Abstract

Title of Dissertation: A LONGITUDINAL STUDY OF PERSON CULTURE FIT: CONVERGENCE OF MENTAL MODELS

Lin Zhu, Doctor of Philosophy, 2012

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The person-environment fit hypothesis argues that the match or fit between an individual and the environment predicts positive adaptation outcomes for the person. Unfortunately, the person-environment fit hypothesis has not received consistent empirical support in the context of cross-cultural adaptation due to lack of a clear conceptualization of fit and an appropriate measure of fit. This dissertation proposes to use the convergence of mental models, a dynamic constructivist approach, to conceptualize person-culture fit, and to use it as a viable mechanism for understanding cross-cultural adaptation processes. A cross-lagged structural equation model was developed to examine how cultural adaptability and host language proficiency lead to positive adaptation outcomes through the mediating roles of mental model convergence and mental model change.

Participants were 126 sojourning Chinese students studying in the U.S. and 30 American students and professors who were friends of the Chinese participants. Data were collected from the Chinese participants at two points in time: shortly after they arrived in the U.S. and three months after the first round of data collection. Based on results from a pilot study, participants were asked to rate the dissimilarities between 10 concepts relevant to cross-cultural adaptation. An index of person-culture fit was generated by comparing each Chinese sojourner's mental space with the aggregated mental space of domestic American participants. In addition, the Chinese participants

reported their level of cultural adaptability, English proficiency, amount of intercultural communication with host nationals, and psychological wellbeing.

Results from the study showed that Chinese sojourners' psychological wellbeing declined about three months after their arrival, which is consistent with the U-curve model of culture shock. Results indicated that cultural adaptability affected cultural adjustment. Specifically, cultural adaptability affected the development of host identification and was positively related to the degree of mental model change. English proficiency affected cultural adjustment through its direct positive effect on the amount of intercultural communication and psychological wellbeing. Finally, person-culture cognitive fit had a positive influence on host identification and psychological wellbeing. The interpretations and implications of the results, the contributions and limitations of the study, and directions for future research, were discussed.

A Longitudinal Study of Person-Culture Fit:

Convergence of Mental Models

by

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Dissertation Submitted to the Faculty of the Graduate School of the
University of Maryland, College Park, in partial fulfillment of
the requirements for the degree of
Doctor of Philosophy
2012

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Dedication

This dissertation is dedicated to my dearest parents, Shiling Zhang and Chuansheng Zhu, and my beloved husband, Mark Kazemzadeh, for their love and support.

Acknowledgements

This dissertation project would not have been possible without the help and support of many people. I especially want to thank my dissertation committee chair and advisor, Dr. Meina Liu, and other committee members including Drs. Edward L. Fink, Dale J. Hample, Leah Waks, and Paul J. Hanges, for whom I have great appreciation and respect.

I consider myself most fortunate to have Dr. Liu as my advisor, whose guidance and advice proved to be invaluable throughout this journey. The decision to make her my adviser was dependent upon the unique perspective, diligence, and work ethic she demonstrated day to day. She was always willing to address my concerns and patiently answer my questions, making herself available at what seemed to be 24 hours a day. I remember remarking on Dr. Liu's ability to articulate my research better than I ever could. Her feedback was always insightful and her criticism constructive. Dr. Liu has also been a cornerstone of strength. Getting a Ph.D. while apart from my husband and family has not been an easy thing, but having the support and understanding from Dr. Liu made this process infinitely less strenuous.

I would also like to thank Dr. Fink. For the longest time, I felt Dr. Fink was from another planet due to his extreme intelligence and bizarre sense of humor. His great passion and high standards towards research and perfection always challenged me to push myself harder than I thought possible. Though he often labeled me as a "troublemaker," mainly because my five-minutes questions always turned into an-hour long discussion, not once did he make me feel like I was an inconvenience. He did, however, return the favor by assigning excessive number of readings to help explain the answers to my questions. Sometimes I felt that his expectations were too high for a graduate student, but now I realized his strict training was one of the most

valuable assets I received from the department.

A great deal of gratitude goes to Dr. Dale Hample, who to this day still does not know he is on my committee, as the ongoing joke goes. Dr. Hample's diverse knowledge extends across a multitude of fields, so any student could identify a fit between their research and Dale's expertise. I can remember many times when I popped to his office with a question and he always has an answer to my question or knows exactly where to find the answer.

I would also like to thank Dr. Leah Waks. She is unarguably one of the most occupied professors in the communication department, but for some strange reason, whenever I have an issue, be it academic or personal, I can always rely on Dr. Waks to listen to my issues and fix them.

Many thanks go to Dr. Paul Hanges. I took Dr. Hanges' Organizational and Industrial Psychology class with strong recommendation from another student and with the "ulterior" motive of asking him to be in my committee. Since then I have been most impressed by his mentoring style and methodological expertise. His insightful advice during my prospectus defense aided in setting the tone and direction of my dissertation.

I am forever indebted to Carolyn Evans and Dr. Joseph Woelfel from the Department of Communication at the University at Buffalo, the State University of New York. Carolyn's expertise with the Galileo program has helped me through many difficult stages of data analyses. Her patience and immediacy in responding to my numerous questions never failed to impress me.

Special thanks go to my dearest husband, Mark Kazemzadeh, who has been a great companion and supporter. He has patiently stayed with me despite the long-distance relationship and my whining and nagging. Every time I lost strength, he

would charge me with his unique sense of humor. I feel so grateful to have him and his wonderful family in my life, including Mama Jan, whose baklava filled my long dissertation writing nights with sweetness, and my parents in-law, Manoutch and Karen Kazemzadeh, who provided moral support and editing help.

Lastly, I thank my colleagues and friends at the communication department from the University of Maryland. Deepa Anagondahalli is a great friend and a most wonderful colleague. Her gentle soul, diligence, and tenacity set the standards for me to aspire to. Hua Jiang, now an assistant professor at Towson University, was the best roommate and is still a great friend. Her superior knowledge has helped me in different stages of my dissertation. I thank Ioana Cionea who provided collegial support and worked on my various statistics questions. I am also indebted to Xiaoying Xie and Shuo Yao, whose exemplary dissertations helped me in my own writing. Lastly, I wish to thank all of those who have extended support: Dr. Shawn Parry-Giles, Lillie Sullivan, Adam Richards, Rowie Kirby, Rowena Briones, Hyunhee Kim, Jarim Kim, DooHee Lee, Steven D. Cohen, Sreashi Das, Liang Ma, Jill and Steve Underhill, and Sejal R. Patel.

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CHAPTER I

AN OVERVIEW

Cultural adaptation is a process by which individuals change their beliefs, values, attitudes, and ways of life to fit into a new environment (Jameson, 2007). Previous research on adaptation has focused either on individual predictors, such as personality traits (e.g., Ramalu, Rose, Uli, & Kumar, 2010), or on environmental constraints (e.g., Kettinger & Grover, 1995), but a new perspective on cultural adaptation argues that it is the match or fit between the person and the culture that determines successful adaptation (L. Yang, Levine, Smith, Ispas, & Rossi, 2008). Fit research, which combines macro-level factors in the cultural environment and the micro-level factors in the individual (Kim, 2005), has been successful in explaining organizational adaptation outcomes such as job satisfaction and turnover rate (e.g., Edwards, 1991; Edwards & Cable, 2009; Kristof, 1996; Ostroff, 1993; Ostroff, Shin, & Kinicki, 2005), but its application to cross-cultural adaptation has yielded contradictory findings.

This dissertation examines cultural adaptation as a process and outcome of person-environment fit. Drawing upon a dynamic constructivist approach, the study conceptualizes person-culture fit as the degree to which sojourners' mental models converge with those of the host nationals they interact with; mental models are dynamic, domain-specific knowledge structures that are socially constructed through communication. According to dynamic constructivists, culture consists of domain-specific knowledge structures (Brett & Crotty, 2008; Morris & Fu, 2001). These knowledge structures "help people make sense of and respond to a situation that they encounter" (Liu & Dale, 2009, p. 224). Many terms have been proposed to refer to knowledge structures, such as schemas, cultural scripts, cognitive spaces, and

mental models. The term “mental models” is adopted for the purpose of this dissertation because mental models not only refer to components in a person’s cognitive structure but also the relationships between components. Through socialization, individual mental models converge to those of the groups with which they affiliate (Fink & S. Chen, 1995; Liu & Dale, 2009), so there is a certain level of sharedness or similarity in mental models among group members. During cultural adaptation, sojourners adapt their existing mental models to those of host nationals. Therefore, under the constructivist framework, person-culture fit can be conceptualized and measured as the degree of similarity between a person’s mental model and the shared mental model of host society nationals concerning issues that are relevant to cultural adaptation.

In previous literature, cultural adaptability and host language proficiency have been found to be two significant predictors of cultural adaptation (e.g., Church, 1982; Cui, Berg, & Jiang, 1998; Gudykunst, 1985; Kelly & Meyers, 1995; Kim, 1978; Moyers & Coleman, 2004; Ployhart & Bliese, 2006; Ruben & Kealey, 1979). However, the mechanisms by which these variables affect adaptation outcomes have rarely been explored. This dissertation suggests that adaptability and host language proficiency are associated with the motivation and ability to interact with host nationals, which leads to the convergence of mental models between a sojourner and the host culture, which, in turn, affects the identification with the host culture and psychological wellbeing. Furthermore, person-culture fit and host identification are in turn associated with the amount of intercultural communication the individual subsequently engages in with host nationals. This study, therefore, seeks to examine cultural adaptation as a dynamic process on cognitive, behavioral, and affective levels.

Methodologically, existing research on intercultural adjustment relies primarily on cross-sectional data gathered at one point in time. To examine adaptation as a dynamic process, this dissertation employs a panel design where data were collected at two points in time during their cultural adaptation process. The longitudinal design allows for an examination of the extent to which person-culture fit is related to changes in cultural adjustment (Wang, Zhan, Mccune, & Truxillo, 2011). Furthermore, longitudinal data provide an opportunity to test the cross-lagged reciprocal relationship between variables.

Chapter II reviews four popular approaches to conceptualizing and measuring person-culture fit: the cultural similarity hypothesis (e.g., Babiker, Cox, & Miller, 1980; Furnham & Bochner, 1986; Ward & Kennedy, 1993), the person-culture personality fit (e.g., Ward & Chang, 1997; Ward & Searle, 1991), the person-culture fit in self-construals (e.g., Cross, 1995; Hyun, 2001), and the person-organizational culture fit (e.g., Cable & Judge, 1995; Edwards, 1994; Judge & Cable, 1997; Kristof, 1996; Ostroff, 1993; Ostroff et al., 2005). The chapter also discusses conceptual and methodological limitations of these approaches. One of the limitations is that there is no clear theorizing as to why certain attributes are used to study person-culture fit. Secondly, in many studies, the concept of fit has not been appropriately measured. Conceptually, fit represents a degree of match between the person and the culture, so characteristics of both the person and the culture have to be taken into consideration, but some research has only measured the characteristics of the person (e.g., Oguri & Gudykunst, 2002) or the culture (e.g., Van Vianen, De Pater, Kristof-Brown, & Johnson, 2004). Lastly, previous studies have used unidimensional measures for multidimensional constructs. Specifically, personality traits and value orientations (e.g., individualism/collectivism, independent and interdependent self-construals) are

conceptualized by many scholars as multidimensional constructs (see Levine et al., 2003); therefore, the fit between the person and the culture should also reflect multidimensional attributes. However, no fit indices used in previous research have captured the multidimensional aspects of the construct of fit.

Following a discussion of the limitations of the previous approaches, a dynamic constructivist approach, the Galileo theory and method, is introduced. Galileo theory assumes that no human experience is independent of the outside world, and *self* can only be understood in relation to other cognitive objects (Woelfel, 2009; Woelfel & Fink, 1980). Under the Galileo framework, person-culture fit can be conceptualized as the degree of convergence or similarity between the sojourners' mental models and the host nationals' mental models. The Galileo approach provides a multidimensional fit index—the convergence fit, a deviation measure along multiple dimensions or constructs. The final section of Chapter II discusses the rationale for the research questions and hypotheses. A structural model is proposed to examine the hypothesized relationships.

Chapter III discusses the methodology that is used to assess the structural model proposed in Chapter II. This chapter starts with a description of the pilot study, followed by a description of the participants, method of data collection, and instruments used to assess cultural adaptability, host language proficiency, intercultural communication, and psychological wellbeing. This section also details the Galileo multidimensional scaling technique. The reliability and validity of the Galileo variables are also assessed.

Chapter IV describes results from model assessment and hypotheses testing. First, a two-step structural equation model is assessed—a measurement model and a structural model. The second part of the chapter summarizes the results from

hypothesis testing, and the chapter finishes with supplemental analyses. The final chapter, Chapter V, includes interpretations of results and discussion of the contributions and limitations of the study. The chapter also suggests directions for future research.

This study has implications for sojourners adapting to a new culture, whether the sojourners are U.S. Americans overseas or foreign residents in the U.S. The study does not target immigrants or refugees, but sojourners. In a more general sense, the adaptation process examined in this dissertation applies to adaptation into any new environment, such as new hires in an organization or people relocating to a different city for study or work. Furthermore, the mental models approach can be applied to study interpersonal relationships and group dynamics.

CHAPTER II

LITERATURE REVIEW

This chapter consists of four sections. It begins with a discussion of cultural adaptation models and predictors of cultural adaptation. The second section reviews the literature on person-culture fit; four popular approaches to studying fit are discussed. In the third section, the Galileo mental models approach is introduced and proposed to address the conceptual and methodological issues in the existing fit research. The last section proposes a dynamic cultural adaptation model that relates cultural adaptability and host language proficiency to cultural adjustment, which includes the behavioral (amount of intercultural communication with host nationals), cognitive (convergence of mental models with host nationals and perceived identification with the host culture), and affective (psychological wellbeing) aspects of cultural adaptation.

Cultural Adaptation

Cultural adaptation is "an umbrella term that encompasses culture shock, assimilation, adjustment, acculturation, integration, and coping" (Begley, 1999, p. 401). Following previous literature (e.g., Bourhis, Barrette, El-Geledi, & Schmidt, 2009; Sobre-Denton & Hart, 2008), this dissertation uses cultural adaptation interchangeably with cultural adjustment and acculturation.

According to Dubos (1965), adaptation refers to both the outcomes of acculturation and the process of acculturation. As an outcome variable, cultural adaptation has been defined and measured in terms of psychological health (R. P. Yang, Noels, & Saumure, 2006), feelings of acceptance and satisfaction (Brislin, 1981), job performance, job satisfaction, and turnover rate (e.g., Edwards & Cable, 2009; Harris, 1972). Research on cultural adaptation as a process seeks to identify the

various stages that individuals go through while trying to adapt to a new culture (e.g., the U-curve model) and the various factors that influence cognitive, behavioral, and affective aspects of cultural adjustment (e.g., the anxiety and uncertainty management model). This section reviews research that examined cultural adaptation as both an outcome and a process.

Cultural Adaptation as an Outcome

Based on a review of literature and results from factor analysis, Black and his colleagues (Black, 1988; Black & Gregersen, 1991; Black, Mendenhall, 1990; Black, Mendenhall, & Oddou, 1991) proposed a tripartite model of cultural adjustment: (1) *work adjustment* refers to adjustment to work responsibilities, supervision, and performance expectations; (2) *interaction adjustment* emphasizes socializing and interacting with host nationals; and (3) *general adjustment* refers to adjustment to local living such as housing, food, and shopping. All three aspects focus on behavioral aspects of cultural adaptation.

The tripartite adjustment model proposed by Black and associates has become one of the most influential frameworks used in the management literature (see Hechanova, Beehr, & Christiansen, 2003, for a review). According to Bhaskar-Shrinivas, Harrison, Shaffer, and Luk (2005), the model has been "clearly operationalized" and "consistently validated" (p. 257). However, despite the popularity of this tripartite adjustment model, it has been criticized for its lack of solid theoretical grounding (Huang, Chi, & Lawler, 2005) and the exclusion from the model of a vital component—psychological performance (Bhaskar-Shrinivas et al., 2005).

Ward and Kennedy (1993, 1996, 1999) proposed that intercultural adaptation includes two essential components: psychological and sociocultural adjustment. The former refers to psychological wellbeing and emotional satisfaction, which can be

understood within a stress and coping framework, whereas the latter consists of cultural-specific skills and the ability to negotiate in the host culture, which can be interpreted within a social learning context (Ward & Kennedy, 1993). Ward and her colleagues further argued that even though the two variables are related (r = .31 in Ward & Kennedy, 1996), they have distinct predictors: Psychological adjustment is predicted by personality, life changes, and social support; sociocultural adaptation is affected by factors such as the amount of contact with host nationals, length of sojourning, cultural identity, and cultural distance (e.g., Ward & Kennedy, 1993, 1996). Psychological adjustment has been operationalized by measuring mood states, particularly depression (e.g., Ward, 1996), and sociocultural adjustment has been assessed in terms of social difficulties sojourners experience (e.g., Ward & Kennedy, 1999).

Ward and Kennedy's (1993, 1996, 1999) bipartite model of intercultural adaptation makes the role of communication central to adaptation and has been widely accepted by communication researchers (e.g., Gudykunst, 2005; Kim, 2008). However, the causal relationship between the two factors in the model is not clear. According to Ward and Kennedy (1993, 1996, 1999), psychological and sociocultural adjustments are both indicators of cultural adjustment. However, sociocultural adjustment focuses on adaptation skills or competence, whereas psychological adjustment focuses on mood states. Theoretically, sojourners' ability to interact and cope with difficulty in a new culture should affect their psychological wellbeing, implying that sociocultural adjustment is the cause of psychological adjustment.

After a critique of Ward and colleagues' intercultural adaptation model, Zhou, Jindal-Snape, Topping, and Todman (2008) proposed a culture shock and adaptation model that includes affective, behavioral and cognitive responses. This model

integrates the stress and coping approach (affective adjustment; e.g., Holmes & Rahe, 1967; Lazarus & Folkman, 1984), the cultural learning perspective (behavioral adjustment; Furnham & Bochner, 1986), and the social identification theories (cognitive adjustment; e.g., Berry, 1990, 1997; Tajfel, 1981). Therefore, the model is called the ABC (affective, behavioral, and cognitive) adjustment model. This model considers three important components in cultural adjustment and is the most comprehensive cultural adaptation model thus far.

Drawing on the ABC model, this dissertation examines three aspects of cultural adjustment as outcomes variables: the affective, the behavioral, and the cognitive. *Affective adaptation* refers to emotional and psychological wellbeing, such as perceived happiness and satisfaction with the host culture. *Behavioral adaptation* refers to adjustment displayed by behaviors, such as amount of interaction with host nationals. Finally, *cognitive adaptation* refers to adjustment in cognition, such as sharing similar cognition with host nationals and perceived identification with the host culture.

Cultural Adaptation as a Process

Research on cultural adaptation as a process seeks to identify patterns or trajectories of adjustment over time. This section reviews three theoretical models that explain the process of cultural adaptation: the U-curve model, Ward and associates' linear model, and the anxiety and uncertainty management model. The three models have conflicting predictions regarding the patterns of acculturation: The U-curve model posits that cultural adjustment decreases in the initial stage of adaptation, and then increases in the adjustment stage. In contrast, Ward and associates' linear model and the anxiety and uncertainty management model predict that cultural adjustment follows an upward-growth pattern.

The U-curve model (Hottola, 2004; Lysgaard, 1955; Oberg, 1960) is one of the most frequently cited stage theories of cultural adaptation. Based on interviews of over 200 Norwegian Fulbright scholars in the U.S., Lysgaard (1955) noted that sojourners encountered the greatest difficulties when their residence was between 6 and 12 months compared with those who had been living in a foreign country for less than 6 months or more than 18 months. Lysgaard (1955) stated:

> Adjustment as a process over time seems to follow a U-shaped curve: adjustment is felt to be easy and successful to begin with; then follows a "crisis" in which one feels less well-adjusted, somewhat lonely and unhappy; finally one begins to feel better adjusted again, becoming more integrated into the foreign community. (p. 50)

Therefore, the path of intercultural adjustment can be graphically represented by a U-shaped curve using the length of stay in the host country as the *x*-axis and psychological wellbeing as the *y*-axis. Empirical evidence from previous studies also supported this U-curve model. For example, Tartakovsky (2009) studied Russian and Ukraine adolescents living in Israel in a 3-year period and found that the psychological wellbeing of immigrants decreased shortly after they migrated to Israel. In another longitudinal study, Brenner (2003) found that the sociocultural adjustment of the U.S. students in study abroad programs followed a U-curve: Sociocultural adjustment decreased sharply when participants first arrived in a new culture, and then showed steady improvement.

The U-curve model has been widely used in intercultural training programs to prepare new sojourners or immigrants for the ups and downs at cultural adaptation. Furthermore, the model has been applied to explain adjustment processes in other social settings, such as in academic performance (see Ward, Okura, Kennedy, &

Kojima, 1998). Despite these strengths, the U-curve model also has limitations. First, the model is primarily descriptive, not predictive; not all individuals experience all stages of the U-curve model, and the amount of time in each stage also varies from individual to individual. Even though the model has intuitive appeal, it lacks explanatory power: It does not explain what factors drive individuals to go through the various stages of cultural adaptation. Therefore, Church (1982) argued that the U-curve model is "weak, inconclusive and overgeneralized" (p. 542).

Ward et al. (1998) reconceptualized the U-curve model into a linear model from the perspective of coping and stress as well as social learning. In Ward et al.'s (1998) model, psychological stress and sociocultural difficulties are highest upon arrival at a new culture and steadily decrease as individuals adapt. Ward et al.'s (1998) model contributes to the literature in several important ways. First, the model is not only descriptive, but also explanatory. Two theoretical frameworks—the stress and coping mechanism and social learning theory—not only predict the acculturation trajectories but also explain why such patterns exist. Secondly, Ward et al.'s (1998) linear model includes both psychological and sociocultural adjustment, which is an advancement over the U-curve model that mainly focuses on psychological wellbeing. Finally, Ward et al. (1998) conducted a longitudinal study to empirically test their model. In their study, sojourners were measured at four different times (upon arrival, and 4, 6, and 12 months after arrival), which allowed the authors to explain the dynamic adaptation process across various stages. However, this model also has limitations. First, stress reduction is not the only component of psychological wellbeing. The initial euphoria and excitement brought about by a new sojourning experience, for example, is overlooked in the Ward et al. (1998) model. The second limitation, as pointed out by Ward et al. (1998), is the high drop-out rate of the sample

that they used to test the model. Only 28% of the original sample completed all four panels of measurement, so there was severe bias due to attrition. To be more specific, participants might have dropped out of the study because they were unhappy or unsatisfied, making the means of psychological wellbeing higher for latter measurement points.

