

Becoming like Americans while not identifying with American culture:  
East Asian international students' acculturation processes and outcomes

By

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## Abstract

This dissertation examines how East Asian international students at University in the U.S. may acculturate differently across domains, the link between those change patterns and mental health, and potential predictors for such change. Study 1 was a four-year longitudinal study showing that, on average, participants aligned their psychological processes more closely with the host culture in the cultural mandate domain (i.e., psychological tendencies based on values and meanings dominant in a culture that are often mandated in an unspoken, intuitive manner by the cultural environment; Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009) in that they became more relatively independent v. interdependent in their self-construals over time, but did not change or became slightly more negative in the cultural evaluation domain (i.e., identification with American culture, preferences for Associating with Americans over Asians). Furthermore, analyses of individual differences showed that changes to align with host culture in the cultural mandate domain and toward more *positive* evaluations in the cultural evaluation domain predicted more positive mental health. Study 2 was a daily diary study showing that engagement in relatively independent activity-based cultural practices (that met mandates of the host culture) predicted increased alignment in the cultural mandate domain, whereas greater engagement in interactions with host culture members that met intergroup contact theory conditions (Allport, 1954; Pettigrew, 1998) predicted increased positive evaluations in the cultural evaluation domain. Implications for acculturation, cross-cultural psychology, and intergroup attitudes research are discussed.

Cultural psychological studies have documented cultural differences between Easterners and Westerners in a wide range of psychological processes, such as interdependent versus independent self-concepts (Kitayama, Duffy, & Uchida, 2007; Markus & Kitayama, 1991, 2010; Miyamoto & Eggen, 2013). Furthermore, an extensive body of research has examined how people's psychological patterns change when they come into contact with a new culture—a phenomenon known as acculturation (Redfield, Linton, & Herskovits, 1936). These studies have documented behavioral patterns and wellbeing outcomes for those who move—temporarily and more permanently—and proposed models to capture various strategies those individuals employ in these situations. However, relatively limited research has focused on whether psychological processes, such as those examined in cultural psychological studies, actually change when people move from one culture to another. Do these processes change to align with new cultures, or are they maintained regardless of contact with new cultures? If they do change, *how* does this change occur? In my dissertation, I examined (i) how people's psychological processes change to align with a new culture, (ii) how these patterns of change predict mental health, and (iii) what predicts these psychological patterns of change. The hope is that this work may enrich the existing acculturation literature into an examination of how psychological processes actually change with acculturation, and to inform cultural psychology literature by identifying *how* psychological processes may come to exist in their different forms across varied cultural contexts. Furthermore, in combination with other research studies, it may inform intervention strategy development to assist immigrants (or at least East Asian international Students at University in the United States, the population of focus here) in short-term adjustment to new cultures.

### **Cultural differences in psychological processes**

During the past two decades, research on cultural differences in psychological processes has been accumulated (for a recent review, see Miyamoto & Eggen, 2013). One of the most widely examined cultural constructs in cross-cultural studies is the independent and interdependent dimension self-construal (i.e., *how the self is construed in relation to others*), (Kitayama et al., 2007; Markus & Kitayama, 1991, 2010). Specifically, in Western cultural contexts, the self tends to be construed as independent from other people and situations, and defined by stable, internal attributes. Primary mandates of the independent self include expressing internal unique characteristics, and pursuing self-originating goals. On the other hand, in Eastern cultural contexts, the self tends to be construed as more interdependent, intertwined with social relationships, and varying depending on situational factors. Primary mandates of the interdependent self are to adjust to the social context, and maintain harmony with others.

Such differences in self-construals have been reflected in a wide range of psychological processes, ranging from self-concepts to motivation to emotion. For example, studies have shown cultural variation in the view of the self; whereas Americans view the self as consisting primarily of stable internal attributes, East Asians focus more on social categories, preferences, and activities to define the self, and view the self as adjustable to context (Bond & Cheung, 1983; Cousins, 1989). In fact, independent Western well-being practices tend to stress the importance of exerting control over environments, while Eastern well-being practices stress the importance of adjusting one's self and perspective to fit circumstances (Weisz, Rothbaum & Blackburn, 1984). Furthermore, research reveals that independent Westerners are more motivated by their own choices whereas interdependent

Easterners tend to be more motivated by choices made by close others (Iyengar & Lepper, 1999).

Much cross-cultural research has also revealed that emotions—their meaning, how they are experienced, and how they are expressed—may be influenced by whether the self is viewed as more independent or interdependent (Markus & Kitayama, 1991). For the independent self, emotions are often understood as originating internally and experienced individually, whereas for the interdependent self, emotions are often understood as originating and experienced through shared situations with others (Chentsova-Dutton & Tsai, 2010; Mesquita, 2001; Uchida, Townsend, Markus, & Bergsieker, 2009). In fact, researchers have found that interdependent Easterners experience socially engaging emotions—the kinds of emotions that foster or regain social interdependence, such as respect and guilt—more intensely than independent Westerners (Kitayama, Markus & Kurokawa, 2000; Kitayama, Mesquita, & Karasawa, 2006). Alternately, they have found that independent Westerners experience disengaging emotions—the kinds of emotions that foster or regain one’s independence from others, such as pride and anger—more intensely than interdependent Easterners.

Compared to the amount of evidence showing East-West differences in these psychological processes, not many studies have examined *how* individuals acquire such cultural differences. Assuming that most cultural differences are not innate, it is reasonable to propose that greater exposure to a certain cultural context should lead to greater attunement to prominent cultural constructs. In fact, cross-cultural studies examining developmental trajectories of children have found that whereas younger children do not show much cultural differences in their cognitive styles, older children show patterns of cognitive styles consistent with their own cultural contexts (Miller, 1984; Ji, 2008; Duffy, Toriyama, Itakura,



& Kitayama, 2009). If greater exposure to a certain cultural context leads to development of psychological tendencies dominant in such a cultural context, it is likely that people who move to a new culture will change their psychological tendencies to match those of the new culture. Thus acculturation studies have much to offer to the more general cross-cultural literature in terms of building evidence for how cultural ideas are acquired *within* people. However, acculturation findings on changes in psychological processes and how the changes occur are limited. What does exist is reviewed in the following section.

### **Acculturation and Domain-Dependency**

Acculturation—how people’s psychological patterns change when they come into contact with a new culture (Redfield et al., 1936)—has been studied for decades. Thus, not surprisingly, there is a wealth of research literature on the topic. In fact, a quick search in PsycINFO for the word “acculturation” yielded more than ten thousand citations. A major presence in this work is John Berry's (2003) Acculturation Model which delineates four strategies immigrants may employ, as determined by the immigrants' attitudes toward engaging with both their heritage cultures (i.e., *cultures of origin*) and the host cultures (i.e., *the cultures in which they are newly living*). Berry (2003) proposes that individuals may employ assimilation (distancing themselves from the heritage culture and mostly engaging with the host culture), separation (maintaining heritage cultural identification and rejecting the host culture), marginalization (rejecting both cultures), or integration (maintaining heritage cultural identification while also engaging with the host culture).

Despite the prolific literature on acculturation, there are at least two limitations of the existing studies on acculturation. First, the majority of acculturation studies have focused on practices and behaviors, such as language use, food preferences, or media usage as indices of acculturation (Schwartz, Unger, Zamboanga, & Szapocznik, 2010). Although informative,

such studies do not help us understand how people's psychological tendencies become attuned to reflect the dominant psychological tendencies in the host culture. For example, even if a person grows to prefer eating food of the host culture, the person has not necessarily truly aligned his or her psyche with the host culture's values or developed host-culture-oriented attitudes. Second, the studies that *have* examined values and attitudes of individuals, instead of practices like food preference and language use, mainly examine these values and attitudes statically as predictors of various adjustment outcomes, such as less stress and better mental health outcomes (Salant & Lauderdale, 2003; Zhang & Goodson, 2011). Even with Berry's relatively encompassing model for describing immigrants' approaches to engaging with new cultures, the model does little to identify what *actual* changes occur within individuals' psychology as they begin to engage with the host culture, or attempt to distance themselves from it, depending on strategy. Furthermore, little attention has been paid in acculturation literature to *how* people's psychological processes change over time to fit the host culture (or not), and what predicts such changes.

The limited number of published acculturation studies that have tested whether people, on average, change their psychological processes to fit a new culture has provided mixed evidence. Some studies found that the more people are exposed to a new cultural context, the closer their psychological processes become to those of the host culture (De Leersnyder, Mesquita & Kim, 2011; Heine & Lehman, 2004). De Leersnyder and colleagues found that Korean immigrants to the U.S. and Turkish immigrants to Belgium emotionally acculturated, in that immigrants' emotional patterns aligned with the patterns of individuals from the host cultures with increased exposure to those host cultures. Furthermore, Heine and Lehman (2004) found that Japanese exchange students in Canada showed self-esteem increases in their first seven months in Canada, and that Canadian English teachers in Japan

showed decreases in their self-esteem across the same timeframe in Japan. Because level of self-esteem is known to be higher in Western cultures than in Eastern cultures (Heine & Hamamura, 2007), these findings provide evidence that people change level of self-esteem to match their host culture.

Alternately, other studies found that adults do not change their psychological tendencies to fit their host cultures as a function of the length of their stay in those cultures (e.g., Cheung, Chudek, & Heine, 2011; Minoura, 1992). For example, Cheung and colleagues studied a wide age range of Hong Kong Chinese who immigrated to Canada, surveying them for their level of identification with Canadian culture. The researchers employed a widely-used and validated scale measuring cultural identification, the Vancouver Index of Acculturation (VIA; Ryder, Alden, & Paulhaus, 2000). The VIA assesses identification with mainstream North American culture through questions such as "I enjoy typical North American jokes" and "I believe in mainstream American values" (see Appendix A6 for an adaptation of this scale for American culture). These researchers found that Hong Kong Chinese who immigrated to Canada aged 16 and older did not show any increase in identification with Canadian culture over time<sup>1</sup>.

There are potentially many factors that could underlie these seemingly contradictory findings. I propose that one of the factors that may be partly responsible for such a discrepancy is the domain of the psychological processes in question. First, there is the *cultural mandate domain* which includes psychological tendencies based on values and meanings dominant in a culture that are often mandated (in a relatively unspoken, intuitive

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<sup>1</sup> It should be noted that they examined a sensitive period and those younger than 16 did show increased identification with Canadian culture over time. The subsample of those older than 16—as mentioned in the main part of the text—is what applies most closely to the focus of the current work.

manner) by the cultural environment (i.e., *cultural mandates*, Kitayama, Park, Sevincer, Karasawa, & Uskul, 2009), such as self-construal and its relevant constructs (e.g., emotional patterns, self-esteem). Second, there is the *cultural evaluation domain* which requires active reflection on and assessment of the culture, and its people, values and artifacts, such as intergroup attitudes and identification with a specific culture. In line with this distinction, Schwartz et al. (2010) recently proposed the importance of distinguishing cultural values (i.e., “beliefs systems associated with a specific context or group”) from cultural identifications (i.e., “attachment to cultural groups and the positive esteem drawn from these attachments”) or cultural practices (“language use, media preferences, social affiliations, and cultural customs and traditions” p. 244). The cultural mandate domain roughly corresponds to the cultural values, whereas the cultural evaluation domain roughly corresponds to the latter two.

In the *cultural mandate domain*, cultural psychology research suggests a system for incorporating psychological tendencies into values and meanings dominant in a culture. Kitayama and his colleagues (2009) theorize that engaging repeatedly in cultural practices (i.e., “cultural tasks”), or specific scripted activities that meet cultural mandates (as defined above) is the path through which culture influences psychological processes. One study exemplifying this process in action at a very low-level showed that even in the short term people rather intuitively attune their self-views in response to the requirements of their immediate situations (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997). Specifically, the researchers found that situations sampled in the U.S. were judged by Japanese and American participants as having more potential impact to increase self-esteem than situations sampled in Japan. This research suggests that daily situations existing in different cultures convey subtle cues as to certain mandates of the culture, and cultural practices meant to meet them. Elicited in Americans situations, presumably, is the cultural task of self-enhancement

to identify and express internally valued attributes, separating one from other individuals, in order to meet the independent self-construal mandate in the U.S. And elicited in Japanese situations is self-criticism to fit-in with others through the social expectation for excellence in order to meet the interdependent self-construal cultural mandate. People exposed repeatedly to such situations in a foreign culture may consistently identify and engage with practices to meet host cultural mandates and thus show acculturation in the cultural mandate domain with increased time in that culture.

The *cultural evaluation domain* may function differently. Whether greater time in the host culture improves evaluation of the host culture might depend on a number of situational and individual factors. Research in the field of intergroup attitudes may inform the topic. This large body of literature reveals a vast web of interacting factors on which intergroup evaluations may depend. Some have suggested that high-quality contact with members of an out-group in terms of meeting specific contact conditions (e.g., interaction partners having equal status, interaction partners working cooperatively toward a common goal, interaction having friendship potential) is conducive to improved attitudes toward that out-group (i.e., intergroup contact theory; Allport, 1954; Pettigrew, 1998). These findings suggest that length of time spent in a host culture (i.e., increased exposure to the host culture) may not necessarily lead to better intergroup attitudes, and presumably other specific interaction conditions may need to be precisely aligned for this to occur.

This domain-dependency of acculturation can explain seemingly contradictory findings regarding whether adults' psychological processes change to match unfamiliar cultures with increased exposure to those cultures. The previous studies that *did* find changes to match host culture among adults focused on how self-esteem levels (Heine & Lehman, 2004) and emotional patterns (De Leersnyder et al., 2011) become more aligned with cultural

mandates. On the other hand, those studies in which psychological process alignment with host culture was *not* found among adults examined evaluations of a host culture, or emotional reactions based on such evaluations. Recall that Hong Kong Chinese who immigrated to Canada at age 16 and older did not show great Canadian identification over time (Cheung et al., 2011). It thus might be the case that psychological processes in the cultural mandate domain (such as self-construal, self-esteem and emotion) are more prone to change as individuals need to engage in cultural practices that align with cultural mandates in their daily lives, whereas those of the cultural evaluation domain such as intergroup attitudes and cultural identification are more difficult to modify because they require multiple specific situational conditions that can be difficult to satisfy for the average person newly introduced to a culture. In my dissertation, my first goal was to examine how psychological processes change as a result of exposure to new a cultural context and whether such acculturation depends on the domain of psychological process of focus.

### **Defining Study Scope**

The population of focus for this work are East Asian international students who recently moved from their heritage culture to attend University in the United States. This population was chosen based on the desire to enhance acculturation work while also enhancing cultural psychology literature. Much of the relatively young field of cultural psychology has been focused on a comparison of psychological processes for those of interdependent Eastern cultural backgrounds (e.g. those from China, Japan, Korea) and those of independent Western cultural backgrounds (e.g. those from the US, Canada, Great Britain). These groups lend themselves well to initial studies of differences in psychological processes because they are more or less equivalent on various social factors (e.g., industrial and economic development) to limit potential confounds.

In addition, this Sojourner (i.e., a person who stays temporarily in a foreign location) population chosen fits a subset of acculturation research, one that is not all-encompassing, but that is convenient for access in the research setting on a dissertation timeline. An additional benefit of beginning with such a population is that members are relatively uniform in terms of intentions with regard to engagement with host cultures compared to immigrants who may have varying intentions regarding length of stay, reason for staying, and various other related concerns that might add noise. Furthermore, the short-term findings may more readily inform temporary strategies that could make positive impacts on this specific type of population.

### **Mental Health Correlates and Consequences of Acculturation**

People often experience stress and strain when transitioning into a new culture (for reviews: Church, 1982; Zhang & Goodson, 2011). One might expect that aligning psychological processes with cultural values and meanings, and viewing the host culture in a positive light would help minimize these challenges; in fact, Berry's (e.g., Berry, 1990, 1997, 1999, 2003) work has shown that some degree of psychological internalization of a host culture's values and meanings is linked with more positive mental health than not. Though I predict that there will be more acculturation in the cultural mandate domain than the cultural evaluation domain, I am also interested in examining whether changes in either of these domains are linked with fewer mental health challenges for individuals. It may be the case that even though people, on average, may not necessarily improve in their evaluations of a host culture as a result of mere contact with the culture and its people, those who do so may experience fewer mental health costs often associated with transitioning into a new culture.

Several studies found that better identification with American culture (i.e., an element of the cultural evaluation domain) is associated with better mental health correlates among participants of Asian heritage cultures in the U.S. (e.g., Ryder et al., 2000; see Zhang &

Goodson, 2011 for a review). However, most of them used a cross-sectional study and thus it is hard to determine if it was the case that those who were mentally healthier simply found it easier to adopt a more positive evaluation of the dominant American culture.

Furthermore, it appears that only one study to date has examined mental health consequences of acculturation in the cultural mandate domain with Sojourners; in that study, it was found that greater levels of importance East Asian international students placed on independent self-construal was associated with lower stress (Cross, 1995). Again, that study was cross-sectional, and it is important to examine mental health correlates of changes in the cultural mandate domain, particularly self-construal, using a longitudinal design.

### **Identifying factors that predict changes**

#### **Cultural Mandate Domain: Self-construal**

It is important to determine and test factors that might promote changes in the independent and interdependent dimensions of self-construal—both because such changes may be linked with mental health buffers for those adjusting to independent cultures, and to help deepen cross-cultural literature in terms of further elucidating *how* differences might develop across cultures. Since self-construal is part of the cultural mandate domain, engagement in cultural practices that align with cultural mandates may prove to be a factor that underlies changes in this psychological tendency (Kitayama et al., 2009). Presumably people repeatedly engage in cultural practices in their daily lives (i.e., "cultural tasks"), and those are eventually incorporated into habitual tendencies. Though researchers proposing this theory are referring to life-long processes of socialization and internalization of one's own culture, this may be a route through which Sojourners begin adopting psychological processes of the host culture. Evidence suggests that cultural practices (e.g., self-criticism with interdependent cultures and self-esteem with independent cultures) to meet cultural



mandates are subtly promoted in situations varying by origination culture (Kitayama et al., 1997). Thus international students in a new culture should be immediately and repeatedly exposed to situations evoking such mandate-meeting practices simply by being placed in situations in the new culture.

Many cultural psychological studies illustrate cultural practices which may foster the independent self-construal mandate in Western cultural contexts (e.g., expressing the unique self, Kim & Markus, 1999; pursuing personal goals and promoting one's self, Oishi & Diener, 2001) as well as the interdependent self-construal mandate in Eastern cultural contexts (self-effacement and self-criticism, Kitayama et al., 1997; adjusting to others, Morling, Kitayama, Miyamoto, 2002). Though the list of cultural practices that are promoted in American situations is certainly numerous, I have selected a number of such practices on which to focus based on their likelihood to be manifested on and around American college campuses. The majority of these were drawn from practices promoting independent ideals that university administrators at American universities and colleges identified as important for succeeding in such an environment (Stephens, Fryberg, Markus, Johnson, & Covarrubias, 2012) including being independently motivated, challenging norms and rules, developing personal opinions, and expressing one's self. I additionally chose the practice of promoting one's self (Oishi & Diener, 2001) since this seems to be a skill nurtured on independent college campuses for succeeding in obtaining and excelling through American careers. I will measure daily engagement in these and the interdependent cultural practices that counter these, and expect that a greater relative engagement in the independent practices than the interdependent practices will predict increase in East Asian international students' relative independent self-construals over time.

## **Cultural Evaluation Domain: Intergroup Attitudes and Identification with American Culture**

While no changes in the cultural evaluation domain over time are expected for East Asian international students on *average*, there are likely individual differences in the extent to which people change in this domain. Furthermore, since more positive evaluations of host cultures may predict better mental health (Salant & Lauderdale, 2003; Zhang & Goodson, 2011), it is important to identify what may promote such positive evaluations for individuals.

As discussed above, there are many possible predictors of changes in the cultural evaluation domain based on the intergroup attitudes research. In the current study, I propose to mainly focus on high-quality interactions in terms of the four contact conditions Allport (1954) identified in his intergroup contact theory, as well as Pettigrew's (1998) fifth addition as part of a "reformulation" of the intergroup contact theory. Specifically, I propose that in order for East Asian international students' cultural evaluations to become more positive with increased time in a host culture, interactions with Americans must consistently meet the following five conditions:

- (1) interaction partners are perceived as holding equal status,
- (2) interaction partners are working toward a common goal,
- (3) interaction partners are cooperatively dependent upon each other,
- (4) interactions are supported by a governing body or institution,
- (5) interactions have qualities that may promote friendship formation (i.e., are relatively intimate and have potential to be repeated in different contexts).

