non-U.S. citizen to participate the research.

Your participation in the study will last about 20 minutes.

Risks and Discomforts

No risks or discomforts are anticipated.

Benefits

This study will us understand better about the message effects in communication. Individually, you may benefit too. Participating in this research may help you learn about how different message construct can have an impact on human behavioral intention and uncertainty and anxiety management.

Compensation

As compensation for your time/effort, you will receive $1 from Amazon M-Turk only when you agree to participate and complete the whole study.

Confidentiality and Records

Your study information will be kept confidential by the researcher in the laptop protected by keyword.

For maximum confidentiality, please clear your browser history and close the browser before leaving the computer.

Additionally, while every effort will be made to keep your study-related information confidential, there may be circumstances where this information must be shared with:

* Federal agencies, for example the Office of Human Research Protections, whose responsibility is to protect human subjects in research;

* Representatives of Ohio University (OU), including the Institutional Review Board, a committee that oversees the research at OU.

Contact Information

If you have any questions regarding this study, please contact the investigator **Hengjun Lin hl542711@ohio.edu, 505-659-1833** or the advisor **Charee Thompson,** thompson3@ohio.edu**, 740-593-4840**

If you have any questions regarding your rights as a research participant, please contact Dr. Chris Hayhow, Director of Research Compliance, Ohio University, (740)593-0664 or hayhow@ohio.edu.

By agreeing to participate in this study, you are agreeing that:

· you have read this consent form (or it has been read to you) and have been given the opportunity to ask questions and have them answered;
· you have been informed of potential risks and they have been explained to your satisfaction;
· you understand Ohio University has no funds set aside for any injuries you might receive as a result of participating in this study;
· you are 18 years of age or older;
· your participation in this research is completely voluntary;
· you may leave the study at any time; if you decide to stop participating in the study, there will be no penalty to you and you will not lose any benefits to which you are otherwise entitled.

Appendix B: Measures

Construal level

You think the doctor's suggestion you just read is/will change your health status…

Concrete								Abstract
Specific								Non-specific
Detailed								Unclear
Precise								Vague

Temporal distance

You think the doctor's suggestion you just read is/will change your health status…

Temporally close								Temporally far away
Happen soon								Happen in the far future
Happen immediately								Happen later
Immediate								Distant

Collective Self-esteem

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
I am a worthy member of the cultural group I belong to.							
I feel I don't have much to offer to the cultural group I belong to.							
I am a good cooperative participant in the cultural group I belong to.							
I often feel I am a useless member of my cultural group.							
I often regret that I belong to the cultural groups I do.							
In general, I'm glad to be a member of the cultural groups I belong to.							
Overall, I often feel that the cultural group of which I am a member are not worthwhile.							
I feel good about the cultural groups I belong to.							

Overall, my cultural groups are considered good by others.							
Most people consider my cultural groups, on the average, to be more ineffective than other cultural groups.							
In general, others respect the cultural groups that I am a member of.							
In general, others think that the cultural groups I am a member of are unworthy.							
Overall, my cultural group memberships have very little to do with how I feel about myself.							
The cultural groups I belong to are an important reflection of who I am.							
The cultural groups I belong to are unimportant to my sense of what kind of a person I am.							
In general, belonging to cultural groups is an important part of my self-image.							

Group Inclusion

Assess to what extent you agree with the following statements based on your experience in the U.S.

	Strongly disagree	Disagree	Unsure	Agree	Strongly agree
This country gives me the feeling that I belong					
This country gives me the feeling that I am part of this country.					
This country gives me the feeling that I fit in.					
This country treats me as an insider.					
This country likes me.					
This country appreciates me.					
This country is pleased with me.					
This country cares about me.					
When it's time to act, uncertainty paralyses me.					
This country allows me to be authentic.					
This country allows me to be who I am.					

This country allows me to express my authentic self.					
This country allows me to present myself the way I am.					
This country encourages me to be authentic.					
This country encourages me to be who I am.					
This country encourages me to be express my authentic self.					
This group encourages me to present myself the way I am.					

Level of Empathy

	Strongly disagree	Disagree	Unsure	Agree	Strongly Agree
I pay attention to the emotions of others					
I am a good listener					
I sense when others get irritated					
I get to know others profoundly					
I enjoy other people's stories					
I notice when someone is in trouble					
I sympathize with others					
I set others at ease easily					

Perceived Similarities

	Very similar	Moderately similar	Slightly similar	Unsure	Slightly different	Moderately different	Very different
The way my others and I speak is ()							
The way others and I reason about problems is ()							
Others and I have () style of communication.							
Others and I have () general values in life.							