Similar to Ward et al. (1998), Gudykunst and his colleagues (e.g., Berger & Gudykunst, 1991; Gudykunst, 1983, 1993, 1995; Gudykunst & Hammer, 1987) conceptualized cultural adaptation as a process of reducing uncertainty and anxiety in an unfamiliar environment. The theory is thus termed anxiety and uncertainty management theory (AUM), which is an extension of Berger and Calabrese's (1975) uncertainty reduction theory. The theoretical extension incorporates the cognitive component (uncertainty), the affective component (anxiety), and the behavioral responses (communication behavior). Both uncertainty and anxiety are undesirable states, which motivate individuals to employ communication strategies such as information gathering to reduce these undesirable states (Berger & Calabrese, 1975).

The AUM theory provides a comprehensive framework that integrates the affective, behavioral, and cognitive components of cultural adjustment. It explains communication behavior between people from different cultures in both the initial interactions and in more developed relationships. According to the AUM theory, in the initial intercultural interactions, being in an unfamiliar environment causes anxiety, which "refers to the fear of negative consequences in a 'foreign' cultural environment" (Gudykunst & Hammer, 1987, p. 112). Therefore, initial intercultural interaction is associated with a high degree of uncertainty and frequent information seeking behavior. The AUM theory also predicts that as more information about the host culture becomes available, uncertainty decreases, which causes communicative

behavior to decrease as well. This argument is supported by Hsu (2010), who found that the Chinese sojourners in the U.S. engaged in less frequent and less intimate self-disclosure with the host nationals as their duration of stay in the U.S. increased.

In the AUM theory, uncertainty reduction is the mediating variable that links communicative behavior with adaptation outcomes. However, a study by Hammer, Wiseman, Rasmussen, and Bruschke (1998) showed that information exchange was not related to uncertainty reduction, and nor was it related to anxiety reduction; thus, it was unrelated to intercultural adaptation. This finding dealt a serious blow to AUM, which is primarily a communication theory of cultural adaptation. Furthermore, the AUM theory of intercultural adjustment proposes 49 hypotheses regarding the relationship between variables such as information seeking and uncertainty level, most of which have not been tested.

Predictors of Cultural Adaptation

Researchers have long been interested in identifying the factors that influence cultural adaptation processes and outcomes. Early cultural adaptation research examined factors such as age, length of stay in the host country, and host language fluency. Whereas age has been found to be a negative correlate of adaptation outcomes (e.g., Stevens, 1999), length of stay in the host country and host language proficiency generally have a positive effect on cultural adjustment (e.g., Cortes, Rogler, & Malgady, 1994). Clément and his colleagues investigated the role of second language proficiency (e.g., English fluency among French-Canadians) in cultural adaptation (e.g., Clément, Gardner, & Smythe, 1980; MacIntyre, Clément, Dörnyei, & Noels, 1998; MacIntyre, Noels, & Clément, 1996). Their findings have supported a positive relationship between second language proficiency and strength of identification with the host culture.

In the past few decades, with the development of personality constructs such as the “Big Five” (Costa & McCrae, 1992), individual differences in personality traits appear to have gained considerable attention from cross-cultural psychologists (e.g., Caligiuri, 2000; Huang et al., 2005; Shaffer, Harrison, Gregersen, Black, & Ferzandi, 2006; Swagler & Jome, 2005). Studies conducted by different researchers in different countries using different personality attributes have found that emotional stability, agreeableness, and extraversion lead to reduced psychological stress (e.g., Ramalu et al., 2010; Wan, Hui, & Tiang, 2003), whereas neuroticism, a personal tendency towards anxiety, hostility, depression, and vulnerability, is related to greater psychological adjustment problems, such as depression (e.g., S. Chen, Benet-Martinez, & Bond, 2008; Ward, Leong, & Low, 2004).

Alternatively, some researchers have focused on environmental factors to explain cultural adjustment (see Bhaskar-Shrinivas, Harrison, Shaffer, & Luk, 2005, for a review). Kim (2005) identified three cultural elements that influence the adaptation process: host receptivity (i.e., host nationals’ openness toward sojourners and willingness to accommodate them), host conformity pressure (i.e., the extent to which sojourners are pressured by the environment to conform to host norms and communicative patterns), and ethnic group strength (i.e., hierarchical power relationships between ethnic groups) (pp. 387-388). Previous research has also examined environmental factors such as organizational culture and subsidiary support. Guzzo, Noonan, and Elron (1994), for example, argued that social support from coworkers and logistical support from the parent company played important roles in making the adjustment process easier.

In summary, previous theories of adaptation have discussed the predictors of adaptation outcomes and the psychological or sociocultural trajectory in the processes

of adaptation. Furthermore, researchers have demonstrated that both individual characteristics and environmental factors affect cultural adaptation. However, with rare exceptions (e.g., G. Chen, Kirkman, Kim, Farh, & Tangirala, 2010), previous studies have focused either on the person going through cultural adjustment or on the environmental attributes. The next section introduces person-culture fit and explains why the process and outcomes of cultural adaptation can be fruitfully examined using this approach.

Person-Culture Fit

In ecological terms, adaptation refers to the process by which a living organism adjusts to its surroundings. Therefore, both the person and the new environment should be considered in studying adaptation. According to ecological theorists, adaptation is a state of equilibrium that results from optimal person-environment fit (Bronfenbrenner, 1979; French, Rodgers, & Cobb, 1974). When a person moves to a new environment or assumes new roles, he or she is not in equilibrium, which motivates him or her to restore equilibrium (Lazarus & Folkman, 1984).

On a cross-cultural level, researchers have argued that certain behaviors and attitudes that are consistent with valued social norms are rewarded (Merton, 1968), and a good fit between the person and the host culture is a source of wellbeing (e.g., Seale & Ward, 1990). Person-culture fit has been defined as the congruence between an individual's internal conditions and the external conditions—the environment (Kim, 2008). Person-culture fit research takes many forms, and this section discusses four prominent approaches. First, the cultural similarity hypothesis argues that the difference between a sojourner's home culture and the host culture is an indicator of fit between the person and the host culture (e.g., Babiker et al., 1980; Furnham &

Bochner, 1986; Ward & Kennedy, 1993). The second approach involves measuring the degree of fit between the sojourners' personality attributes and the normative personality attributes in the host culture (e.g., Ward & Chang, 1997; Ward & Searle, 1991). The third approach uses independent and interdependent self-construals (Markus & Kitayama, 1991). According to this approach, the difference between a sojourner's self-construal and the normative self-construal in the host culture indicates person-culture fit. The last approach, the person-organizational culture fit, focuses on the value congruence between the individual and the organization.

Cultural Similarity Hypothesis

According to the proponents of the cultural similarity hypothesis, culture provides a unitary and coherent structure constraining the way that individuals think and act (Jun & Gentry, 2005). As a result, people sojourning in a host society that is similar to their own home culture will experience less uncertainty and anxiety than those whose home culture is dissimilar to the host culture. Therefore, person-culture fit can be assessed by the degree of similarity or distance between a person's home culture and the host culture.

First, perceived cultural similarity or distance can be measured by individuals' evaluation of the distance between their home culture and the host culture. For example, Ward and Kennedy (1993) asked New Zealanders sojourning in other countries to rate, on a scale of 0-4, how New Zealand differed from their host countries in ten areas. Another way of assessing cultural similarity or distance is to use Hofstede's (1983) cultural dimensions. For example, Morosini, Shane, and Singh (1998) operationalized cultural distance as the absolute difference between the scores that the home country and the host country received on Hofstede's (1980, 1983) dimensions of power distance, uncertainty avoidance, masculinity/femininity, and

individualism/collectivism.

Even though the cultural similarity hypothesis has intuitive appeal, studies utilizing this approach have produced mixed results. Whereas mild support has been found for the idea that cultural similarity facilitates sojourners' adjustment (e.g., Babiker et al., 1980; Furnham & Bochner, 1986; Ward & Kennedy, 1993), dissenting claims have also been made asserting that cultural similarity is irrelevant to cultural transition or even has a negative relationship with adaptation outcomes (e.g., Brewster, 1995; Jun & Gentry, 2005; Selmer & Lauring, 2009). For example, Selmer (2007) compared American business sojourners in Canada and Germany. The author found that even though American sojourners perceived Canada as being significantly more similar to the U.S. than Germany, no significant differences were detected in American sojourners' cultural adjustment in these two countries. Similarly, Jun and Gentry (2005) found that respondents staying in a culturally dissimilar host country reported greater satisfaction compared with those staying in a culturally similar country. The researchers argued that sojourners often fail to expect differences in relatively similar cultures, possibly leading to a sense of disappointment and resentment when differences do exist.

Cultural similarity research represents an oversimplified perspective of person-culture fit. First, the cultural similarity hypothesis assumes that individuals within a culture possess the same cultural traits, overlooking individual variations within the selected cultures. Cross-cultural researchers have realized that not all individuals in a culture espouse the mainstream cultural values (see Oyserman, Coon, & Kemmelmeiser, 2002, for a review), casting doubt on the assumptions of the cultural similarity approach. Secondly, in the cultural similarity hypothesis, the unit of analysis is on the cultural level, but this violates the assumption of the person-culture

fit research, which suggests that measurement of fit should be conducted at both the individual level and the cultural level. Finally, researchers have not empirically assessed the mechanisms underlying how cultural similarity or distance leads to psychological wellbeing or the lack of wellbeing.

The Personality Cultural Fit Hypothesis

Ward and colleagues (Ward & Chang, 1997; Ward & Searle, 1991) conceptualized person-culture fit as the fit between individuals' personality attributes and the culture's normative personality attributes. Ward and associates argued that it is not individuals' personality traits per se that predicted positive psychological adjustment, but the discrepancies between sojourning individuals' personality traits and those of the members of the host culture. Previous research indicated that no personality trait is associated with universal adjustment or maladjustment. For example, whereas Searle and Ward (1990) found that the extraversion of Malaysian and Singaporean students in New Zealand was positively correlated with enhanced psychological wellbeing, Armes and Ward (1989) found that extraversion among English-speaking expatriates in Singapore was associated with increased feelings of boredom, frustration, depression, and poor health. These results suggest that extraverted people may fit the New Zealand culture but not the Singaporean culture. Based on these studies, Ward and her associates formed the cultural fit hypothesis. The hypothesis highlights the interaction between the person and the environment, and states that the mismatch of the acculturating individual's personality traits to the host culture is predictive of acculturative outcomes such as depression and social difficulty.

Ward and Chang (1997) tested the cultural fit hypothesis with a sample of American sojourners in Singapore. Participants completed a 21-item extraversion

subscale of the Eysenck Personality Questionnaire (H. J. Eysenck & Eysenck, 1975), providing individuals' extraversion scores. The culture's normative extraversion score was obtained from an earlier study by S. B. G. Eysenck and Long (1986) that involved about 1,000 Singaporeans. Person-culture extraversion fit was calculated as the absolute discrepancy between the sojourner's extraversion and the Singaporeans' normative extraversion. It was found that the lower the difference between American expatriates and Singaporean means in extraversion, the lower the levels of depression. The cultural fit hypothesis was supported. However, one flaw with Ward and Chang's (1997) study is that the authors did not measure host nationals' level of extraversion. Instead, Singaporean normative values on extraversion were calculated from a previous study conducted by S. B. G. Eysenck (1986) and Long a decade before.

In a more recent study, Ward et al. (2004) examined the relationship between the Big Five personality dimensions and intercultural adjustment among Australian sojourners in Singapore and Singaporean sojourners in Australia. Similar to the Ward and Chang (1997) study, person-culture fit was measured by the absolute difference between the mean scores provided by the host sample and the responses of the sojourning sample. Unlike the Ward and Chang (1997) study, Ward et al. (2004) actually measured the host culture's normative attributes by employing a Singaporean sample in Singapore and an Australian sample in Australia. Contrary to the authors' hypotheses and to the earlier research findings in Ward and Chang (1997), results showed that even though four of the five personality dimensions were related to sojourners' psychological and sociocultural adjustment, the fit between individuals and host cultural norms was not. Furthermore, extraversion was positively related to acculturative outcomes in both the Singaporean sample in Australia and the Australian sample in Singapore, although extraversion is not a culturally prototypical trait in

Singapore. Given that the Ward et al. (2004) study represents a methodological advancement over the Ward and Chang (1997) study in measuring the host culture's normative data, the finding of no relationship between person-culture fit and acculturative outcomes suggests that this approach of assessing person-culture fit to explain cultural adaptation has limitations.

Person-Culture Self-Construal Fit

Drawing on insights from cross-cultural psychology, researchers have used the concept of self-construal in person-culture fit studies. The concept of self-construal was proposed by Markus and Kitayama (1991) to reflect the variation that people from different cultures have concerning the relationship between self and others, especially "the degree to which they see themselves as separate from others or connected with others" (Markus & Kitayama, 1991, p. 73). According to Markus and Kitayama (1991), an *independent self-construal* emphasizes autonomy and independence from others, whereas an *interdependent self-construal* emphasizes connectedness with others. Furthermore, Markus and Kitayama (1991) argued that an independent self-construal prevails in Western societies, especially the U.S.; in contrast, Eastern cultures such as Japanese and Chinese cultures encourage an interdependent way of relating to others.

Research has consistently found that independent self-construal is related to sojourners' adaptation in North American cultures. Cross (1995), for example, found that Asian students in Hawaii who scored high in independent self-construal used coping strategies that are prototypical of the North American culture and experienced lower levels of stress compared with those who scored low on the independent self-construal. Hyun (2001) also observed that Korean immigrants with a highly independent self-construal had greater psychological adjustment in the U.S. than those

with an interdependent self-construal. Hyun (2001) argued that immigrants with high independent self-construals are more likely to possess personal qualities such as being assertive, self-reliant, expressive, sociable, and confident, and he argued that these attributes are consistent with norms in the American society. Consequently, Hyun (2001) explained that these immigrants may feel more self-fulfilled and satisfied in the American culture compared with those who have low independent self-construal. In another study examining Asian international students' adaptation in the U.S., Oguri and Gudykunst (2002) found that Asian sojourners' independent self-construal was positively correlated with both the psychological and sociocultural adjustment, but the interdependent self-construal did not have a significant relationship with sojourners' adjustment.

However, even though the above researchers claimed that the results from their studies provided support for the cultural fit hypothesis, the fit index was obtained on the individual level. That is to say, the self-construal fit was measured directly by the sojourner's self-construal score, with high scores on the independence indicating a closer fit and high scores on the interdependence indicating a less close fit. The normative self-construal in the host society was not measured but rather assumed. Empirical evidence has challenged the assumption that Asians have high interdependent and low independent self-construals. For example, R. P. Yang et al. (2006) assessed the degree of self-construal fit for international students in Canada by subtracting the individual's self-construal scores (separately for independent and interdependent self-construals) from the mean scores of self-construal for the Canadian group. Contrary to the previous assumption that Asians have lower independent self-construal compared with Westerners, R. P. Yang et al. (2006) found that Asian international students in the sample scored higher on independent

self-construal. In addition, the authors concluded that the person-culture self-construal discrepancy was not related to sojourners' psychological and sociocultural adjustment after controlling for English language proficiency.

Another limitation with the existing person-culture self-construal fit research is that most research was conducted in Western societies. Following the argument that interdependence does not match societies that emphasize independence and individuals with high interdependence have a difficult time adjusting to societies such as the U.S. (e.g., Cross, 1995; Okazaki, 1997), those with high independent self-construals should have difficulty adjusting to Asian societies, in which an interdependent self-construal predominates according to Markus and Kitayama (1991). However, there is no direct evidence supporting this argument. It remains unclear whether it is the person-culture self-construal fit that matters or the type of self-construal (independent vs. interdependent) that facilitates cultural adjustment. It is possible that, compared with interdependent people, individuals with high independent self-construals are less reliant on other people and existing relationships wherever they are, regardless of the person-culture fit with the host society.

Person-Organization Fit

According to Ostroff et al. (2005), person-organization fit (P-O fit) can be defined "as the compatibility between characteristics of the individual such as personality, values, goals, and those of the organization such as culture, values, goals, and norms" (p. 593). One approach that has been used to conceptualize and measure P-O fit is value congruence. Edwards and Cable (2009) defined values as "general beliefs about the importance of normatively desirable behaviors or end states" (p. 655). Value congruence, therefore, refers to the similarity between values held by an individual and an organization or a work group (Chatman, 1989, 1991).

P-O fit researchers have stated that value congruence enhances communication, increases predictability, and fosters trust, which contributes to positive outcomes such as job satisfaction and organizational identification (Edwards & Cable, 2009). Various studies have found a positive relationship between P-O value congruence and individuals' job satisfaction (Ostroff et al., 2005), organizational commitment (Lauver & Krisof-Brown, 2001), and career success (Bretz & Judge, 1994). A negative relationship has also been observed between value fit and turnover (C. A. O'Reilly, Chatman, & Caldwell, 1991).

The P-O value congruence can be directly assessed by the individual's subjective judgment, called perceived fit or subjective fit. According to Cable and Judge (1996), perceived fit is an overall judgment about the extent to which the individual perceives he or she fits in with the environment. For example, Wang et al. (2011) used a three-item scale to measure perceived P-O fit. A sample item is, "The things that I value in life are very similar to the things that this organization values." In another study, participants were asked to indicate how well they fit in their organization, providing a direct measurement of fit (van Vuuren, Veldkamp, Jong, & Sevdel, 2007). That is why perceived fit is also called direct fit. Previous research has found that the perceived fit with the environment results in better adaptation outcomes, such as higher job satisfaction, less turnover, and better job performance (e.g., Cable & DeRue, 2002). For example, Wang et al. (2011) found that perceived fit mediated the relationship between adaptability of newcomers (i.e., the individual tendency to take initiatives to adapt to new environments) and work-related outcomes, including job performance, job satisfaction, and turnover intentions.

Compared with actual fit or objective fit, perceived fit is a more proximal predictor of attitudes (Cable & Judge, 1996; Edwards, Caplan, & Van Harrison,,

1998). For example, Cable and Judge (1995) found that perceived fit affected the evaluation of job applicants, even when actual fit, calculated by a comparison of individual and organizational values, showed no influence. In another study, Judge and Cable (1997) found that job applicants' perceived fit mediated the relationship between the actual fit and organization attraction, suggesting that the perceived fit is a more proximal predictor of adjustment compared with actual fit. However, these results may be due to a consistency bias (Edwards, 1991). For example, if a person responds "I fit well with the organization," he or she is more likely to think, "I feel I fit well with the organization, so I must be satisfied with my job" (Kristof, 1996). In other words, perceived fit and job satisfaction are both indicators of a person's attitude toward the organization. Therefore, compared with the actual fit, the perceived fit has more inflated correlation with adaptation outcome variables such as satisfaction. Wang et al. (2011) also discussed the common method bias that is found in most P-O perceived fit research: Both perceived fit and the outcome variables employ self-report responses.

In contrast to perceived fit, actual fit is based on a comparison of an individual's personal values and an independent assessment of the external group's aggregated values (e.g., workgroup's values or managers' values) (Cable & Judge, 1996; Ostroff et al., 2005). In P-O fit studies, a common practice is to use the algebraic difference between the person and the organization to assess fit, that is, Fit = $X - Y$, where X represents a personal attribute and Y represents the same attribute for the organization (Edwards, 1991). However, using a difference score as a measure of the actual fit conceals the independent and direct effects that personal and cultural characteristics have on the outcomes (Edwards, 1994). Furthermore, researchers usually use the same basic variable to measure both the person and the organization

the person functions in (L. Yang et al., 2008), overlooking the possibility of multiple value variables.

Conceptual and Measurement Problems

In sum, previous person-culture fit research has demonstrated the importance of considering the match between the person and the culture in understanding individuals' cultural adaptation. However, the previous research has many limitations. The most critical one is the inappropriate conceptualization of fit. There is no clear theorizing as to why specific variables are chosen to investigate the congruence between the person and the culture. For example, in a number of studies the fit between the person's extraversion and the culture's normative extraversion is examined (e.g., Ward & Chang, 1997). This trait measures the degree to which a person is talkative and sociable and enjoys social gatherings (Costa & McCrae, 1992), but it is not a cultural-level variable. Just because host people have generally low scores for extraversion, as was the case in Ward and Chang's (1997) study, does not mean that the host culture discourages extraversion, nor does it mean that extraverted people have maladjustment in societies in which extraversion is discouraged. Empirically, the person-culture extraversion fit proposition has received minimal support; in contrast, substantial evidence suggests that extraversion is related to better adjustment regardless of the type of culture (e.g., Huang et al., 2005; Searle & Ward, 1990). Therefore, researchers should consider reconceptualizing person-culture fit.

Furthermore, with rare exceptions (e.g., Ward & Chang, 1997; Ward et al., 2004; R. P. Yang et al., 2006), most person-culture fit studies did not actually measure the fit between the individual and the culture. Most fit indices have been either obtained solely from cultural-level variables or from individual-level variables. Researchers focusing on cultural-level analysis have used the differences or

similarities between two cultures (the home culture and the host culture) as a fit index (e.g., Morosini et al., 1998). In contrast, some researchers have used individual-level scores as a fit index. For example, in examining person-culture self-construal fit, Oguri and Gudykunst (2002) did not measure the normative tendency in Hawaii in terms of self-construal. Instead, they assumed that the U.S. culture emphasizes independent self-construal. Therefore, participants scoring high in independence were considered as having a closer fit with the culture compared with interdependent people. However, as demonstrated by R. P. Yang et al. (2006), Westerners do not always have higher independent self-construals as compared to Asians, nor do Asians always have higher interdependent self-construals than Westerners (see Levine et al., 2003, for a review).

Finally, previous fit indices have not been able to assess multiple characteristics of the person and culture. A common approach is to examine one characteristic along which the person and the environment differ. For example, Parks, Bochner, and Schneider (2001) studied person-culture fit on Hofstede's (1980, 1983) individualism/collectivism value dimension. However, in cultural adaptation, various attributes affect sojourners' acculturation outcomes, so researchers may need to consider many aspects of the person and the culture such as personality, needs, and values (Kristof, 1996; Westerman & Cyr, 2004). Focusing only on one of these characteristics may present only a partial picture of person-culture fit.

Thus, existing person-culture fit research has not conceptualized or measured fit properly. The following section proposes a dynamic constructivist approach—the Galileo mental models approach—to solve conceptual and methodological problems in person-culture fit research.

Galileo Mental Models and the Convergence of Mental Models

This section proposes an alternative approach, the Galileo constructivist approach, to study person-culture fit. Following a brief introduction of the constructivist perspective on cultural adaptation, mental models and the convergence of mental models under the Galileo framework are discussed.

The Dynamic Constructivist Perspective on Cultural Adaptation

Current research follows two trends in explaining the influence of culture on individuals (Brett & Crotty, 2008). These two trends arise from two different ways of conceptualizing culture: culture as a set of general and stable traits or culture as a "loose network of domain-specific knowledge structures" (Hong, Morris, Chiu, & Benet-Martinez, 2000, p. 710). The former is termed a *trait approach* and the latter is a *dynamic constructivist approach* (Morris & Fu, 2001).

According to the trait approach, culture is the distinct character shared by a social group (Brett & Crotty, 2008). Research using this approach tends to examine general cross-cultural differences and similarities that are relatively stable. Hofstede (1983), for example, identified four dimensions of cultural values that are used to distinguish between different cultures: individualism/collectivism, power distance, masculinity/femininity, and uncertainty avoidance. Based on this approach, culture shock can be explained as a clash between the cultural values in the sojourners' home culture and those in their host culture; similarly, person-culture fit can be conceptualized as the (dis)similarity between the individual's cultural values and those of the host nationals.