Though these are only five of the many possible situational factors that may be conducive to more positive evaluations of those of another group, I chose these specifically based on the

potential environmental characteristics we expect that International University students to have in their interaction opportunities with Americans while on campus in the United States.

Since the majority of these students presumably did come to the United States without already-established friends, and likely spent the majority of their time in classrooms, in residence halls, and other campus-related group activities, I expected most interactions to have the *potential* to be relatively structured. This structure is particularly amenable to these conditions. Though I expect that these are not conditions consistently met for the *average* East Asian international student—or at least at a level to influence more positive evaluations of American culture—I predict that experiences with Americans that greatly meet each of these conditions *will* predict individual East Asian international students' more positive American cultural evaluations.

### **Overview of the Dissertation**

I developed three main goals for my dissertation: (i) to examine how East Asian international students' psychological patterns change, on average, to accommodate American culture, both over their first year interacting with the American culture (Study 1a) and three years later (Study 1b) and determine if patterns support the domain-dependency I propose; (ii) to determine whether individual variance in such changes predicts mental health both during participants' first year (Study 1a) in the U.S. and beyond to their fourth year (Study 1b); and (iii) to identify predictors of such psychological change patterns (Study 2).

Study 1 consisted of a longitudinal survey of East Asian international students at the University of Wisconsin-Madison at four time points beginning in summer of 2009: (1) before they left their home countries for UW-Madison (TP1), (2) at the end of their first semester (TP2), (3) at the end of their second semester/first year (TP3), and (4) at the end of their seventh semester/half way through their fourth year, in 2012 (TP4). The survey included

two measures of self-construal to assess psychological processes in the cultural mandate domain, one measure of identification with American culture and three measures of intergroup attitudes to assess psychological processes in the cultural evaluation domain, and two measures of mental health.

Study 2 utilized a daily diary format to examine possible predictors of changes I expected East Asian international students to display across their first four years in the U.S. For Study 2, I aimed to recruit a new set of East Asian international students during their first year (both Spring and Fall of 2014) at UW-Madison. I administered a pretest of the same measures given in Study 1 (i.e., self-construal, identification with American culture, intergroup attitudes, and mental health). During each of the five days of the daily diary portion of the study they completed an online survey assessing their engagement in American cultural practices as well as quality of interactions with Americans in terms of the five intergroup contact theory conditions over the day. A post-test of the same measures from the pretest were given at the end of the daily diary period (Post-test 1), and one month following the pretest (Post-test 2).

I hypothesized specifically that: (i) psychological patterns of East Asian international students in the U.S. *would* change to accommodate American culture, but that the change would depend on domain, with average changes matching American culture in the cultural mandate domain (i.e., self-construal), and no change or more negative change in the cultural evaluation domain (i.e., intergroup attitudes and identification with American culture) (Study 1); (ii) that those East Asian international students who match Americans on dominant self-construal tendencies and have more positive evaluations of Americans and greater identification with American culture would experience better mental health (Study 1); and (iii) that East Asian international students who engage in relatively more independent (and

less interdependent) cultural practices would show more relative independent self-construals over time, and that more positive interactions with Americans (in terms of meeting specific contact conditions) would predict more positive attitudes towards Americans and greater identification with American culture (Study 2).

Additionally, I explored whether participants' greater engagement in relatively independent cultural practices and greater experience in high-quality interactions with Americans would predict better mental health over the course of one week and one month (Study 2). This last proposition was exploratory because it may be the case that mental health will be initially hampered as international students grapple with cultural mandates and new interactions, but it is unclear whether links between these experiences and mental health changes would be identified across such a short span of time.

## **Study 1a**

### **Method**

#### **Participants**

Participants were 38<sup>2</sup> East Asian international students (35 Chinese, 1 Korean, 1 Taiwanese, 1 Singaporean; 29 females), mean age of 18.45 ( $SD = 0.65$ ) attending the University of Wisconsin-Madison (*UW-Madison*) starting in the September 2009. None had lived in the United States prior to time point 1. They were recruited through email by randomly selecting from a list of email addresses of new dormitory residents, provided by UW-Madison residential housing department. At each of the four time points, they received \$25 for completing the study.

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<sup>2</sup> These 38 participated at the first time point, 30 of these participated at time point 2, and 31 of these participated at time point 3.

## Procedure

Since participants were of various backgrounds but attending a U.S. institution, I conducted the study in English. Additionally, I conducted the study in an online format to allow them to complete the survey from their home countries at the initial time point. I emailed them one month before they left their home countries to come to the United States. I requested their participation in a study ostensibly meant to determine what factors affect "student life" at UW-Madison and how experiences affect life satisfaction and well-being, and encouraged them to participate in a study that would inform improvements of student life at UW-Madison. They were asked to first complete an online survey through a link provided, to pick up their compensation when they arrived on campus, and to watch for at least two more emails throughout the year for further participation opportunities. Their participation at that time from abroad was considered time point 1 (TP1). I emailed them again to complete (nearly) the same study at the end of their first semester, time point 2 (TP2), again at the end of their first year, time point 3 (TP3). The survey included multiple measures of each of the following: self-construal, intergroup attitudes, identification with American culture, cognition, communication, interaction partners, emotional and social support, influence and adjustment, and involvement in campus activities, mental health, physical health, and demographics. In the current proposal, I focus only on those most relevant to my dissertation goals: self-construal, intergroup attitudes, identification with American culture, and mental health.

## Measures

**Cultural Mandate Domain: Self-construal.** To measure levels of self-construal, we included two scales: a self-construal scale (modified from: Singelis, 1994 and used by Na et al., 2010; see Appendix A1) and a five statements test (FST; modified from the twenty

statements test, Bond & Cheung, 1983; Cousins, 1989; see Appendix A2). The self-construal scale consisted of 20 items, 10 measuring level of independent self-construal (e.g., “*I enjoy being unique and different from others in many respects.*”) and 10 measuring level of interdependent self-construal (e.g. “*I will sacrifice my self-interest for the benefit of the group I am in.*”). Participants indicated level at which each statement described them on a 5-point Likert scale from 1 = “doesn't describe me at all to 5 = “describes me very much”.

Cronbach’s alphas were .65 for independence and .58 for interdependence. The difference between the two sets of measures was calculated as *relative independence* for analysis. See Table 1 for Mean values at all timepoints.

The FST consisted of a prompt asking participants to provide five open-ended statements that describe themselves. These responses were coded by three independent coders for pure psychological attributes (e.g., “I am outgoing”, “I am passionate”), interests (e.g., “I enjoy playing video games”, “I like playing the piano and the violin”), and social categorization (e.g., “I am a student”, “I am Catholic”). As in previous studies, the first was meant to measure level of independent self-construal and the latter two were meant to measure level of interdependent self-construal<sup>3</sup>. Inter-coder reliabilities were .99 for pure psychological attributes, .95 for interests, and .91 for social categorization. Since these values were high, codes were averaged across coders for a final score for each. Following former

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<sup>3</sup> Pure psychological attributes are considered indicators of independent self-construal because they show that participants define themselves with stable, internal attributes. On the other hand, social categorization is considered an indicator of interdependent self-construal. In addition, interests and activities are considered indicators of interdependent self-construal because they refer to more contextual information than pure psychological attributes (Semin & Fielder, 1988; e.g., “like to play the piano” is a more context-dependent attribute of the self than “artistic”). In fact, previous studies have shown that, compared to Americans’ self-concepts, East Asians’ self-concepts involve less pure psychological attributes and more interests and social categorization (Cousins, 1989).

studies (e.g., Na et al., 2010), I subtracted the number of instances of interests and social categories from the number of instances of pure psychological attributes to obtain a *relative independence FST index*; resulting is a number ranging from -5 to 5. See Table 1 for mean values at all timepoints.

**Cultural Evaluation Domain: Intergroup attitudes and cultural identification measures.** To measure intergroup attitudes, three scales were presented through the online survey: preference for associating with Americans over Asians (selected from the acculturation attitudes scale; Suinn, Ahuna, & Khoo, 1992; see Appendix A3), a thermometer scale (see Appendix A4), and an American artifact liking scale (modified from Szapocznik, Kurtines & Fernandez, 1980; see Appendix A5). The preference for associating with Americans over Asians consisted of one question, “If you could pick, whom would you prefer to associate with in the community?” with five response options ranging from “Almost exclusively Asians, Asian-Americans, Orientals”, to “Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups”. Responses were converted to a numeric scale from 1 to 5, with higher numbers indicating a higher preference for associating with Americans over Asians. For the thermometer scale, participants were asked to evaluate a number of cultures with a number from 0 to 100 (with 0 indicating “extremely unfavorable” and 100 indicating “extremely favorable”). The “European/European American culture” evaluation was utilized for this research. To measure American artifact liking, participants were given a list of 6 American artifacts (e.g., T.V. programs, books and magazines) and asked to indicate how much they enjoy them on a 5-point Likert scale (Cronbach’s alpha = .75).

To measure identification with American culture, one scale was utilized (modified from the Vancouver Index of Acculturation; Ryder et al., 2000; see Appendix A6), consisting



of 10 items (e.g., "I enjoy social activities with typical Americans") for which participants indicated their level of agreement on a 9-point Likert scale from 1 = "strongly disagree" to 9 = "strongly agree" (Cronbach's alpha = .77). See Table 1 for mean values at all timepoints.

**Mental health measures.** Perceived stress was measured through a widely-used scale asking how often participants experienced 10 things over the previous 30 days (e.g., found that they could not cope with all the things that they had to do; Cronbach's alpha = .92; Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988; see Appendix A7). Responses are chosen from a 5-point Likert scale from 1 = "never" to 5 = "very often". Depressive symptoms were measured using the commonly employed Center for Epidemiologic Studies Depression Scale (CES-D ; Devins & Orme, 1985; Radloff, 1977; Roberts & Vernon, 1983; Turner & Avison, 1992; see Appendix A8) which asks how often participants experienced 20 situations (e.g., they were "bothered by things that usually did not bother them"; Cronbach's alpha = .99). Responses are chosen from a 5-point Likert scale from 1 = "rarely or none of the time" to 5 = "most or all of the time". See Table 1 for mean values at all timepoints.

## **Results**

### **Psychological process changes across students' first year**

To examine general psychological process changes across the first three time points (across participants' first year in the U.S.) for self-construal, intergroup attitudes, and identification with American culture, the data were considered hierarchical, with scale ratings nested within participants. Thus, hierarchical linear modeling (HLM) was used (HLM7, Student version). HLM allowed the examination of each participant's change in scale ratings over time, and summarizes the results across participants. For all the models shown, homogeneous variance across all four timepoints was assumed unless the unrestricted model

was a significant improvement (as indicated by the Chi-squared model fit comparison test; where the unrestricted variance model was used, that is noted). The following equations were used for all models, with  $Y^*$  representing different outcome variables, depending on the specific model.

$$\text{Level-1 Model: } Y^* = \pi_0 + \pi_1*(time) + \pi_2*(time\_qua) + e$$

$$\text{Level-2 Model: } \pi_0 = \beta_{00} + r_0$$

$$\pi_1 = \beta_{10} + r_1$$

$$\pi_2 = \beta_{20}^4$$

$$\text{The Combined Model: } Y^* = \beta_{00} + \beta_{10}*(time) + \beta_{20}*(time\_qua) + r_0 + r_1*(time) + e$$

In the equations above,  $Y^*$  refers to the outcome variable in which I was interested. *Time* refers to the timepoint when the corresponding outcome variable was measured, assuming a linear change ( $time = -1, 0, 1$ ); *time\_qua* refers to the quadratic coding for the three time points ( $time\_qua = -1, 2, -1$ ). Consequently,  $\beta_{00}$  is the grand mean of the outcome variable;  $\beta_{10}$  is the main linear effect of the outcome variable over time;  $\beta_{20}$  is the main quadratic effect of the outcome variable over time;  $e$  is level-1 residual;  $r_0$  is level-2 residual for the grand mean;  $r_1$  is level-2 residual for the linear effect.

**Cultural mandate domain: self-construal.** For the Singelis self-construal scale,  $Y^*$  is the difference score in self-construal (relative independence), with the score of interdependence subtracted from that of independence<sup>5</sup>. As predicted, over time, East Asian

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<sup>4</sup> Including a parameter estimate for the level-2 residual for the quadratic effect ( $r_2$ ) was not allowed given the number of timepoints, and that excluding the level-1 residual ( $e$ ) was not an option.

<sup>5</sup> As is practice in many cultural psychology studies, I examined relative independence rather than independence and interdependence as separate, parallel constructs. This makes sense as a general measure of change for participants over time. I did analyze these constructs separately for the Singelis scale (as doing so with FST does not make sense) for an exploratory purpose. Across their first year, East Asian international participants did not

international students became marginally more relatively independent in their self-construals in a linear fashion,  $b_{10} = 0.14$ ,  $\beta_{10} = 0.19$ ,  $t(37) = 1.91$ ,  $p = .06$ , but not quadratically so,  $b_{20} = 0.05$ ,  $\beta_{20} = 0.06$ ,  $t(95) = 1.15$ ,  $p = .25$ . See figure 1 (the first three time points) for a graph of means.

For the five statements test,  $Y^*$  represents the relative independence index (using calculation described above, see figure 2 for a graph of means). As predicted, overall, there was a linear change such that participants provided more relatively independent statements over time,  $b_{10} = 0.83$ ,  $\beta_{10} = 0.31$ ,  $t(36) = 3.04$ ,  $p = .004$ , but no quadratic change over time,  $b_{20} = 0.23$ ,  $\beta_{20} = 0.08$ ,  $t(93) = 1.58$ ,  $p = .11$ .

**Cultural evaluation domain: intergroup attitudes and identification with American culture.** For all intergroup attitudes measures,  $Y^*$  represents the participants' evaluation of focus for each measure. Note that all models, except for the identification with American culture model, allowed unrestricted variance given that the unrestricted model was a significant improvement over the homogenous model.

*Preference for associating with Americans over Asians.* With the regard to participants' preference for associating with Americans over Asians measure (see figure 3), as predicted, Asians' preference for associating with Americans over Asians decreased linearly over time,  $b_{10} = -0.34$ ,  $\beta_{10} = -0.41$ ,  $t(37) = -3.63$ ,  $p < .001$ , and marginally according to a quadratic trend,  $b_{20} = -0.10$ ,  $\beta_{20} = -0.12$ ,  $t(37) = -1.90$ ,  $p = .07$ . It appears they quickly

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become more independent in their self-construals in a linear fashion,  $b_{10} = 0.03$ ,  $\beta_{10} = 0.06$ ,  $t(37) = 0.57$ ,  $p = .17$ , or a quadratic fashion,  $b_{20} = 0.003$ ,  $\beta_{20} = 0.005$ ,  $t(37) = 0.09$ ,  $p = .93$ . Participants *did* become less interdependent in their self-construals in a linear fashion,  $b_{10} = -0.11$ ,  $\beta_{10} = -0.23$ ,  $t(37) = -2.68$ ,  $p = .01$ , but not in a quadratic fashion,  $b_{20} = -0.04$ ,  $\beta_{20} = -0.07$ ,  $t(37) = -1.03$ ,  $p = .31$ .

decreased in their preference for associating with Americans over Asians across the first half of their first year, but then showed no change across the second half of that year.

***Thermometer ratings of European Americans.*** Based on thermometer scale ratings (see figure 4), participants did not change in their evaluation of European American culture according to a linear trend,  $b_{10} = -0.86$ ,  $\beta_{10} = -0.05$ ,  $t(37) = -0.48$ ,  $p = .63$ , or a quadratic trend,  $b_{20} = -0.70$ ,  $\beta_{20} = -0.04$ ,  $t(37) = -0.58$ ,  $p = .57$ .

***American Artifact Liking.*** Participants did not change in their liking of American cultural artifacts in a linear,  $b_{10} = -0.05$ ,  $\beta_{10} = -0.07$ ,  $t(37) = -1.02$ ,  $p = .31$ , or quadratic,  $b_{20} = 0.01$ ,  $\beta_{20} = 0.02$ ,  $t(37) = 0.30$ ,  $p = .77$  way (see figure 5), though the direction indicates a decrease in evaluation of the European American culture over time.

***Identification with American culture.*** With regard to identification with American culture, over time participants did not change in a linear fashion,  $b_{10} = -0.07$ ,  $\beta_{10} = -0.07$ ,  $t(37) = -0.77$ ,  $p = .45$ , or in a quadratic fashion,  $b_{20} = 0.05$ ,  $\beta_{20} = 0.06$ ,  $t(94) = 1.24$ ,  $p = 0.22$ . See figure 6 for a graph of means.

**Effect sizes.** For each of these domains, I additionally used a Fisher's Z-transformation on the standardized betas ( $\beta$ ) for each psychological process, which is equivalent to a Cohen's  $r$  in each case. I then averaged across the  $r$ 's for each to produce an average effect size representing each domain. Accordingly, for the cultural mandate domain (i.e., self-construal),  $r = 0.25$  for the linear effect, and  $r = 0.07$  for the quadratic effect. For the cultural evaluation domain (i.e., intergroup attitudes and identification with American culture),  $r = -0.16$  for the linear effect and  $r = -0.05$  for the quadratic effect. Based on the widely-recognized Cohen's standards (Cohen, 1988), there appears a small-to-medium linear effect of time in the cultural mandate domain. There also appears to be a small effect of time in the cultural evaluation domain. As proposed, the direction of the change in the cultural

evaluation domain was opposite to the direction of the change in the cultural mandate domain: East Asian international students changed to accommodate American culture in the cultural mandate domain, but became less positive toward American culture in the cultural evaluation domain. See Table 2 and 3 for a summary of these findings and effect sizes.

### **Mental health outcomes across students' first year**

To examine how changes in self-construal, intergroup attitudes, and identification with American culture predict mental health, I used multiple regression analysis. The change from TP1 to TP3 for the specific psychological factor of focus was entered as a predictor, and the mental health factor of focus at TP3 as outcome, with the outcome variable at TP1 entered as a covariate.

**Cultural mandate domain: self-construal.** An increase in relative independence<sup>6</sup> based on the Singelis self-construal scale from TP1 to TP3 marginally predicted fewer depressive symptoms at TP3, after controlling for depressive symptoms at TP1,  $b = -0.27$ ,  $\beta = -0.35$ ,  $F(1, 27) = 3.44$ ,  $p = .07$ , and predicted less perceived stress at TP3, after controlling for perceived stress at TP1,  $b = -0.28$ ,  $\beta = -0.36$ ,  $F(1, 27) = 5.83$ ,  $p = .02$ . An increase in the relative independence index based on the five statements test from TP1 to TP3 did not predict a change in depressive symptoms,  $b = 0.00$ ,  $\beta = -0.001$ ,  $F(1, 27) = 0.00$ ,  $p = .997$ , or perceived stress at TP3,  $b = 0.007$ ,  $\beta = 0.04$ ,  $F(1, 27) = .07$ ,  $p = .80$ , after controlling for each outcome at TP1.

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<sup>6</sup> Individually, an increase in independence based on the Singelis self-construal scale from TP1 to TP3 *did* predict fewer depressive symptoms at TP3,  $b = -.52$ ,  $\beta = -0.63$ ,  $F(1, 27) = 19.64$ ,  $p < .001$ , and less perceived stress at TP3,  $b = -.36$ ,  $\beta = -0.42$ ,  $F(1, 27) = 9.66$ ,  $p = .004$ , after controlling for each mental health factor at TP1. An increase in interdependence based on the Singelis self-construal scale from TP1 to TP3 *did* predict fewer depressive symptoms at TP3,  $b = -.57$ ,  $\beta = -0.47$ ,  $F(1, 27) = 7.49$ ,  $p = .01$ , but not less perceived stress at TP3,  $b = -.12$ ,  $\beta = -0.09$ ,  $F(1, 27) = 0.32$ ,  $p = .58$ , after controlling for each mental health factor at TP1.