Situational Processes (Intercultural Communication Competence)

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
I often find it difficult to differentiate between similar cultures.							
I feel that people from other cultures have many valuable things to teach me.							
Most of my friends are from my own culture.							
I feel more comfortable with people from my own culture than with people from other cultures.							
I find it easier to categorize people based on their cultural identity than their personality.							
I often notice similarities							

in personality between people who belong to completely different cultures.							
I usually feel closer to people who are from my own culture because I can relate to them better.							
Most of my friends are from my own culture.							
I usually look for opportunities to interact with people from other cultures.							
I feel more comfortable with people who are open to people from other cultures than people who are not.							

Connection with Strangers (Interpersonal Attraction)

After reading the scenario, assess the following statements about Dr. Smith.

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
I think he (she) could be a friend of mine.							
I would like to have a friendly chat with him (her).							
It would be difficult to meet and talk with him (her).							
We could never establish a personal friendship with each other.							
He (she) just wouldn't fit into my circle of friends.							
He (she) would be pleasant to be with.							
I feel I can know him (her) personally.							

He (she) is personally offensive to me.							
I don't care if I ever get to meet him (her).							
I sometimes wish I were more like him (her).							

Ethical Interactions (Cultural Inclusiveness)

	Strongly disagree	Disagree	Unsure	Agree	Strongly Agree
I feel cultural differences are respected in this country.					
I feel included in this country.					
People from different cultures get along well with each other in this country.					
Native People are accepting cultural differences.					
Native people understanding cultural differences in communication.					
Native people make efforts help people from other cultures.					
Native people understand that people from other cultures have difficulties in a new culture.					

Uncertainty

	Strongly disagree	Disagree	Unsure	Agree	Strongly Agree
I am not confident when I communicate with Dr. Smith.					
I can interpret my Dr. Smith's behavior when we communicate.					
I am indecisive when I communicate with Dr. Smith.					
I can explain the Dr. Smith's behavior when we communicate.					
I am not able to understand the Dr. Smith when we communicate.					
I know what to do when I communicate with Dr. Smith.					
I am uncertain how to behave when I communicate with Dr. Smith.					
I can comprehend Dr. Smith's behavior when					

we communicate.					
I am not able to predict the Dr. Smith's behavior when we communicate.					
I can describe the Dr. Smith's behavior when we communicate.					

State Anxiety

Imagine you were communicating with Dr. Smith, how would you feel compared to occasions when you are interacting with health providers from your own cultural/ethnic group?

	1 (Not all all)	2	3	4	5	6	7	8	9	10 (extremely)
Awkward										
Self-conscious										
Happy										
Accepted										
Confident										
Irritated										
Impatient										
Defensive										
Suspicious										
Careful										

Mindfulness

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
I like to investigate things.							
I always open to new ways of doing things.							
I "get involved" in almost everything I do.							
I am very creative.							
I attend to the "big picture".							
I am very curious.							
I try to think of new ways of doing things.							
I like to be challenged intellectually.							
I like to figure out how things work.							

Communication Effectiveness

Imagine your communication with Dr. Smith, who is from a cultural background different to yours, and based on the scenario you read, to what extent will you agree with the following statements?

Dr. Smith explained the following to my satisfaction (Information Giving):

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
What my medical problem was							
The causes of my medical problem							
What I could do to get better							
The benefits and disadvantages of treatment choices (that is, choices about what I could do to get better)							

Dr. Smith did a good job of (Information Verifying):

	Strongly disagree	Disagree	Somewhat disagree	Unsure	Somewhat agree	Agree	Strongly agree
Reviewing or repeating important information.							
Making sure I understood his/her explanations.							
Making sure I understood his/her directions.							
Using language I could understand.							
Checking his/her understanding of what I said.							

Appendix C Scenarios

High Construal Level (and proximal temporality)

Imagine you are concerned about your weight management and decide to seek a doctor's advice. You go to see Dr. Smith, who is from a culture different than yours. You have conversation with Dr. Smith about your health concerns and Dr. Smith makes the following suggestions for you: "I understand that you are concerned about your weight management. If you want to be healthier, you should develop and maintain healthy behaviors. I believe you will start to see good changes of your health status immediately."

Low Construal Level (and proximal temporality)

Imagine you are concerned about your weight management and decide to seek a doctor's advice. You go to see Dr. Smith, who is from a culture different than yours. You have conversation with Dr. Smith about your health concerns and Dr. Smith makes the following suggestions for you: "I understand that you are concerned about your weight management. If you want to be healthier, you should go out for a moderate run every day for 30 mins from 5:00 pm – 5:30 pm for about 1.5-2 miles; eat 2 cups of green-leaf vegetables and ensure your fat intake less than 35% of your total calories per day. I believe you will start to see good changes of your health status immediately."

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