The trait approach has undoubtedly remained the dominant paradigm in cross-cultural research. However, the approach has also received considerable criticism. One criticism arises from the concern that this approach treats culture as a static, country-level construct and fails to account for individual experiences within

the culture (Fiske, 2002; Liu & Dale, 2009). Furthermore, a great deal of empirical evidence suggests that people within one culture may possess multiple cultural frames (see Oyserman et al., 2002, for a review). Therefore, a trait approach makes it difficult for researchers to explain the extent to which individuals revise their pre-existing cultural knowledge and embrace new cultural values in the host society.

In contrast, the dynamic constructivist approach emphasizes that knowledge structures are dynamic, depending on accessibility, availability, and activation (Morris & Fu, 2001). Therefore, culture's influence may vary from individual to individual, depending on the social context. In the cultural adaptation process, the local practices, relationships, and social and political institutions may all influence individuals' mental models of self in relation to the cultural environment; such mental models may prompt individuals to use different knowledge structures, and therefore different motivations and behaviors to interact with host nationals, which in turn lead to different acculturative outcomes. The dynamic constructivist approach, therefore, allows us to explain individual experiences of cultural adaptation by investigating how culturally bound yet situationally relevant knowledge structures influence their intercultural communication, and subsequently, adaptation outcomes.

Furthermore, constructivists assume that there exist tensions between contradictory values, norms, and ideologies that are stored in people's knowledge structures (Brett & Crotty, 2008). Culture's influence on individuals is not stable or uniform; instead, as different contextual cues activate different knowledge structures, people may exhibit different cognitive, affective, and behavioral tendencies over time or in various contexts. Hence, culture's influence is dynamic and contextual. Therefore, dynamic constructivists have argued that it is difficult to reduce cultural influences to a small number of dimensions (e.g., the Big Five traits or the dimensions

of cultural values).

Finally, following the symbolic interactionist tradition, constructivists believe that people's consciousness or knowledge structures are socially constructed and meaning is shared through social interaction. On a cultural level, cultural schemas are developed through shared experiences among a group of people, who internalize these shared experiences to create meaning and to understand the world around them (Quinn, 2005). This perspective explains why cultural adaptation is a social process between the sojourners and the host nationals: When sojourners enter a new society, they may experience cognitive conflicts because knowledge structures are culturally bound and sojourners are confronted with diverging knowledge structures. Hall (1984) described the concept of culture shock this way:

> The shifting of the self-world relationships . . . brings about heightened levels of consciousness through an increased awareness of the split between inner subjective experiences and external objective circumstances . . . the painful discrepancy between what is and what should be. (p. 226)

In this sense, both individual characteristics and culture are "mutually constitutive" (Church, 2010, p. 445). Cultural models are synonymous with collective mental models in that they both refer to shared understanding or common perspectives among a group of people (Jones, Ross, Lynam, Perez, & Leitch, 2011). To understand adaptation, both the individual's mental models and the culture's mental models need to be considered.

Convergence of Mental Models: Galileo Theory and Method

Mental models refer to the patterned knowledge structures people use routinely to interpret events and to guide their behaviors (Liu & Dale, 2009). According to Rouse and Morris (1986), mental models are "mechanisms whereby

humans are able to generate descriptions of the system purpose and form, explanations of system functioning and observed system states, and predictions of future system states" (p. 351). Van Boven and Thompson (2003) referred to mental models as "cognitive representations of the casual relationships within a system that allow people to understand, predict and solve problems within that system" (p. 388). Therefore, mental models serve as sources of expectations for how elements are connected and how things proceed.

Convergence of mental model occurs when individuals interact with others or their surroundings. For example, Liu (2004) found that mental models of two negotiators converged as a result of their interaction. Efforts have already been made to validate the constructs of mental models and the convergence of mental models (Mathieu, Heffner, Goodwin, Salas, & Cannon-Bowers, 2000; Mohammed & Dumville, 2001), and reliable measures of mental models have been constructed (see Woelfel & Fink, 1980). Mental models and the convergence of mental models have been employed by researchers studying teamwork and decision-making processes to explain team dynamics (e.g., Cannon-Bowers, Salas, & Converse, 1993; Mohammed, Klimoski, & Rensch, 2000), but their application in the field of cultural adaptation has been very limited.

This dissertation proposes that mental models and their convergence can be used to understand cultural adaptation. Because mental models are situation specific, mental models consisting of structural relationships between concepts relevant to the home culture, the host culture, and adaptation challenges are especially important for sojourners. Furthermore, sojourners amend their mental models when receiving new input from the host culture.

The Galileo technique and multidimensional scaling. Consistent with the

constructivist perspective, Galileo theory assumes that no objects or concepts have inherent meaning. “All meanings within the Galileo theory are therefore relative, with each object defined in terms of its pattern of similarity and differences with other objects” (Woelfel, 2009, p. 2). The Galileo theory of mental models relies on judgments of separation or dissimilarity of concepts to represent human cognition within a multidimensional perceptual space (Woelfel & Fink, 1980). The multidimensional space consists of the interrelationship between concepts: Concepts that are similar to one another are close to each other in this space, and concepts that are dissimilar to each other are far from each other (Woefel & Fink, 1980).

In a typical Galileo project, participants are presented with a set of *n* concepts relevant to the research topic and asked to rate the distance between each pair of concepts based on an arbitrary unit (i.e., a yardstick) provided by the researcher, resulting in a $n \times n$ distance matrix with the diagonal elements being 0s (S. Chen, 1993). This matrix serves as the input data for the Galileo program, which produces the projections of the concepts on the principal axes of this space (S. Chen, 1993, p. 28). This measurement technique is a multidimensional scaling (MDS) method in that it provides a direct measurement of cognitive structure, which sets it apart from other multivariate techniques such as factor analysis. That is, a Galileo input data matrix is based on participants’ direct assessment of the similarity or dissimilarity between concepts or ideas (e.g., “how different are A and B?”) (Woelfel & Fink, 1980). For example, in order to understand how Japanese and Americans perceive individualism and collectivism differently, Gelfand, Triandis, and Chan (1996) asked Japanese and American participants to judge the similarity between 15 concepts that are relevant to the constructs of individualism and collectivism (e.g., *enjoy life, pleasure, choose own goals, reciprocating favors, family security,* and *respect for tradition*), resulting in 105

(15*14/2 = 105) paired comparisons.

In contrast, indirect measurement asks participants to judge the separation of concepts based on a predefined set of attributes (e.g., how different are A and B in length? How much do you like A, and how much do you like B?); (Pinkley, Gelfand, & Duan, 2005; Woelfel & Fink, 1980). Therefore, indirect measurement requires two things: (1) The attributes along which concepts are differentiated must be known prior to the measurement; (2) the functions (e.g., linear or curvilinear) relating the overall distance between any two concepts to the set of attribute differences must be known (Woelfel & Fink, 1980, p. 41). However, both conditions are difficult to fulfill, so researchers often assume that they know the attributes and the functional relationships. Direct measurement does not make these assumptions and thus minimizes the assumptions that researchers make on the participants. Pinkley et al. (2005) claimed that the MDS technique enables researchers to *uncover* the hidden cognitive structure instead of imposing it.

Components of a Galileo mental model. A Galileo mental model consists of concepts of objects, attributes, the *self,* and the distance between these concepts. An object is defined as “anything that can be designated or referred to” (Blumer, 1969, p. 68). According to constructivists, objects do not have intrinsic meaning but are defined in relation to other objects. In this sense, attributes (e.g., good, bad, and evil) are also objects and their meanings also derive from their similarity or dissimilarity with other objects (Woelfel & Stoyanoff, 2007).

In a Galileo mental model, the concept of *self* occupies a special place. According to Woelfel (2009):

> Like any point in the space, the self has a meaning which is given entirely by its location in the space—that is, by its distance relations with the other points

> or constructs. We expect that individuals will locate their self point close to those concepts which they believe describe them well, and far from those concepts which they believe describe them poorly or not at all. (p. 5)

Therefore, in a Galileo cognitive space, people's selves are close to attributes that describe them and to behaviors that they frequently perform, and far away from those attributes that they believe that they do not exhibit and behaviors that they seldom perform (Woelfel & Stoyanoff, 2007). Empirical studies using the Galileo mental model approach has supported this notion. In a private commercial study about five major brands, Woelfel (as cited in Woelfel & Stoyanoff, 2007) found that the closer the brand was to the *self* point, the greater the market share the brand had, indicating that people are more likely to purchase a brand that is closer to the concept of *self* in their mental space. In another study exploring people's use of different communication media (i.e., newspaper, Internet, cell phone, and iPod), researchers found that the distance between the *self* point and the communication media is negatively related to the media use (hours per day); (r = - .90); (Cheong et al., 2009).

The Galileo mental model also provides information about people's beliefs and attitudes. A *belief* is defined by the distance relation between any two points, and an *attitude* toward a concept can be measured by the distance between *self* and that concept point (Woelfel & Fink, 1980). For example, a close distance between *Banana Republic* and *fashion* probably means that the person believes that Banana Republic is fashionable. A great distance between *self* and *Banana Republic* indicates that the person's negative attitude toward Banana Republic, even though it may be considered a fashionable brand. Further, evaluative terms (e.g., *good*, *bad*, and *things I like*) can be included in the Galileo space to indicate the evaluative beliefs in a person's mental model: Positive evaluations of objects are denoted by a small distance between the

object and positive terms such as *good* and *things I like* (Dinauer, 2003, p. 6).

Galileo representation of person-culture fit. S. Chen (1993) defined an individual's mental model about an organization as "a set of attitudes and beliefs that reflects each individual member's perception of the prevalent values, norms, and expectations in his/her work environment" (p. 50). Therefore, in a typical Galileo study, concepts that are important to the person's understanding of the environment are used for paired comparison procedures to study an individual's mental model (Fink & S. Chen, 1995). S. Chen (1993) also explained that a cultural group's mental model can be derived from the central tendency of individual members' mental models. As Woelfel and Fink (1980) stated, "Although information is obviously lost in the averaging process, nonetheless the result is a space of real utility for practical decision making, since it represents the central tendency of the group scaled, or as Durkheim says, 'the average, then represents a certain state of the group mind'" (p. 133).

Therefore, by comparing an individual's mental model with the host culture's aggregated mental model, the Galileo mental models framework provides a person-culture cognitive fit index. The more similar the mental models are between the person and the culture, the closer the fit is. This person-culture convergence of mental models is similar to the actual fit discussed in the person-organization fit literature (Kristof, 1996; Ostroff et al., 2005), because, like actual fit, it "allows a verifiable assessment of similarity or complementarity, without asking for implicit judgments of fit by those involved in the situation being analyzed" (Kristof, 1996, p. 11). But unlike the actual fit used in previous research, convergence fit is a holistic measure that assesses the convergence in multiple attributes of the person and the culture. Furthermore, the convergence fit is represented by a single number; thus, it

does not present multicollinearity problems for data analysis and parameter estimation. Operationally, the mental model fit between the person and the culture is obtained by first rotating the person's mental space against the culture's along the coordinates, and then examining the mean distance between all components in the person's space and their counterparts in the culture's space. More importantly, convergence fit examines the congruence between many aspects of the person and the culture (i.e., many values and beliefs) and is an appropriate measure for the multidimensional concept of person-culture fit (Kristof, 1996; Westerman & Cyr, 2004).

According to dynamic constructivists, mental models change in response to external stimuli. As sojourners interact with the social environment in the host society, their mental models concerning relationships between self and the host society may also change. Additionally, the Galileo mental models approach provides information on the distance between the concept of *self* and the host culture. A smaller distance between *self* and the *host culture* represents a more positive attitude toward the host culture. Therefore, the distance indicates the level of identification a sojourner has with the host culture.

Hypotheses and Model

This section proposes a dynamic cultural adaptation model that examines how individuals' attributes (i.e., cultural adaptability and host language proficiency) influence the affective, behavioral, and cognitive aspects of cultural adaptation. In this model, behavioral adjustment and cognitive adjustment are related to each other and both predict affective adjustment. On a cognitive level, sojourners' cultural adaptability influences the extent to which they adapt their mental models to those of the host nationals and develop identification with the host culture to reduce stress. On a behavioral level, sojourners' functional skills, such as host language proficiency,

influence the amount of intercultural communication they engage in with host nationals. Finally, on the affective level, sojourners achieve positive emotional states, such as happiness and satisfaction, as a result of cognitive and behavioral adjustment. This dissertation not only investigates the antecedents and consequences of the different cultural adjustment variables but also explores the cross-lagged reciprocal relationship between these variables.

Longitudinal Data Design

Previous cultural adjustment research has mainly relied on cross-sectional data at one point in time (Brenner, 2003). However, cross-sectional research has several drawbacks: First, researchers using cross-sectional data at one point in time are not able to assess temporal precedence, which is an essential component for establishing causality. Secondly, cross-sectional data provide information only about relationships or lack of relationships between variables but not about group-level tendencies to increase or decrease over time (see Curran & Bauer, 2011, for a detailed discussion). Finally, the cross-sectional data model is inappropriate for assessing causal reciprocity due to biases in estimation (Gollob & Reichardt, 1985). According to Hunter and Gerbing (1982), “even though some estimation procedures such as are contained in LISREL permit the estimation of causal parameters in nonrecursive models with cross-sectional data, nonrecursive models are fundamentally not suitable for treatment in a cross-sectional model” (p. 289). Therefore, a longitudinal model is theoretically more appropriate for examining cultural adaptation as a dynamic, rather than static, process.

In this dissertation, cultural adaptability and host language proficiency are measured once because they are considered relatively stable traits that do not change over a short period of time, whereas intercultural communication, person-culture

mental model fit, host identification, and psychological wellbeing are measured at two different times with a three-month interval. The three-month lag was determined based on previous literature. G. Chen and Klimoski (2003) argued that the adaptation period of newcomers in organizations usually lasts between two and three months. Wang et al. (2011) also found that newcomers' perceived person-environment fit as well as psychological wellbeing improved over a 3-month period. In a longitudinal study on international students' adjustment in Ireland, A. O'Reilly, Ryan, and Hickey (2010) found that there were significant differences in international students' psychological wellbeing between pre-arrival and 12 weeks post-arrival. Furthermore, international students experienced significantly less sociocultural difficulty at 12 weeks post-arrival compared with 6 weeks post-arrival. In sum, previous literature has suggested that three months is sufficient time for adaptation to take place.

A repeated-measures latent model is proposed to examine group changes on psychological wellbeing across the two times. Existing research leads to different conclusions about change in psychological wellbeing: The U-curve model suggests a decrease in the first few months of adaptation, whereas the coping and stress model and the uncertainty and anxiety management model suggest a positive, linear relationships between time and psychological wellbeing. Therefore, one research question the dissertation addresses is:

RQ1: Is there significant improvement or decrease of psychological wellbeing in the initial stage of cultural adaptation?

This dissertation employs a cross-lagged panel model to assess the relationships between variables. A cross-lagged panel model includes two types of effects: autoregressive effects and cross-lagged effects. Autoregressive effects, also called lagged effects, refer to the effects a variable has on itself. Omitting

autoregressive effects causes serious bias in parameter estimation, as illustrated by Gollob and Reichardt (1985). Autoregressive effects reflect measurement stability and are assumed to be positive. Therefore, it is hypothesized that:

H1a: The amount of intercultural communication at Time 1 is positively associated with the amount of intercultural communication at Time 2.

H1b: The degree of person-culture fit at Time 1 is positively associated with the degree of person-culture fit at Time 2.

H1c: The level of psychological wellbeing at Time 1 is positively associated with the level of psychological wellbeing at Time 2.

H1d: Perceived identification with the host culture at Time 1 is positively associated with perceived host identification with the host culture at Time 2.

In the following section, 12 hypotheses and one research question are proposed that can be tested with the cross-lagged model.

The Theoretical Model

Host language proficiency in cultural adjustment. Host language proficiency refers to the cognitive, affective, and operational capacity to communicate in accordance with the host nationals' communication symbols and meaning systems (Kim, 1988, 2001, 2005). Considering that communication skills are essential for satisfying sojourners' daily needs, such as ordering food and asking for directions, scholars have argued that a sense of wellbeing in the host country is contingent on competence in the host language (e.g., Kim, 1977, 1988; Noels, Pon, & Cléments, 1996; R. P. Yang et al., 2006).

Researchers have examined two dimensions of the host language proficiency factor: the actual competency in the host language as measured by test scores in the host language or the perceived competence in the host language as measured by

self-report. Even though host language test scores provide an easy way to measure host language proficiency, some researchers have argued that actual communication competence does not predict communication behaviors: Just because some people have higher competence in the host language does not mean that they are more likely to communicate with host nationals. Therefore, these researchers claim that perceived proficiency in the host language is a more important predictor of acculturative outcomes than actual linguistic competence (e.g., Gaudet & Clément, 2005; Hammer, Gudykunst, & Wiseman, 1978; MacIntyre et al., 1998; MacIntyre et al., 1996; Pak, Dion, & Dion, 1985). Therefore, perceived proficiency in the host language is used in this dissertation.

Intercultural communication refers to the actual behavior of interacting with host nationals. Some previous researchers have conceptualized and operationalized intercultural communication as a difference between communication with host nationals and home nationals. For example, Swagler and Ellis (2003) used the percentage of time Taiwanese students spent socializing with Americans minus the percentage of time they spent with Chinese to measure intercultural communication. However, to conceptualize intercultural communication as a difference between intercultural and intracultural communication may be problematic. One assumption is that assimilation (i.e., high host identity and low home-culture identity) is the most effective adaptation strategy, but current research suggests that a bicultural identity or cultural integration is the most effective strategy of cultural adaptation (e.g., Benet-Martínez & Haritatos, 2005; Benet-Martínez, Leu, Lee, & Morris, 2002). The difference measure also does not take the absolute amount of communication into consideration: It does not distinguish someone who spends a lot of time communicating with people in both the home culture and the host culture from those

who spend very little time with either group. Therefore, this dissertation conceptualizes intercultural communication as the absolute amount of communication between the sojourners and the host nationals (Church, 1982).

Previous research has been successful in finding a significant correlation between self-reported host language proficiency and intercultural communication (e.g., Barratt & Huba, 1994; Poyrazli, Arbona, Bullington, & Pisecco, 2001; Stoynoff, 1997). Barratt and Huba (1994), for example, found that as the international students' English skills increased, their interpersonal relationships with Americans also increased. In a study about foreign business expatriates in China, Selmer (2006) found that proficiency in Mandarin had a positive association with expatriates' sociocultural adjustment after the time that expatriates had spent in China was controlled for. Utilizing a path analytic model, Swami, Arteche, Chamorro-Premuzic, and Furnham (2010) found that English proficiency had an indirect influence on adjustment by reducing perceived cultural differences and increasing contact with host nationals among Malaysian undergraduate students in Britain.

Perceived host language proficiency also has a direct effect on psychological wellbeing. For example, R. P. Yang et al. (2006) found that language self-confidence played a pivotal role mediating the relationship between self-construal and psychological and sociocultural adjustment among international students in Canada. In another study, Lee and Van Vorst (2010) found that expatriates' self-reported Chinese language ability significantly influenced their cultural adjustment in Taiwan. In a study regarding cultural adjustment of expatriates in Japan, Peltokorpi (2008) found that Japanese proficiency had a positive relationship with expatriates' general adjustment and job satisfaction. Gaudet and Clément (2004) studied French-speaking Canadians in a unilingual English-speaking community and found that confidence in

English was positively related to self-esteem and negatively related to stress from daily hassles.

Therefore, this dissertation proposes the following hypotheses:

H2: Controlling for baseline intercultural communication, sojourners' host language proficiency has a positive influence on the amount of intercultural communication they have with host nationals at Time 2.

H3: Controlling for baseline psychological wellbeing, sojourners' host language proficiency has a positive influence on their psychological wellbeing at Time 2.

Cultural adaptability in cultural adjustment. Recent researchers proposed that cultural adaptability captures the individual differences in dealing with a new environment (Moyers & Coleman, 2004). Ployhart and Bliese (2006) defined *adaptability* as consisting of "ability, skills, disposition, willingness, and/or innovation, to change or to fit different tasks, social, and environmental features" (p. 13). Empirical evidence has been consistent in finding that adaptability is related to positive adaptation outcomes, including job satisfaction (e.g., Park & Holloway, 2003), enhanced work performance (e.g., Karaevli & Hall, 2006; Paulsson, Ivergard, & Hunt, 2005), and reduced turnover intention (e.g., Wang et al., 2011).

First, researchers have suggested that adaptability affects behavioral cultural adjustment because it concerns the willingness to interact with culturally different others. Williams (2005), for example, conceptualized cultural adaptability as a core component of intercultural communication skills and a prerequisite for intercultural communication behavior. In a study investigating the relationship between college students and their foreign instructors, Thweatt (2003) found that compared with other factors such as age, sex, and previous experience, students' level of openness to

diversity and challenge (i.e., cultural adaptability) was the only significant predictor of students' intercultural communication competence.

Furthermore, cultural adaptability is related to affective cultural adjustment. In one study, Templer (2010) found that expatriate mangers' cultural adaptability was related to subordinates' job satisfaction. In another study, Wang et al. (2011) found that cultural adaptability was positively related to person-organization fit, which was positively related to job satisfaction and negatively related to turnover intentions.

Finally, cultural adaptability is also related to the development of host identification. One distinct feature of cultural adaptation is that sojourners have to deal with two types of identities: home identity and host identity. Individuals can be divided into four categories based on their orientation towards these identities: assimilation (identification mostly with the host culture), integration (high identification with both the home culture and the host culture), separation (identification mostly with the home culture), or marginalization (low identification with both cultures) (e.g., Berry, 1990; Berry, Phinney, Sam, & Vedder, 2006; Berry & Sam, 1997). Previous studies have found that openness to experience, a key component of cultural adaptability, is a positive predictor of identification with both the home culture and the host culture (e.g., Benet-Martínez & Haritatos, 2005).

Based on the previous discussion, three hypotheses are formed:

H4: Controlling for baseline intercultural communication, sojourners' cultural adaptability has a positive influence on the amount of intercultural communication they have with host nationals at Time 2.

H5: Controlling for baseline psychological wellbeing, sojourners' cultural adaptability has a positive influence on their Time 2 psychological wellbeing.

H6: Controlling for baseline host identification, sojourners' cultural

adaptability has a positive influence on their Time 2 identification with the host culture.

Person-culture fit in cultural adjustment. Person-culture fit is conceptualized as the degree of similarity in cognitive structures between an individual sojourner and the host nationals. It reflects the sojourner's cognitive adaptation, which has effects on other aspects of cultural adjustment: intercultural communication behavior, development of host identification, and improvement in psychological wellbeing.