**Cultural evaluation domain: Intergroup attitudes and identification with**

**American culture.** An increase in a preference for associating with Americans over Asians from TP1 to TP3 predicted fewer depressive symptoms at TP3,  $b = -0.18$ ,  $\beta = -0.38$ ,  $F(1, 25) = 4.85$ ,  $p = .04$ , but not perceived stress at TP3,  $b = 0.01$ ,  $\beta = 0.02$ ,  $F(1, 25) = 0.01$ ,  $p = .91$ , controlling for each outcome at TP1. For the thermometer ratings of Americans, changes from TP1 to TP3 did not predict fewer depressive symptoms,  $b = 0.00$ ,  $\beta = -0.003$ ,  $F(1, 27) = 0.00$ ,  $p = .99$ , or perceived stress,  $b = 0.00$ ,  $\beta = 0.01$ ,  $F(1, 27) = 0.008$ ,  $p = .93$ , after controlling for each outcome at TP1. Similarly, increased liking of American artifacts from TP1 to TP3 did not predict fewer depressive symptoms,  $b = -0.25$ ,  $\beta = -0.22$ ,  $F(1, 26) = 1.64$ ,  $p = .21$ , or perceived stress,  $b = -0.05$ ,  $\beta = -0.04$ ,  $F(1, 26) = 0.07$ ,  $p = .79$ , after controlling for each outcome at TP1. An increase in identification with American culture, as measured by Vancouver American subscale, from TP1 to TP3 did predict fewer depressive symptoms at TP3,  $b = -0.30$ ,  $\beta = -0.53$ ,  $F(1, 26) = 12.84$ ,  $p = .001$ , but not perceived stress,  $b = -0.08$ ,  $\beta = -0.13$ ,  $F(1, 26) = 0.66$ ,  $p = .42$ , controlling each outcome at TP1.

As predicted, self-construal changes to align with the American culture were predictive of better mental health. Also, similar predictions were supported for the evaluation domain such that increased preference for associating with Americans over Asians and increased identification with American culture predicted better mental health over time. Even though acculturation effects across domains appear different, mental health outcomes seem consistent such that more alignment with cultural mandates of, and more positive evaluation toward, the American culture predict better mental health.

## **Study 1b**

### **Method**

#### **Participants**

Participants were 17 of the 38 East Asian international students (15 Chinese, 1 Taiwanese, 1 Hong Kong Chinese; 12 females) who participated at time point 1, mean age at timepoint 1 of 18.50 ( $SD = 0.62$ ). They were recruited by email during their seventh semester at UW-Madison.

#### **Procedure**

I emailed participants at the end of their seventh semester (TP4) asking them to again participate in the UW "student life survey". They again received \$25 for completing the online survey.

#### **Measures**

The measures were exactly the same as in Study 1a, and I again focus here on only those most relevant to my dissertation goals: self-construal, intergroup attitudes, identification with American culture, and mental health. For more detail, see the Methods section for Study 1a. See Table 1 for mean values at all timepoints.

### **Results**

As detailed in each area of focus below, analyses for general changes across all four time points and for mental health implications were conducted in the same manner as they were in Study 1a. In addition, moderation analyses were conducted for effects found to address the possibility that findings were biased by missing data at TP4, given that I was only able to recruit 17 (of the 38 students from year one) to participate at TP4. See the moderation analyses section at the end of results for more detail on these analyses.

#### **Psychological process changes across students' four years**

To examine general changes across the participants' four years in the U.S. for self-construal, intergroup attitudes, and identification with American culture, analyses followed the same format as in Study 1a. The data were again considered hierarchical, with scale ratings nested within participants, and hierarchical linear modeling (HLM) was employed (HLM7, Student version). For all the models shown, homogeneous variance across all four timepoints was assumed unless the unrestricted model was a significant improvement (where the unrestricted variance model was used, that is noted). The following equations were used for all models, with  $Y^*$  representing different outcome variables, depending on the specific model.

$$\text{Level-1 Model: } Y^* = \pi_0 + \pi_1^*(time) + \pi_2^*(time\_qua) + e$$

$$\text{Level-2 Model: } \pi_0 = \beta_{00} + r_0$$

$$\pi_1 = \beta_{10} + r_1$$

$$\pi_2 = \beta_{20} + r_2$$

$$\text{The combined model: } Y^* = \beta_{00} + \beta_{10}^*(time) + \beta_{20}^*(time\_qua) + r_0 + r_1^*(time) + r_2^*(time\_qua) + e$$

In the equations above,  $Y^*$  refers to the outcome variable in which I was interested.

*Time* refers to the time point when the corresponding outcome variable was measured, assuming a linear change ( $time = -3, -1, 1, 3$ ); *time\_qua* refers to the quadratic coding for the three time points ( $time\_qua = -1, 1, 1, -1$ ). This equally spaced timepoint coding configuration might not be the most intuitive since time points are not across standard measure time, however I believe that this coding configuration may actually be quite representative of psychological changes over this timeframe. In other words, one might expect changes to be more rapid across the students first year in the U.S. compared to the students' fourth year.



$\beta_{00}$  is the grand mean of the outcome variable;  $\beta_{10}$  is the linear effect of the outcome variable over time;  $\beta_{20}$  is the quadratic effect of the outcome variable over time,  $e$  is level-1 residual;  $r_0$  is level-2 residual for the grand mean;  $r_1$  is level-2 residual for the linear effect;  $r_2$  is level-2 residual for the quadratic effect.

**Cultural Evaluation Domain: Self-construal.** For the Singelis self-construal scale,  $Y^*$  is the difference score in self-construal (relative independence), with the score of interdependence subtracted from that of independence<sup>7</sup>. As predicted, over time, East Asian international students became more relatively independent in their self-construals in a linear fashion,  $b_{10} = 0.06$ ,  $\beta_{10} = 0.08$ ,  $t(37) = 2.14$ ,  $p = .04$ , but not a quadratic fashion,  $b_{20} = 0.05$ ,  $\beta_{20} = 0.06$ ,  $t(37) = 0.82$ ,  $p = .42$ . See figure 1 for a graph of means.

For the five statements test,  $Y^*$  represents the relative independence index (using calculation described above). In this case, there was a marginal linear change in number of relatively independent statements provided over time,  $b_{10} = 0.20$ ,  $\beta_{10} = 0.07$ ,  $t(36) = 1.83$ ,  $p = .08$ , and a significant quadratic change over time,  $b_{20} = 0.49$ ,  $\beta_{20} = 0.18$ ,  $t(36) = 2.49$ ,  $p = .02$  such that participants showed a more rapid increase in relative independence initially, and a slow-down in that increase later (see figure 2 for a graph of means illustrating this pattern).

**Cultural Evaluation Domain: Intergroup attitudes and identification with American culture.**

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<sup>7</sup> Again I analyzed independence and interdependence as separate constructs. Across their four years at UW-Madison, participants did not become more independent in their self-construals in a linear fashion,  $b_{10} = 0.02$ ,  $\beta_{10} = 0.04$ ,  $t(37) = 1.07$ ,  $p = .30$ , or a quadratic fashion,  $b_{20} = -0.009$ ,  $\beta_{20} = -0.01$ ,  $t(37) = -0.21$ ,  $p = .84$ . Participants did not become less interdependent in their self-construals in a linear fashion,  $b_{10} = -0.02$ ,  $\beta_{10} = -0.04$ ,  $t(37) = -1.18$ ,  $p = .25$ , but did so marginally in quadratic fashion,  $b_{20} = -0.08$ ,  $\beta_{20} = -0.16$ ,  $t(37) = -2.01$ ,  $p = .051$ .

For all intergroup attitudes measures,  $Y^*$  represents the participants' evaluation (of focus for each measure).

***Preference for associating with Americans over Asians.*** As predicted, Asians' preference for associating with Americans decreased linearly,  $b_{10} = -0.10$ ,  $\beta_{10} = -0.12$ ,  $t(37) = -3.21$ ,  $p = .003$ , and quadratically,  $b_{20} = -0.018$ ,  $\beta_{20} = -0.22$ ,  $t(37) = -2.08$ ,  $p = .045$ , over time. See figure 3 for a graph of means.

***Thermometer ratings of European Americans.*** Based on thermometer scale ratings<sup>8</sup> (see figure 4), participants did not change in their evaluation of European American culture according to a linear trend,  $b_{10} = -0.30$ ,  $\beta_{10} = -0.02$ ,  $t(37) = -0.57$ ,  $p = .57$ , or a quadratic trend,  $b_{20} = -0.75$ ,  $\beta_{20} = -0.05$ ,  $t(37) = -0.65$ ,  $p = .52$ .

***American Artifact Liking.*** Participants did not change in their liking of American cultural artifacts<sup>3</sup> along a linear,  $b_{10} = -0.02$ ,  $\beta_{10} = -0.04$ ,  $t(37) = -1.03$ ,  $p = .31$ , or quadratic,  $b_{20} = 0.01$ ,  $\beta_{20} = 0.02$ ,  $t(37) = 0.28$ ,  $p = .78$  pattern (see figure 5).

***Identification with American culture.*** Unexpectedly, participants increased in their identification with American culture over time in a marginally linear fashion,  $b_{10} = 0.07$ ,  $\beta_{10} = 0.07$ ,  $t(37) = 1.90$ ,  $p = .07$ . There was additionally an unexpected quadratic effect,  $b_{20} = -0.15$ ,  $\beta_{20} = -0.15$ ,  $t(37) = -2.07$ ,  $p = 0.045$  such that the East Asian international students did not seem to change in their American identification across their first year at UW-Madison, but then significantly increased in that identification between years 2 and 4. See the next section on moderation and the discussion for a potential explanation of this finding. Also see figure 6 for a graph of means.

#### **Testing for moderation of the effects by existence of missing participants at TP4**

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<sup>8</sup> Modeled with unrestricted variance model since it was a significant improvement over the homogenous model.

HLM handles missing data by extrapolating based on data points that do exist, thus slopes are extrapolated for those who did not participate in TP4. Since there could be a concern that these assumed slopes could drive the effects found for this portion of the current research analysis, I conducted moderation analyses. I analyzed whether participants' having or not having data for TP4 (indicator coded as 1 and 0, respectively) moderated any effect(s) of time on each outcome variable (where there indeed were effects).

Participation at the fourth time point did not moderate the linear effect of time on participants' relative independence as measured by the Singelis scale,  $b_{20} = 0.006$ ,  $\beta_{20} = 0.01$ ,  $t(36) = 0.06$ ,  $p = .95$ . It also did not moderate the marginal linear effect,  $b_{20} = -0.15$ ,  $\beta_{20} = -0.05$ ,  $t(36) = -0.46$ ,  $p = .65$ , or the quadratic effect,  $b_{21} = 0.05$ ,  $\beta_{21} = 0.085$ ,  $t(36) = 0.35$ ,  $p = .73$ , of time on relative independence, as measured by five statements test. Similarly, the linear effect of time on participants' preference for associating with Americans was not moderated by whether they participated in timepoint four or not,  $b_{20} = -0.02$ ,  $\beta_{20} = -0.03$ ,  $t(36) = -0.26$ ,  $p = .80$ , nor was the quadratic effect,  $b_{20} = -0.15$ ,  $\beta_{20} = -0.20$ ,  $t(36) = -0.96$ ,  $p = .50$ . Participation in time point four *did* marginally moderate the marginal linear effect,  $b_{20} = 0.21$ ,  $\beta_{20} = 0.21$ ,  $t(36) = 1.84$ ,  $p = .07$ , but not the quadratic effect,  $b_{20} = -0.21$ ,  $\beta_{20} = -0.21$ ,  $t(36) = -0.98$ ,  $p = .34$ , of time on participants' identification with Americans culture. Interestingly, the marginal moderation here aligns with the single finding that was in the opposite direction than expected for this study: that over time, East Asian international students' identified less with American culture. The marginal moderation might explain the unexpected finding. See the discussion section for more on this topic. Most importantly, moderation analyses for each *expected* effect found across all four timepoints were *not* generally significant, suggesting that the effects found were not driven by the existence of missing data at timepoint four.

**Effect sizes.** As in Study 1a, I calculated an average Cohen's  $r$  as an average effect size for each domain. For the cultural mandate domain (i.e., self-construal),  $r = 0.07$  for the linear effect, and  $r = 0.12$  for the quadratic effect. For the cultural evaluation domain (i.e., intergroup attitudes and identification with American culture),  $r = -0.03$  for the linear effect and  $r = -0.08$  for the quadratic effect.

Based on the widely-recognized Cohen's (1988) standards, the linear effect of time on self-construal is very small, though it should be noted that even with the small sample size, there was a linear effect of time on self-construal as measured by the Singelis scale. Also based on Cohen's standards, there is a small quadratic effect of time on self-construal (i.e., the cultural mandate domain as tested here) such that East Asian international students' self-construals showed a more rapid increase in relative independence at the beginning of their first four years spent in the U.S., with a slow down or downturn in that change later in those four years (see Figure 2). There appears to be no linear or quadratic effect of time in the cultural evaluation domain. See Tables 4 and 5 for a summary of these findings.

### **Mental health outcomes extended to students' senior years**

To examine how changes in self-construal, intergroup attitudes and identification with American culture predict mental health, I used again multiple regression analysis. The change from TP1 to TP4 for the specific psychological factor of focus was entered as a predictor, and the mental health factor of focus at TP4 as outcome, and the outcome variable at TP1 entered as a covariate.

**Cultural Mandate Domain: Self-construal.** An increase in relative independence<sup>9</sup> based on the Singelis self-construal scale from TP1 to TP4 did not predict fewer depressive

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<sup>9</sup> Individually, an increase in independence based on the Singelis self-construal scale from TP1 to TP4 did not predict fewer depressive symptoms at TP4,  $b = -0.18$ ,  $\beta = -0.20$ ,  $F(1, 15) = 0.91$ ,  $p = .35$ , or less perceived stress

symptoms at TP4,  $b = -0.05$ ,  $\beta = -0.07$ ,  $F(1, 15) = 0.08$ ,  $p = .78$ , or less perceived stress at TP4,  $b = 0.11$ ,  $\beta = 0.15$ ,  $F(1, 15) = 0.52$ ,  $p = .48$ , after controlling for each outcome at TP1.

An increase in the relative independence index based on the five statements test from TP1 to TP4 did not predict a change in depressive symptoms,  $b = 0.01$ ,  $\beta = 0.08$ ,  $F(1, 15) = 0.12$ ,  $p = .73$ , or perceived stress,  $b = 0.05$ ,  $\beta = 0.03$ ,  $F(1, 15) = .02$ ,  $p = .89$ , at TP4, after controlling for each outcome at TP1.

### **Cultural evaluation domain: Intergroup attitudes and identification with**

**American culture.** An increase in a preference for associating with Americans over Asians from TP1 to TP4 did not predict fewer depressive symptoms at TP4,  $b = 0.19$ ,  $\beta = 0.32$ ,  $F(1, 15) = 2.41$ ,  $p = .14$ , or perceived stress at TP4,  $b = -0.11$ ,  $\beta = -0.18$ ,  $F(1, 15) = 0.77$ ,  $p = .40$ , controlling for each outcome at TP1. Increases in thermometer ratings of Americans from TP1 to TP4 *did* predict fewer depressive symptoms,  $b = -0.02$ ,  $\beta = -0.51$ ,  $F(1, 15) = 7.86$ ,  $p = .01$ , and perceived stress,  $b = -0.02$ ,  $\beta = -0.48$ ,  $F(1, 15) = 7.13$ ,  $p = .02$ , at TP4 after controlling for each associated covariate. Increased liking of American artifacts from TP1 to TP4 did not predict fewer depressive symptoms,  $b = 0.02$ ,  $\beta = 0.03$ ,  $F(1, 15) = 0.02$ ,  $p = .90$ , or perceived stress,  $b = 0.05$ ,  $\beta = 0.07$ ,  $F(1, 15) = 0.11$ ,  $p = .74$ , at TP4 after controlling for outcome measures at TP1. An increase in identification with American culture from TP1 to TP4 did not predict fewer depressive symptoms at TP4,  $b = -0.12$ ,  $\beta = -0.23$ ,  $F(1, 15) = .99$ ,  $p = .34$ , or perceived stress,  $b = -0.14$ ,  $\beta = -0.26$ ,  $F(1, 15) = 1.37$ ,  $p = .26$ , controlling for each outcome at TP1.

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at TP3,  $b = -0.06$ ,  $\beta = -0.07$ ,  $F(1, 15) = 0.11$ ,  $p = .75$ , after controlling for each mental health factor at TP1. Similarly, an increase in interdependence based on the Singelis self-construal scale from TP1 to TP4 did not predict fewer depressive symptoms at TP4,  $b = -0.10$ ,  $\beta = -0.13$ ,  $F(1, 15) = 0.31$ ,  $p = .59$ , or less perceived stress at TP3,  $b = -0.20$ ,  $\beta = -0.24$ ,  $F(1, 15) = 1.30$ ,  $p = .27$ , after controlling for each mental health factor at TP1.

Overall, mental health implications were only found with regard to the thermometer rating, with increases in such ratings across four years predicting reductions in depressive symptoms and stress. Again, it may be the case that sample size was a hindrance for consistent findings.

### **Discussion**

Analyses across time points 1, 2 and 3 showed that East Asian international students did acculturate differently in different domains. On average, participants did change to match the host culture in the cultural mandate domain (i.e., they became more relatively independent in their self-construals), but did not change or became less positive in the cultural evaluation domain (with preference for associating with Americans over Asians decreasing linearly over time). Consolidated effect sizes seem to indicate the most prominent effect is the linear change to match the host culture in the cultural mandate domain and small negative change in the cultural evaluation domain. These findings support the proposal that the cultural evaluation domain may be more difficult to modify than the cultural mandate domain. Furthermore, I found some support that individuals who match the host culture in the cultural mandate domain and have more positive evaluations of the host culture (i.e., changing in the cultural evaluation domain) also experience better mental health outcomes (decreased perceived stress—and marginally decreased depressive symptoms—for self-construal as measured by Singelis scale, and fewer depressive symptoms with increased preference for associating with Americans over Asians and increased identification with American culture) over time.

Upon analyzing data from the participants' fourth year at UW-Madison, the patterns of findings are generally maintained. While the effects were generally smaller, the direction remains the same and thus findings extended to the fourth year are promising. Interestingly,

but not entirely unexpected, is that where significant effects were found (self-construal and preference for associating with Americans over Asians), the majority of the change that occurred did so within the first few months after International students' arrival on campus. After that, patterns seem to hold relatively steadily to the end of the students' first year and the middle of the students' fourth year.

One exception is identification with American culture: there was a marginal linear effect, and a significant quadratic effect. A graph of means (figure 6) roughly illustrated that East Asian international students maintained their initial level of identification with American culture across their first year at UW-Madison, but then considerably increased in that identification to year four. Incidentally, the only timepoint 4 moderation finding was a marginal moderation of this unexpected finding. Subsequent plotting of means, separately for those who participated at timepoint 4 and those who dropped off after timepoint 3 (figure 7), seem to explain this unexpected finding. It appears that, though their absolute means were not significantly different at any of the initial three timepoints, these two participant groups diverged in their pattern of changes in their identifications with American culture during their first year (i.e., there was a cross-over interaction between time and the participation in TP4). Those who did not participate at TP4 began at a slightly higher level of identification with American culture, but then declined in their identification with American culture from TP2 to TP3. The others maintained their initially slightly lower levels of identification across that time. Had those who began declining from TP2 to TP3 remained in the study, we may not have seen the positive linear effect or quadratic effect of time.

Despite the challenges with retention, utilizing a longitudinal design to demonstrate the general psychological processes found here is informative for both the acculturation and cross-cultural psychology bodies of literature. However, findings must be interpreted with

caution. The Hierarchical Linear Modeling methods used here employed maximum likelihood estimation, a method that generally requires a larger sample size to ensure reliable results. Due to the small, but growing, population of East Asian international students at University of Wisconsin-Madison, I was not able to recruit an optimum sample size for this study (even before the drop off in participation to timepoint 4). Promising is the finding that participation in the 4th timepoint did not moderate effects found for predicted changes across the four time points in Study 1b, but even Study 1a's results must be taken with caution. Future replication at other Universities with a greater population of International Students than UW-Madison would be useful.

Mental health implication results found across the participants' first year did not consistently extend to the participants' final year at UW, but where there were findings, patterns again suggest that greater evaluation of the American culture predicts improved mental health, though the factors that predict better mental health differed depending on the timing of acculturation. Increase in independent self-construal and identification with American culture predicted better mental health during the first year, whereas only positive attitude toward Americans predicted better mental health during the fourth year. When individuals are first transitioning to a new culture, individual differences in self-construal and identification with the host culture may play a relatively large role in choosing and shaping one's environment, leading to better or worse mental health outcomes. On the other hand, after spending a few years in the host culture, one's environment may become more stable. Instead, more general positive attitudes toward the people in the host culture may lead to better daily interactions and thus better mental health during the later phase of transition. Hechanova-Alampay, Beehr, Christiansen, and Van Horn (2002) also found that a predictor of better adjustment to a new culture during earlier phases of transition was not a predictor



during later phases of the transition. Together with the present findings, these results suggest the importance of looking at different phases of adjustment. It would be worth considering recruiting more participants for future studies and follow-up with measures that might parse what could be happening differently with greater time in the U.S. Perhaps mental health has stabilized over time with increase time and experience in the American culture.