First, there exists a cross-lagged reciprocal relationship between person-culture fit and intercultural communication. Roloff and Van Swol (2009) pointed out that communication is both the predictor and product of shared mental models: "Communication plays an integral role in the development of shared cognition, and communication processes benefit from the development of shared cognition" (p. 172). On the one hand, person-culture mental models fit promotes intercultural communication. Edwards and Cable (2009) stated that one effect of value congruence is enhanced communication. They reasoned that the presence of shared mental models implies shared standards concerning what is important and what is right, which "establishes a common frame for describing, classifying, and interpreting events" (Edwards & Cable, 2009, p. 656). Because a common frame facilitates information exchange and reduces misunderstandings (Kalliath, Bluedorn, & Strube, 1999; Meglino, Ravlin, & Adkins, 19991), convergence of mental models encourages people to engage in more interaction. This argument is consistent with the broader literature that examines the effects of interpersonal similarity on the frequency and quality of communication (see Edwards & Cable, 2009, for a brief review).

On the other hand, intercultural communication also leads to person-culture

mental model fit. Galileo researchers have claimed that mental models converge in the same manner that physical systems do (e.g., Fink & S. Chen, 1995; Woelfel & Fink, 1980). Applying the second law of thermodynamics to the human communication system, Kincaid, Yum, and Woelfel (1983) argued that a physical system cannot be stable if it is not at equilibrium. According to Kincaid et al. (1983):

> If all of the gases in a closed container were squeezed into one corner, or if a proportion of the gas molecules were moving at a greater velocity, then over time the molecules would redistribute themselves evenly throughout the container, and eventually the molecules would converge on the average velocity corresponding to the most probable distribution. (pp. 59-60)

Therefore, just as the collision of molecules results in their exchange of energy and momentum, the process of communication results in a transfer of information regarding the communicators' cognitive structure (Fink & S. Chen, 1995). This process has been observed by researchers who study group discussion and decision making (e.g., Roloff & Van Swol, 2009). For example, Kennedy and McComb (2010) described mental model convergence as a macro-cognitive process in which individuals' mental models are updated and modified through communication until they converge to the group mean. This process implies that a sojourner's mental model converges with the host culture's mental model when there is information exchange between the sojourner and the host culture. An interesting example was provided by Kincaid et al. (1983), who studied the mental models of Korean immigrants in Hawaii. The elements of the mental model in the study consisted of concepts that are important to the U.S. culture (the host culture) and the Korean culture (the home culture), such as *individual freedom, saving face*, and *sense of authority*. The researchers found that mental models of early Korean immigrants

whose residence in Hawaii exceeded eight years were closer to mental models of host residents in Hawaii compared with more recent Korean immigrants (1 to 7 years), suggesting that mental models of immigrants converged with those of local residents as the interaction with the local residents increased. Therefore, it is hypothesized that:

H7: There is a cross-lagged reciprocal causal relationship between intercultural communication and person-culture fit.

Person-culture fit also affects sojourners' psychological wellbeing. According to constructivists, culture provides the meaning system on which individuals base their interpretation of events and make decisions. However, when an individual enters a new culture, the incongruity between his or her mental models and those of the host culture prevents him or her from making sense of the surroundings. Consequently, sojourners may experience uncertainty and anxiety, which is not necessarily related to host language use. For example, many people speak the host language fluently but experience a high level of stress because they have mental models that diverge from the members of the new community. A hypothesis is thus formed:

H8: Controlling for baseline psychological wellbeing, the degree of person-culture fit at Time 1 is positively associated with sojourner's Time 2 psychological wellbeing.

Finally, on a cognitive level, person-culture fit also affects host identification. Tajfel (1978) argued that cognitive similarities between members of a group form the basis of a shared identity. Cross-cultural psychologists have argued that identity development is a result of social and cultural construction (Markus & Kitayama, 1991). When a person is socialized into a culture, he or she starts to accept the symbolic meaning of images with cultural significance. This shared symbolic network evokes affective commitment with the host culture and a sense of common identity

(Warner, 1959). Therefore, it is hypothesized that:

H9: Controlling for baseline host identification, the degree of person-culture fit at Time 1 is positively associated with Time 2 perceived identification with the host culture.

Mental model change in cultural adjustment. Mental model change is motivated by two factors: cultural adaptability and the initial divergence between the person's and the culture's mental models. Cultural adaptability concerns individual differences in how fast cognitive change takes place. I. Fazey, Fazey, and Fazey (2005) argued that adaptive expertise (an individual's ability to deal flexibly with new situations) is most relevant to the disposition to changing current perspectives and cognitive representations of a social, economic, and biophysical system.

The initial degree of similarity between the person and the culture in mental models affect mental model change in that the more similar a person's mental model is with the host culture's, the less room there is for change, indicating a negative relationship between person-culture fit and mental model change. Liu, Friedman, Barry, Gelfand, and Zhang (2012) found that when negotiation parties are from different cultures, they hold drastically more different mental models compared with intracultural dyads. As a result, intercultural negotiation dyads changed mental models more than intracultural negotiation dyads. Based on the above discussion, the following hypotheses are formed:

H10: Sojourners' cultural adaptability is positively associated with their mental model change between Time 1 and Time 2.

H11: The degree of person-culture fit at Time 1 is negatively associated with the amount of subsequent mental model change.

Mental model change has implications for affective adjustment. Even though

some previous studies on negotiation have found that mental model change is positively related to objective negotiation outcomes such as joint gains (Liu et al., 2012), the relationship between mental model change and psychological wellbeing has not been studied. Because prior research has not been clear as to the relationship between mental model change and psychological wellbeing, a research question instead of a hypothesis is proposed:

RQ2: Does mental model change influence psychological wellbeing?

Host identification in cultural adjustment. Host identification refers to identification with the host culture and the host nationals. In this study, host identification is represented by the distance between the *self* concept and the *U.S. culture* concept in sojourners' Galileo mental models. Host identification is related to both behavioral adjustment and affective adjustment. First, studies have shown that identification affects communication patterns (see Gardner, Paulsen, Gallois, Callan, & Monaghan, 2000, for a review). Stewart and Garcia-Prieto (2008) argued that social identification provides "shared and distinctive forms of communication behaviors (e.g., technical jargon, slang, private jokes, argot, etc.)" (p. 661), which facilitate the communication process. Empirical evidence has supported the influence of group identification on communication. Suzuki (1998), for example, studied Japanese and American bank employees and found that there was a positive relationship between national identity and communication frequency. It is hypothesized that:

H12: Controlling for baseline intercultural communication, Time 1 host identification has a positive effect on the amount of intercultural communication at Time 2.

Host identification also affects psychological adjustment. Jameson (2007) stated that cultural identity refers to "an individual's sense of self derived from formal

or informal membership in groups that transmit and inculcate knowledge, beliefs, values, attitudes, traditions, and ways of life" (p. 207). According to the social identity theory, identification with a social group that is viewed positively adds to one's positive self-concept (Tajfel, 1981, 1982). Lewin (1948) also indicated that individuals need a firm sense of group identification to develop a sense of wellbeing. If sojourners cannot establish a firm identification with local social groups, they may experience isolation and depression. In organizational research, identification has been connected to a number of positive outcomes, including greater job satisfaction and productivity, and reduced turnover (see Ashforth & Mael, 1989; Meyer & Allen, 1997). Therefore, it is hypothesized that:

> H13: Controlling for baseline psychological wellbeing, sojourners' Time 1 host identification is positively associated with their psychological wellbeing at Time 2.

Based on the above research questions and hypotheses, the following cross-lagged data model was tested:

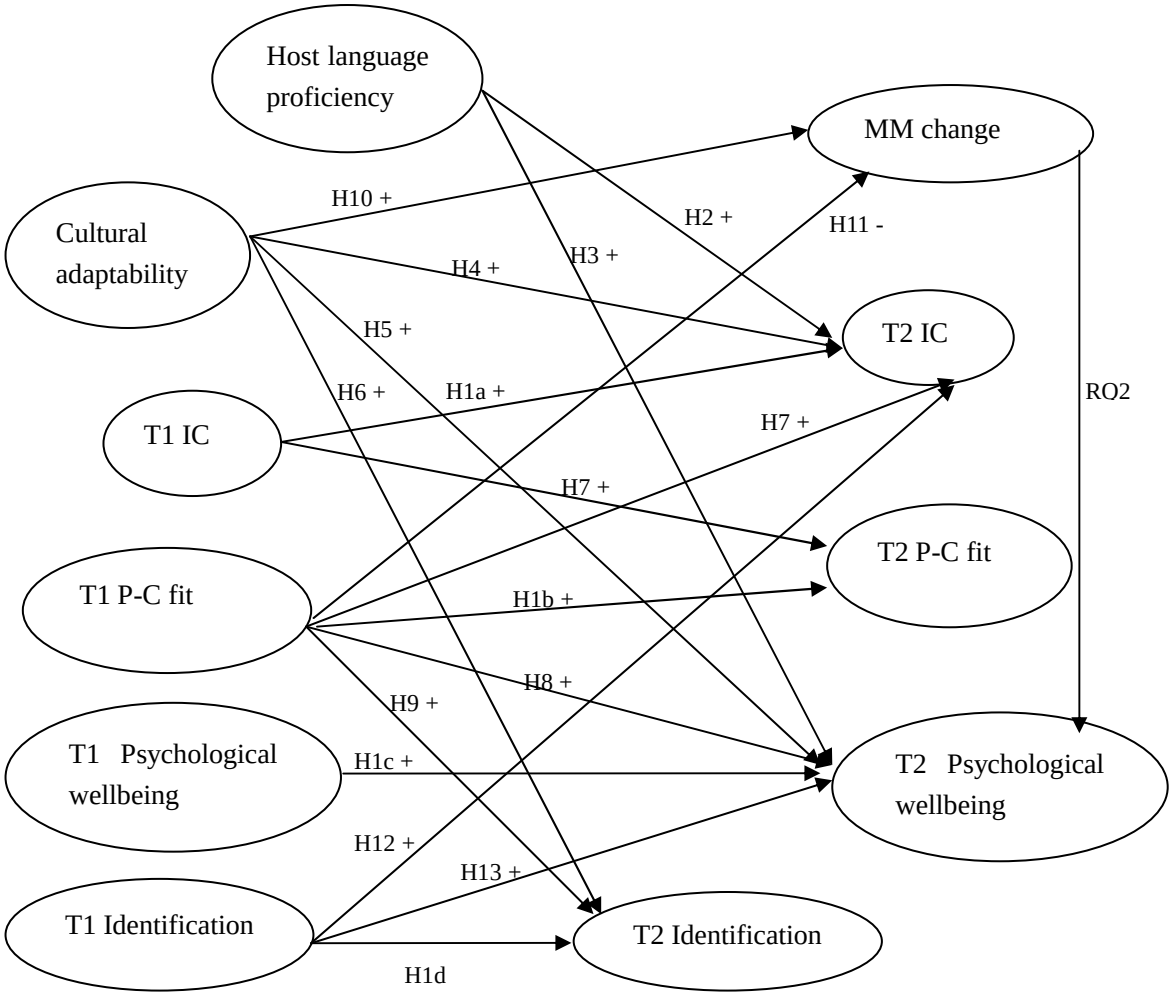


Figure 1. Structural relations based on the hypotheses. All exogenous variables are allowed to covary. T1 refers to data collected at Time 1, and T2 refers to data collected at Time 2. IC refers to intercultural communication, MM refers to mental models, P-C fit refers to person-culture fit, and identification refers to host identification.

CHAPTER III

METHOD

This chapter discusses the participants, design, materials, and procedures used to evaluate the model proposed in Chapter II. In addition, a pilot study to generate the domain of concepts is also described.

Pilot Study

The first step in a Galileo mental model study is to generate a domain of concepts that is relevant to the research topic; in this dissertation, it is cultural adaptation. A pilot study was conducted in July 2011 for this purpose.

Participants

A total of twenty international students studying at three different universities in the U.S. were recruited for the pilot study. Their ages ranged from 22 to 34, and their stay in the U.S. varied from 1 to 7 years. Fifteen of the participants were originally from China, two were from India, and the rest are from various other countries.

Procedures

All participants responded to an online survey (at surveymoneky.com) between July and August of 2011. The topic was intercultural adaptation or adjustment. The questionnaire was written in English. It contained three questions. For example, participants were asked to list everything that came to their mind when they thought of adapting to being in the U.S. (see Appendix A).

Results

The pilot study generated 98 concepts relevant to cultural adaptation. Concepts that expressed similar ideas were collapsed to form more general concepts.

For example, concepts such as *language*, *accent*, and *English skills* were placed under the category of *the ability to use English*. This process resulted in seven concepts: *independence, good food, the ability to use English, social ability, school performance, family/friends*, and *convenience of transportation.* The seven concepts accounted for about 80 percent of the original 98 concepts. This approach is consistent with traditional person-environment fit research that focuses on the value congruence between a person and an organization (e.g., Ostroff et al., 2005). Three concepts were added to the concept domain. They are: *yourself*, *the U.S.*, and *China*. A previous study by Kincaid et al. (1983) employed similar procedures in their study of Korean immigrants' mental model convergence in Hawaii.

The Formal Study

Data collection took place between September 2011 and December 2011. This section describes the participants, instruments, and the data collection procedure.

Chinese participants were recruited through the Chinese Students and Scholars' Association (CSSA) at three universities (University of Maryland, University of Texas-Dallas, and University of Texas-Arlington). There was no age restrictions (as long as the participant was over 18 years old), but only new arrivals whose stay in the U.S. has not exceeded one year qualified for the current study.

The approval to conduct this study was obtained from the IRB office at the University of Maryland. Participants were paid 7 dollars each for their participation.

Participants and Procedures

Time 1 participants and procedure. In covariance structure modeling, different methods or criteria have been proposed to determine the sample size (e.g., Bentler & Chour, 1987; Jackson, 2003). The current research followed the recommendation from MacCallum, Browne, and Sugawara (1996), who proposed that

at a given level of power (e.g., power of .80 for rejecting the hypothesis of close fit when the true model fit is mediocre or poor), minimum sample size (N_{min}) should be determined by the degrees of freedom *d*. The covariance structure model examined in the current research includes 21 measured variables (232 unique variances and covariances), and 64 parameters to be estimated, resulting in *df* = 168. Based on MacCallum et al.'s (1996) recommendation, an adequate minimum sample size is from 100 to 200.

A total of 126 participants completed the Time 1 online survey from August to September 2011. The majority of the participants were from the University of Texas Dallas (*N* = 78, 62%); the rest were from the University of Texas Arlington (*N* = 38, 30%) and the University of Maryland College Park (*N* = 10, 8%). About 60% of the participants were female. Participants' age ranged from 20 to 43 with the average being 23.9 years (*Mdn* = 22). Ninety percent of the students had resided in the U.S. for no more than three months (from 11 days to 297 days) (*Mdn* = 55). The majority of the participants reported studying in some field of business (*N* = 76, 57%), 16% of the participants were studying engineering (*N* = 21), 14% studying the sciences (*N* = 18), and the rest were from various other majors, such as TESOL and political science.

Participants were measured for their cultural adaptability (5 items), English proficiency (4 items), intercultural communication (1 item), and psychological wellbeing (6 items). In addition, they completed an MDS procedure in which all participants were asked to rate the dissimilarity or distance between the 10 concepts generated in the Pilot Study (i.e., *independence, good food, the ability to use English, social ability, school performance, family/friends, convenience of transportation, yourself, the U.S.,* and *China*), so this procedure involved a total of 45 pairs of

comparisons.

In typical Galileo procedures, a criterion pair (or "exemplar pair") with a specified number of units apart (e.g., 10 or 100) is provided as a "yardstick" on which participants are to base their judgment of distances. The criterion pair is typically from the concept domain. For example, in a Galileo study on cognitive space of university faculty, Fink and S. Chen (1995) used the distance between *University Faculty* and *Instability* as the criterion pair. The current study uses an alternative approach in which no criterion pair was provided to the participants. Instead, participants were asked to use 0 if "the two concepts are exactly identical" and 100 if "the distance between the two concepts is moderate" (see Section IV in Appendix B for this task). The most important practical reason for not using a criterion pair is that applying the same criterion pair in both the Chinese sample and the American sample is difficult. Furthermore, even though Berlin and Kay (1969) suggested that *red* and *white* can be used as a fairly invariant criterion pair for cross-cultural studies, Gordon and De Leo (1976) demonstrated through their study that using *red* and *white* as a criterion pair produces identical structures as the no-criterion condition. Finally, in the no-criterion pair approach, participants are still provided with a yardstick. There is no upper bound and fractions are possible.

Time 2 participants and procedures. The same 126 participants were contacted at the beginning of December 2012 to complete the second panel of data collection. By mid-December, 2011, 103 participants completed the Time 2 online survey. The completion rate is 82%. Their average age was 23.04 (*Mdn* = 23), and their average stay in the U.S. was 58.15 by Time 1 measurement (*Mdn* = 55). Participants completed items measuring their intercultural communication (1 item) and psychological wellbeing (6 items), and they also rated the distances between the

45 pairs of concepts again.

American participants and procedures. To assess the mental models of host nationals, Chinese participants were also asked to provide contact information of three U.S. Americans (e.g., friends, professors, or classmates). Through this snowballing technique, 34 participants were recruited to complete the same MDS task. Four of the participants turned out to be Chinese students and their responses were discarded. All of the 30 American participants were either professors or students at the same universities as the Chinese participants. Among the participants, 17 were female and 13 were male. Participants' age ranged from 18 to 58 with the average being 30.39 (two unreported). On average, the sample of American participants spent 3.3 hours communicating with Chinese international students in a week (ranging from less than one hour a week to 12 hours a week).

Data Preparation

All data were downloaded from surveymonkey.com. The first panel of data was matched with the second panel of data based on the email accounts associated with each response. Descriptive statistics were examined to see whether the statistical assumption of normality was met for multivariate analyses (i.e., SEM). Kline (2005) argued that problems in multivariate normality may be detected by examining univariate normality for each variable, so the skewness and kurtosis of each variable were obtained (see Appendices C-F for Panel 1 variables and Panel 2 variables).

Kline (2005) proposed that the absolute values of skewness and kurtosis should be used in evaluating whether the population assumption of normality is plausible. According to Kline (2005), skewness greater than three and kurtosis greater than ten indicate large deviations from normality. Based on this rule, 5 out of the 23 (22%) variables were positively skewed. Data trimming and transformation were

performed on all continuous variables to improve their distribution.

Data trimming refers to recoding extreme values to lower values. The non-Galileo type of data were trimmed at the 95th percentile, that is, if 200 was the 95th percentile for a variable, any score larger than 200 was recoded to 200. For the Galileo type of data, all values exceeding 999 were considered extreme and set to 999. The reason for this is to maintain consistency among different paired comparisons between two cultural groups (i.e., Chinese and Americans) and two times of measurement. This process eliminated outliers.

Secondly, a power transformation was used to improve the skewness and kurtosis of the trimmed data. Fink (2009) suggested the following functional formula to transform data to approximate a normal distribution:

$$Y^* = (Y + k)^{\lambda}$$

where Y is the original variable, k is a constant, λ is the power value ($\lambda \neq 0$), and Y^* is the transformed variable. Because all the items in this study are positively skewed, a power transformation with the value of λ between 0 and 1 is considered appropriate in normalizing the distribution of variables. For $0 < \lambda < 1$, $(Y + k)$ has to be a positive number. In the current study, all items were measured by magnitude scales, which are non-negative, so $k = 1$ was chosen for all transformations. After trial and error, the λ value that resulted in the best combined skewness and kurtosis was chosen for each variable. Because repeated-measures means models were also used for this study, Panel 1 variables and their corresponding Panel 2 variables employed the same λ values to ensure that latent means at both times have the same metrics. After transformation, the skewness and kurtosis for all the items from both Panels were below the cut-off value (see Appendices G-J for λ values and descriptive statistics for transformed variables). Transformed variables were used for all subsequent analyses.

Finally, because participants were from three different universities, to examine whether participants might differ in the measured variables due to school affiliation, a series of one-way ANOVAs were conducted. The results showed that participants from the three universities did not differ significantly in any of the 113 variables (both non-Galileo and Galileo variables) except for 5 of them (see Appendix K for the ANOVA results). Because fewer than 5 percent of the variables were significantly different among participants due to school affiliation, data from the three universities were combined for subsequent analyses.

As was the case with the sojourners' group, the U.S. sample consists of participants from three different universities. A one-way ANOVA was conducted on each paired-comparison variable to see whether there were significant differences between the three groups. Results showed that 4 out of the 45 (8.8%) paired comparison variables were significantly different among the three groups. Although this number may be higher than that which could be expected of chance, the relatively small number of variables that were different among the three schools (<10%) makes it still reasonable to combine data for subsequent analyses.

Instrumentation

Exploratory factor analyses (EFA) were conducted to assesses the dimensional structure of the scales. The reliability of latent factors with measured indicators was assessed by Cronbach's alpha. The Galileo variables were assessed by the fixed- and random-effects dependability coefficients.

Host language proficiency. The self-reported host language proficiency scale was adapted from Cléments and Noels' (1992) scale of host language ability. It consists of four items that measure participants' perceived English abilities (speaking, reading, understanding, and writing). Participants were asked to rate on a 7-point

scale their fluency in English with 1 representing *not at all fluent* and 7 representing *fluent* (Cléments & Noels, 1992). Magnitude scales were used to measure all items of host language proficiency. Participants were asked to indicate their level of agreement with each item using any nonnegative number. Like the original scale, 0 represented "no English proficiency at all" and higher numbers represented greater English proficiency. Participants were also instructed to use 100 to represent "moderate level of English proficiency." The scale had no upper bound.

Principal components analysis (PCA) was used to examine the dimensional structure of the scale. One component was extracted with an eigenvalue bigger than 1. This component explained 67.66% of the variance in the indicators. The following table presents the component loadings:

Table 1

Component Loadings for Principal Component Analysis of the English Proficiency Scale

	English Proficiency
Writing	.86
Reading	.82
Speaking	.82
Listening	.79

This scale had high internal consistency reliability (Cronbach's $\alpha = .89$).

Cultural adaptability. The subscale of cultural adaptability in the Individual Adaptability Measure (I-ADAPT) developed by Ployhart and Bliese (2006) was used to measure cultural adaptability. The full scale contains four factors measured by 55 items, and the subscale—cultural adaptability—consists of five items (see Appendix L). A sample item is "I enjoy learning about cultures other than my own."

Magnitude scales were used to measure the five-item cultural adaptability factor. A PCA was performed and one component was extracted. This component explained 59.44% percent of the variance among the variables. The following table presents the component loadings for each item:

Table 2

Component Loadings for Principal Component Analysis of Cultural Adaptability Scale

	Cultural Adaptability
enjoy variety	.92
enjoy learning about other cultures	.78
comfortable interacting with cultural others	.74
respect other's culture	.70
work well with diverse others	.69

The two items that had the lowest loadings were deleted and only items that loaded above .70 remained as indicators of cultural adaptability. The new scale has good internal consistency reliability (Cronbach's $\alpha = .83$).

Intercultural communication frequency. A communication scale was adapted from Fink and S. Chen (1995) to measure intercultural communication frequency: Respondents were asked to recall how many hours during a typical week within last month they communicated with people from the host culture. Results showed that Time 1 intercultural communication and Time 2 intercultural communication were moderately correlate, $r = .55$ ($p < .01$).

Psychological Wellbeing. Ward and associates (e.g., Searle & Ward, 1990; Ward & Kennedy, 1993; Ward & Searle, 1991) conceptualized psychological

adjustment as psychological wellbeing or emotional satisfaction. The current study adapted the Short Depression-Happiness Scale (SDHS) previously employed by Joseph and associates (Joseph, Linley, Harwood, Lewis, & McCollam, 2004; Lewis & Joseph, 1997; McGreal & Joseph, 1993). The scale consists of six items (see Appendix M). A sample item is "I felt dissatisfied with my life." Joseph et al. (2004) claimed that the SDHS has good psychometric properties of internal consistency reliability, test-retest reliability, and convergent and discrimnant validity. In order to make the scale more relevant to the purpose of this dissertation, the phrase "in the U.S." was added to every statement. For example, "I felt dissatisfied with my life" was changed into "I felt dissatisfied with my life in the U.S."

Among the six items of the psychological wellbeing factor, three items tapped into the negative wellbeing (i.e., dissatisfied, cheerless, meaningless) and the other three tapped into the positive wellbeing (i.e., happy, pleased, enjoyable). Items related to negative wellbeing were reverse coded by multiplying the values of these items by -1. A PCA was performed on the six indicators at Time 1 and Time 2 to assess the dimensionality of the scale. At Time 1, two components with eigenvalues greater than 1 were extracted and they explained a total of 70.23% of the variance in the indicators. At Time 2, two components with eigenvalues greater than 1 were also extracted and they explained a total of 62.98% of the variance in the indicators. The following two tables present the component loadings for the variables:

Table 3

Component Loadings for Principal Component Analysis of the Time 1 Psychological Wellbeing Scale

	Component 1	Component 2
Happy	.768	-.410
Pleased	.753	-.274

Life was enjoyable	.679	-.531
Dissatisfied with life	.784	.278
Cheerless	.577	.637
Life was meaningless	.444	.666
Eigenvalue	2.762	1.452

Table 4

Component Loadings for Principal Component Analysis of the Time 2 Psychological Wellbeing Scale

	Component 1	Component 2
Happy	.844	-.297
Pleased	.747	-.242
Life was enjoyable	.734	-.417
Dissatisfied with life	.526	.640
Cheerless	.361	.760
Life was meaningless	.330	.383
Eigenvalue	2.325	1.454

As can be shown from the above tables, items with positive wording (i.e., happy, pleased, enjoyable) loaded relatively highly on the first factor at both Time 1 and Time 2, whereas items with negative wording (i.e., dissatisfied, cheerless, meaningless) either did not consistently load highly on the first factor (i.e., dissatisfied) or did not load highly on the first factor (i.e., cheerless, meaningless). Therefore, a decision was made to drop the three negatively worded items. The new component had acceptable internal consistency reliability at Time 1 (Cronbach's $\alpha = .74$) and Time 2 (Cronbach's $\alpha = .71$).

Person-culture fit. Person-culture fit was measured by comparing the structure of each sojourner's mental model and the aggregated mental model of host nationals. To do this, the transformed data matrix consisting of the 45 paired

comparisons were processed by the Galileo MICROGAL. MICROGAL reads direct magnitude comparison estimates among all the concepts as the raw data, and calculates the geometric mean of inter-point distances, the standard errors, and the coordinates of each concept in a multidimensional space (S. Chen, 1993, p. 97). The Galileo program also generated the host cultural space based on data from members of the host culture. Following the procedure in Fink and S. Chen (1995), the geometric mean was used as the central tendency for the host culture's mental model. Specifically, the arithmetic means of the transformed comparison pairs were calculated, and then exponentiated by power (1/0.4 =) 2.5. Finally, the coordinates in each sojourner's mental space were rotated and translated to a least-square best fit to the axes of the host culture's mental model through the Galileo INTERGAL procedure. This procedure yields a mean distance between all points in the individual's mental space and their counterparts in the host culture's mental space—a number indicating the lack of person-culture convergence, or person-culture divergence. The fit variable was created by multiplying the person-culture divergence scores by -1.

A one-way ANOVA was conducted to see whether the convergence fit variable differed among the three participating universities. Results showed that the convergence fit variables at Time 1 and Time 2 did not differ significantly among the three groups: F_{T1} (2, 115) = 0.29 (p = .752); F_{T2} (2, 96) = 1.034 (p = .359). Time 1 person-culture fit was correlated with Time 2 fit at r = .68 (p < .01).

Mental model change. Because each participant completed the similarities ratings task twice, each individual's mental model at Time 1 was compared with their mental model at Time 2 by Galileo INTEGAL\V56. Following the same comparison procedure, the coordinates in each sojourner's Time 1 mental space were rotated and

translated to a least-square best fit to the axes of the same person's mental model at Time 2 through the Galileo INTERGAL procedure. The mean distance between all concept points in the individual's Time 1 mental space and their counterparts in the mental space at Time 2 represents the degree of change in mental models between two points in time. After trimming and transforming, a one-way ANOVA was conducted on the mental model change variable and results showed that the participants from the three participating universities did not differ significantly in this variable (F (2, 95) = 0.331, p = .719).

Host identification. Based on the discussion in the previous section, host identification is represented by the distance between the concepts of *self* and *the U.S. culture* in the individual sojourner's mental space: The closer the distance, the more identified the person feels toward the host culture. The host identification variable was created by multiplying the distance variable by -1. After trimming and transforming, a one-way ANOVA was conducted and results showed that the participants from the three universities did not differ significantly in either Time 1 host identification, F (2, 121) = 0.34 (p = .712), or Time 2 host identification, F (2, 99) = 0.09 (p = .915). Time 1 identification was moderately correlated with Time 2 identification, r = .43 (p < .01).

The reliability of paired-comparison variables. Miller (1988) proposed using the fixed- and random-effects dependability coefficients to evaluate the reliability of the paired-comparison data. O'Brien (1984) provided the following formula for calculating the dependability coefficients from the output of the repeated-measures analyses of variance:

$$D_F = (BMS - EMS) / BMS$$

$$D_R = (BMS - EMS) / (BMS + (RMS - EMS)/n)$$

where D_F refers to the fixed effects dependability coefficient and D_R refers to the random effects dependability coefficient, *BMS* is the mean square between pairs, *EMS* is the error (residual) mean squares, *RMS* is the mean squares within raters, and *n* is the number of raters or judges (O'Brien as cited in Miller, 1988, p. 210).

The D_F and D_R were calculated on the logarithm transformed Chinese data at Time 1 and Time 2, and on the logarithm transformed American data (see Miller, 1988, for a comparison of D_F and D_R calculated from raw data and the transformed data). Table 5 provides a list of the coefficients for the three groups' mental models that were constructed with the paired-comparison data.

Table 5

Fixed and Random Effects Dependability Coefficients for Chinese (Time 1 and Time 2) and American Samples

	BMS	*EMS*	*RMS*	*n*	D_F	D_R
Chinese (Time 1)	27.593	1.716	6.486	126	.94	.94
Chinese (Time 2)	21.462	1.641	18.688	101	.92	.92
Americans	13.478	1.955	13.003	30	.85	.83

It can be seen from the table that for the Chinese participants at Time 1, about 94% of the variance that is due to the logarithmically transformed paired-comparison estimates is systematic. For Time 2 variables, the value is 92%. For the American participants, the value is 85% and 83% for fixed- and random-effects dependability coefficients respectively. Overall, the Galileo-type data exhibited satisfactory reliability.

CHAPTER IV

ANALYSES AND RESULTS

This chapter describes the statistical analyses used to test the model proposed in Chapter II and details the findings from the analyses. The hypotheses were tested with structural equation modeling using LISREL 8.80 (Jöreskog & Sörbom, 2006). This section begins with findings from the repeated-measures means model. Following that, a two-step structural equation model consisting of the measurement phase and the structural phase was examined. Lastly, supplemental analyses were conducted to explore nonsignificant effects.

Analyses

The research question and hypotheses were tested with a repeated-measures means model and a structural equation model.

Repeated-Measures Means Model

Different from ANOVA, a repeated-measures means model can be used to examine changes in the latent factor over different times or across different conditions. This study examines the changes in psychological wellbeing between Time 1 and Time 2. Instead of comparing the means of the measured indicators of psychological wellbeing, a repeated-measures means model is proposed to examine whether the latent psychological wellbeing of new international students changes.

Structural Equation Modeling (SEM)

SEM was used to test the causal relationship among the factors. In the proposed model, English proficiency (ξ_1), cultural adaptability (ξ_2), Time 1 intercultural communication (ξ_3), Time 1 person-culture fit (ξ_4), Time 1 psychological wellbeing (ξ_5), and Time 1 host identification (ξ_6) are considered exogenous variables. Time 2 intercultural communication (η_1), Time 2 person-culture fit (η_2), mental model

change (η_3), Time 2 psychological wellbeing (η_4), and Time 2 host identification (η_5) are endogenous variables.

Mueller and Hancock (2008) recommended a two-phase SEM analysis for latent variable path analysis (LVPA) models. The authors argued that a measurement phase in which all factors are allowed to covary (i.e., a structurally saturated model) should precede the structural phase in which the structure among latent factors is assessed (Mueller & Hancock, 2008, p. 497). The rationale for using this approach is that misspecifications in the measurement portion can be addressed before the structural model can be assessed, so if the final structural model does not fit the data, it cannot be due to measurement misspecification (Mueller & Hancock, 2008). In the measurement phase, if the data do not fit the initial measurement model, re-specification might be appropriate. In the second phase—the structural phase, a priori, theory-derived structural hypotheses on the latent factors are imposed.

Researchers have suggested different criteria for evaluating SEM model's goodness of fit with data. The chi-square test is based on a comparison between observed data and the hypothesized model. According to Fink and Monge (1985), a nonsignificant χ^2 value indicates that the null hypothesis that the population covariance matrix and the population model-based covariance matrix are equal cannot be rejected. However, scholars have also proposed that χ^2 value is not an appropriate measure of model fit because it is sensitive to sample size and the size of correlations (Kline, 2005), and because it is "viewed by most as overly strict given its power to detect even trivial deviations of a data from the proposed model" (Mueller & Hancock, 2008, p. 379). Therefore, Chin and Todd (1995) recommended the ratio of χ^2 to the degree of freedom to be smaller than 3 as a criterion. Hu and Bentler (1999) suggested joint criteria for evaluating model fit. They are: (1) NNFI, CFI $\geq$ 0.96 and SRMR $\leq$

0.09, or (2) SRMR ≤ 0.09 and RMSEA ≤ 0.06. In this dissertation, both the χ^2 to the degree of freedom ratio and Hu and Bentler's (1999) joint criteria are used to evaluate model fit.

Results

Repeated-Measures Means Model

A repeated-measures means model was performed to examine whether the psychological wellbeing of the sojourners had undergone significant changes between the two panels. This design measures within-subjects differences instead of between-subjects differences. The following table summarizes the results from the means model (see Appendix N for the means model syntax):

Table 6

Psychological Wellbeing Repeated-Measures Means Model

	Means	Variance
Time 1 Psychological Wellbeing	0	9.26
Time 2 Psychological Wellbeing	-1.82 ($p < .01$)	7.04
χ^2 (9, N = 126) =15.37, p =.08, CFI = .98 RMSEA = .08 (CI: .00; .14) SRMR= .08		

Note. Time 1 psychological wellbeing was used as the reference, and that is why the value for mean psychological wellbeing at Time 1 is 0.

Results showed that the psychological wellbeing of Chinese sojourning students in the U.S. decreased three months after their arrival (decreased by 1.77 units). In addition, participants in this study became more homogeneous in terms of psychological wellbeing (the variance decreased from 9.26 to 7.04). The effect size of the change as assessed by Cohen's *d* is .63.

Model Assessment

The two-step SEM procedure proposed by Mueller and Hancock (2008) was

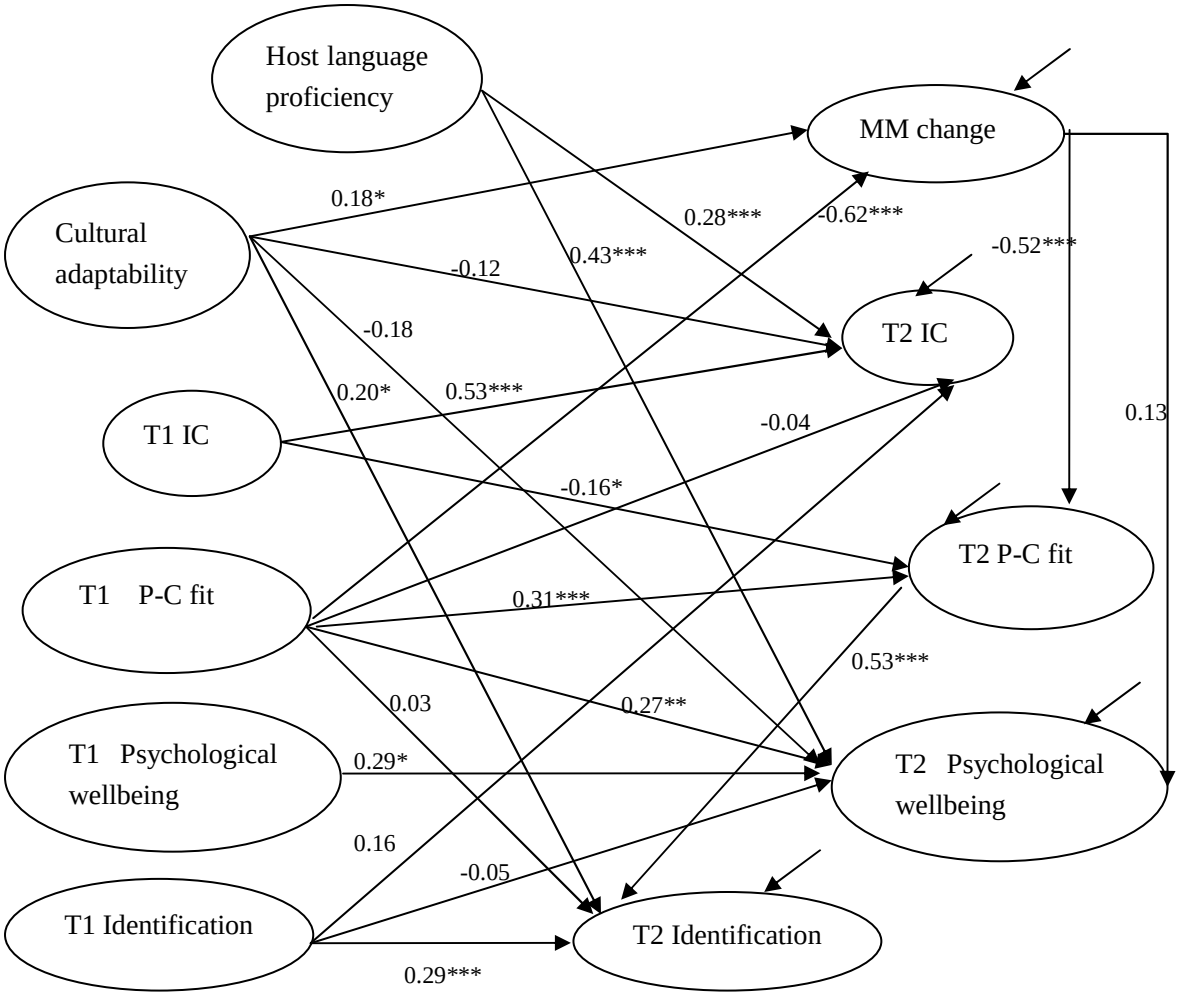
followed. The measurement model and the structural model were examined in LISREL 8.80 (Jöreskog & Sörbom, 2006) using maximum likelihood estimation. The covariance matrix used in this study were obtained via listwise deletion.

The measurement model. The results of the measurement model did not indicate a good fit: χ^2 (121, N = 103) = 193.04, p < .01. RMSEA = .08 (CI: .06, .10), SRMR = .07, and CFI = .94. But the chi square to the degrees of freedom ratio was only 1.60, which is less than the cutoff value of 3 proposed by Chin and Todd (1995), indicating acceptable fit. LISREL 8.80 contains Lagrange multiplier statistics which estimate the decrease in chi square when a previously fixed parameter is set free. Based on the modification statistics, two indicators of the English proficiency factor were allowed to covary: speak and read. One cross-loading was also added to improve model fit: "I felt pleased with the way I am in the U.S." was allowed to load on the cultural adaptability factor. The revised measurement model has the following goodness of fit indices: χ^2 (119, N = 103) = 164.51, p < .01, RMSEA = .06 (CI: .04, .08), SRMR = .07, CFI = .96. Based on Hu and Bentler's (1999) criteria, the revised measurement model met the cut-off values and had acceptable fit with the data. The χ^2 difference is 28.53 with two degrees of freedom. Therefore, the revised measurement model represented significantly better fit with the data compared to the original measurement model.

The structural model. Age was added as a covariate in the structural model, because age was found to be an important factor for psychological wellbeing in previous adaptation research (e.g., Stevens, 1999). The structural model did not have acceptable fit with the data: χ^2 (154, N = 103) = 236.69, p < .01, RMSEA = .07 (CI: .05, .09), CFI = .93, SRMR = .08. According to Mueller and Hancock (2008), any hypothesized model is only an approximation to reality. When model fit indices

suggest misfit between the hypothesized model and the data, modifications can be made as long as they are justified based on theoretical consideration (Mueller & Hancock, 2008). Following Mueller and Hancock's (2008) suggestion, modifications were made sequentially from the one that resulted in the biggest chi square change: (1) a path was added from mental model change to Time 2 person-culture fit; and (2) a path was added from Time 2 person-culture fit to Time 2 host identification. These modifications made sense theoretically.

The final modified model had the following fit indices: χ^2 (152, N = 103) = 191.04, $p < .05$, RMSEA = .05 (CI: .02, .07), SRMR = .07, CFI = .96. Based on the joint criteria proposed by Hu and Bentler (1999) (i.e., CFI $\geq$ 0.96 and SRMR $\leq$ 0.09, or SRMR $\leq$ 0.09 and RMSEA $\leq$ 0.06), the revised model had acceptable fit with the data. The revised model represented a significant improvement over the original model: $\Delta\chi^2$ = 236.69 - 191.04 = 45.65 (df = 2, $p < .01$). Furthermore, compared with the final measurement model, the fit did not degrade significantly. The final measurement model has the following chi square value: χ^2 (119, N = 103) = 164.51. Because the structural model is nested within the measurement model, a chi square difference test was conducted and the results are: $\Delta\chi^2$ = 191.04 - 164.51 = 26.53 (df = 33, p = .78), supporting the argument that fit of the measurement model and that of the structural model are not significantly different. The syntax for the revised model is presented at Appendix O and the path diagram of the revised model is presented in Figure 2.



* $p < .05$, ** $p < .01$, *** $p < .001$

Figure 2. Revised model path diagram. LISREL 8.80 (Jöreskog & Sörbom, 2006) was used to conduct model assessment and the method of estimation was maximum likelihood. Standardized path coefficients are presented. T1 refers to Time 1, T2 refers to Time 2, IC refers to intercultural communication, MM refers to mental models, P-C fit refers to person-culture fit, and identification refers to host culture identification.

Hypothesis Testing

Thirteen hypotheses and one research question were proposed. This section details results from each hypothesis and research question. Table 7 lists unstandardized and standardized parameter estimates. Unstandardized parameter

estimates were examined in discussing the following hypotheses.

Table 7

Unstandardized and Standardized Parameter Estimates of the Hypothesized Model

From	To	unstandardized	standardized
language proficiency	T2 IC	0.03***	.28***
language proficiency	T2 psychological wellbeing	0.41***	.43***
cultural adaptability	T2 IC	-0.03	- .12
cultural adaptability	MM change	5.35*	.18*
cultural adaptability	T2 psychological wellbeing	-0.41	- .18
cultural adaptability	T2 host identification	0.39*	.20*
T1 IC	T2 IC	0.58***	.53***
T1 IC	T2 P-C fit	-1.04*	- .16*
T1 P-C fit	T2 IC	-0.01	- .04
T1 P-C fit	T2 P-C fit	0.28***	.31***
T1 P-C fit	MM change	-9.51***	- .62***
T1 P-C fit	T2 psychological wellbeing	0.32*	.27*
T1 P-C fit	T2 host identification	0.03	.03
T2 P-C fit	T2 host identification	0.58***	.52***
MM change	T2 P-C fit	-0.03***	- .52***
MM change	T2 psychological wellbeing	0.01	.13
T1 psychological wellbeing	T2 psychological wellbeing	0.23*	.29*
T1 host identification	T2 IC	0.02	.16
T1 host identification	T2 psychological wellbeing	-0.06	- .05
T1 host identification	T2 host identification	0.28***	.29***

* $p < .05$, ** $p < .01$, *** $p < .001$

Note. T1 = Time 1; T2 = Time 2 ; IC = intercultural communication ; P-C fit = person-culture fit ; MM = mental models.

H1a to H1d hypothesized four autoregressive, or lagged, causal relationship between Time 1 factors and their counterparts at Time 2. These hypotheses were supported: Time 1 intercultural communication positively affected Time 2 intercultural communication ($\gamma = 0.58$, $p < .001$). Time 1 person-culture fit was positively related to Time 2 person-culture fit ($\gamma = 0.28$, $p < .001$), and Time 1 psychological wellbeing had a significant positive effect on Time 2 psychological wellbeing ($\gamma = 0.23$, $p < .05$). Finally, Time 1 host identification also affected Time 2 host identification ($\gamma = 0.28$, $p < .001$).

H2 predicted a positive association between host language proficiency and

Time 2 intercultural communication, controlling for Time 1 intercultural communication. Results showed that English proficiency did have a significant positive effect on Time 2 intercultural communication ($\gamma = 0.03$, $p < .001$), indicating that host language proficiency increased intercultural communication behavior after controlling for baseline intercultural communication. Therefore, H2 was supported.

H3 hypothesized that host language proficiency would have a positive effect on Time 2 psychological wellbeing. This hypothesis was also supported: after controlling for Time 1 psychological wellbeing, English proficiency still had a significant positive influence on Time 2 psychological wellbeing ($\gamma = 0.41$, $p < .001$).

H4 hypothesized a positive causal relationship between cultural adaptability and Time 2 intercultural communication. Results from the structural model showed that the path from cultural adaptability to Time 2 intercultural communication was not significant ($\gamma = -0.03$, $p = .15$). Therefore, H4 was not supported.

H5 hypothesized that cultural adaptability has a positive effect on Time 2 psychological wellbeing after controlling for baseline psychological wellbeing. Results showed that the effect of cultural adaptability on Time 2 psychological wellbeing was not significant ($\gamma = -0.41$, $p = .18$). Therefore, H5 was not supported.