Overall, the patterns can cautiously be interpreted as a suggestion that East Asian international students generally become more like Americans in terms of their self-construals while actually increasing in their preferences to associate with those of their own culture over Americans, and while not changing or, if anything, becoming slightly more negative in their attitudes toward the American culture and cultural artifacts, though their identification with American culture may slightly increase after a long exposure. Additionally, it appears that such patterns of change could be working against each other in terms of affecting mental health of this population. While the general pattern of change toward more relative independent self-construal is linked with more positive mental health, the general pattern of change toward less positive evaluation of the American culture is linked with worse mental health.

This work provides a potential explanation for previously mixed acculturation findings. It appears that there is a key domain dependency that, though recently suggested in theory (Schwartz et al., 2010), has not been empirically tested before. Additionally, this research is one of the limited number of acculturation studies actually employing a longitudinal design (for a review, see Zhang & Goodson, 2011), and one of the few that has found psychological process changes over time. Furthermore it may inform general cross-cultural research in examining how psychological processes are shaped over long periods of time to eventually rest at a snapshot in time of "cultural differences". Additionally, findings

regarding how short-term and longer-term changes seem to link with more positive mental health for East Asian international students in an American University might be utilized to inform short-term intervention strategies to help East Asian Sojourners have more positive experiences as soon as possible after arriving in Western cultures. Study 2 may provide additional input as to why these changes occur over time and further inform each of these bodies of work.

## **Study 2**

Building on findings from Study 1, Study 2 was proposed to test potential factors that predict East Asian international students' becoming more independent and less interdependent in self-construals, and more positive in their evaluations of American culture. East Asian international students were recruited during their first two years in the U.S. They first completed a pretest including key measures of self-construal, intergroup attitudes, identification with American culture, and mental health. Then they participated in five days of a daily diary study during which they completed a short survey daily including measures of engagement in cultural practices and quality of interactions with Americans, which are proposed as predictors for changes in self-construal and evaluations, respectively. Finally, participants completed Post-test 1 containing the same key measures as the pretest at the end of the five-day daily diary period and Post-test 2, also containing the same key measures as pretest, one month after they completed the pretest.

Relatively greater engagement in independent cultural practices than interdependent cultural practices during the five days was predicted to promote relative independent over interdependent self-construal at post-test, controlling for initial relative independence at pretest. Additionally, greater engagement in high-quality interactions with Americans (in terms of the five specific intergroup contact conditions (Allport, 1954; Pettigrew, 1998) was

expected to predict more positive intergroup attitudes and American identification at post-test, controlling for these evaluations at pretest. Though research hypotheses with regard to mental health more directly applied to studies 1a and 1b (i.e., the direct link between average changes in self-construal, intergroup attitudes, and identifications with host culture and mental health), I also explored whether engagement in American cultural practices and high-quality interactions with Americans were predicted to promote positive mental health in terms of less depressive symptoms and stress.

## Method

### Participants

Participants were 58 East Asian international students (52 Chinese, 1 Hong Kong Chinese, 1 Taiwanese, 3 Korean, and 1 Singapore Chinese; 34 females), mean age of 19.21 ( $SD = 1.04$ ) attending University of Wisconsin-Madison. Of these, 43 were in their first year of living in the U.S., 10 were in their second year in the U.S., and 5 were between 2 and 5 years<sup>10</sup>. All were recruited through the UW-Madison psychology participant pool. They were reimbursed .5 credits for each 15 minutes the study requires of their time (30 minutes for pretest, 30 minutes for each post-test, 15 minutes per day for 5 days, with a total potential earning of 5.5 credits). Participants who completed every survey were entered into an Amazon lottery for one \$50 gift card for each set of 25 students participating. Of the 58 participants, all completed post-test 1, 48 completed post-test 2, and the majority completed every daily diary survey (average number of completed daily surveys = 55.6,  $SD = 1.67$ ).

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<sup>10</sup> I had planned to recruit all participants during their first month in the U.S. While the majority of participants did participate then, I had to recruit others who had been in the U.S. for longer periods of time. The number of East Asian international students accessible in the psychology participant pool is limited to about 40 students in fall terms and fewer in the spring term. Shy of delaying my graduation date by a year, this mix of recruitment was the only option.

## **Procedure**

Once participants signed up for the study through the participant pool system (SONA) in the UW-Madison psychology department, they were asked to schedule their "main participation week" (for the pretest, post-test 1 and the five daily diary surveys) during one of the subsequent weeks for which they would be able to fully participate on a nightly basis. At noon on the first day of their main participation week, they were emailed a link to the pretest survey (see *pretest measures below*). They were given a midnight deadline for completion, and were reminded by email at 8 pm that evening, if they had not completed the survey by then. Upon pretest survey completion, they were thanked and reminded again of the importance of continued participation in the survey.

The five-day daily diary portion of the study began the following day. At 7 pm each evening for five days, participants received an email with a link to a short survey (daily diary survey; see below), and a request to complete it immediately before bed that evening. They received a reminder at 10:30 pm and participation was allowed the following morning, just after waking. At noon the day following their 5th and final daily diary entry, they received an email with a link to the post-test survey (i.e., post-test one; questionnaires presented one-by-one in the order listed below) to complete. They were reminded to watch for a link to the final survey about one month later, and again reminded of the importance of study completion. A link to a second version of the post-test survey (i.e., post-test two) was emailed to participants one month following their completion of the pretest.

## **Measures**

### **Pretest measures**

For the pretest survey, participants were presented with an electronically-signable consent form, the following measures, and then a set of demographics questions. The

measures presented here were intermixed amongst themselves based on the order that several were presented in Study 1. The results served as baseline measures.

**Prior intergroup contact measures.** To obtain basic descriptive characteristics of the level of contact participants had with Americans before the start of the study, participants were asked three questions: "On an average day how many minutes do you spend interacting with European Americans?" ( $M = 161.05$  minutes,  $SD = 281.73$ ), "How many European American friends do you have currently?" ( $M = 8.41$ ,  $SD = 17.60$ ), and "Do you have a European American boyfriend/girlfriend or spouse?" (3.4% yes). Additionally included were questions requesting average level of daily interaction with European Americans in and outside of UW-settings (e.g., "On an average day, how many minutes do you spend interacting with European Americans in UW-Related settings?"). Analogous questions regarding Asian International student interaction partners were included for potential exploration (e.g., "On an average day how many minutes do you spend interacting with Asian International students?",  $M = 354.47$ ,  $SD = 532.46$ ), "How many Asian International Student friends do you have currently?",  $M = 33.16$ ,  $SD = 40.80$ ; "Do you have an Asian International student romantic partner (boyfriend/girlfriend or spouse)?", 24% yes). See Appendix B1 for questions and see Table 6 for additional descriptive statistics.

**Cultural mandate domain: self-construal measures.** To measure levels of self-construal, the Singelis (1994) self-construal scale and the five statements test (FST) as described in Study 1 (see Appendices A1 and A2, respectively; see table 7 for means) were included. Cronbach's alphas for the Singelis scale were .83 for independence and .83 for interdependence. Inter-coder reliabilities for the FST were .98 for pure psychological attributes, .97 for interests, and .97 for social categorization.

**Cultural evaluation domain: intergroup attitudes and cultural identification**

**measures.** To measure intergroup attitudes, the following were presented, exactly as they were presented in Study 1: a preference for associating with Americans over Asians question (selected from the acculturation attitudes scale; Suinn et al., 1992; see Appendix A3), a thermometer scale (see Appendix A4), and an artifact liking scale (Cronbach's alpha = .78; modified from Szapocznik et al., 1980; see Appendix A5). To measure identification with American culture, the adapted version of the Vancouver Index of Acculturation (Cronbach's alpha = .85; Ryder et al., 2000) was presented (see Appendix A6). See Table 7 for means.

**Mental health measures.** Perceived stress (Cronbach's alpha = .86; Cohen et al., 1983; Cohen & Williamson, 1988; see Appendix A7) and depressive symptoms as measured by the CES-D (Cronbach's alpha = .93; Devins & Orme, 1985; Radloff, 1977; Roberts & Vernon, 1983; Turner & Avison, 1992; see Appendix A8) were measured exactly as they were in Study 1. See Table 7 for means.

**Self-monitoring scale.** To measure the level at which participants may have been concerned about self-presentation and were likely to respond in a manner they thought aligned with researchers' expectations, the self-monitoring scale (Snyder, 1974) was utilized. The measure includes 25 statements<sup>11</sup> (e.g., "I find it hard to imitate behavior of other people", "When I am uncertain how to act in a social situation, I look to the behavior of others for cues"; Cronbach's alpha = .56) to which participants indicated their reactions in terms "true" or "false". Responses that indicated high self-monitoring received a "1" while the others received a "0" (half requiring reverse-coding), and then scores were summed (see

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<sup>11</sup> By mistake, the final item was omitted in the survey, and thus only 24 items were included. Note the low Cronbach's alpha. For both of these reasons, results with this scale should be taken with caution.

Appendix B2). Since this construct is proposed to remain constant overtime (and appeared to in this study), I utilized the pretest value for analyses ( $M = 12.5$ ,  $SD = 2.94$ ).

### **Post-test measures**

All of the above measures except for those for prior intergroup contact were administered as Post-test 1 and Post-test 2 (see Table 7 for means).

### **Daily diary measures**

**Cultural Practices.** Two scales were employed to measure engagement in cultural practices. One is based on various activities the participants may have attempted to engage in throughout the day, and the other based on various emotions the participants may have felt during the day. See Table 8 for descriptive statistics.

The *activity-based cultural practice measure* measured the level at which participants felt that they tried to engage in various cultural practices during the day (see Appendix B3). The cultural practices identified for this measure are based on cultural task theory (Kitayama et al, 2009) and likely manifestation of expected cultural practices in the college environment. It consists primarily of practices that meet independent ideals that university administrators at American universities and colleges identified as important for succeeding in such an environment (Stephens et al., 2012). Participants were prompted with "Today I felt that I..." and were given five independent cultural practice statements (e.g., "tried to be independently motivated", "tried to stress my good qualities to others"; Cronbach's alpha = .91) and five interdependent cultural practice statements (e.g., "tried to adopt opinions of others", "tried to keep my thoughts to myself"; Cronbach's alpha = .88). Eight of these statements were adapted from the student expectations Stephens and colleagues (2012) solicited from American university and liberal arts college administrators as important values and practices to succeed at American colleges. The other two were adapted from cultural task

theory (promoting one's self, Oishi & Diener, 2001). Participants were asked to indicate the level at which they agree with these statements from 1 = "Not at all" to 7 = "Very much so". The difference between the mean of the reported level of engagement in independent practices and the reported level of engagement in the interdependent cultural practices was utilized as one *relative independent activity-based cultural practice engagement* measure. The mean of these values across the five daily diary days (i.e., *mean relative independent activity-based cultural practice engagement*) were used in analyses.

The *emotion-based cultural practice measure* was used to determine how strongly participants experienced (on a scale from 1 = "Did not experience at all" to 5 = "Experienced very strongly") 19 emotions that day, with 12 being emotions of focus (see Appendix B4). Six emotions were disengaging emotions (three positive: pride, superiority, self-esteem; three negative: sulky feelings, frustration, anger; Cronbach's alpha = .65), and six emotions were engaging emotions (three positive: friendly feelings, respect, sympathy; three negative: guilt, shame, fear of causing trouble for another; Cronbach's alpha = .53; Kitayama et al., 2006). The other emotions were filler items. Previous studies have shown that, in their daily lives, those of independent culture (i.e., the U.S), experience disengaging emotions more strongly than engaging emotions, and those of interdependent culture (i.e., Japan) experience engaging emotions more strongly than disengaging emotions. I propose that the more participants engage in independent cultural practices, the more likely they feel engaging emotions. Thus measuring these emotions was intended as an indirect measure of each type of cultural practice engagement. A *relative independent emotion-based cultural practice engagement* measure was calculated by taking the mean strength of experience across the six disengaging emotions (i.e., *independent cultural practice engagement*) and subtracting the mean strength of experience across the six engaging emotions (i.e., *interdependent cultural practice*



*engagement*). The mean of these values across the five days (i.e., *relative independent emotion-based cultural practice engagement*) was used in analyses.

**Intergroup contact quality and quantity.** To measure the quality of intergroup contact quantity and quality for these international students, various aspects regarding daily interactions with Americans were assessed (see Appendix B5 for questions; see Table 8 for descriptive statistics).

*Contact condition-based quality* was of greatest focus for this research. It was assessed through six questions that evaluated the level at which specific contact conditions offered by the reformulated intergroup contact theory (Allport, 1954; Pettigrew, 1998) were met on a daily basis. For the set, I first asked "Approximately how many minutes did you interact with European American college students in UW-related settings today (either in class, in residence halls, or in extracurricular activities)?" to determine whether the participant experienced UW-based interactions (i.e., interactions that I believe would be sufficiently structured to fit this set of conditions). If the participant indicated that he or she did have such structured interactions that day (i.e., the response was greater than zero), an additional set of questions were presented. These questions were meant to measure the extent to which these interactions met the six optimal contact conditions (e.g., "Did you work with the American(s) toward a common goal?"; "Do you feel that the interaction was supported and/or encouraged by authorities at UW (administrators, university housing staff, professors, etc)?") Response options are on 7-point Likert scales with higher numbers representing interaction with Americans that day having had greater compliance with the contact condition of focus. Three questions included an 8th response option of "not applicable", or similar, where necessary (see Appendix B5). Responses to these six condition-related questions were averaged (with the "not applicable" responses first re-coded as missing data so as to be

excluded) to form *contact condition-based quality* (Cronbach's alpha = .74) with a range from 1 to 7. Then the *contact condition-based quality* values for each of the five daily diary days were averaged to form a *mean contact condition-based quality* for the week. This was the measure of most interest given that I hypothesized that this would be the key predictor for changes in the evaluation domain for East Asian international students in a University setting.

*General contact quality* was assessed to account for the possibility that too few participant interactions would meet these contact conditions over the course of the study, and to compare the findings with the *contact-condition based quality* measure. This was measured utilizing three questions asking about the intimacy level of the interactions (from 1 = "very superficial" to 7 = "very intimate"), the general valence of the interactions (from 1 = "negative" to 7 = "positive"; Barlow et al., 2012) and anxiety felt during the interactions (from 1 = "not at all anxious" to 7 = "very anxious"). The anxiety measure was reverse-coded, and then a mean was calculated for these measures across the five daily diary study days as *mean general contact quality* (Cronbach's alpha = .62). Note that these questions were asked regarding interactions in UW-related settings so as to directly compare to the contact condition-based set of questions.

Contact quantity was assessed with two other more general questions to determine if simple measures of quantity might be just as predictive as quality measures. "Approximately how many minutes did you interact with European Americans today?" (i.e., *general contact quantity*;  $M = 103.85$  minutes per day,  $SD = 108.89$ , and 5.0% with 0 minutes of interaction) and "How many of your minutes interacting with European Americans were with European American friends (or a boyfriend/girlfriend or spouse)?" (i.e., *deep contact quantity*;  $M = 60.72$  minutes per day,  $SD = 83.16$ , and 13.8% with 0 minutes of interaction). Daily responses to these questions were averaged across the daily diary week for *mean contact*

*quantity* and *mean deep contact quantity*, respectively. Note that these questions were also asked regarding interactions in UW-related settings so as to directly compare to the contact condition-based set of questions.

I also included a few other questions about non-UW-based interactions. Participants had comparatively limited interactions outside of UW-based settings ( $M = 30.36$  minutes per day,  $SD = 44.95$ , and 24.1 % with 0 minutes of interaction and I thus did not explore these variables further.

## **Results**

To examine whether engaging in cultural practice and high-quality contact during the daily diary week predicted relative independence and more positive evaluations of the American culture, respectively, at the end of the week (post-test 1) and a month later (post-test 2), multiple regression was employed. See Table 7 for a summary of all of these findings, and Table 8 for descriptive statistics of daily diary measures.

### **Cultural practice engagement as a predictor of change in the cultural mandate domain**

To determine whether cultural practice engagement predicted self-construal changes over time, I regressed each measure of relative independent self-construal (Singelis' scale and FST) at each post-test on relative independent self-construal at pretest, and each predictor:

*activity-based cultural practice engagement* and *emotion-based cultural practice*

*engagement*. This resulted in four different regression models. To test whether tendencies for

self-monitoring would account for findings, I ran the same analyses with self-monitoring

level at pretest as a covariate in each of these analyses.

**Activity-based cultural practice engagement.** As predicted, I found that greater engagement in relatively independent activity-based cultural practices predicted greater

relative independent self-construal at post-test 1<sup>12</sup>, as measured by the Singelis scale,  $b = 0.18$ ,  $\beta = 0.28$ ,  $F(1, 55) = 5.98$ ,  $p = .02$ , but not as measured by the five statements test,  $b = -0.15$ ,  $\beta = -0.08$ ,  $F(1, 55) = 0.54$ ,  $p = .47$ , while controlling for each measure of relative independent self-construal of focus at pretest, respectively. Findings with post-test 2 were unexpectedly weaker. Greater engagement in relatively independent activity-based cultural practices did not predict greater relative independent self-construal at post-test 2, as measured by the Singelis scale,  $b = 0.08$ ,  $\beta = 0.12$ ,  $F(1, 44) = 0.90$ ,  $p = .35$ , or as measured by the five statements test,  $b = -0.15$ ,  $\beta = -0.09$ ,  $F(1, 45) = 0.42$ ,  $p = .52$ , while controlling for the measure of relative independent self-construal of focus at pretest.

**Emotion-based cultural practices engagement.** Unexpectedly, engagement in relatively independent emotion-based cultural practices did not predict greater relative independent self-construal<sup>13</sup> at post-test 1, as measured by the Singelis scale,  $b = 0.20$ ,  $\beta =$

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<sup>12</sup> I also analyzed how independent activity-based cultural practices predicted independent self-construal changes as measured by the Singelis scale, and how interdependent activity-based cultural practices predicted interdependent self-construal changes as measured by the Singelis scale. I found that greater engagement in independent activity-based cultural practices predicted greater independent self-construal at post-test 1,  $b = 0.11$ ,  $\beta = 0.21$ ,  $F(1, 55) = 4.44$ ,  $p = .04$ , and greater engagement in interdependent activity-based cultural practices predicted greater interdependent self-construal at post-test 1,  $b = 0.15$ ,  $\beta = 0.30$ ,  $F(1, 55) = 6.25$ ,  $p = .02$ , while controlling for each self-construal measure of focus at pretest, respectively. Greater engagement in independent activity-based cultural practices *also* predicted greater independent self-construal at post-test 2,  $b = 0.13$ ,  $\beta = 0.28$ ,  $F(1, 44) = 5.78$ ,  $p = .02$ , and greater engagement in interdependent activity-based cultural practices predicted greater interdependent self-construal at post-test 2,  $b = 0.16$ ,  $\beta = 0.36$ ,  $F(1, 44) = 8.29$ ,  $p = .006$ , while controlling for the self-construal measure of focus at pretest.

<sup>13</sup> I also examined whether independent emotion-based cultural practices predicted independent self-construal changes as measured by the Singelis scale, and whether interdependent emotion-based cultural practices predicted interdependent self-construal changes as measured by the Singelis scale. Greater engagement in independent emotion-based cultural practices did not predict greater independent self-construal at post-test 1,  $b = 0.03$ ,  $\beta = 0.03$ ,  $F(1, 55) = 0.08$ ,  $p = .78$ , and greater engagement in interdependent emotion-based cultural practices did not predict greater interdependent self-construal at post-test 1,  $b = 0.04$ ,  $\beta = 0.03$ ,  $F(1, 55) = 0.08$ ,  $p$

0.13,  $F(1, 55) = 1.23, p = .27$ , or as measured by the five statements test,  $b = 0.75, \beta = 0.18, F(1, 55) = 2.50, p = .12$ , while controlling for the measure of relative independent self-construal of focus at pretest. Greater engagement in relatively independent emotion-based cultural practices also did not predict greater relative independent self-construal at post-test 2, as measured by the Singelis scale,  $b = -0.16, \beta = -0.10, F(1, 44) = 0.58, p = .45$ , or as measured by the five statements test,  $b = -0.06, \beta = -0.01, F(1, 45) = 0.01, p = .92$ , while controlling for the measure of relative independent self-construal of focus at pretest.

**Self-Monitoring level as covariate.** All of the above analyses were run again with self-monitoring level as a covariate to test whether tendencies for self-monitoring would account for any of the findings.

**Activity-based cultural practice engagement.** All of the effects found without self-monitoring scale as a covariate remained. Greater engagement in relatively independent activity-based cultural practices again predicted greater relative independent self-construal at post-test 1<sup>14</sup>, as measured by the Singelis scale,  $b = 0.18, \beta = 0.28, F(1, 54) = 5.86, p = .02$ ,

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$= .78$ , while controlling for each self-construal measure of focus at pretest. Greater engagement in independent emotion-based cultural practices also did not predict greater independent self-construal at post-test 2,  $b = -0.11, \beta = -0.11, F(1, 44) = 0.85, p = .36$ , and greater engagement in interdependent emotion-based cultural practices did not predict greater interdependent self-construal at post-test 2,  $b = 0.04, \beta = 0.04, F(1, 44) = 0.10, p = .75$ , while controlling for the self-construal measure of focus at pretest.

<sup>14</sup> Greater engagement in independent activity-based cultural practices predicted greater independent self-construal at post-test 1,  $b = 0.11, \beta = 0.21, F(1, 54) = 4.21, p = .045$ , and greater engagement in interdependent activity-based cultural practices predicted greater interdependent self-construal at post-test 1,  $b = 0.16, \beta = 0.30, F(1, 54) = 6.26, p = .02$ , while controlling for self-monitoring level and each self-construal measure of focus at pretest, respectively. Greater engagement in independent activity-based cultural practices *also* predicted greater independent self-construal at post-test 2,  $b = 0.13, \beta = 0.29, F(1, 43) = 5.96, p = .02$ , and greater engagement in interdependent activity-based cultural practices predicted greater interdependent self-construal at post-test 2,  $b = 0.16, \beta = 0.36, F(1, 43) = 7.47, p = .009$ , while controlling for self-monitoring level and the self-construal measure of focus at pretest.

but not as measured by the five statements test,  $b = -0.15$ ,  $\beta = -0.09$ ,  $F(1, 54) = 0.53$ ,  $p = .47$ , while controlling for self-monitoring level and each relative independent self-construal measure of focus at pretest. Greater engagement in relatively independent activity-based cultural practices did not predict greater relative independent self-construal at post-test 2, as measured by the Singelis scale,  $b = 0.08$ ,  $\beta = 0.13$ ,  $F(1, 43) = 0.97$ ,  $p = .33$ , or as measured by the five statements test,  $b = -0.11$ ,  $\beta = -0.06$ ,  $F(1, 44) = 0.23$ ,  $p = .63$ , while controlling for self-monitoring level and the relative independent self-construal measure of focus at pretest.

***Emotion-based cultural practices engagement.*** Again, the findings remained the same once the self-monitoring scale was added as a covariate. Engagement in relatively independent emotion-based cultural practices did not predict greater relative independent self-construal<sup>15</sup> at post-test 1, as measured by the Singelis scale,  $b = 0.20$ ,  $\beta = 0.13$ ,  $F(1, 54) = 1.25$ ,  $p = .27$ , or as measured by the five statements test,  $b = 0.76$ ,  $\beta = 0.18$ ,  $F(1, 54) = 2.50$ ,  $p = .12$ , while controlling for self-monitoring and the relative independent self-construal measure of focus at pretest. Greater engagement in relatively independent emotion-based cultural practices also did not predict greater relative independent self-construal at post-test 2, as measured by the Singelis scale,  $b = -0.16$ ,  $\beta = -0.10$ ,  $F(1, 43) = 0.57$ ,  $p = .46$ , or as measured by the five statements test,  $b = -0.14$ ,  $\beta = -.03$ ,  $F(1, 44) = 0.06$ ,  $p = .81$ , while controlling for the relative independent self-construal measure of focus at pretest.

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<sup>15</sup> Greater engagement in independent emotion-based cultural practices did not predict greater independent self-construal at post-test 1,  $b = 0.03$ ,  $\beta = 0.03$ ,  $F(1, 54) = 0.08$ ,  $p = .78$ , and greater engagement in interdependent emotion-based cultural practices did not predict greater interdependent self-construal at post-test 1,  $b = 0.04$ ,  $\beta = 0.03$ ,  $F(1, 54) = 0.07$ ,  $p = .79$ , while controlling for self-monitoring each self-construal measure of focus at pretest. Greater engagement in independent emotion-based cultural practices also did not predict greater independent self-construal at post-test 2,  $b = -0.11$ ,  $\beta = -0.11$ ,  $F(1, 43) = 0.82$ ,  $p = .37$ , and greater engagement in interdependent emotion-based cultural practices did not predict greater interdependent self-construal at post-test 2,  $b = 0.03$ ,  $\beta = 0.03$ ,  $F(1, 43) = 0.05$ ,  $p = .82$ , while controlling for self-monitoring and the self-construal measure of focus at pretest.

### **Intergroup contact quality and quantity as predictors of change in the cultural evaluation domain**

To determine whether contact quality and quantity, during the daily diary week predicted evaluation changes across time, I regressed each cultural evaluation measure (preference for associating with Americans over Asians, thermometer ratings of Americans, American artifact liking, identification with American culture) at post-test on the corresponding cultural evaluation measure at pretest, as well as on the four predictors: mean contact condition quality, mean contact quantity, mean deep contact quantity, and mean general contact quality. There were eight different analyses consisting of combinations of each of the four *evaluation* measures and each post-test. The first—mean contact condition-based quality—was of most interest, and its comparison to the other measures of contact quality and quantity was more exploratory.

**Mean contact condition-based quality.** My main prediction was in regard to contact quality based on the extent to which the six optimum contact conditions were met. As predicted, *mean contact condition-based quality* across the five days predicted participants' preference for associating with Americans over Asians at post-test 1,  $b = 0.31$ ,  $\beta = 0.36$ ,  $F(1, 53) = 9.08$ ,  $p = .004$ , controlling for preference for associating with Americans over Asians at pretest. Unexpectedly mean contact condition-based quality did not predict participants' preference for associating with Americans over Asians at post-test 2,  $b = 0.11$ ,  $\beta = 0.11$ ,  $F(1, 44) = 0.64$ ,  $p = .43$ , controlling for preference for associating with Americans over Asians at pretest. As predicted, mean contact condition-based quality predicted changes in thermometer ratings of Americans from pretest to post-test 1,  $b = 10.38$ ,  $\beta = 0.47$ ,  $F(1, 53) = 25.71$ ,  $p < .001$ , and marginally from pretest to post-test 2,  $b = 5.42$ ,  $\beta = 0.24$ ,  $F(1, 43) = 3.93$ ,  $p = .05$ . Mean contact condition-based quality also predicted changes in liking of American artifacts

from pretest to post-test 1,  $b = 0.28$ ,  $\beta = 0.33$ ,  $F(1, 53) = 12.10$ ,  $p = .001$ , and but not from pretest to post-test 2,  $b = 0.18$ ,  $\beta = 0.20$ ,  $F(1, 44) = 2.78$ ,  $p = .10$ . Finally, mean contact condition-based quality also predicted changes in identification with American culture from pretest to post-test 1,  $b = 0.51$ ,  $\beta = 0.42$ ,  $F(1, 52) = 16.21$ ,  $p < .001$ , and from pretest to post-test 2,  $b = 0.65$ ,  $\beta = 0.51$ ,  $F(1, 42) = 17.47$ ,  $p < .001$ .

**Mean general contact quality.** *Mean general contact quality* (a combined measure of intimacy level, valence, and anxiety-provoking nature, reverse-coded, of interactions with European Americans) across the five days predicted participants' preference for associating with Americans over Asians at post-test 1,  $b = 0.02$ ,  $\beta = 0.05$ ,  $F(1, 53) = .12$ ,  $p = .73$ , but marginally did so—in the opposite direction than expected—at post-test 2,  $b = -0.18$ ,  $\beta = -0.28$ ,  $F(1, 44) = 4.06$ ,  $p = .05$ , controlling for preference for associating with Americans over Asians at pretest. Mean general contact quality did not predict changes in thermometer ratings of Americans from pretest to post-test 1,  $b = 1.17$ ,  $\beta = 0.09$ ,  $F(1, 53) = 0.73$ ,  $p = .40$ , or from pretest to post-test 2,  $b = 1.38$ ,  $\beta = 0.09$ ,  $F(1, 43) = 0.57$ ,  $p = .45$ . Mean general contact quality did not predict changes in liking of American artifacts from pretest to post-test 1,  $b = 0.04$ ,  $\beta = 0.09$ ,  $F(1, 53) = 0.70$ ,  $p = .41$ , or from pretest to post-test 2,  $b = -0.05$ ,  $\beta = -0.09$ ,  $F(1, 44) = 0.52$ ,  $p = .48$ . Finally, mean general contact quality did not predict changes in identification with American culture from pretest to post-test 1,  $b = -0.02$ ,  $\beta = -0.03$ ,  $F(1, 52) = 0.05$ ,  $p = .82$ , or from pretest to post-test 2,  $b = 0.07$ ,  $\beta = 0.08$ ,  $F(1, 42) = 0.38$ ,  $p = .54$ .

**Mean contact quantity.** As expected, *mean contact quantity* (minutes interacting with European Americans in general) across the five days marginally predicted participants' preference for associating with Americans over Asians at post-test 1,  $b = 0.001$ ,  $\beta = 0.24$ ,  $F(1, 55) = 3.70$ ,  $p = .06$ , controlling for preference for associating with Americans over Asians at pretest. It predicted participants' preference for associating with Americans over



Asians at post-test 2,  $b = 0.002$ ,  $\beta = 0.35$ ,  $F(1, 45) = 7.23$ ,  $p = .01$ , controlling for preference for associating with Americans over Asians at pretest. Mean contact quantity did not predict changes in thermometer ratings of Americans from pretest to post-test 1,  $b = 0.01$ ,  $\beta = 0.08$ ,  $F(1, 55) = 0.50$ ,  $p = .48$ , or from pretest to post-test 2,  $b = 0.03$ ,  $\beta = 0.17$ ,  $F(1, 44) = 2.05$ ,  $p = .16$ . Mean contact quantity also did not predict changes in liking of American artifacts from pretest to post-test 1,  $b = 0.001$ ,  $\beta = 0.12$ ,  $F(1, 55) = 1.25$ ,  $p = .27$ , or from pretest to post-test 2,  $b = 0.001$ ,  $\beta = 0.13$ ,  $F(1, 45) = 1.13$ ,  $p = .30$ . Finally, mean contact quantity marginally predict changes in identification with American culture from pretest to post-test 1,  $b = 0.002$ ,  $\beta = 0.22$ ,  $F(1, 54) = 3.79$ ,  $p = .06$ , and significantly predicted changes from pretest to post-test 2,  $b = 0.003$ ,  $\beta = 0.31$ ,  $F(1, 43) = 5.65$ ,  $p = .02$ .

**Mean deep contact quantity.** *Mean deep contact quantity* (minutes interacting with European American friends or boyfriend/girlfriend or spouse) across the five days marginally predicted participants' preference for associating with Americans over Asians at post-test 1,  $b = 0.002$ ,  $\beta = 0.25$ ,  $F(1, 52) = 3.62$ ,  $p = .06$ , and significantly at post-test 2,  $b = 0.004$ ,  $\beta = 0.38$ ,  $F(1, 44) = 8.03$ ,  $p = .007$ , controlling for preference for associating with Americans over Asians at pretest. Mean deep contact quantity did not predict changes in thermometer ratings of Americans from pretest to post-test 1,  $b = 0.00$ ,  $\beta = 0.00$ ,  $F(1, 52) = 0.00$ ,  $p = .997$ , or from pretest to post-test 2,  $b = 0.01$ ,  $\beta = 0.05$ ,  $F(1, 43) = 0.14$ ,  $p = .71$ . Mean deep contact quantity also did not predict changes in liking of American artifacts from pretest to post-test 1,  $b = 0.00$ ,  $\beta = 0.02$ ,  $F(1, 52) = 0.05$ ,  $p = .82$ , or from pretest to post-test 2,  $b = 0.001$ ,  $\beta = 0.10$ ,  $F(1, 44) = 0.58$ ,  $p = .45$ . Finally, mean deep contact quantity did not predict changes in identification with American culture from pretest to post-test 1,  $b = 0.001$ ,  $\beta = 0.13$ ,  $F(1, 51) = 1.25$ ,  $p = .27$ , but did so marginally from pretest to post-test 2,  $b = 0.003$ ,  $\beta = 0.24$ ,  $F(1, 42) = 2.95$ ,  $p = .09$ .

## Mental Health

**Cultural practice engagement as predictor.** To explore whether engagement in relatively independent cultural practices and quality of interactions with Americans predicted positive mental health in terms of depressive symptoms and stress, I regressed each mental health measure of focus (stress, depressive symptoms) at post-test on the corresponding mental health measure at pretest, and both predictors: activity-based cultural practice engagement, and emotion-based cultural practice engagement. There were four different analyses with post-test 1 and post-test 2, and each measure of mental health. I did not have strong predictions for mental health outcomes, but generally predicted that cultural practice engagement and contact condition quality might predict fewer depressive symptoms and lower stress over time.

***Activity-based cultural practice engagement.*** Greater engagement in relatively independent activity-based cultural practices<sup>16</sup> across the daily diary week did not predict fewer depressive symptoms at post-test 1,  $b = -0.01$ ,  $\beta = -0.03$ ,  $F(1, 55) = 0.09$ ,  $p = .76$ , or at

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<sup>16</sup> I also analyzed how independent activity-based cultural practices and interdependent activity-based cultural practices predicted changes in mental health. Level of engagement in independent activity-based cultural practices during the daily diary week did not predict a change in depressive symptoms at the end of the week (at post-test 1),  $b = 0.01$ ,  $\beta = 0.03$ ,  $F(1, 55) = 0.14$ ,  $p = .71$ , or one month later (at post-test 2),  $b = -0.003$ ,  $\beta = -0.007$ ,  $F(1, 44) = 0.003$ ,  $p = .96$ , controlling for depressive symptom level at pretest. Similarly, level of engagement in interdependent, activity-based cultural practices during the daily diary week did not predict a change in depressive symptoms at post-test 1,  $b = 0.03$ ,  $\beta = 0.08$ ,  $F(1, 55) = 0.91$ ,  $p = .34$ , or at post-test 2,  $b = 0.05$ ,  $\beta = 0.10$ ,  $F(1, 44) = 0.73$ ,  $p = .40$ , controlling for depressive symptom level at pretest.

Level of engagement in independent activity-based cultural practices during the daily diary week also did not predict a change in stress at post-test 1,  $b = 0.02$ ,  $\beta = 0.04$ ,  $F(1, 55) = 0.12$ ,  $p = .73$ , or at post-test 2,  $b = -0.06$ ,  $\beta = 0.12$ ,  $F(1, 44) = 1.10$ ,  $p = .30$ , controlling for stress level at pretest. Similarly, level of engagement in interdependent, activity-based cultural practices during the daily diary week did not predict a change in perceived stress at post-test 1,  $b = -0.05$ ,  $\beta = 0.11$ ,  $F(1, 55) = 1.16$ ,  $p = .29$ , or at post-test 2,  $b = -0.01$ ,  $\beta = -0.02$ ,  $F(1, 44) = 0.04$ ,  $p = .84$ , controlling for stress level at pretest.

post-test 2,  $b = -0.04$ ,  $\beta = -0.08$ ,  $F(1, 44) = 0.40$ ,  $p = .53$ , while controlling for level of depressive symptoms at pretest. Similarly, greater engagement in relatively independent activity-based cultural practices did not predict less stress at post-test 1,  $b = -0.05$ ,  $\beta = -0.108$ ,  $F(1, 55) = 0.90$ ,  $p = .35$ , or at post-test 2,  $b = -0.04$ ,  $\beta = -0.07$ ,  $F(1, 44) = 0.33$ ,  $p = .57$ , while controlling for stress at pretest.

***Emotion-based cultural practice engagement.*** Level of engagement in relatively independent<sup>17</sup> emotion-based cultural practices across the daily diary week did not predict lower depressive symptoms post-test 1,  $b = 0.109$ ,  $\beta = 0.09$ ,  $F(1, 55) = 1.18$ ,  $p = .28$  or at post-test 2,  $b = 0.15$ ,  $\beta = 0.10$ ,  $F(1, 44) = 0.73$ ,  $p = .40$ , while controlling for level of depressive symptoms at pretest. Alternately, greater engagement in relatively independent emotion-based cultural practices *did* predict less stress at post-test 1,  $b = -0.29$ ,  $\beta = -0.23$ ,  $F(1, 55) = 5.672$ ,  $p = .02$ , but not at post-test 2,  $b = -0.10$ ,  $\beta = -0.06$ ,  $F(1, 44) = 0.28$ ,  $p = .60$ , while controlling for stress at pretest.

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<sup>17</sup> Level of engagement in independent emotion-based cultural practices during the daily diary week did not predict a change in depressive symptoms at the end of the week (at post-test 1),  $b = 0.11$ ,  $\beta = 0.13$ ,  $F(1, 55) = 2.72$ ,  $p = .11$ , but *did* predict such a change one month later (at post-test 2),  $b = 0.25$ ,  $\beta = 0.26$ ,  $F(1, 44) = 4.54$ ,  $p = .04$ , controlling for depressive symptom level at pretest. Surprisingly, the direction of the change suggests that greater engagement in independent emotion-based cultural practices is linked with *increased* depressive symptoms over time. Participants' level of engagement in interdependent emotion-based cultural practices during the daily diary week did not predict a change in depressive symptoms at the end of the week (at post-test 1),  $b = 0.09$ ,  $\beta = 0.10$ ,  $F(1, 55) = 1.44$ ,  $p = .24$ , but did suggest a marginal increase in depressive symptoms one month later (at post-test 2),  $b = .24$ ,  $\beta = 0.21$ ,  $F(1, 44) = 2.97$ ,  $p = .09$ , controlling for depressive symptom level at pretest. The direction of this marginal change is as would be expected, suggesting that greater engagement in interdependent emotion-based cultural practices is linked with *increased* depressive symptoms over time.

Level of engagement in independent emotion-based cultural practices during the daily diary week did not predict a change in stress at post-test 1,  $b = 0.05$ ,  $\beta = 0.06$ ,  $F(1, 55) = 0.35$ ,  $p = .56$ , or at post-test 2,  $b = 0.01$ ,  $\beta = 0.01$ ,  $F(1, 44) = 0.01$ ,  $p = .91$ , controlling for stress level at pretest. The level of engagement in interdependent emotion-based cultural practices during the daily diary week *did* predict an increase (as expected) in perceived stress at post-test 1,  $b = 0.22$ ,  $\beta = 0.22$ ,  $F(1, 55) = 5.15$ ,  $p = .03$ , but not at post-test 2,  $b = 0.02$ ,  $\beta = 0.02$ ,  $F(1, 44) = 0.03$ ,  $p = .87$ , controlling for stress level at pretest.

**Quality of contact as predictor.** To explore whether quality of contact with Americans in terms of optimum contact conditions predicted fewer depressive symptoms and less stress, I regressed the mental health measure of focus (i.e., depressive symptoms, stress) on the mental health measure of focus at pretest, and the four predictors: mean contact condition-based quality, mean general contact quality, mean contact quantity, and mean deep contact quantity.

**Mean contact condition-based quality.** Mean contact condition-based quality did not predict fewer depressive symptoms at post-test 1,  $b = -0.002$ ,  $\beta = -0.003$ ,  $F(1, 53) = 0.001$ ,  $p = .97$ , or at post-test 2,  $b = 0.01$ ,  $\beta = 0.02$ ,  $F(1, 43) = 0.02$ ,  $p = .89$ , controlling for depressive symptom level at pretest. This quality measure also did not predict lower stress at post-test 1,  $b = 0.06$ ,  $\beta = 0.10$ ,  $F(1, 53) = 1.30$ ,  $p = .26$ , or at post-test 2,  $b = 0.07$ ,  $\beta = 0.09$ ,  $F(1, 43) = 0.61$ ,  $p = .44$ , controlling for stress at pretest.