H6 hypothesized that cultural adaptability would be positively related to Time 2 identification with the host culture. Results showed that after controlling for Time 1 host identification, cultural adaptability was positively related to host identification at Time 2, as indicated by the significant positive path from cultural adaptability to Time 2 host identification ($\gamma = 0.39$, $p < .05$). Therefore, H6 was supported.

H7 hypothesized a cross-lagged reciprocal causal relationship between intercultural communication and person-culture fit. Furthermore, the hypothesized relationships were positive: Time 1 intercultural communication leads to Time 2

person-culture fit and Time 1 person-culture fit leads to increased intercultural communication at Time 2. Results showed that Time 1 intercultural communication had an effect on person-culture fit but that this effect was opposite to the hypothesized direction ($\gamma = -1.04$, $p < .05$). In addition, Time 1 person-culture fit did not have a significant effect on Time 2 intercultural communication ($\gamma = -0.01$, $p = 0.96$). Therefore, H7 was not supported in this study.

H8 predicted a positive effect from Time 1 person-culture fit to Time 2 psychological wellbeing. Results showed Time 1 person-culture fit produced a positive lagged effect on Time 2 psychological wellbeing ($\gamma = 0.32$, $p < .05$), controlling for the baseline psychological wellbeing. Therefore, H8 was supported.

H9 hypothesized that Time 1 person-culture fit had a positive relationship with Time 2 host identification. Results showed that in the original model (before model respecification), person-culture fit had a positive lagged effect on host-culture identification ($\gamma = 0.31$, $p < .001$). However, in the final revised model, the lagged causal effect became nonsignificant ($\gamma = 0.03$, $p = .73$). Nonetheless, there is a significant simultaneous causal effect from person-culture fit to host identification at Time 2 ($\beta = 0.58$, $p < .001$). Therefore, H9 was partially supported in that person-culture fit did have a positive simultaneous effect on host identification.

Hypotheses 10 and 11 and RQ2 assessed the role of mental model change in mediating the effect of predictor variables on psychological wellbeing. H10 hypothesized cultural adaptability to be a positive predictor for mental model change, and this hypothesis was supported ($\gamma = 5.35$, $p < .05$). H11 predicted a negative relationship between the initial person-culture fit and mental model change. This hypothesis was also supported ($\gamma = -9.51$, $p < .001$). Finally, RQ2 asked whether changes in mental models have an effect on Time 2 psychological wellbeing. Results

showed that mental model change did not have a significant effect on psychological wellbeing ($\beta = 0.01$, $p = .29$).

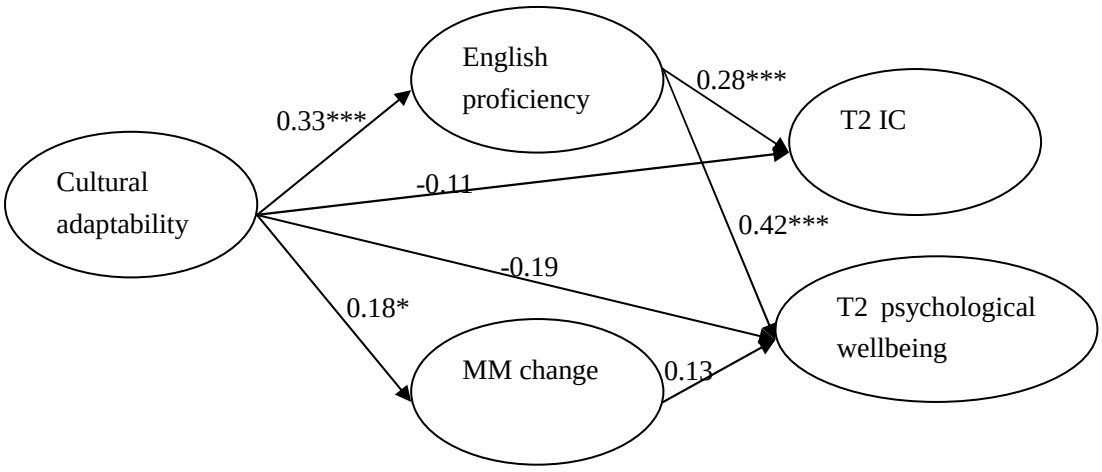
H12 and H13 examined the role of host identification on cultural adjustment. H12 hypothesized that Time 1 host identification has a positive effect on Time 2 intercultural communication after controlling for baseline intercultural communication. According to LISREL output, Time 1 host identification did not have a significant influence on subsequent intercultural communication behavior ($\gamma = 0.02$, $p = .06$). Therefore, H12 was not supported. H13 hypothesized that Time 1 identification with the host culture would have a positive effect on Time 2 psychological wellbeing. This hypothesis was not supported: Time 1 host identification did not significantly affect Time 2 psychological wellbeing ($\gamma = -0.06$, $p = .56$).

The revised model explained 40% of the variance in Time 2 intercultural communication, 60% of the variance in Time 2 person-culture fit, and 48% of the variance in mental model change. In addition, 28% of the variance in Time 2 psychological wellbeing and 40% of the variance in Time 2 host identification were explained by the hypothesized model.

Supplemental Analyses

From the above section, it was found that cultural adaptability had no significant direct effect on intercultural communication and psychological wellbeing at Time 2. One possible reason may be because of its correlation with English proficiency ($r = .30$, $p < .01$), which had a significantly positive effect on both the intercultural communication and psychological wellbeing. To test whether the effect of cultural adaptability on cultural adjustment variables was mediated by English proficiency, a partial mediation model was tested in which English proficiency

partially mediated the relationship between cultural adaptability and cultural adjustment variables (see Appendix P for LISREL syntax). The partial mediation model has the following fit indices: χ^2 (157, N = 103) = 202.29 (p < .01); CFI = .96; RMSEA = 0.05 (CI: .03; 0.07); SRMR= .09. Results showed that cultural adaptability had a significant positive effect on English proficiency (γ = 0.77, p < .001), which had a significant positive effect on Time 2 intercultural communication (β = 0.03, p < .001) and Time 2 psychological wellbeing (β = 0.39, p < .001). In addition, cultural adaptability also has a significant positive effect on mental model change (γ = 5.23, p < .05), which has a positive yet nonsignificant effect on Time 2 psychological wellbeing (β = 0.01, p = .25). In sum, the indirect effect of cultural adaptability on Time 2 intercultural communication and psychological wellbeing were 0.02, p < .05, and 0.30, p < .01. The following graph presents the path diagram of the partial mediation model:



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

Figure 3. Partial-mediation path diagram. LISREL 8.80 (Jöreskog & Sörbom, 2006) was used to conduct model assessment and the method of estimation was maximum likelihood. Standardized path coefficients are presented. T2 refers to Time 2, IC refers to intercultural communication, and MM refers to mental model.

CHAPTER V

DICUSSION

The primary purpose of this study is to investigate a dynamic ABC (affective, behavioral, and cognitive) adaptation model in which sojourners' personal attributes including cultural adaptability and linguistic proficiency influence their intercultural communication behavior, cause changes in their mental structure and shared cognition over time, which in turn influence their identification with the host culture and psychological wellbeing. The study employed a longitudinal model to examine the cross-lagged reciprocal causal relations between intercultural communication and person-culture fit. The longitudinal design also allowed for the examination of predictor variables on the increase or decrease in outcome variables controlling for baseline variables.

Findings from the study suggested that (a) the psychological wellbeing of sojourning Chinese decreased three months after their arrival; (b) host language proficiency was directly related to an increase in intercultural communication and an increase in psychological wellbeing; (c) cultural adaptability predicted cognitive adjustment—host identification; (d) person-culture fit was a significant predictor of an increase in host identification and psychological wellbeing; and finally, (e) changes in mental models were determined by two factors: initial cognitive divergence with the host culture and cultural adaptability.

This chapter consists of four parts. The first part reviews the study, and the second part discusses the results from each hypothesis. In the third part, the contributions and limitations of the study are summarized. Finally, the directions of future research and a conclusion form the last part of the dissertation.

Review of the Study

This study used the framework of dynamic constructivism to examine cultural adaptation. According to dynamic constructivists, culture consists of different knowledge structures, some of which are shared with other members of the cultural group; social practices shape the experience of social contexts, and consequently individuals' knowledge structures (Brett & Crotty, 2008; Morris & Fu, 2001). The primary assumption of the study is that shared social cognition or perspective between sojourners and local residents predicts positive adaptation outcomes. This assumption was tested in a dynamic cultural adaptation model in which cognitive adjustment, which is manifest in mental model convergence and perceived identification with the host culture, was related to behavioral and affective adjustment through causal reciprocity.

A total of 126 Chinese students from three different universities were recruited for this dissertation. The majority of these students were new arrivals (90 percent of the participants had been in the U.S. for no more than 3 months at Time 1 measurement). All participants responded to items measuring their cultural adaptability, English proficiency, intercultural communication, and psychological wellbeing. In addition, each participant completed a dissimilarity rating task. In this task, participants rated the distance between 10 concepts that were relevant to adaptation in the U.S. (i.e., 45 pairs of distances). Based on the distance matrix, the Galileo program generated a mental model consisting of the structural relationship between the 10 concepts for each participant. Finally, each participant's mental model was compared with the host cultural group's average mental model, and a fit score was derived from this comparison.

Three months later, the same participants from Time 1 were contacted to

respond to the same questionnaire, except that two factors—cultural adaptability and English proficiency—were not measured twice because they are assumed to be relatively stable in a period of three months. One hundred and three participants completed the second panel, resulting in an 18% of drop-out rate.

No significant difference was found among participants from the three home universities based on ANOVA results, so their responses were combined for model assessment and hypothesis testing. Exploratory factor analyses were performed on latent factors with multiple indicators. The hypotheses were tested using a cross-lagged structural equation model.

Discussion of Results

Group Changes in Psychological Wellbeing

Existing research has suggested contradictory relations between time and psychological wellbeing. The U-curve model (Hottola, 2004; Lysgaard, 1955; Oberg, 1960) suggested a decrease in psychological wellbeing in the initial stage of cultural adaptation, but according to the coping and stress model (Ward et al., 1998) and the anxiety and uncertainty management model (e.g., Berger & Gudykunst, 1991; Gudykunst, 1983, 1993; Gudykunst & Hammer, 1987), there is a positive linear relationship between time and psychological wellbeing.

The results from this dissertation supported the first downturn of the U-curve theory of cross-cultural adaptation (Lysgarrd, 1955; Oberg, 1960): The psychological wellbeing of the sojourning Chinese students declined three months after their arrival in the U.S. This result is consistent with findings from other empirical studies. For example, Cemalcilar and Falbo (2008) found a significant decline in psychological wellbeing among international students in the U.S. when measured at 3 months into the first academic semester.

Proponents of the U-curve theory noted that sojourners experience a honeymoon stage when they first enter the new environment, which is perceived with enthusiasm and fascination, but after the initial excitement recedes, sojourners experience increased negative psychological symptoms such as anxiety, fear, anger and feelings of helplessness, also known as "culture shock" (Ward et al., 1998). However, even though the U-curve model describes the psychological change among sojourners, it did not offer an explanation as to why psychological wellbeing declines. Findings from this dissertation offer a reasonable explanation. It was found that the average mental model of sojourners became less similar to the host mental models at Time 2 compared with Time 1. That is to say, sojourners' average person-culture fit declined 3 months after arrival. Because mental model fit was found to be a significant positive predictor for psychological wellbeing, as mental model fit decreases, so does psychological wellbeing. Furthermore, this dissertation extends the previous adaptation literature by basing its results on longitudinal data. In comparison, previous empirical evidence supporting the U-curve model was mainly from cross-sectional data (see Church, 1982, for a review). The longitudinal approach is more appropriate for investigating changes over time (Ward et al., 1998).

Host Language Proficiency in Cultural Adjustment

Previous studies have shown that host language proficiency is the most significant predictor in cultural adjustment. For example, in a cross-sectional study on Malay and Chinese sojourning students in Britain, Swami (2009) found that English language proficiency was the strongest predictor of sociocultural adjustment for Chinese students. Another longitudinal study conducted by Ying and Han (2008) had similar findings: English proficiency was found to be the most significant predictor of enhanced adjustment among Taiwanese students in the U.S. Their findings showed

that English proficiency was related to both sociocultural and psychological adjustment. This dissertation examined the positive influence of host language proficiency on sojourners' behavioral adjustment and affective adjustment.

First, the study found that English proficiency had a positive influence on intercultural communication frequency. This finding is not surprising, considering that self-assessed host language proficiency is the most frequently reported predictor for sociocultural adjustment (Zhang & Goodson, 2011), the ability to effectively communicate with host nationals.

Secondly, results showed that English proficiency contributed to the improvement in psychological wellbeing after baseline psychological wellbeing was controlled for, indicating that English proficiency is a positive factor in the affective adjustment of sojourners. Previous research has found a strong correlation between host language proficiency and affective adjustment. Tran (1995), for example, studied 632 elderly Hispanics in the U.S. and found that there was a strong correlation between the ability to speak English and positive affect. This dissertation contributes to existing research by asserting the temporal precedence of English proficiency to psychological wellbeing.

Cultural Adaptability in Cultural Adjustment

The current dissertation predicted that sojourners scoring high on cultural adaptability (i.e., they enjoy variety in life and feel comfortable interacting with different cultures) interact more with people from the host culture, are more likely to develop identification with the host culture, and change their mental models more compared with sojourners who score low on cultural adaptability. As a result, cultural adaptability is positively related to psychological adjustment.

Cultural adaptability was predicted to have a direct positive influence on

intercultural communication and psychological wellbeing, but results from this dissertation did not support either hypothesis. Small determinant of the covariance matrix may explain the nonsignificant relationships: Cultural adaptability was correlated with English proficiency ($r = .33$, $p < .01$). Therefore, even though cultural adaptability did not directly affect intercultural communication and psychological wellbeing, it had a significant nonstructural relationship with these variables through its correlation with English proficiency. In the supplemental analysis in which English proficiency was modeled as the mediating variable of cultural adaptability, the significant indirect effect of cultural adaptability on intercultural communication and psychological wellbeing was supported. The supplemental model was plausible because adaptable sojourners are more likely to acquire the language skills that help them function in new cultures. Past research has also suggested that personality traits such as openness to new experience, a trait similar to cultural adaptability, is related to the ability to interact with host people (e.g., Peltokorpi & Froese, in press).

Secondly, based on the assumption that culturally adaptable individuals are likely to develop a sense of belonging with the host culture , this dissertation tests the cognitive consequences of cultural adaptability. Results from this study found that cultural adaptability is related to an increase in identification with the host culture. Drawing from literature on biculturalism, a bicultural identity is essential to success in intercultural adjustment (Benet-Martínez & Haritatos, 2005; Benet-Martínez et al., 2002). Evidence has been found that the development of bicultural identity is positively related to openness to different experiences (Benet-Martínez & Haritatos, 2005).

It should be noted that high identification with the host culture does not mean detachment from the home culture. Ramirez (1984) stated that bicultural individuals

have a sense of belonging in two cultures without compromising a sense of cultural identity. In the current study, there was a significant zero-order correlation between the distance for pair of *China* and *self* and that of *the U.S.* and *self* (r_{t1} = .237, p < .01; r_{t2} = .277, p < .01). Even though the identification with the home culture was not included in the hypothesized model, results from this study suggest that identification with the host culture and the home culture may be correlated due to a common personality factor—adaptability. Individuals who are adaptable and flexible may be comfortable identifying with multiple cultures instead of with only one culture.

Intercultural Communication in Cultural Adjustment

This study predicted that intercultural communication affects cultural adjustment through its positive effect on person-culture fit. Results from the current study did not support this causal link: Communication with host people was found to have a negative effect on person-culture fit. A possible explanation may account for this surprising result. The participants in this study were relatively new to the host country. As a result, they communicated with host people because they needed the host nationals' help in dealing with daily challenges, and to a lesser degree because they chose to communicate. Those sojourners who needed to communicate the most may be those who held more divergent mental models with the host nationals. This may explain the negative relationship between intercultural communication and person-culture fit.

Person-Culture Fit in Cultural Adjustment

The primary objective of this study was to investigate the role of person-culture mental model fit in cultural adaptation. Findings from this study suggest that the more similar the sojourners' mental model is to the host culture's, the more they feel identified with the host culture, and the more satisfied they are with the

host culture.

First, the similarity of mental models between an individual sojourner and the host culture is predictive of his or her identification with the host culture. This result is consistent with social identity theory (Tajfel, 1978; Turner, 1991). Swaab, Postmes, Van Beest, and Spears (2007), for example, argued that when members of a group develop shared cognitions, they are more likely to develop a shared social identity based on this similarity. This result has implications for organizations wishing to cultivate a common identity among its members; it implies that group identification can be developed through increasing the homogeneity of perspectives.

Secondly, this study found that person-culture mental model fit is predictive of positive psychological wellbeing after the baseline psychological wellbeing was controlled for. The cognitive component of cultural adaptation has always been an important predictor for satisfaction and happiness (e.g., Organ & Near, 1985). Researchers studying shared cognition have argued that shared cognition and affect are both socially created and experienced (e.g., Thompson & Fine, 1999). The finding from this study supported the idea that the person-culture convergence of mental models is related to positive affective adjustment.

The significant paths in this study can be attributed to two distinct factors. First, the dissertation employed the Galileo mental models approach to conceptualize and measure fit. The convergence of mental models fit index derived from a holistic consideration of multiple values and concepts. In contrast, previous fit indices focused on one specific aspect of difference. For example, Ward et al.'s (2004) study examined the deviation scores between sojourners' personality traits and the host nationals' personality traits. Based on the Big Five personality traits, five fit indices have to be examined separately. Furthermore, the current study utilized a longitudinal

design and therefore controlled for baseline variables. If the relationships were to be studied with cross-sectional data, the result would be very different. For example, Time 1 person-culture fit had significant negative zero-order correlation with the indicators of Time 1 psychological wellbeing. However, when Time 1 psychological wellbeing was controlled for, person-culture fit was found to have a positive effect on Time 2 psychological wellbeing. This could explain why some previous studies have found nonsignificant results between person-culture fit and cultural adjustment (Ward et al., 2004; R. P. Yang et al., 2006).

Changes in Mental Models in Cultural Adjustment

In this dissertation, changes in mental models were measured by comparing an individual's Time 1 mental model with his or her Time 2 mental model of cultural adaptation. Mental model change is conceptually different from changes in person-culture convergence of mental models because sojourners do not always modify their mental models to converge to the host culture's average mental model. Two hypotheses regarding two predictors of mental model change— cultural adaptability and person-culture fit—were supported.

Cultural adaptability had a positive effect on changes in mental models. This relationship supported the construct validity of mental model change. The negative relationship between initial similarity in person-culture mental models and mental model change implies that differences in potentials between mental models provides momentum for cognitive change. Sojourners whose mental models were more divergent from that of the host culture changed more in three months compared with those whose mental models were more similar to the host culture.

Host Identification in Cultural Adjustment

Host identification has been identified as an important component of cultural

adjustment by previous studies (e.g., Pedersen, Neighbors, Larimer, & Lee, 2011; Tsamitis, 2009; Ward & Seale, 1991). Unlike previous studies, this dissertation used the psychological distance between *self* and *U.S. culture* in sojourner's Galileo mental models to measure host identification. In addition, host identification was conceptualized as reflective of cognitive adjustment, and it was proposed to have a positive influence on behavioral adjustment (intercultural communication) and affective adjustment (psychological wellbeing).

The results did not support the positive influence of host identification on intercultural communication and psychological wellbeing. Some previous studies also showed that host identification did not affect cultural adjustment. For example, Cemalcilar and Falbo (2008) found that whereas international students in the U.S. experienced higher degrees of identification with the host culture three months after arrival, their psychological wellbeing actually declined. In another longitudinal study of adolescent immigrants in Israel, Walsh and Tartakovsky (2011) found that the degree of identification with the host country was not related to psychological adjustment. The nonsignificant relationship between host identification and psychological wellbeing suggests that cognitive adjustment and affective adjustment are distinct.

Contributions and Limitations

The current study has several important theoretical and practical contributions, but it also has many limitations. This section discusses the implications and limitations of the study, and points out directions to future research.

Contributions

First, this dissertation proposed and tested a dynamic intercultural adaptation model in which various aspects of cultural adjustment (behavioral, cognitive, and

affective) were related to each other. Many previous adaptation models have focused on examining predictors of different aspects of cultural adjustment, overlooking the interrelationship between these aspects. For example, Ward and Kennedy's (1993, 1996, 1999) bipartite model of intercultural adaptation included sociocultural and psychological adjustment as outcome variables, and examined their separate predictors. In contrast, this dissertation argued that behavioral, cognitive, and affective adjustment are related. Findings from this dissertation suggested that cognitive adjustment (person-culture cognitive fit and host identification) affected sojourner's behavioral (intercultural communication) and affective (psychological wellbeing) adjustment.

Furthermore, many previous cultural adaptation studies did not treat behavioral adjustment or cognitive adjustment as outcome variables. For example, intercultural communication and host identification have often been used as predictors of sociocultural and psychological adjustment (e.g., Lee & Van Vorst, 2010; Searle & Ward, 1990). Some studies have concluded that intercultural communication and host identification are not important during cultural adaptation; instead, researchers argued that social support from home nationals and identification with culture of origin are sufficient for the wellbeing of sojourners (e.g., Montgomery & McDowell, 2009; Ward & Kennedy, 1994). However, based on a more comprehensive ABC model of cultural adaptation, this dissertation argued that all aspects of adjustment should be measured and studied because they all contribute to the success and wellbeing of sojourners. The effect of functional skills and cognitive adaptation may be more long term. For example, international students may not need to interact with host students to achieve a sense of wellbeing because their ethnic support system is usually extensive in universities, but when they graduate and work in an environment

dominated by host nationals, the communicative skills and shared cognition may be crucial to their sociocultural and psychological wellbeing.

Secondly, this dissertation employed the person-environment (P-E) fit as an explanatory mechanism in the context of cultural adjustment. P-E fit refers to the compatibility between individuals and the environment, and P-E fit research concerns the antecedents and consequences of P-E fit (Kristof, 1996). Under the general umbrella of P-E fit, researchers have studied person-organization fit (P-O fit) (e.g., Cable & DeRue, 2002; Schneider, 2001), person-job fit (P-J fit) (e.g., Hollenbeck, 1989), and person-culture fit (P-C fit) (e.g., Ward & Kennedy, 1993, 1996; Ward et al., 2004). Even though the significance of P-O fit and P-J fit has been established in the field of organizational research, the importance of P-C fit, a construct relevant to sojourners and immigrants, has received little support: Both the Ward et al. (2004) study and the R. P. Yang et al. (2006) study found that the deviation between sojourners and host nationals on some characteristics (e.g., personality traits, self-construals) were not related to cultural adjustment.