**Mean general contact quality.** Mean general contact quality did not predict fewer depressive symptoms at post-test 1,  $b = 0.007$ ,  $\beta = 0.02$ ,  $F(1, 53) = 0.06$ ,  $p = .80$ , or at post-test 2,  $b = -0.01$ ,  $\beta = -0.03$ ,  $F(1, 43) = 0.04$ ,  $p = .84$ , controlling for depressive symptom level at pretest. It unexpectedly predicted *greater* stress for participants at post-test 1,  $b = 0.07$ ,  $\beta = 0.20$ ,  $F(1, 53) = 5.64$ ,  $p = .02$ , controlling for their stress levels at pretest. It did not predict stress level at post-test 2,  $b = 0.09$ ,  $\beta = 0.16$ ,  $F(1, 43) = 1.77$ ,  $p = .19$ , controlling for stress levels at pretest.

**Mean contact quantity.** Mean contact quantity did not predict fewer depressive symptoms at post-test 1,  $b = 0.00$ ,  $\beta = -0.04$ ,  $F(1, 55) = 0.22$ ,  $p = .64$ , or at post-test 2,  $b = -0.001$ ,  $\beta = -0.12$ ,  $F(1, 44) = 0.89$ ,  $p = .35$ , controlling for depressive symptom level at pretest. It also did not predict lower stress for participants at post-test 1,  $b = 0.00$ ,  $\beta = -0.08$ ,  $F(1, 55)$

= 0.60,  $p = .44$ , or at post-test 2,  $b = 0.00$ ,  $\beta = -0.03$ ,  $F(1, 44) = 0.04$ ,  $p = .84$ , controlling for stress levels at pretest.

***Mean deep contact quantity.*** Mean deep contact quantity did not predict fewer depressive symptoms at post-test 1,  $b = -0.001$ ,  $\beta = -0.10$ ,  $F(1, 52) = 1.36$ ,  $p = .25$ , or at post-test 2,  $b = -0.001$ ,  $\beta = -0.16$ ,  $F(1, 43) = 1.75$ ,  $p = .19$ , controlling for depressive symptom level at pretest. This contact quantity measure also did not predict lower stress for participants at post-test 1,  $b = -0.001$ ,  $\beta = -0.15$ ,  $F(1, 52) = 2.87$ ,  $p = .10$ , or at post-test 2,  $b = 0.00$ ,  $\beta = 0.006$ ,  $F(1, 43) = 0.002$ ,  $p = .96$ , controlling for stress levels at pretest.

## **Discussion**

Results from Study 2 highlight some important predictors of East Asian international students' acculturation while at universities in U.S. The data support my predictions that (i) high independent (relative to interdependent) cultural (activity-based) practice engagement predicts increases in relatively independent self-construals over time, and (ii) that experience with high-quality interactions with Americans, in terms of high concordance with intergroup contact theory conditions, predicts improvements in evaluation of American culture (even if, on average, such improvements are not common for East Asian international students according to Study 1).

With regard to the cultural mandate domain, engagement in relatively independent activity-based cultural practices across the daily diary week were found to predict increases in relative independent self-construal, as measured by the Singelis scale, across that week. Furthermore, when I separated those activity-based practices into their independent and interdependent components, there was a considerably stronger link with the individual dimensions of self-construal (see footnotes of each results section). This may be due to the

very high correlation between independent and interdependent activity-based practices. See the General Discussion section for more on this topic.

Unexpectedly, the emotion-based cultural practices did not predict increases in relative self-construal. It will be important, in future work, to revisit the design of this cultural practice engagement measure. In doing so, a closer consideration of the cultural psychology literature pointing to Eastern cultural scripts for balancing positive and negative emotions (Leu et al., 2010; Miyamoto & Ma, 2011; Miyamoto & Ryff, 2011) may be useful. I had supposed that including an equal number of positive and negative disengaging and engaging emotions in this measure and summing positive and negative emotions, per Kitayama and colleagues' (Kitayama et al., 2006) research, would have addressed such potential issues. However, it may be the case that a more nuanced approach (such as separating positive and negative emotions and examining the relationship between the two) is necessary to properly capture the affective nature of cultural practice. Furthermore, a measure of emotions experienced on a daily basis may be too indirect in that they may be potentially tied up with other strongly emotion-affecting daily experiences (e.g., frustration with oneself at disappointing exam results) outside of those more directly related to self-construal.

There were no findings with the five statements test measure of relative independence. It may be the case the memorable nature of this test makes it hard for such changes to appear over such short spans of time. Additionally, findings may have emerged with the usual twenty statements rather than the five for this specific study.

Also unexpected was that findings were weaker at post-test 2, despite the supposition that it may take that longer period to actually detect changes in this cultural mandate domain. It appears that the proximity between the predictors and outcome measures tend to matter more than the length of the time that has passed from pretest to outcome measurements. I had

assumed that experiences over one particular week should be representative of students' experiences in general, and thus predicted that the experiences over one week should predict acculturation over the long run. However, the results seem to suggest that it was not the case. It may be the case that at students' first (and some second) year at University is densely packed with occurrences involving many factors that may influence psychological processes. It would be interesting to replicate this work, sampling a number of weeks throughout students first year at University (rather than just those at the beginning-to-middle of their semesters), consolidating these daily diary studies into a longitudinal study to examine what might occur over longer periods of time.

Changes in cultural evaluation across the daily diary week were consistently predicted by engagement in interactions with European Americans that met intergroup contact theory-delineated conditions, and these findings generally extended to post-test 2. There were only a couple of clear predictors among the simpler measures of interaction quantity and quality that were linked with more positive cultural evaluations over time (*mean contact quantity* predicting an increase in preference for associating with Americans over Asians, and identification with American culture, from pretest to post-test 2, and *deep contact quantity* predicting changes in these same constructs across the same amount of time). It is interesting that these two quantity measures predict changes in the same two components of the cultural evaluation domain that involve more orientation toward interpersonal interactions than the other two components which focused on cultural artifacts or general feelings toward the host culture. A potential future direction could include looking into whether there is a systematic nature to this alignment. It could be the case that the cultural evaluation domain could be further delineated into two constructs: one that is more interaction- or relationship-based, and one that is more about general attitudes toward the host culture.

Unexpectedly, *general contact quality* marginally predicted a change in the opposite direction for preference for associating with Americans over Asians between pretest and post-test 2. In other words, higher *general contact quality* (in terms of intimacy level, positivity, and lack of anxiety felt during the interaction) for interactions with Americans predicted a greater preference for associating with Asians over Americans. Interestingly, when examining whether various features of contact predicted changes in mental health, this is the only factor that appears to have had an effect. Again, this effect is in the opposite direction from that which was expected: higher *general contact quality* with Americans marginally predicted an increase in stress from pretest to post-test 1. Though the overall direction was not expected, these findings aligning together in the same direction may suggest the unique nature of *general contact quality*, and also indirectly support the link between the cultural evaluation domain and mental health.

Although it is hard to determine why interactions that more greatly meet this composite quality measure would lead to this unexpected association preference, and greater stress, closer examination of cultural psychology literature might point to some possibilities. Interactions with *lower* intimacy might be more preferred by East Asian participants given research suggesting that those of Eastern cultures self-disclose less in their relationships (Kito, 2005), and may prefer communication that is more implicit and less explicit (Eggen, Miyamoto, & Uchida, 2012), though it could be argued that the participants would not necessarily define "intimate" as highly self-disclosing explicit communication. In addition, because East Asian culture tends to encourage prevention-orientation (Lockwood, Marshall, & Sadler, 2005), it is possible that the anxiety or negative emotions felt during the interaction with Americans (i.e., low *general contact quality*) might have motivated East Asian participants to attempt to restore the associated relationships with American interaction



partners (i.e., show a *preference for associating with Americans over Asians*). I would suggest future work on examining what it is about interactions with Americans that highly meet the dimensions of *general contact quality* might lead an East Asian international student to increase in their preference for associating with Asians over Americans.

What is important is that interactions that more greatly met contact-conditions did *not* increase mental health challenges in the manner found for interactions of greater *general contact quality*. Such a change would be particularly confusing and would contradict the link between findings from Study 2 and Study 1: that (a) interactions that meet such conditions consistently improve general evaluations of the American culture (according to Study 2), and (2) that such greater evaluations (according to Study 1) may predict more positive mental health over time. A clearer picture of how mental health links with engagement in cultural practices and daily interactions with those of the host culture might require a longer-term study similar to the longitudinal format of Study 1.

Beyond the unexpected stress finding, my exploratory analyses did not generally indicate that these experiences with potential predictors of alignment with American self-construal patterns (i.e., cultural practice engagement) and of more positive evaluations of American culture (i.e., high-quality contact) are predictors themselves for improved mental health. It may be the case that linking mental health with engagement in cultural practices and daily interactions with those of the host culture would require a longer-term study similar to the longitudinal format of Study 1. Or it simply may be the case that these students are dealing with much greater mental-health impacting factors during their early years in a new culture, that is hard to tease out the potentially buffering effects that engagement in host cultural-mandated practices and positive interactions with those of the host culture have in such a short timeframe. In fact, an examination of the depressive symptom levels over all

measurement periods indicate that depressive symptoms are maintained at levels well above the scale cut-off for concern. One additional issue may be that the timeframe of reflection for each of these scales did not work well for the short time periods of focus in this study—the depressive symptom scale asked participants to think back to the last week, and the perceived stress scale asked them to think back to the last 30 days.

In sum, for the intergroup contact portion of this study, it appears that attention to meeting the specific intergroup contact theory conditions while East Asian international students are in University-based settings might make an impact—at least in the short term—on their evaluations of, and identification with, the host culture. I am not proposing that one major goal of interventions with International students should be greater evaluation of host cultures in general, but combining these findings with the mental health findings from Study 1 would suggest doing so might help such students achieve greater well-being while at University.

Overall, findings from Study 2 generally seem to suggest that the effects of the predictors tested are stronger for the evaluation domain than for the self-construal domain. This may point to a need to re-assess the cultural practice engagement measures designs to determine if they could be further refined. Or it might be the case that engagement in cultural practices that meet cultural mandates are actually quite subtle and it can be a challenge for individuals to recognize when they are engaged in them. In fact, one of my arguments is that the cultural mandate domain is more amenable to change independent of the individual's explicit evaluation of the culture of focus. Thus cultural mandates might influence engagement in very subtle cultural practices that are hard to capture with explicit measures but, over time, make significant changes in psychological processes. It may be important to measure cultural practice engagement in another format—possibly through behavioral

observation or more implicit measures. This is the reason I chose to employ the emotion-based cultural practice engagement measure in addition to the activity-based cultural task engagement measure, but the emotion-based measure did not appear effective. Overall, it might be that the measures of cultural practices were not effective, and/or that the important cultural practices may be more implicit.

The results of Study 2 are promising and do point to some potential factors that may influence psychological process changes as East Asian international students engage with the American culture, and possibly more broadly how Sojourners engage with host cultures. It appears that consistent daily engagement in activities that meet the cultural mandates of host cultures (i.e., relative independence) may inherently modify associated psychological processes of that domain (i.e., relative independent self-construal), at least across a short, concentrated period of time. Even stronger is the finding that engagement in interactions with those from host cultures that meet contact theory conditions may inherently modify psychological associated processes in the cultural evaluation domain (i.e., attitudes and identification with host culture).

### **General Discussion**

Taken as a whole, this dissertation elucidates (i) the possibility of a domain-dependency in how people's psychological patterns change, on average, to accommodate a new culture, supporting change to match host cultures in the cultural mandate domain and no change, or more negative change, in the cultural evaluation domain; (ii) that psychological process change to align with those characteristic of host cultures in the cultural mandate domain and toward more positive evaluation domain are linked with better mental health, and (iii) that daily engagement in practices that meet the cultural mandates of host cultures, and engagement in intergroup contact theory condition-compliant interactions with others from

host cultures, may inherently encourage change in domain-consistent psychological processes.

### **Application to Acculturation Literature**

While a number of limitations of this work are outlined below, this research has potential for enriching a number of bodies of literature. In regard to the acculturation literature, this research highlights domain-dependency as a potential explanation to clarify the mixed findings regarding whether psychological processes do change to match host cultures or not—and providing empirical work to support Schwartz and colleagues' (2010) recently-proposed theory. Further, this work moves beyond examination of practices and behaviors that are usually examined in acculturation literature, and provides a deeper exploration of how psychological processes actually become attuned over time to reflect those of the host culture.

Most importantly, by integrating the work on acculturation with a classic social psychological theory on intergroup relations (i.e., intergroup contact theory), this research suggests that interactions with the people from a host culture that meet contact quality conditions facilitate more positive attitudes toward, and greater identification with, the host culture—the measures that have been typically used as indices of acculturation. On the other hand, mere contact quantity was less likely to predict more positive evaluations of the host culture. This suggests that long exposure to the host culture per se may not necessarily increase positive attitude and identification with the host culture. Instead, having high quality interactions that meet contact conditions may be necessary. Thus, the present research contributes to the acculturation literature by providing an integrative theoretical model to understand and predict when people develop positive attitudes toward, and identification with, a host culture as they transition to the new culture.

In terms of Berry's (2003) model, my findings regarding the change toward alignment with host culture in the cultural mandate domain might suggest that the assimilation strategy (i.e., rejection of heritage culture and engagement with host culture) might actually manifest in East Asian international students' psychological processes. At the same time, my findings regarding no change or more negative change in the cultural evaluation domain suggests that East Asian international students do not have stronger (or may even have weaker) *intentions* toward engaging with the host culture over time, suggesting that, on average, they are taking separation or marginalization strategies. Thus, depending on the domain, the dominant strategy markedly differs. Such divergence may further support the independence of acculturation patterns in terms of psychological process change (i.e., cultural mandate domain) and acculturation patterns in terms of changes in explicit intention to engage with the host culture (i.e., cultural evaluation domain), suggesting the importance of distinguishing the two domains. Furthermore, although Berry's model has mainly focused on explicit intentions toward engaging with the host or heritage culture (and thus cultural evaluation domain), I highly support future research which takes a closer look at how psychological process changes in the cultural mandate domain interact with Sojourners' explicit intentions regarding engagement with host culture and maintenance of their heritage cultural identity. It might be the case that explicit intentions (e.g., identification with American culture) prove to be a moderating factor of some of the current self-construal alignment findings.

Additionally, given the impact that engaging in high quality interactions meeting contact theory conditions seems to have on psychological processes in the cultural evaluation domain, this research might suggest an alternative explanation for a sensitive period for acculturation (e.g., Cheung et al., 2011; Minoura, 1992). While in the current paper I focused on adults (or at least young adults older than 16) to keep the discussion simple, the Cheung

and colleagues' (2011) findings for Hong Kong Chinese who immigrated to Canada *before* the age 16 actually *did* show increased identification with Canadian culture. They used the sensitive period explanation. However, it is possible that children are able to acculturate better in terms of identification with a host culture (and possibly the other cultural evaluation domain constructs) because the majority of their daily interactions (i.e., interactions in primary and secondary school classrooms) are structured in such a way to foster more high quality interactions than adults' interactions are. Teachers and school administrators are able to structure the interactions to an even greater degree than can university professors and administrators, and likely encourage equal status between students, encourage group activities toward common goals (assignments), and require cooperation in those group activities. Furthermore, these students interact with the same classmates regularly and thus most interactions with classmates have friendship potential, at least in terms of repeated interaction opportunity.

### **Application to Cultural Psychology Literature**

This work might also inform cultural psychology literature by testing theories of *how* psychological processes may come to exist in their different forms across varied cultural contexts. Kitayama and colleagues (2009) proposed the concept of engagement in cultural tasks (or "cultural practices" examined here) to meet cultural mandates. Life-long repeated engagement in such practices is presumably incorporated into habitual tendencies. As tested in Study 2, there is evidence that engagement in relatively more independent cultural practices (at least in terms of those that are activity-based) across a week's time are linked with increases in relatively independent self-construals for those who begin with greater relatively interdependent self-construals. Replications of this work with refined emotion-based practice measures would prove helpful in strengthening support for this theory.

### **Application to Intergroup Attitudes Literature**

The portion of this research examining factors that may influence acculturation in the cultural evaluation domain is consistent with intergroup attitudes research. I tested engagement in interactions that meet contact theory conditions, as well as interactions that simply meet basic quality and quantity features, and found that condition-meeting interactions more consistently predicted positive evaluations (i.e., across all four measures of cultural evaluation). This suggests that that meeting contact theory conditions might be the most productive for improving intergroup attitudes, at least for this sample. This is consistent with a large meta analysis of intergroup contact research showing that basic intergroup contact is sufficient for prejudice reduction, but that meeting Allport's conditions provides a stronger reduction of prejudice (Pettigrew & Tropp, 2006). This was particularly the case for those studies that similarly tested these conditions simultaneously.

### **Application to College Campus Life in the U.S.**

Incorporating the Study 2 findings regarding potential psychological processes-influencing factors, and Study 1 findings linking change in those psychological process with better mental health, begs a consideration of related short-term intervention strategies to help International students better adjust in new cultures. Activity-based cultural practices and intergroup contact conditions that were tested here may be applicable to the college environment. The majority of activity-based cultural practices chosen for the measure were proposed by actual American college and university administrators as independent strivings that may promote success at these schools (Stephens et al., 2012). While these research findings suggest that emphasis on such ideals by the institution (e.g., university) can actually hurt a subset of relatively interdependent Americans (i.e., those of lower socioeconomic status) at these universities, the current study suggests that it might be important to carefully

promote these cultural practices, or at least teach East Asian international students about cultural values embedded in daily practices, and strategies to deal with them.

This work is not intended to suggest that the independent cultural mandate is morally more acceptable than any other, but simply that International students may be required to quickly learn to function in an institutional setting with subtle—and less subtle—expectations for independent behavior. Furthermore, one consideration that must be made in the larger picture of this work, is whether such changes are truly the best option for international students or the American society as a whole. It could be the case that promoting modifications to one's psychological tendencies to adhere to the host culture may improve international students' mental health in the short term, as found in Study 1. However, that improved mental health could be due to an acceptance of a status quo that is not the ideal. Tensions which lead to short-term mental health challenges may be a potential catalyst for real, lasting, positive societal change if handled in a different manner than I am suggesting here. However, such societal change to accommodate students from multiple cultural backgrounds will require longer-term change initiatives targeted at a higher societal level, supported by multiple institutions. In the meantime, I suggest considering employing a few lessons learned from this work to help individual international students to make small improvements in his or her experiences in the short term.

### **Relationship between Cultural Mandate and Evaluation Domains**

One question that arises from this work is how the two proposed psychological process domains are related. In Studies 1a and 1b, I found that East Asian international students began to align with the American culture in the cultural mandate domain over time, but showed no change, or a slightly negative change in the cultural evaluation domain. This would suggest that these two domains are largely independent, and follow-up analyses



indicating little correlation between measures across domains at each time point further supports this possibility.

Despite the data, it is possible that these two domains are related, but differ in terms of their rates of change, or more specifically, in terms of how quickly the situational requirements for change in each domain are satisfied and how change in one may lead to change in the other domain over time. As suggested by a combination of the three studies, attunement to context and cultural practice engagement that can promote cultural mandate alignment occur relatively immediately after arrival in a host culture. On the other hand, engaging in intergroup contact that greatly meets intergroup contact theory conditions to presumably promote more positive attitudes toward, and identification with, host culture (i.e., more positive cultural evaluations) may be more challenging and uncommon for the average East Asian international student in the short-term. It could be the case that with longer-term examination of this type of Sojourner group (or possibly even just different sort of analyses over a similar period of time), a researcher might find that as individuals' psychological processes begin to align with host culture in the cultural mandate domain, these Sojourners begin to develop increased feelings of competency in interacting with those from the host culture. In turn, these Sojourners might increase their attempts with such interactions and experience greater quality intergroup interactions and thus more positive evaluations of American culture. This would be an excellent next step in future research.

### **Handling of Independence and Interdependence**

To simplify representation of general changes over time, in my main analyses, I represent independence and interdependence with a singular value: relative independence (e.g., subtracting mean interdependence from mean independence with the Singelis scale).

While this aligns with the approach many researchers follow, others handle these as separate,

parallel constructs. This is consistent with recent research that indicates individuals can simultaneously hold high independent and high interdependent self-construals. In order to fully represent my findings with this approach, I also separated independence and interdependence for all analyses (both with the Singelis scale and with the Cultural Practice Engagement measures). Results were presented in footnotes.

It may be noted that variation across these two approaches existed, with separate analyses showing generally weaker results for changes over time in Studies 1a and 1b, but significantly stronger results throughout Study 2. As can be seen in Tables 9 and 10, these constructs are correlated in all studies, and particularly strongly in Study 2. It may be the case that the separate analyses would be the better choice for Study 2, though I kept them separate for consistency with Studies 1a and 1b.

### **Limitations**

The most obvious limitation to the current study is that no control group is included. It is important to examine whether American (or similar Western culture-originating) students who arrive at university show similar patterns of alignment in the cultural mandate domain to explore whether the observed pattern is specific to individuals who are transitioning to a new culture or can be observed for any individuals who adjust to a college life. I originally aimed to obtain parallel data for American students at UW-Madison, or for students studying abroad in Asian countries that could be analyzed as a comparison, but limited time and resources made this sample a major recruitment challenge. Promising is existing research showing decreases in Canadian English Teachers' self-esteem while in Japan (Heine & Lehman, 2004). This may suggest that analogous changes in the cultural mandate domain (i.e., higher interdependence and lower independence) might have been found for an American sample of students in Asian cultures

I focus these initial acculturation studies to experiences of Sojourners, specifically East Asian international students, predominantly of Chinese origin, in a large Midwestern American university. The limitation of beginning with college-student population is present here as it is in many research studies: results are limited in generalization. Ideally this work would apply to other age groups besides young adults, other cultures besides East Asians, and other settings beyond the large university. At the same time, to the extent that one's background influences one's daily interactions with Americans and engagement in cultural practices, the resulting changes in psychological processes may differ. Overall, the findings with this population are important in themselves, but it is necessary for one to maintain an awareness that they may only apply to this single population. Finding in this research should be combined with additional existing and future work incorporating wider populations and cultures.

As suggested previously, Study 1 should be replicated with larger numbers of East Asian international student participants in order to assure stability. However, if taken as preliminary findings, these data should inform several new areas of exploration for a few bodies of literature, and the methods employed may be leveraged in planning additional future longitudinal acculturation studies. Furthermore, given that the current study design is largely correlation-based, it will be important to follow-up with experimental studies to better ascertain directionality between the current study's proposed psychological process changes and mental health, and between proposed predictors and psychological processes.

Finally, in my dissertation, I examined only one type of psychological process in the cultural mandate domain: self-construal. This was chosen as a good place to start because it is such a central psychological process, and may be most likely influenced by cultural mandates and engagement in associated practices. Additionally, it has received limited attention in

acculturation literature despite its core role in cultural psychology research. It would be beneficial to examine other psychological processes that fall into the cultural mandate domain, such as tendencies toward influence versus adjustment and motivation.

### **Conclusion**

In my dissertation, I have provided preliminary evidence for how several psychological processes may change over time with engagement in foreign cultures, potential factors that may lead to such changes, and potential mental health implications. By showing how psychological processes change in response to exposure to a new culture and experiences in daily life, my dissertation illustrates how socio-cultural contexts may dynamically influence our psychological processes. In order to do so, this work employed multiple study designs (multi-year longitudinal data collection, daily diary data collection), an advanced statistical technique (Hierarchical Linear Modeling), and integrated multiple bodies of research (acculturation, cross-cultural psychology and intergroup attitudes). This research may enrich acculturation, cross-cultural psychology, and intergroup attitudes areas of research. It is my hope that the current findings will not only contribute to the advancement of the relevant fields, but also inform programs to help people who are struggling as they navigate their way in a new cultural context.<sup>18</sup>

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## References

- Allport, G. W. (1954). *The nature of prejudice*. Oxford England: Addison-Wesley.
- Barlow, F., Paolini, S., Pedersen, A., Hornsey, M. J., Radke, H. M., Harwood, J., Rubin, M., & Sibley, C. G. (2012). The contact caveat: Negative contact predicts increased prejudice more than positive contact predicts reduced prejudice. *Personality and Social Psychology Bulletin*, 38(12), 1629-1643. doi:10.1177/0146167212457953
- Berry, J. W. (1990). Psychology of acculturation. In J. Berman (Ed.), *Cross-cultural perspectives: Nebraska Symposium on Motivation* (pp. 201-234). Lincoln: University of Nebraska Press.
- Berry, J. W. (1997). Immigration, acculturation, and adaptation. *Applied Psychology: An International Review*, 46, 5-68.
- Berry, J. W. (1999). Intercultural relations in plural societies. *Canadian Journal of Psychology*, 40, 12-21.
- Berry, J. W. (2003). Conceptual approaches to acculturation. In K. M. Chun, P. Balls Organista, & G. Marín (Eds.), *Acculturation: Advances in theory, measurement, and applied research* (pp. 17-37). Washington, DC: American Psychological Association.
- Bond, M. H., & Cheung, T. S. (1983). College students' spontaneous self-concept: The effect of culture among respondents in Hong Kong, Japan, and the United States. *Journal of Cross-Cultural Psychology*, 14, 153-171.
- Chentsova-Dutton, Y. & Tsai, J.L. (2010). Self-focused attention and emotional reactivity: The role of culture. *Journal of Personality and Social Psychology*, 98, 507-519.
- Cheung, B. Y., Chudek, M., & Heine, S. J. (2011). Evidence for a sensitive period for acculturation: Younger immigrants report acculturating at a faster rate. *Psychological Science*, 22, 147-152.

- Church, A. T. (1982). Sojourner adjustment. *Psychological Bulletin*, 91(3), 540-572.  
doi:10.1037/0033-2909.91.3.540.
- Cohen, J. (1988). *Statistical power analysis for the behavioral sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.
- Cohen, S., Kamarck, T., Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior*, 24, 385-396.
- Cohen, S., & Williamson, G. (1988). Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. Newbury Park, CA: Sage.
- Cousins, S. D. (1989). Culture and self-perception in Japan and the United States. *Journal of Personality and Social Psychology*, 56, 124-131.
- Cross, S. E. (1995). Self-construals, coping, and stress in cross-cultural adaptation. *Journal of Cross-Cultural Psychology*, 26(6), 673-697. doi:10.1177/002202219502600610.
- De Leersnyder, J., Mesquita, B., & Kim, H. (2011). Where do my emotions belong? A study of immigrants' emotional acculturation. *Personality and Social Psychology Bulletin*, 37(4), 451-463.
- Devins, G.M., and Orme, C.M. (1985). "Center for Epidemiologic Studies Depression Scale." *Test Critiques*, 21(3), 267-283.
- Duffy, S., Toriyama, R., Itakura, S., & Kitayama, S. (2009). Development of cultural strategies of attention in North American and Japanese children. *Journal of Experimental Child Psychology*, 102, 351-359.
- Eggen, A., Miyamoto, Y., & Uchida, Y. (2012). Cultural Differences in Expression-Based versus Sensing-Based Communication: Interpersonal Mechanisms and Implications

- for Relationship Quality. Unpublished manuscript. University of Wisconsin-Madison, Madison, WI.
- Hechanova-Alampay, R., Beehr, T. A., Christiansen, N. D., & Van Horn, R. K. (2002). Adjustment and Strain among Domestic and International Student Sojourners A Longitudinal Study. *School Psychology International*, 23(4), 458-474.
- Heine, S. J., & Hamamura, T. (2007). In search of East Asian self-enhancement. *Personality and Social Psychology Review*, 11, 1–24.
- Heine, S. J., & Lehman, D. R. (2004). Move the Body, Change the Self: Acculturative Effects of the Self-Concept. In M. Schaller, C. S. Crandall, M. Schaller, C. S. Crandall (Eds.), *The psychological foundations of culture* (pp. 305-331). Mahwah, NJ US: Lawrence Erlbaum Associates Publishers.
- Iyengar, S. S., & Lepper, M. R. (1999). Rethinking the value of choice: A cultural perspective on intrinsic motivation. *Journal of Personality and Social Psychology*, 76, 349-366.
- Ji, L. J. (2008). The leopard cannot change his spots, or can he? Culture and the development of lay theories of change. *Personality and Social Psychology Bulletin*, 34, 613-622.
- Kim, H., & Markus, H. (1999). Deviance or uniqueness, harmony or conformity? A cultural analysis. *Journal of Personality and Social Psychology*, 77(4), 785-800.  
doi:10.1037/0022-3514.77.4.785.
- Kitayama, S., Duffy, S., & Uchida, Y. (2007). Self as cultural mode of being. In S. Kitayama & D. Cohen (Eds.), *Handbook of Cultural Psychology*, pp 136-174. New York, NY: Guilford Press.
- Kitayama, S., Markus, H., & Kurokawa, M. (2000). Culture, emotion, and well-being: Good feelings in Japan and the United States. *Cognition and Emotion*, 14, 93-124.

- Kitayama, S., Markus, H., Matsumoto, H., & Norasakkunkit, V. (1997). Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology*, 72(6), 1245-1267. doi:10.1037/0022-3514.72.6.1245.
- Kitayama, S., Mesquita, B., & Karasawa, M. (2006). Cultural affordances and emotional experience: Socially engaging and disengaging emotions in Japan and the United States. *Journal of Personality and Social Psychology*, 91(5), 890-903. doi:10.1037/0022-3514.91.5.890.
- Kitayama, S., Park, H., Sevincer, A., Karasawa, M., & Uskul, A. K. (2009). A cultural task analysis of implicit independence: Comparing North America, Western Europe, and East Asia. *Journal Of Personality And Social Psychology*, 97(2), 236-255. doi:10.1037/a0015999.
- Kito, M. (2005). Self-disclosure in romantic relationships and friendships among American and Japanese college students. *The Journal of Social Psychology*, 145, 127-140.
- Leu, J., Mesquita, B., Ellsworth, P. C., ZhiYong, Z., Huijuan, Y., Buchtel, E., & ... Masuda, T. (2010). Situational differences in dialectical emotions: Boundary conditions in a cultural comparison of North Americans and East Asians. *Cognition and Emotion*, 24, 419-435.
- Lockwood, P., Marshall, T. C., & Sadler, P. (2005). Promoting success or preventing failure: Cultural differences in motivation by positive and negative role models. *Personality and Social Psychology Bulletin*, 31(3), 379-392.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224-253.



- Markus, H. R., & Kitayama, S. (2010). Cultures and selves: A cycle of mutual constitution. *Perspectives on Psychological Science, 5*, 420-430.
- Mesquita, B. (2001). Emotions in collectivist and individualist contexts. *Journal of Personality and Social Psychology, 80*, 68-74.
- Miller, J. G. (1984). Culture and the development of everyday social explanation. *Journal of Personality and Social Psychology, 46*, 961-978.
- Minoura, Y. (1992). A sensitive period for the incorporation of a cultural meaning system: A study of Japanese children growing up in the United States. *Ethos, 20*, 304-339.
- Miyamoto, Y., & Eggen, A. (2013). Cultural perspectives. In J. DeLamater & A. Ward (Eds.), *Handbook of Social Psychology*. Springer.
- Miyamoto, Y., & Ma, X. (2011). Dampening or savoring positive emotions: A dialectical cultural script guides emotion regulation. *Emotion, 11*, 1346-1357.
- Miyamoto, Y., & Ryff, C. (2011). Cultural differences in the dialectical and non-dialectical emotional styles and their implications for health. *Cognition and Emotion, 25*, 22-30.
- Morling, B., Kitayama, S., & Miyamoto, Y. (2002). Cultural practices emphasize influence in the United States and adjustment in Japan. *Personality and Social Psychology Bulletin, 28*, 311-323.
- Na, J., Grossmann, I., Varnum, M. W., Kitayama, S., Gonzalez, R., & Nisbett, R. E. (2010). Cultural differences are not always reducible to individual differences. *PNAS Proceedings Of The National Academy Of Sciences Of The United States Of America, 107*(14), 6192-6197. doi:10.1073/pnas.1001911107.
- Oishi, S., & Diener, E. (2001). Goals, culture, and subjective well-being. *Personality and Social Psychology Bulletin, 27*, 1674-1682.

- Pettigrew, T. F. (1998). Intergroup contact theory. *Annual Review of Psychology*, 49, 465-85. doi:10.1146/annurev.psych.49.1.65.
- Pettigrew, T. F., & Tropp, L. R. (2006). A meta-analytic test of intergroup contact theory. *Journal of Personality and Social Psychology*, 90(5), 751-783. doi:10.1037/0022-3514.90.5.751.
- Radloff, L.S. 1977. "The CES-D Scale: A self-report depression scale for research in the general population." *Applied Psychology Measurement*, 1(3), 385-401.
- Redfield, R., Linton, R., & Herskovits, M.J. (1936). Memorandum for the study of acculturation. *American Anthropologist*, 38, 149-152.
- Roberts, R.E., and Vernon, S.W. 1983. "The center for epidemiologic studies depression scale: Its use in a community sample." *American Journal of Psychiatry*, 140(1), 41-46.
- Ryder, A. G., Alden, L. E., & Paulhus, D. L. (2000). Is acculturation unidimensional or bidimensional? A head-to-head comparison in the prediction of personality, self-identity, and adjustment. *Journal of Personality and Social Psychology*, 79(1), 49-65.
- Salant, T., & Lauderdale, D. S. (2003). Measuring culture: a critical review of acculturation and health in Asian immigrant populations. *Social science & medicine*, 57(1), 71-90.
- Schwartz, S. J., Unger, J. B., Zamboanga, B. L., & Szapocznik, J. (2010). Rethinking the concept of acculturation: implications for theory and research. *American Psychologist*, 65(4), 237-251.
- Semin, G. R., & Fiedler, K. (1988). The cognitive functions of linguistic categories in describing persons: Social cognition and language. *Journal of Personality and Social Psychology*, 54(4), 558-568.

- Singelis, T. (1994). The measurement of independent and interdependent self-construals. *Personality and Social Psychology Bulletin*, 20, 580-591.
- Snyder, M. (1974). Self-monitoring of expressive behavior. *Journal of Personality And Social Psychology*, 30(4), 526-537. doi:10.1037/h0037039.
- Stephens, N. M., Fryberg, S. A., Markus, H., Johnson, C. S., & Covarrubias, R. (2012). Unseen disadvantage: How American universities' focus on independence undermines the academic performance of first-generation college students. *Journal of Personality and Social Psychology*, 102(6), 1178-1197. doi:10.1037/a0027143.
- Suinn, R. M., Ahuna, C., Khoo, G. (1992). The Suinn-Lew Asian Self-Identity Acculturation Scale: Concurrent and factorial validation. *Educational & Psychological Measurement*, 52(4), 1041-1046.
- Szapocznik, J., Kurtines, W.M., & Fernandez, T. (1980). Bicultural adjustment and involvement in Hispanic American youths. *International Journal of Intercultural Relations*, 4, 353-365.
- Turner, R.J., and Avison, W.R. 1992. "Innovations in the measurement of life stress: Crisis theory and the significance of event resolution." *Journal of Health and Social Behavior*, 33, 36-50.
- Uchida, Y., Townsend, S. M., Markus, H., & Bergsieker, H. B. (2009). Emotions as within or between people? Cultural variation in lay theories of emotion expression and inference. *Personality and Social Psychology Bulletin*, 35, 1427-1439.
- Weisz, J. R., Rothbaum, F. M., & Blackburn, T. C. (1984). Standing out and standing in: The psychology of control in America and Japan. *American Psychologist*, 39, 955-969.

Zhang, J. & Goodson, P. (2011). Predictors of international students' psychosocial adjustment to life in the United States: A systematic review. *International Journal of Intercultural Relations*, 35, 139-162.

*Appendix A1. Self-construal Scale*

In this part, we would like you to read each statement and indicate the extent to which you believe it describes yourself. Please record your judgment by circling one number on the scale.

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>			
Doesn't describe me at all	Doesn't describe me much	Don't know	Describes me somewhat	Describes me very much			
1. I always try to have my own opinions.			1	2	3	4	5
2. I am comfortable with being singled out for praise or rewards.			1	2	3	4	5
3. The best decisions for me are the ones I made by myself.			1	2	3	4	5
4. In general I make my own decisions.			1	2	3	4	5
5. I act the same way no matter who I am with.			1	2	3	4	5
6. I am not concerned if my ideas or behavior are different from those of other people.			1	2	3	4	5
7. I always express my opinions clearly.			1	2	3	4	5
8. Being able to take care of myself is a primary concern for me.			1	2	3	4	5
9. I enjoy being unique and different from others in many respects.			1	2	3	4	5
10. I do my own thing, regardless of what others think.			1	2	3	4	5
11. I am concerned about what people think of me.			1	2	3	4	5
12. In my own personal relationships I am concerned about the other person's status compared to me and the nature of our relationship.			1	2	3	4	5
13. I think it is important to keep good relations among one's acquaintances.			1	2	3	4	5
14. I avoid having conflicts with members of my group.			1	2	3	4	5
15. When my opinion is in conflict with that of another person's, I often accept the other opinion.			1	2	3	4	5
16. I respect people who are modest about themselves.			1	2	3	4	5
17. I will sacrifice my self-interest for the benefit of the group I am in.			1	2	3	4	5
18. I often have the feeling that my relationships with others are more important than my own accomplishment.			1	2	3	4	5
19. I feel my fate is intertwined with the fate of those around me.			1	2	3	4	5
20. Depending on the situation and the people that are present, I will sometimes change my attitude and behavior.			1	2	3	4	5

*Appendix A2. Five statements test*

In the five blanks below please make five different statements about yourself, which describe who you are, what kind of person you are, characteristics you have, and the like. Answer as if you are giving the answers to yourself, not to somebody else. Write your answers in the order they occur to you. Don't worry about logic or importance. Go along fairly fast.

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_
4. \_\_\_\_\_
5. \_\_\_\_\_

*Appendix A3. Preference for associating with Americans over Asians*

Choose the one answer which best describes you.

If you could pick, whom would you prefer to associate with in the community?

- a) Almost exclusively Asians, Asian-Americans, Orientals
- b) Mostly Asians, Asian-Americans, Orientals
- c) About equally Asian groups and Anglo groups
- d) Mostly Anglos, Blacks, Hispanics, or other non-Asian ethnic groups
- e) Almost exclusively Anglos, Blacks, Hispanics, or other non-Asian ethnic groups

*Appendix A4. Thermometer Scale*

We are interested in people's attitudes toward different cultures. Below you will see something that looks like a thermometer. You will be using this to indicate your overall evaluation of these cultures. Here's how it works: if you have a favorable attitude toward members of this culture, you would give the group a score somewhere between 50° and 100°, depending on how favorable your evaluation is. On the other hand, if you have an unfavorable attitude toward members of this group, you would give the group a score somewhere between 0° and 50°, depending on how unfavorable your evaluation is. The degree labels will help you to place your evaluation. However, you are not restricted to the numbers indicated – feel free to use any number between 0 and 100. Please be honest.

FAVORABLE	100°	Extremely favorable
	90°	Very favorable
	80°	Quite favorable
	70°	Fairly favorable
	60°	Slightly favorable
	50°	Neither favorable nor unfavorable
	40°	Slightly unfavorable
	30°	Fairly unfavorable
	20°	Quite unfavorable
	10°	Very unfavorable
UNFAVORABLE	0°	Extremely unfavorable

1. Thermometer rating for European/European American culture:
2. Thermometer rating for Hispanic/Hispanic American culture:
3. Thermometer rating for Asian/Asian American culture:
4. Thermometer rating for African/African American culture:
5. If you are an international student, thermometer rating for your own culture:



*Appendix A5. American Artifact liking*

Please circle the number that best describes your feelings.

I enjoy...

	Not at all				Very much
1. American music	1	2	3	4	5
2. American -oriented places	1	2	3	4	5
3. American -type recreation	1	2	3	4	5
4. American T.V. programs	1	2	3	4	5
5. American radio stations	1	2	3	4	5
6. American books and magazines	1	2	3	4	5

*Appendix A6: Identification with American Culture*

In this part, please answer each question as carefully as possible by circling *one* of the numbers to the right of each question to indicate your degree of agreement or disagreement.

Many of these questions will refer to your *heritage culture*<sup>19</sup>, meaning the culture that has influenced you most (other than American culture). It may be the culture of your birth, the culture in which you have been raised, or another culture that forms part of your background. If there are several such cultures, pick the one that has influenced you *most* (e.g., Irish, Chinese, Mexican, Black). If you do not feel that you have been influenced by any other culture, please try to identify a culture that may have had an impact on previous generations of your family.