The current study extended the P-C fit literature by proposing and testing a new measure of P-C fit that employed the Galileo theory and method—the convergence of mental models between the individual and the culture. This measure addressed problems with previous person-environment fit indices. It was appropriate to the level of analysis, because it measured the deviation of the person from the environment. Further, compared with perceived P-E fit measures, the cognitive fit index does not present the consistency bias as discussed by Edwards (1991). Each participant rated 45 pairs of comparisons with magnitude scale at Time 1, and three months later, they rated the same 45 pairs of comparisons. It is very unlikely that participants would remember their responses at Time 1, so the strong correlation

of .68 between the measures at two different times indicates the stability of the new measure. The measure possessed good fixed- and random-effects dependability reliability, and it was validated through its significant positive relationship with Time 2 psychological wellbeing and a positive correlation with host culture identification. Finally, the fit index measures differences among multiple attributes without presenting the problem of multicollinearity.

The current study also has methodological implications. The study employed a cross-lagged panel data model. By controlling for baseline variables, the hypothesized model allowed us to examine the influence of predictor variables on the improvement in behavioral, cognitive and affective adjustment. Previous scholars have argued that serious biases in estimates could occur if the autoregressive (lagged) effects are not taken into consideration (Gollob & Reichardt, 1987). The longitudinal design has implications for future P-C fit research. For example, Ward et al. (2004) found that the P-C extraversion fit was not related to adaptation, but because the researchers used cross-sectional data, it was not possible for them to examine whether P-C extraversion fit was related to improved adaptation.

This study used the structural equation modeling (SEM) for model assessment and hypotheses testing. SEM is a full-information multi-equation system: It takes all pieces of information into consideration simultaneously when estimating coefficients. In addition, SEM takes measurement errors into consideration. Bohrnstedt and Carter (1971) discussed the serious effects of measurement error in linear regression, one of which being that the coefficient estimate is not robust. The latent factors used in the study were purged of measurement errors.

Limitations

The study also has some limitations. The first one is that participants were all

Chinese international students. The decision to choose a Chinese sample was based on two considerations. First, Chinese sojourners to the U.S. have increased in the last decade. According to the Institute of International Education statistics, China has surpassed India in becoming the largest provider of international students in the U.S. In 2011, there were over 150,000 Chinese studying in the U.S., representing 22% of the total number of international students in the U.S. Therefore, the current study captures the rising interest in the adaptation process of the Chinese student population. The second reason for choosing students from a single culture was to eliminate the moderating effect of culture in the hypothesized model, because the theoretical relationships between variables may be different across national cultures. However, a problem with having a culturally homogeneous sample is that it limits the external validity of the study, because findings from this study may not be generalizable to sojourners from other cultures. Future research should recruit sojourners from other cultures to see whether the theoretical relationships vary across cultures.

Secondly, even though the longitudinal design employed by this dissertation represents a methodological advancement over cross-sectional research, due to constraints of time and resources, only two panels of data were collected. The study measured sojourners twice during their first semester in the U.S. Even though the first three months are of great interest to cultural adaptation scholars, the information on subsequent months was not obtained. For one thing, the two-wave panel design does not permit us to see whether the relationships between variables change over time. For example, even though person-culture fit was found to have a positive effect on psychological wellbeing and host identification, it is not clear whether such a relationship will become stronger or weaker over time. In addition, the current design does not provide enough information for an examination of the linear or nonlinear

trajectories of variable in cultural adjustment. For example, results from this study showed that sojourners' psychological wellbeing decreased in a period of three months. However, it is not clear whether psychological wellbeing will have the same trend if more points in time were used. Future studies should aim to measure cultural adjustment variables at more than two points in time.

In addition, this dissertation only measured cultural adaptability and English proficiency once, and the American participants' mental models in the study were only measured once. The assumption is that the sojourners' cultural adaptability and English proficiency as well as the referent group's mental models were relatively stable over three months, but this assumption can be challenged.

There are also measurement issues with the current study. EFA results showed the psychological wellbeing scale was not unidimensional. This may be due to the cross-cultural variability in measurement items. The original scales were in English and developed by western scholars (Joseph et al., 2004; Lewis & Joseph, 1997; McGreal & Joseph, 1993), and they were translated to Chinese. Even though the original scale has been found to have good reliability and validity (e.g., Joseph & Lewis, 1998; Joseph, Lewis, & Olsen, 1996; Lewis, McCollam, & Joseph, 2000; Walsh, Joseph, & Lewis, 1995), its applicability to the Chinese sample showed that it did not have good psychometric properties. As a result, some items were dropped from the scale. However, these decisions were exploratory, which means confirmatory research still needs to be conducted to investigate the psychometric properties of the scale across different cultural samples.

Conclusion

In conclusion, the study has made theoretical and methodological contributions to existing cultural adaptation research. It proposed and tested a

dynamic adaptation model for the affective, behavioral, and cognitive cultural adjustment. Results from this study supported the person-culture fit hypothesis: The convergence of mental models between sojourners and the host culture was predictive of host identification and psychological wellbeing. The study has implications not only for intercultural adjustment but also for organizational adjustment, teamwork effectiveness, and college adjustment. In addition, the Galileo multidimensional approach can be applied to dyadic relationships, such as the congruence in mental structures between parents and children, husbands and wives, and supervisors and employees.

Appendix A

Online Survey of the Pilot Study

Age: _____

You are (check which one applies):

Male:_____ **Female**:_____

How many **years** have you been in the U.S.? _____

You are an international student from which country (your **nationality**):

Please respond to the following three questions. You may write anything you think of—there are no correct answers.

1. List ten things that come to your mind when you think of adapting to the U.S. (It can be anything specific, or any concepts or ideas).
2. In your opinion, what are the most important qualities that a successful student studying in the U.S. should possess?
3. List five cultural differences between your home culture and the U.S. culture.

Appendix B

Online Survey of the Formal Study

Section I: Please read each of the following statements carefully and rate each statement in terms of your agreement with it using the following scale:

Use a number from 0 (zero) on up to indicate the extent to which you agree with the following statements. Zero means you ***completely disagree*** *with the statement, and higher numbers represent greater agreement. If you* ***moderately*** *agree with the statement, rate the statement as 100; if you agree* ***twice*** *as much as a moderate level of agreement, rate the statement as 200; if you agree* ***half*** *as much as a moderate level of agreement, rate the statement as 50. Thus,*

Completely disagree = 0.

Moderately agree = 100.

The greater the agreement with the statement, the higher the number should be. There is no highest number: Use any number from zero on up

Statement	**Rating** *Completely disagree = 0.* *Moderately agree = 100.* *The greater the agreement with the statement, the higher the number should be.*
I enjoy learning about cultures other than my own.	
I work well with diverse others.	
It is important to me that I respect others' culture.	
I enjoy the variety and learning experiences that come from working with people of different backgrounds.	
I feel comfortable interacting with others who have different values and customs than my own.	
I felt dissatisfied with my life when I was studying abroad in the host culture.	
I felt happy when I was studying abroad in the host culture.	
I felt cheerless when I was studying abroad in the host culture.	
I felt pleased with the way I was in the host culture.	

I felt that life was enjoyable in the host culture.	
I felt that life was meaningless in the host culture.	

Section II: Please rate your English proficiency using the following scale:

*Use a number from 0 (zero) on up to indicate your English proficiency. Zero means there is "no evidence of proficiency" and 100 means the English level is "moderately proficient. If you believe that your English is **twice** as much as a moderate level of proficiency, use the number 200; if you believe that your English is **half** as much as a moderate level of proficiency, use the number 50; Thus,*

No evidence of proficiency = 0.
Moderately proficient = 100.
The greater the level of proficiency, the higher the number should be.
There is no highest number: Use any number from zero on up

English	**Proficiency Rating** *No evidence of proficiency = 0.* *Moderately proficient = 100.* *The greater the level of proficiency, the h should be.*
Reading	
Writing	
Listening	
Speaking	

Section III: Communication Patterns

1. How much time in an average week do you communicate with local American people since you came to the U.S.?_
   For about _____hours ___minutes
2. How much time in an average week do you communicate with someone from your home culture since you came to the U.S.?
   For about_____hours ____minutes
3. How much time in an average week do you use the American mass media since you came to the U.S., including reading American newspaper, watching American television programs, and visiting American websites?
   For about_____hours ___ minutes

Section IV: Similarity Rating Task

In this section, you are going to be presented with **45** pairs of words (concepts) that are relevant to Chinese students'adjustment in the U.S. Following each pair of words, you are asked to give a number that indicates the degree of difference (distance) between these words. You may use any number that is equal to or bigger than zero.

Zero means that you think that the two concepts are **exactly identical**, or there is no distance between the two concepts. The bigger the number, the more dissimilar the two concepts are, or the more distant they are from each other.
For example, if you think that the two concepts are **moderately different from each other**, use the number **100**. If you think that the two concepts are **less different than "moderately different,"** use a number **smaller than 100** (perhaps 10, 61, or 90). If you think that the two concepts are **more different/dissimilar than "moderately different,"** use a umber **bigger than 100** (perhaps, 170, 200, or 350).

You can use any number from zero on up, such as 18, 193, or 347. Therefore,

If two concepts are identical, write 0.
Not identical, but not very different, write a number between 0 and 100.
As different as "moderately different" write 100.
More different than "moderately different," write a number larger than 100.

Use any number from zero on up. Just like measures of physical distance, there is no upper bound to the possible number you can use.

Concept pair	**Distance** *Not identical, but not very different, write a number between 0 and 100.* *As different as "moderately different," write 100.* *More different than "moderately different," write a number larger than 100*
Independence-The ability to use English	
Independence-Good Food	
Independence-Social Ability	
Independence-Friends/family	
Independence-School Performance	
Independence-Convenience of transportation	
Independence-The U.S.	
Independence-China	
Independence-Yourself	
The ability to use English-Good Food	
The ability to use English-Social Ability	
The ability to use English-Friends/family	
The ability to use English-School Performance	
The ability to use English-Convenience of transportation	
The ability to use English-The U.S.	
The ability to use English-China	
The ability to use English-Yourself	
Good Food-Social Ability	
Good Food-Friends/family	
Good Food-School Performance	
Good Food-Convenience of transportation	
Good Food-The U.S.	

Good Food-China	
Good Food-Yourself	
Social Ability-Friends/family	
Social Ability-School Performance	
Social Ability-Convenience of transportation	
Social Ability-The U.S.	
Social Ability-China	
Social Ability-Yourself	
Friends/family-School Performance	
Friends/family-Convenience of transportation	
Friends/family-The U.S.	
Friends/family-China	
Friends/family-Yourself	
School Performance-Convenience of transportation	
School Performance-The U.S.	
School Performance-China	
School Performance-Yourself	
Convenience of transportation -The U.S.	
Convenience of transportation -China	
Convenience of transportation -Yourself	
The U.S.-China	
The U.S. –Yourself	
China-Yourself	

Demographic Questions

1. Your age is	**_____ years.**
2. You are: (Check which one applies):	
Male	
Female	

3. How long have you been in the U.S. as a student?	

4. What is your major at the university?	

Your email address_____ (This information is used for contacting you for the second survey. If you complete both surveys, your will receive 7 dollars for your participation).

Please provide the contact information of three local Americans that you have the most contact with (e.g., your adviser, your classmates, your roommate.)

Contact Name	Relationship	Email

Appendix C

Descriptive Statistics for Panel 1 Variables Non-MDS Variables

	M	*SD*	*Skewness*	*SE*	*Kurtosis*	***SE***
Intercultural communication scale						
interpersonal contact	6.06	8.30	4.67	.22	29.91	.43
mass media exposure	7.21	9.57	4.29	.22	26.98	.43
Cultural adaptability scale						
enjoy learning about other cultures	235.75	220.68	2.69	.22	6.70	.43
work well with diversity	118.17	65.51	1.35	.22	1.61	.43
respect other's culture	315.94	270.91	1.73	.22	1.84	.43
enjoy variety	196.33	169.18	2.14	.22	3.70	.43
comfortable interacting with cultural others	137.83	94.64	1.74	.22	2.35	.43
Psychological wellbeing scale						
dissatisfied with life	34.10	32.09	.66	.22	-.50	.43
Happy	143.13	83.01	.67	.22	-.64	.43
Cheerless	31.24	35.22	.89	.22	-.54	.43
Pleased	101.94	59.71	.93	.22	.58	.43
life was enjoyable	160.78	137.73	2.17	.22	4.16	.43
life was meaningless	10.60	17.65	1.45	.22	.52	.43
English proficiency scale						
English Reading	145.08	63.89	.94	.22	.47	.43
English Listening	121.72	68.38	1.42	.22	1.45	.43
English writing	109.40	44.41	.50	.22	-.25	.43

English speaking	101.90	50.10	.70	.22	-.28	.43

Appendix D

Descriptive Statistics for Panel 1 MDS Variables

	M	*SD*	*Skewness*	*SE*	*Kurtosis*	***SE***
independence-English	85.69	62.24	.52	.22	-.57	.43
independence-food	130.60	123.43	1.97	.22	3.52	.43
independence- social ability	75.02	68.45	.68	.22	-.76	.43
independence-friends/family	97.98	72.95	1.26	.22	1.70	.43
independence-school	126.77	124.12	1.95	.22	3.52	.43
independence-transportation	107.44	101.73	1.60	. 22	2.22	.43
independence-America	89.71	83.99	1.02	.22	.34	.43
independence-China	127.92	103.41	1.32	.22	1.28	.43
independence-You	66.43	67.96	.84	.22	-.48	.43
English-food	153.43	144.27	1.33	.22	.99	.43
English-social	63.34	64.93	1.01	.22	-.05	.43
English-Friends/family	135.57	155.32	1.98	.22	3.27	.43
English-school	69.89	62.72	.86	.22	-.19	.43
English-transportation	132.56	125.32	1.77	.22	2.93	.43
English-America	72.89	86.64	1.31	.22	.85	.43
English-China	149.63	153.90	1.92	.22	3.02	.43
English-You	105.45	116.57	2.24	.22	5.15	.43
food-social ability	148.02	140.88	1.61	.22	1.61	.43
food-friends/family	126.31	133.00	1.95	.22	2.87	.43
food-school	231.42	272.28	1.89	.22	2.77	.43
food-transportation	152.95	144.13	1.40	.22	1.06	.43
food-America	212.53	275.57	2.10	.22	3.26	.43

food-China	100.98	126.30	2.10	.22	4.12	.43
food-You	119.02	137.74	2.59	.22	6.49	.43
social ability-friends/family	79.06	62.87	.55	.22	-.52	.43
social ability-school	95.83	60.80	.50	.22	-.73	.43
social ability-transportation	118.89	126.25	2.15	.22	4.16	.43
social ability-America	72.81	65.78	.80	.22	-.45	.43
social ability-China	79.08	67.29	.68	.22	-.66	.43
social ability-You	104.58	124.05	2.17	.22	4.46	.43
friends/family-school	151.79	174.60	2.13	.22	3.82	.43
friends/family-transportation	160.73	212.05	2.55	.22	6.13	.43
friends/family-America	148.65	149.71	1.52	.22	1.14	.43
friends/family-China	63.99	59.95	.93	.22	.12	.43
friends/family-You	62.73	61.89	.86	.22	-.11	.43
school-transportation	170.07	155.14	1.14	.22	.23	.43
school-America	110.75	98.09	1.72	.22	2.75	.43
school-China	91.18	102.47	2.28	.22	6.33	.43
school-You	88.37	102.60	1.91	.22	3.29	.43
transportation-America	140.38	136.41	1.54	.22	1.67	.43
transportation-China	106.35	131.05	2.16	.22	4.04	.43
transportation-You	144.23	171.14	2.17	.22	4.30	.43
America-China	493.30	1204.65	3.44	.22	10.31	.43
America-You	120.91	101.77	1.63	.22	2.19	.43
China-You	75.14	63.49	.75	.22	-.35	.43

Appendix E

Descriptive Statistics for Panel 2 Variables Non-MDS Variables

	M	*SD*	*Skewness*	*SE*	*Kurtosis*	*SE*
Intercultural communication scale						
interpersonal contact	6.10	6.28	2.01	.24	4.29	.47
mass media exposure	8.19	8.01	1.36	.24	1.10	.48
Psychological wellbeing scale						
dissatisfied with life	34.48	35.62	.82	.24	-.66	.47
Happy	12076.17	121501.73	10.15	.24	103.00	.47
Cheerless	30.09	33.28	.98	.24	-.21	.47
Pleased	2021.57	19698.73	10.15	.24	103.00	.47
life was enjoyable	2046.70	19696.28	10.15	.24	103.00	.47
life was meaningless	8.33	12.35	1.58	.24	2.08	.47

Appendix F

Descriptive Statistics for Panel 2 MDS Variables

	M	*SD*	*Skewness*	*SE*	*Kurtosis*	***SE***
independence-English	77.71	57.06	.99	.24	1.72	.47
independence-food	136.38	130.41	1.69	.24	2.46	.47
independence- social ability	62.85	53.26	.95	.24	2.26	.47
independence-friends/family	90.86	72.42	2.00	.24	8.78	.47
independence-school	134.52	133.71	1.76	.24	2.46	.47
independence-transportation	89.23	85.52	1.96	.24	5.27	.47
independence-America	78.98	88.85	2.00	.24	5.04	.47
independence-China	112.81	84.96	1.56	.24	3.69	.47
independence-You	67.78	64.27	.78	.24	-.34	.47
English-food	149.05	161.64	2.29	.24	7.28	.47
English-social	51.31	52.37	.85	.24	-.28	.47
English-Friends/family	129.86	119.63	1.84	.24	3.34	.47
English-school	67.69	60.19	.81	.24	-.20	.47
English-transportation	128.35	132.43	1.81	.24	2.62	.47
English-America	60.95	80.75	2.14	.24	7.44	.47
English-China	154.58	154.33	1.82	.24	2.36	.47
English-You	90.92	78.04	1.32	.24	1.38	.47
food-social ability	122.34	124.86	2.04	.24	3.64	.47
food-friends/family	102.60	99.93	1.87	.24	3.24	.47
food-school	703.40	4818.84	10.05	.24	101.35	.47
food-transportation	151.98	203.73	2.30	.24	4.46	.47
food-America	160.95	180.94	1.93	.24	2.95	.47

food-China	66.28	79.98	2.63	.24	12.09	.47
food-You	108.11	126.32	2.33	.24	4.88	.47
Social ability-friends/family	72.37	49.40	.15	.24	-.60	.47
social ability-school	88.16	61.24	.61	.24	-.47	.47
social ability-transportation	98.50	75.44	1.10	.24	.96	.47
social ability-America	69.47	60.20	.76	.24	-.17	.47
social ability-China	81.15	77.10	1.36	.24	1.68	.47
social ability-You	76.19	62.58	1.39	.24	3.12	.47
Friends/family-school	128.36	126.43	2.02	.24	3.61	.47
Friends/family-transportation	125.46	128.42	1.97	.24	3.42	.47
Friends/family-America	136.74	115.90	1.25	.24	.49	.47
Friends/family-China	70.60	75.47	1.57	.24	2.23	.47
Friends/family-You	66.16	58.89	.88	.24	.06	.47
School-transportation	168.38	173.65	1.76	.24	2.62	.47
School-America	104.92	81.69	1.07	.24	.60	.47
School-China	105.41	98.51	1.64	.24	2.62	.47
School-You	80.67	68.99	1.06	.24	.42	.47
transportation-America	125.31	127.39	1.86	.24	3.10	.47
transportation-China	82.27	76.23	1.41	.24	1.83	.47
transportation-You	101.64	87.269	2.052	.24	4.747	.47
America-China	9970.62	98998.20	10.1	.24	102.000	.47
America-You	132.13	143.35	3.38	.24	14.30	.47
China-You	66.44	58.68	.950	.24	.25	.47

Appendix G

Descriptive Statistics for Panel I Transformed Non-MDS Variables

	λ	*M*	*SD*	Skewness	*SE*	Kurtosis	*SE*
Intercultural Communication Scale							
interpersonal contact	.10	.69	.29	.10	.22	-.57	.43
mass media exposure	.10	.74	.34	.18	.22	-.48	.43
Cultural Adaptability Scale							
enjoy learning about other cultures	.35	6.38	1.61	1.71	.22	3.02	.43
work well with diversity	.35	5.15	1.01	-0.12	.22	2.19	.43
respect other's culture	.35	7.04	1.86	1.10	.22	0.35	.43
enjoy variety	.35	5.99	1.52	1.20	.22	1.46	.43
comfortable interacting with cultural others	.35	5.38	1.19	0.60	.22	1.59	.43
Psychological Wellbeing Scale							
dissatisfied with life	.50	5.03	3.14	-.06	.22	-1.32	.43
Happy	.50	11.49	3.49	.13	.22	-.52	.43
Cheerless	.50	4.60	3.35	.31	.22	-1.34	.43
Pleased	.50	9.66	3.12	-.30	.22	1.05	.43
life was enjoyable	.35	5.57	1.48	.71	.22	2.04	.43
life was meaningless	.43	2.13	1.67	1.07	.22	-.53	.43
English Proficiency Scale							
English Reading	.50	11.81	2.57	.39	.22	.09	43
English Listening	.50	10.71	2.85	.83	.22	.49	.43
English writing	.50	10.29	2.15	-.08	.22	.04	.43

English speaking	.50	9.83	2.52	-.05	.22	.41	.43

Appendix H

Descriptive Statistics for Panel 1 Transformed MDS Variables

	λ	*M*	*SD*	*Skewness*	*SE*	*Kurtosis*	*SE*
independence-English	.40	5.40	2.15	-.66	.22	-.26	.43
independence-food	.40	6.40	2.42	.39	.22	.78	.43
independence- social ability	.40	4.85	2.46	-.21	.22	-1.12	.43
independence-friends/family	.40	5.77	2.10	-.52	.22	.55	.43
independence-school	.40	6.22	2.59	.18	.22	.59	.43
independence-transportation	.40	5.81	2.46	.10	. 22	-.03	.43
independence-America	.40	5.23	2.61	-.17	.22	-.87	.43
independence-China	.40	6.39	2.37	-.18	.22	.27	.43
independence-You	.40	4.43	2.61	-.04	.22	-1.34	.43
English-food	.40	6.62	2.98	-.04	.22	-.28	.43
English-social	.40	4.43	2.44	.00	.22	-1.12	.43
English-Friends/family	.40	6.15	3.03	.39	.22	.22	.43
English-school	.40	4.78	2.31	-.25	.22	-.86	.43
English-transportation	.40	6.35	2.61	.15	.22	.24	.43
English-America	.40	4.45	2.84	.26	.22	-1.12	.43
English-China	.40	6.63	2.76	.48	.22	.47	.43
English-You	.40	5.61	2.69	.25	.22	.31	.43
food-social ability	.40	6.71	2.56	.53	.22	.17	.43
food-friends/family	.40	6.23	2.53	.68	.22	.73	.43
food-school	.40	7.48	3.92	.38	.22	-.02	.43
food-transportation	.40	6.70	2.81	.16	.22	-.17	.43
food-America	.40	7.30	3.62	.95	.22	.80	.43

food-China	.40	5.22	3.04	.36	.22	-.25	.43
food-You	.40	5.98	2.64	.61	.22	1.35	.43
social ability-friends/family	.40	5.09	2.33	-.53	.22	-.75	.43
social ability-school	.40	5.83	1.85	-.70	.22	.56	.43
social ability-transportation	.40	6.03	2.57	.45	.22	.76	.43
social ability-America	.40	4.84	2.37	-.23	.22	-.95	.43
social ability-China	.40	5.08	2.34	-.32	.22	-.85	.43
social ability-You	.40	5.46	2.85	.35	.22	.11	.43
friends/family-school	.40	6.58	2.90	.78	.22	.78	.43
friends/family-transportation	.40	6.50	3.29	.81	.22	1.13	.43
friends/family-America	.40	6.54	2.90	.23	.22	.00	.43
friends/family-China	.40	4.55	2.32	-.18	.22	-1.00	.43
friends/family-You	.40	4.39	2.47	-.11	.22	-1.28	.43
school-transportation	.40	6.94	3.01	-.02	.22	-.45	.43
school-America	.40	5.99	2.31	.02	.22	.47	.43
school-China	.40	5.23	2.63	.24	.22	.00	.43
school-You	.40	5.11	2.66	.36	.22	-.20	.43
transportation-America	.40	6.41	2.82	.10	.22	-.08	.43
transportation-China	.40	5.50	2.85	.53	.22	.31	.43
transportation-You	.40	6.28	3.12	.47	.22	.42	.43
America-China	.40	8.67	6.34	2.49	.22	6.15	.43
America-You	.40	6.27	2.25	.05	.22	.69	.43
China-You	.40	4.97	2.31	-.38	.22	-.77	.43

Appendix I

Descriptive Statistics for Panel 2 Transformed Non-MDS Variables

	λ	*M*	*SD*	Skewness	*SE*	Kurtosis	*SE*
Intercultural Communication Scale							
interpersonal contact	.10	0.71	0.32	0.06	0.24	-0.69	0.47
mass media exposure	.10	0.80	0.40	-0.18	0.24	-0.67	0.48
Psychological Wellbeing Scale							
Dissatisfied with life	.50	5.00	3.26	0.19	0.24	-1.26	0.47
Happy	.50	9.84	2.75	-0.31	0.24	0.27	0.47
Cheerless	.50	4.59	3.18	0.30	0.24	-1.21	0.47
Pleased	.50	8.34	3.30	-0.50	0.24	-0.12	0.47
life was enjoyable	.35	4.86	1.13	-0.32	0.24	1.02	0.47
life was meaningless	.43	2.05	1.31	0.70	0.24	-1.21	0.47

Appendix J

Descriptive Statistics for Panel 2 Transformed MDS Variables

	λ	*M*	*SD*	*Skewness*	*SE*	*Kurtosis*	*SE*
independence-English	.40	5.14	1.85	-0.96	0.24	-0.05	0.47
independence-food	.40	6.30	2.57	-0.20	0.24	-0.07	0.47
independence- social ability	.40	4.55	2.09	-0.56	0.24	-1.11	0.47
independence-friends/family	.40	5.53	2.02	-0.68	0.24	-0.02	0.47
independence-school	.40	6.15	2.33	-0.38	0.24	-0.07	0.47
independence-transportation	.40	5.28	2.06	-0.40	0.24	-0.54	0.47
independence-America	.40	4.77	2.33	-0.18	0.24	-0.93	0.47
independence-China	.40	6.03	1.83	-0.81	0.24	0.62	0.47
independence-You	.40	4.59	2.48	-0.18	0.24	-1.22	0.47
English-food	.40	6.42	2.95	0.07	0.24	-0.23	0.47
English-social	.40	4.02	2.27	-0.07	0.24	-1.39	0.47
English-Friends/family	.40	6.27	2.43	-0.24	0.24	0.28	0.47
English-school	.40	4.68	2.15	-0.37	0.24	-1.03	0.47
English-transportation	.40	6.09	2.56	0.03	0.24	-0.05	0.47
English-America	.40	4.00	2.67	0.29	0.24	-1.36	0.47
English-China	.40	6.76	2.54	0.51	0.24	0.42	0.47
English-You	.40	5.40	2.05	-0.52	0.24	-0.24	0.47
food-social ability	.40	6.07	2.39	0.09	0.24	0.41	0.47
food-friends/family	.40	5.71	2.42	0.14	0.24	0.34	0.47
food-school	.40	7.27	3.73	0.11	0.24	-0.71	0.47
food-transportation	.40	6.31	3.29	0.85	0.24	0.89	0.47

food-America	.40	6.63	2.98	0.37	0.24	0.21	0.47
food-China	.40	4.39	2.47	0.02	0.24	-1.17	0.47
food-You	.40	5.48	2.34	-0.27	0.24	-0.07	0.47
social ability-friends/family	.40	5.03	2.01	-0.87	0.24	-0.42	0.47
social ability-school	.40	5.55	1.99	-0.63	0.24	0.11	0.47
social ability-transportation	.40	5.70	1.96	-0.63	0.24	-0.04	0.47
social ability-America	.40	4.70	2.18	-0.51	0.24	-1.01	0.47
social ability-China	.40	5.01	2.25	-0.36	0.24	-0.83	0.47
social ability-You	.40	5.07	2.07	-0.60	0.24	-0.32	0.47
friends/family-school	.40	6.19	2.40	-0.11	0.24	0.52	0.47
friends/family-transportation	.40	6.13	2.69	0.21	0.24	0.49	0.47
friends/family-America	.40	6.54	2.45	0.03	0.24	0.11	0.47
friends/family-China	.40	4.62	2.30	-0.11	0.24	-0.95	0.47
friends/family-You	.40	4.60	2.14	-0.48	0.24	-0.96	0.47
school-transportation	.40	6.74	2.97	-0.06	0.24	-0.21	0.47
school-America	.40	5.77	2.03	-0.77	0.24	0.17	0.47
school-China	.40	5.69	2.33	-0.30	0.24	-0.26	0.47
school-You	.40	5.15	2.14	-0.40	0.24	-0.48	0.47
transportation-America	.40	6.02	2.62	-0.12	0.24	-0.07	0.47
transportation-China	.40	5.07	2.21	-0.46	0.24	-0.56	0.47
transportation-You	.40	5.80	1.97	-0.36	0.24	0.75	0.47
America-China	.40	7.15	2.67	0.32	0.24	0.05	0.47
America-You	.40	6.44	2.18	0.79	0.24	2.15	0.47
China-You	.40	4.66	2.09	-0.46	0.24	-0.86	0.47

Appendix K

ANOVA Results (Panel 1 and Panel 2)

	Time 1	Time 2
English Proficiency		
reading	F (2, 123) = 2.582, p = .08	--
writing	F (2, 123) = .90, p = .41	--
listening	F (2, 123) = .366, p = .69	--
speaking	F (2, 123) = .186, p = .83	--
Cultural Adaptability		
enjoy learning about other cultures	F (2, 123) = 1.448, p = .24	--
work well with diversity	F (2, 123) = 1.097, p = .34	--
respect other's culture	F (2, 123) = 1.085, p = .34	--
enjoy variety	F (2, 123) = 1.240, p = .29	--
comfortable interacting with cultural others	F (2, 123) = 2.161, p = .12	--
Intercultural Communication		
intercultural communication	F (2, 123) = 6.786, p = .002	F (2, 123) = 2.385, p = .097
Psychological wellbeing		
dissatisfied with life	F (2, 123) = 0.139, p = .986	F (2, 100) = 0.504, p = .606
happy	F (2, 123) = 0.235, p = .791	F (2, 100) = 2.339, p = .102
cheerless	F (2, 123) = 1.368, p = .258	F (2, 100) = 1.278, p = .283
pleased	F (2, 123) = 0.702, p = .497	F (2, 100) = 1.175, p = .313
life was enjoyable	F (2, 123) = 0.603, p = .549	F (2, 100) = 1.327, p = .270
life was meaningless	**F (2, 123) = 4.270, p = .016**	F (2, 100) = 1.793, p = .172
MDS Paired Comparisons		
independence-English	F (2, 121) = 0.502, p = .607	F (2, 99) = 2.609, p = .079
independence-food	F (2, 121) = 0.677, p = .510	F (2, 99) = 1.107, p = .335

independence-social ability	F (2, 121) = 1.479, p = .232	F (2, 99) = 1.430, p = .244
independence-friends	F (2, 121) = 1.375, p = .257	F (2, 99) = 1.027, p = .362
independence-school	F (2, 121) = 0.150, p = .861	F (2, 99) = 1.257, p = .289
independence-transportation	F (2, 121) = 0.069, p = .933	F (2, 99) = 0.266, p = .767
independence-America	F (2, 121) = 0.286, p = .752	F (2, 99) = 0.558, p = .574
independence-China	F (2, 121) = 1.439, p = .241	F (2, 99) = 0.367, p = .694
independence-You	F (2, 121) = 0.849, p = .430	F (2, 99) = 1.179, p = .312
English-food	F (2, 121) = 0.168, p = .846	F (2, 99) = 1.605, p = .206
English-social	F (2, 121) = 0.518, p = .597	F (2, 99) = 0.657, p = .521
English-Friends/family	F (2, 121) = 0.058, p = .944	F (2, 99) = 0.668, p = .515
English-school	F (2, 121) = 0.596, p = .552	F (2, 99) = 1.257, p = .289
English-transportation	F (2, 121) = 0.014, p = .986	**F (2, 99) = 3.378, p = .038**
English-America	F (2, 121) = 1.519, p = .223	F (2, 99) = 0.451, p = .638
English-China	F (2, 121) = 0.812, p = .446	F (2, 99) = 0.792, p = .456
English-You	F (2, 121) = 0.233, p = .792	F (2, 99) = 0.931, p = .398
food-social ability	F (2, 121) = 0.209, p = .812	F (2, 99) = 1.567, p = .214
food-friends/family	F (2, 121) = 0.823, p = .442	F (2, 99) = 0.178, p = .837
food-school	F (2, 121) = 1.152, p = .320	F (2, 99) = 2.796, p = .066
food-transportation	F (2, 121) = 0.278, p = .758	**F (2, 99) = 4.686, p = .011**
food-America	F (2, 121) = 0.031, p = .970	F (2, 99) = 2.837, p = .063
food-China	F (2, 121) = 0.474, p = .624	F (2, 99) = 1.469, p = .235
food-You	F (2, 121) = 0.019, p = .981	F (2, 99) = 0.153, p = .859
social ability-friends/family	F (2, 121) = 0.206 p = .814	F (2, 99) = 1.245, p = .292
social ability-school	F (2, 121) = 0.237, p = .790	F (2, 99) = 0.019, p = .982
social ability-transportation	F (2, 121) = 0.026, p = .974	F (2, 99) =1.014, p = .366
social ability-America	**F (2, 121) = 3.911, p = .023**	F (2, 99) = 0.069, p = .934
social ability-China	F (2, 121) = 1.498, p = .228	F (2, 99) = 0.256, p = .775
social ability-You	F (2, 121) = 2.010, p = .138	F (2, 99) = 0.724, p = .487
friends/family-school	F (2, 121) = 0.278, p = .758	F (2, 99) = 0.106, p = .899

friends/family-transportation	F (2, 121) = 0.160, p = .852	F (2, 99) = 0.244, p = .784
friends/family-America	F (2, 121) = 0.097, p = .908	F (2, 99) = 0.903, p = .408
friends/family-China	F (2, 121) = 0.498, p = .609	F (2, 121) = 1.047, p = .355
friends/family-You	F (2, 121) = 0.283, p = .754	F (2, 121) = 1.910, p = .154
school-transportation	F (2, 121) = 1.083, p = .342	F (2, 121) = 1.563, p = .215
school-America	F (2, 121) = 0.471, p = .625	F (2, 121) = .688, p = .505
school-China	F (2, 121) = 2.333, p = .101	F (2, 121) = 1.033, p = .360
school-You	F (2, 121) = 0.714, p = .492	F (2, 121) = .590, p = .556
transportation-America	F (2, 121) = 0.235, p = .791	F (2, 121) = 1.053, p = .353
transportation-China	F (2, 121) = 0.233, p = .793	F (2, 121) = .135, p = .874
transportation-You	F (2, 121) = 0.109, p = .896	F (2, 121) = .351, p = .705
America-China	F (2, 121) = 0.903, p = .408	F (2, 121) = .028, p = .972
America-You	F (2, 121) = 0.341, p = .712	F (2, 121) = .089, p = .915
China-You	F (2, 121) = 0.777, p = .462	F (2, 121) = .930, p = .398

Appendix L

Cultural Adaptability Scale

1. I enjoy learning about cultures other than my own.
2. I work well with diverse others.
3. It is important to me that I respect others' culture.
4. I enjoy the variety and learning experiences that come from working with people of different backgrounds.
5. I feel comfortable interacting with others who have different values and customs.

Appendix M

Adapted Short Depression Happiness Scale (SDHS)

1. I felt dissatisfied with my life in the U.S.
2. I felt happy in the U.S.
3. I felt cheerless in the U.S.
4. I felt pleased with the way I am in the U.S.
5. I felt that life was enjoyable in the U.S.
6. I felt that life was meaningless in the U.S.

Appendix N

Syntax for Psychological Wellbeing Repeated Measure Means Model

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Psychological wellbeing means model
Observed variables
T1Psy1 T1Psy2 T1Psy3 T2Psy1 T2Psy2 T2Psy3
Covariance matrix
12.371
6.079 10.129
3.326 2.428 2.194
2.459 2.921 .4269 7.737
1.182 4.368 .674    5.679 11.176
.629 1.057 .658 2.144 1.714 1.336
Means
11.52 9.63 5.57 9.80 8.41 4.85
Sample size is 117
Latent variables
PSYT1 PSYT2
Relationships
T1Psy1 = CONST 1* PSYT1
T1Psy2 = CONST PSYT1
T1Psy3 = CONST PSYT1
T2Psy1 = CONST 1* PSYT2
T2Psy2 = CONST PSYT2
T2Psy3 = CONST PSYT2
PSYT1 = 0*CONST
PSYT2 = CONST
Let the errors of T1Psy1 and T2Psy1 covary
Let the errors of T1Psy2 and T2Psy2 covary
Let the errors of T1Psy3 and T2Psy3 covary
Set path from PSYT1 to T1Psy2 = path from PSYT2 to T2Psy2
Set path from PSYT1 to T1Psy3 = path from PSYT2 to T2Psy3
Set path from CONST to T1Psy1 = path from CONST to T2Psy1
Set path from CONST to T1Psy2 = path from CONST to T2Psy2
Set path from CONST to T1Psy3 = path from CONST to T2Psy3
Path diagram
Options: MI
End of program
```

Appendix O

Syntax for Final Revised Model

```
Observed variables
Ada1 Ada2 Ada3 Read Listen Write Speak T1intercomm T2intercomm T1Psy1
T1Psy2 T1Psy3 T2Psy1 T2Psy2 T2Psy3 T1fit T2fit T1identification T2identification
T12modelchange age
Covariance matrix
2.585
 1.714 2.324
 .920 1.237 1.408
 1.182 .935 .494 6.600
 1.179 1.339 .609 5.305 8.099
 .792 .823 .855 3.887 3.757 4.637
 1.060 1.076 .705 3.812 5.398 3.626 6.326
 .017 .085 .047 -.014 .100 .036 .188 .087
 .013 .019 -.007 .138 .277 .142 .317 .052 .103
 1.934 2.978 2.181 2.691 2.735 2.112 2.700 .185 .157 12.175
 -.099 .699 .949 1.554 1.107 1.804 2.025 .160 .021 5.946 9.731
 .765 .957 .494 1.651 1.824 .980 1.259 .033 .051 3.381 2.342 2.195
 .373 .493 .487 1.207 2.538 1.669 2.482 .104 .238 2.488 3.003 .446 7.562
 .491 .607 .221 1.587 2.161 2.026 2.077 .028 .042 1.051 4.014 .633 5.278 10.863
 .221 .085 .029 .777 1.275 .727 .939 .014 .067 .563 .995 .612 2.047 1.610 1.282
 -.911 -.949 -.469 -1.984 -1.564 -.773 -.227 .060 .024 -1.709 -.449 -1.251 .346 .588
-.414 4.753
 -1.199 -1.403 -.788 -1.014 -.763 -.683 -.195 -.048 -.024 -1.323 -.419 -.982 .079 .545
-.326 2.758 3.781
 -1.168 -.988 -.441 -.704 -.693 -.633 -.240 .068 .144 -.527 -.429 -.494 -.047 -1.064
-.074 1.887 1.551 5.062
 -.668 -.457 -.176 -.548 -.303 -.800 -.244 -.026 .008 .192 -.101 -.312 .108 -.051 -.100
2.011 2.319 2.082 4.747
 16.172 18.417 8.121 12.072 8.437 1.748 -3.233 -.844 -.954 14.735 1.216 14.220
-4.782 -2.795 6.142 -49.092 -47.078 -25.399 -30.751 1130.960
 .004 .000 .007 -.039 -.041 -.019 -.035 -.001 -.001 -.019 -.027 -.021 .023 .017 .004
-.006 -.017 -.004 -.011 .079 .006
 Sample size is 103
 Latent variables
 Adaptability Proficiency T1wellbeing T2wellbeing T1IC T2IC T1FIT T2FIT T1HI
T2HI Change AGE
 Relationships
 Ada1 = 1* Adaptability
 T1Psy2 Ada2 Ada3 = Adaptability
 Listen = 1* Proficiency
 Read Write Speak = Proficiency
 T1Psy1 = 1* T1wellbeing
 T1Psy2 T1Psy3 = T1wellbeing
 T2Psy1 = 1* T2wellbeing
 T2Psy2 T2Psy3 = T2wellbeing
 T1intercomm = 1*T1IC
```

set the error variance of T1intercomm to 0
T2intercomm = 1*T2IC
set the error variance of T2intercomm to 0
T12modelchange = 1*Change
set the error variance of T12modelchang to 0
T1fit = 1*T1FIT
set the error variance of T1fit to 0
T2fit = 1*T2FIT
set the error variance of T2fit to 0
T1identification = 1*T1HI
set the error variance of T1identification to 0
T2identification = 1*T2HI
set the error variance of T2identification to 0
age = 1*AGE
Set the error variance of age to 0
T2IC = T1IC T1FIT Proficiency Adaptability T1HI
T2FIT = T1FIT T1IC Change
T2wellbeing = T1wellbeing T1FIT T1HI Change Proficiency Adaptability AGE
T2HI = T1HI T1FIT Adaptability T2FIT
Change = Adaptability T1FIT
Let the errors of T1Psy1 and T2Psy1 correlate
Let the errors of T1Psy2 and T2Psy2 correlate
Let the errors of T1Psy3 and T2Psy3 correlate
Set the path from T1wellbeing to T1Psy2 = the path from T2wellbeing to T2Psy2
Set the path from T1wellbeing to T1Psy3 = the path from T2wellbeing to T2Psy3
Let the errors of Write and Listen correlate
Path diagram
Options: MI AD=OFF
End of program

Appendix P

Syntax for the Partial Mediation Model

Observed variables
Ada1 Ada2 Ada3 Read Listen Write Speak T1intercomm T2intercomm T1Psy1 T1Psy2 T1Psy3 T2Psy1 T2Psy2 T2Psy3 T1fit T2fit T1identification T2identification T12modelchange age
Covariance matrix
2.585
1.714 2.324
.920 1.237 1.408
1.182 .935 .494 6.600
1.179 1.339 .609 5.305 8.099
.792 .823 .855 3.887 3.757 4.637
1.060 1.076 .705 3.812 5.398 3.626 6.326
.017 .085 .047 -.014 .100 .036 .188 .087
.013 .019 -.007 .138 .277 .142 .317 .052 .103
1.934 2.978 2.181 2.691 2.735 2.112 2.700 .185 .157 12.175
-.099 .699 .949 1.554 1.107 1.804 2.025 .160 .021 5.946 9.731
.765 .957 .494 1.651 1.824 .980 1.259 .033 .051 3.381 2.342 2.195
.373 .493 .487 1.207 2.538 1.669 2.482 .104 .238 2.488 3.003 .446 7.562
.491 .607 .221 1.587 2.161 2.026 2.077 .028 .042 1.051 4.014 .633 5.278 10.863
.221 .085 .029 .777 1.275 .727 .939 .014 .067 .563 .995 .612 2.047 1.610 1.282
-.911 -.949 -.469 -1.984 -1.564 -.773 -.227 .060 .024 -1.709 -.449 -1.251 .346 .588 -.414 4.753
-1.199 -1.403 -.788 -1.014 -.763 -.683 -.195 -.048 -.024 -1.323 -.419 -.982 .079 .545 -.326 2.758 3.781
-1.168 -.988 -.441 -.704 -.693 -.633 -.240 .068 .144 -.527 -.429 -.494 -.047 -1.064 -.074 1.887 1.551 5.062
-.668 -.457 -.176 -.548 -.303 -.800 -.244 -.026 .008 .192 -.101 -.312 .108 -.051 -.100 2.011 2.319 2.082 4.747
16.172 18.417 8.121 12.072 8.437 1.748 -3.233 -.844 -.954 14.735 1.216 14.220 -4.782 -2.795 6.142 -49.092 -47.078 -25.399 -30.751 1130.960
.004 .000 .007 -.039 -.041 -.019 -.035 -.001 -.001 -.019 -.027 -.021 .023 .017 .004 -.006 -.017 -.004 -.011 .079 .006
Sample size is 103
Latent variables
Adaptability Proficiency T1wellbeing T2wellbeing T1IC T2IC T1FIT T2FIT T1HI T2HI Change AGE
Relationships
Ada1 = 1* Adaptability
T1Psy2 Ada2 Ada3 = Adaptability
Listen = 1* Proficiency
Read Write Speak = Proficiency
T1Psy1 = 1* T1wellbeing
T1Psy2 T1Psy3 = T1wellbeing
T2Psy1 = 1* T2wellbeing
T2Psy2 T2Psy3 = T2wellbeing
T1intercomm = 1*T1IC
set the error variance of T1intercomm to 0
T2intercomm = 1*T2IC
set the error variance of T2intercomm to 0
T12modelchange = 1*Change

```
  set the error variance of T12modelchang to 0
  T1fit = 1*T1FIT
  set the error variance of T1fit to 0
  T2fit = 1*T2FIT
  set the error variance of T2fit to 0
  T1identification = 1*T1HI
  set the error variance of T1identification to 0
  T2identification = 1*T2HI
  set the error variance of T2identification to 0
  age = 1*AGE
  Set the error variance of age to 0
Proficiency = Adaptability
  T2IC = T1IC T1FIT Proficiency T1HI Adaptability
  T2FIT = T1FIT T1IC Change
  T2wellbeing = T1wellbeing T1FIT T1HI Change Proficiency Adaptability AGE
  T2HI = T1HI T1FIT Adaptability T2FIT
  Change = Adaptability T1FIT
Let the errors of T1Psy1 and T2Psy1 correlate
  Let the errors of T1Psy2 and T2Psy2 correlate
Let the errors of T1Psy3 and T2Psy3 correlate
Set the path from T1wellbeing to T1Psy2 = the path from T2wellbeing to T2Psy2
Set the path from T1wellbeing to T1Psy3 = the path from T2wellbeing to T2Psy3
  Let the errors of Write and Listen correlate
    Path diagram
  Options: MI AD=OFF
End of program
```

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