	Strongly disagree		Disagree		Neutral/Depends		Agree		Strongly agree
1. I often participate in mainstream American cultural traditions.	1	2	3	4	5	6	7	8	9
2. I would be willing to marry an American person.	1	2	3	4	5	6	7	8	9
3. I enjoy social activities with typical American people.	1	2	3	4	5	6	7	8	9
4. I am comfortable working with typical American people.	1	2	3	4	5	6	7	8	9
5. I enjoy American entertainment (e.g., movies, music).	1	2	3	4	5	6	7	8	9
6. I often behave in ways that are 'typically American.'	1	2	3	4	5	6	7	8	9
7. It is important for me to maintain or develop American cultural practices.	1	2	3	4	5	6	7	8	9
8. I believe in mainstream American values.	1	2	3	4	5	6	7	8	9
9. I enjoy typical American jokes and humor.	1	2	3	4	5	6	7	8	9
10. I am interested in having American friends.	1	2	3	4	5	6	7	8	9
11. I often participate in my heritage cultural traditions.	1	2	3	4	5	6	7	8	9
12. I would be willing to marry a person from my heritage culture.	1	2	3	4	5	6	7	8	9
13. I enjoy social activities with people from the same heritage culture as myself.	1	2	3	4	5	6	7	8	9
14. I am comfortable working with people of the same heritage culture as myself.	1	2	3	4	5	6	7	8	9
15. I enjoy entertainment (e.g., movies, music) from my heritage culture.	1	2	3	4	5	6	7	8	9
16. I often behave in ways that are typical of my heritage culture.	1	2	3	4	5	6	7	8	9
17. It is important for me to maintain or develop the practices of my heritage culture.	1	2	3	4	5	6	7	8	9
18. I believe in the values of my heritage culture.	1	2	3	4	5	6	7	8	9
19. I enjoy the jokes and humor of my heritage culture.	1	2	3	4	5	6	7	8	9
20. I am interested in having friends from my heritage culture.	1	2	3	4	5	6	7	8	9

<sup>19</sup> Only responses to the first 10 items (focusing on American culture) were assessed for the current study.

*Appendix A7. Perceived Stress*

In the last 30 days, how often have you...

	Never	Almost never	Sometimes	Fairly often	Very often
a. been upset because of something that happened unexpectedly?	1	2	3	4	5
b. felt that you were unable to control the important things in your life?	1	2	3	4	5
c. felt nervous and “stressed”?	1	2	3	4	5
d. felt confident about your ability to handle your personal problems?	1	2	3	4	5
e. felt that things were going your way?	1	2	3	4	5
f. found that you could not cope with all the things that you had to do?	1	2	3	4	5
g. been able to control irritations in your life?	1	2	3	4	5
h. felt that you were on top of things?	1	2	3	4	5
i. been angered because of things that were outside of your control?	1	2	3	4	5
j. felt difficulties were piling up so high that you couldn’t overcome them?	1	2	3	4	5

*Appendix A8. Depressive Symptoms (CES-D)*

During the past week:

	Rarely or none of the time	Some or a little of the time	Occasionally or moderate amount of the time	Most or all of the time
a. I was bothered by things that usually don't bother me.	1	2	3	4
b. I did not feel like eating; my appetite was poor.	1	2	3	4
c. I felt that I could not shake off the blues even with the help of my family and friends.	1	2	3	4
d. I felt that I was just as good as other people.	1	2	3	4
e. I had trouble keeping my mind on what I was doing.	1	2	3	4
f. I felt depressed.	1	2	3	4
g. I felt that everything I did was an effort.	1	2	3	4
h. I felt hopeful about the future.	1	2	3	4
i. I thought my life had been a failure.	1	2	3	4
j. I felt fearful.	1	2	3	4
k. My sleep was restless.	1	2	3	4
l. I was happy.	1	2	3	4
m. I talked less than usual.	1	2	3	4
n. I felt lonely.	1	2	3	4
o. People were unfriendly.	1	2	3	4
p. I enjoyed life.	1	2	3	4
q. I had crying spells.	1	2	3	4
r. I felt sad.	1	2	3	4
s. I felt that people dislike me.	1	2	3	4
t. I could not get "going."	1	2	3	4

*Appendix B1. Prior Intergroup Contact*

1. On an average day, how many minutes do you spend interacting with European Americans? *Note: By "European American" we mean "White American" throughout this survey.*

Please answer in minutes: \_\_\_\_\_

2. How many European American friends do you have currently? \_\_\_\_\_

Do you have a European American boyfriend/girlfriend or spouse?

\_\_\_\_\_ Yes    \_\_\_\_\_ No

3. On an average day, how many minutes do you spend interacting with European Americans *outside of UW-related settings*?

Please answer in minutes: \_\_\_\_\_

4. On an average day, how many minutes do you spend interacting with Asian international students?

Please answer in minutes: \_\_\_\_\_

5. How many Asian international student friends do you have currently? \_\_\_\_\_

6. Do you have an Asian international student romantic partner (boyfriend/girlfriend or spouse)?

\_\_\_\_\_ Yes    \_\_\_\_\_ No

7. If you do have Asian international student friends and/or romantic partner, please indicate the country of origin for the *majority* of them (e.g., China, Korea, India). *Note: you can leave this blank if you do not have Asian international student friends.* \_\_\_\_\_

8. On an average day, how many minutes do you spend interacting with Asian international students *in UW-related settings*? *Note: UW-related settings would include places like class, residence halls, and extracurricular activities.*

Please answer in minutes: \_\_\_\_\_

9. On an average day, how many minutes do you spend interacting with Asian international students *outside of UW-related settings*?

Please answer in minutes: \_\_\_\_\_

*Appendix B2. Self-monitoring scale*

The statements below concern your personal reactions to a number of different situations. No two statements are exactly alike, so consider each statement carefully before answering. IF a statement is TRUE or MOSTLY TRUE as applied to you, select "T". If a statement is FALSE or NOT USUALLY TRUE as applied to you, circle the "F". It is important that you answer as frankly and honestly as you can.

T	F	
		1. I find it hard to imitate the behavior of other people.
		2. My behavior is usually an expression of my true inner feelings, attitudes, and beliefs.
		3. At parties and social gatherings, I do not attempt to do or say things that others will like.
		4. I can only argue for ideas which I already believe.
		5. I can make impromptu speeches even on topics about which I have almost no information.
		6. I guess I put on a show to impress or entertain people.
		7. When I am uncertain how to act in a social situation, I look to the behavior of others for cues.
		8. I would probably make a good actor.
		9. I rarely seek the advice of my friends to choose movies, books, or music.
		10. I sometimes appear to others to be experiencing deeper emotions than I actually am.
		11. I laugh more when I watch a comedy with others than when alone.
		12. In groups of people, I am rarely the center of attention.
		13. In different situations and with different people, I often act like very different persons.
		14. I am not particularly good at making other people like me.
		15. Even if I am not enjoying myself, I often pretend to be having a good time.
		16. I'm not always the person I appear to be.
		17. I would not change my opinions (or the way I do things) in order to please someone else or win their favor.
		18. I have considered being an entertainer.
		19. In order to get along and be liked, I tend to be what people expect me to be rather than anything else.
		20. I have never been good at games like charades or improvisational acting.
		21. I have trouble changing my behavior to suit different people and different situations.
		22. At a party, I let others keep the jokes and stories going.
		23. I feel a bit awkward in company and do not show up quite as well as I should.
		24. I can look anyone in the eye and tell a lie with a straight face (if for a right end).
		25. I may deceive people by being friendly when I really dislike them.

*Appendix B3. Activity-based Daily Cultural Practices Scale*

Please read the following statements and indicate the degree to which *you felt you did each of the following* today.

Today I felt that I ...	Not at all		Somewhat		Moderately so		Very much so
	1	2	3	4	5	6	7
1. tried to be independently motivated							
2. tried to be motivated by others' high expectations							
3. tried to challenge norms and/or rules							
4. tried to adopt the norms and/or rules							
5. tried to develop personal opinions							
6. tried to adopt opinions of others							
7. tried to express myself							
8. tried to keep my thoughts to myself							
9. tried to stress my good qualities to others							
10. tried to maintain modesty							

*Appendix B4. Emotion-based Daily Cultural Practices Scale*

Please indicate how strongly you experienced each of the following emotions today.

		Did not experience at all				Experienced very strongly
1.	happiness	1	2	3	4	5
2.	elation	1	2	3	4	5
3.	calmness	1	2	3	4	5
4.	friendly feelings	1	2	3	4	5
5.	respectful	1	2	3	4	5
6.	sympathy	1	2	3	4	5
7.	pride	1	2	3	4	5
8.	superiority	1	2	3	4	5
9.	self-esteem	1	2	3	4	5
10.	unhappiness	1	2	3	4	5
11.	sadness	1	2	3	4	5
12.	fear	1	2	3	4	5
13.	boredom	1	2	3	4	5
14.	guilt	1	2	3	4	5
15.	shame	1	2	3	4	5
16.	fear of causing trouble on another	1	2	3	4	5
17.	sulky feelings	1	2	3	4	5
18.	frustration	1	2	3	4	5
19.	anger	1	2	3	4	5



Appendix B5. *Daily Contact Quality and Quantity*

1. Approximately how many minutes did you interact with European Americans today? Note: By "European American" we mean "White American" throughout this survey.

Please answer in minutes: \_\_\_\_\_

*[If they answered more than 0, then they receive the following questions]:*

2. How many of your minutes interaction with European Americans were with European American friends (or a boyfriend/girlfriend or spouse)?

Please answer in minutes: \_\_\_\_\_

3. How many of your minutes interacting with European Americans were *outside* of UW-Related settings? Note: UW-related settings would include places like class, residence halls, and extracurricular activities.

Please answer in minutes: \_\_\_\_\_

4. How intimate were the majority of those interactions with European Americans *outside of UW-related-settings*?

Very superficial						Very intimate
1	2	3	4	5	6	7

5. Approximately how many minutes did you interact with European American college students in UW-related settings today (either in class, in residence halls, or in extracurricular activities)?

Please answer in minutes: \_\_\_\_\_

*[If they answered more than 0, then they receive the following questions]:*

*As you answer the next set of questions below, think about your interactions with European American college student(s) in UW-related settings today. If you had more than one interaction like this, choose the one that was longest or most meaningful.*

*During your interactions today with American college student(s) today...*

1. Did you perceive the European American(s) as your equal?

Definitely not						Definitely yes
1	2	3	4	5	6	7

2. Were the interactions with the European Americans competitive or cooperative?

Very competitive						Very Cooperative
1	2	3	4	5	6	7

3. Did you work with the American(s) toward a common goal?

Definitely not							Definitely yes
1	2	3	4	5	6	7	

4. Did the goal you were working toward together require you and the American(s) to depend on each other to achieve it?

Definitely not						Definitely yes	
1	2	3	4	5	6	7	N/A

5. Do you feel that the interaction was supported and/or encouraged by authorities at UW (professors, university housing staff, administrators, etc)?

Not at all supported						Very supported	
1	2	3	4	5	6	7	N/A

6. Did you feel you could become friends with American(s) who you interacted with?

Definitely not						Definitely yes	
1	2	3	4	5	6	7	*

\* I was already friends with this/these European American(s) at the time of the interaction(s)

7. Were these interactions superficial or intimate?

Very superficial						Very intimate
1	2	3	4	5	6	7

8. Were these interactions generally negative or positive?

Negative						Positive
1	2	3	4	5	6	7

9. How anxious did you feel in these interactions?

Not at all anxious						Very anxious
1	2	3	4	5	6	7

*Table 1. Study 1: Summary of Changes over Time*

The following table provides means (except where indicated with the depressive symptoms) across all participants at time point 1, timepoint 2, timepoint 3, and timepoint 4.

<i>Cultural Mandate Domain</i>	TP1	TP2	TP3	TP4
Independence (Singelis)	3.58	3.64	3.62	3.82*
Interdependence (Singelis)	3.72	3.50	3.49*	3.57
Relative Independence (Singelis)	-0.14	0.14	0.13 <sup>†</sup>	0.25*
Relative Independence (FST)	1.32	2.81	3.16*	2.69 <sup>†</sup>

\*  $p < .05$ , <sup>†</sup> $p < .1$  for linear change toward a match to host culture

<i>Cultural Evaluation Domain</i>	TP1	TP2	TP3	TP4
Preference for associating with Americans over Asians	3.08	2.41	2.39*	2.44*
Thermometer ratings of European American Culture	75.82	72.50	74.07	72.22
Average liking of American things	3.68	3.60	3.51	3.49
Identification with American culture	5.93	6.00	5.71	6.51 <sup>‡</sup>

\*  $p < .05$ , <sup>†</sup> $p < .10$  for linear change toward a more negative evaluation of the host culture

<sup>‡</sup> $p < .10$  for linear change toward a more positive evaluation of the host culture

<i>Mental Health</i>	TP1	TP2	TP3	TP4
Depressive symptoms over last week	1.56	1.79	1.86	1.66
Depressive symptoms over last week (sum)	37.95	40.53	41.67	39.11
Perceived stress in last month	2.33	2.60	2.59	2.41
Perceived stress in last month (sum)	23.32	25.97	25.73	24.06

Table 2. Study 1a: Summary of changes in cultural mandate domain from TP1 to TP3

This summarizes the changes of interest in the cultural mandate domain across participants' first year. The overall effects are calculated as an average of the z-transformation of each of the effect sizes.

*Linear changes:*

Specific measure	b (Time)	p-value	Change toward host culture?	Effect size (r)
Self-construal: relative independence	0.14	.06 <sup>+</sup>	yes	0.19
TST index: relative independence	0.84	.004*	yes	0.32
<b>Overall linear effect in self-construal domain:</b>			yes	<b>.25</b>

*Quadratic changes:*

Specific measure	b (Time_qua)	p-value	Direction of change?	Effect size (r)
Self-construal: relative independence	0.05	.25	Increase, then decrease (∩)	0.06
TST index: relative independence	0.23	.11	Increase, then decrease (∩)	0.08
<b>Overall quadratic effect in self-construal domain:</b>			<b>Increase, then decrease (∩)</b>	<b>.07</b>

\* $p < .05$ , +  $p < .1$

Table 3. Study 1a: Summary of changes in cultural evaluation domain from TP1 to TP3

This summarizes the changes of interest in the cultural evaluation domain across participants' first year. The overall effects are calculated as an average of the z-transformation of each of the effect sizes.

*Linear changes:*

Specific measure	b (Time)	p-value	More positive toward host culture?	Effect size (r)
Preference for associating with Americans over Asians	-0.34	<.001*	no	-0.43
Thermometer rating: Americans	-0.86	.63	no	-0.05
American artifact liking	-0.05	0.31	no	-0.07
Identification with American culture	-0.07	0.45	no	-0.07
<b>Overall linear effect in cultural evaluation domain:</b>			<i>no</i>	<b>-0.16</b>

*Quadratic changes:*

Specific measure	b (Time_qua)	p-value	Direction of change?	Effect size (r)
Preference for associating with Americans over Asians	-0.10	.07 <sup>+</sup>	Decrease, then increase (U)	-0.13
Thermometer rating: Americans	-0.70	.57	Decrease, then increase (U)	-0.04
American artifact liking	0.01	.77	Increase, then decrease (∩)	0.02
Identification with American culture	0.05	.22	Increase, then decrease (∩)	0.06
<b>Overall quadratic effect in cultural evaluation domain:</b>			<b>Decrease, then increase (U)</b>	<b>-0.05</b>

\*  $p < .05$

*Table 4. Study 1b: Summary of changes in cultural mandate domain from TP1 to TP4*

This summarizes the changes of interest in the cultural mandate domain extended to participants' fourth year. The overall effects are calculated as an average of the z-transformation of each of the effect sizes.

*Linear changes:*

Specific measure	b (Time)	p-value	Change toward host culture?	Effect size (r)
Self-construal: relative independence	0.06	.04*	yes	0.08
TST index: relative independence	0.20	.08 <sup>+</sup>	yes	0.07
<b>Overall linear effect in self-construal domain:</b>			<i>yes</i>	<b><i>0.07</i></b>

*Quadratic changes:*

Specific measure	b (Time_qua)	p-value	Direction of change?	Effect size (r)
Self-construal: relative independence	0.05	.42	Increase, then decrease (∩)	0.06
TST index: relative independence	0.49	.02*	Increase, then decrease (∩)	0.18
<b>Overall quadratic effect in self-construal domain:</b>			<b>Increase, then decrease (∩)</b>	<b><i>0.12</i></b>

\*  $p < .05$

Table 5. Study 1b: Summary of changes in cultural evaluation domain from TP1 to TP4

This summarizes the changes of interest in the cultural evaluation domain extended to participants' fourth year. The overall effects are calculated as an average of the z-transformation of each of the effect sizes.

*Linear changes:*

Specific measure	b (Time)	p-value	More positive toward host culture?	Effect size (r)
Preference for associating with Americans over Asians	-0.10	.003*	no	-0.12
Thermometer rating: Americans	-0.30	.57	no	-0.02
American artifact liking	-0.02	0.31	no	-0.04
Identification with American culture	0.07	.07 <sup>+</sup>	yes	0.07
<b>Overall linear effect in cultural evaluation domain:</b>			<b>no</b>	<b>-0.03</b>

*Quadratic changes:*

Specific measure	b (Time_qua)	p-value	Direction of change?	Effect size (r)
Preference for associating with Americans over Asians	-0.18	.045*	Decrease, then increase (U)	-0.22
Thermometer rating: Americans	-0.75	.52	Decrease, then increase (U)	-0.05
American artifact liking	0.01	.80	Increase, then decrease (∩)	0.02
Identification with American culture	-0.15	.045*	Decrease, then increase (U)	-0.15
<b>Overall quadratic effect in cultural evaluation domain:</b>			<b>Decrease, then increase (U)</b>	<b>-0.08</b>

\*  $p < .05$

*Table 6. Study 2: Prior Intergroup Contact Descriptive Statistics*

This table provides descriptive information regarding the average daily level of interaction (in minutes per day) that participants reported experiencing, on average at pretest, with both European American students and East Asian international student. Note that the "% who responded with '0' column" is the only column in which units reported are not "minutes per day".

	M	SD	Range	% who responded with "0"	25th Percentile	50th Percentile
Interacting with European Americans (in general)	161.05	281.73	0–2000	8.60%	20	90
Interacting with European Americans outside of UW settings	24.88	42.41	0–240	43.10%	0	5
Interacting with Asian International students	354.47	532.46	5–3600	0%	120	240
Interacting w/ Asian International students outside of UW settings	136.38	186.40	0–1080	8.60%	30	60



Table 7. Study 2: Summary of Changes over Time

The following table provides means (except where indicated as sums) and standard deviation across all participants at pretest and each post-test. Subscripts indicate whether each predictor significantly predicts a positive change (unless indicated in the key below the tables) in the construct from pretest to the post-test of focus.

Cultural Mandate Domain	Pretest		Post-Test 1		Post-Test 2	
	Mean	SD	Mean	SD	Mean	SD
Independence (Singelis)	3.65	0.07	3.74 <sup>a</sup>	0.08	3.77 <sup>a</sup>	0.08
Interdependence (Singelis)	3.83	0.06	3.73 <sup>a</sup>	0.07	3.76 <sup>a</sup>	0.07
Relative Independence (Singelis)	-0.18	0.08	0.01 <sup>a+</sup>	0.07	0.01	0.09
Relative Independence (FST)	-1.94	0.21	-1.29	0.21	-1.24	0.24

<i>Cultural Evaluation Domain</i>	Pretest		Post-Test 1		Post-Test 2	
	Mean	SD	Mean	SD	Mean	SD
Preference for associating	2.72	0.1	2.79 <sup>c,q+,d+</sup>	0.09	2.67 <sup>g+,q,d</sup>	0.1
Thermometer ratings	76.59	2.35	73.5 <sup>c</sup>	2.18	75.77 <sup>c+</sup>	2.37
Average liking of artifacts	3.74	0.09	3.73 <sup>c</sup>	0.08	3.83	0.09
Identification with American culture	6.19	0.13	6.04 <sup>c</sup>	0.12 <sup>q+</sup>	6.39 <sup>c,q,d+</sup>	0.14

<i>Mental Health</i>	Pretest		Post-Test1		Post-Test 2	
	Mean	SD	Mean	SD	Mean	SD
Depressive symptoms	1.9	0.06	1.95	0.06	2.03	0.08
Depressive symptoms (sum)	37.93	1.29	38.69	1.16	40.6	1.51
Perceived stress	2.88	0.07	2.82 <sup>e,g+</sup>	0.06	2.93	0.08
Perceived stress (sum)	28.79	0.7	28.12	0.65	29.3	0.85

<sup>a</sup>  $p < .05$ , <sup>a+</sup>  $p < .10$  for activity-based cultural practice engagement predicting change

<sup>c</sup>  $p < .05$  for emotion-based cultural practice engagement predicting change

<sup>c</sup>  $p < .05$ , <sup>c+</sup>  $p < .10$  for contact condition-based quality predicting change

<sup>g+</sup>  $p < .10$  for general contact quality predicting change in the direction opposite to prediction

<sup>q</sup>  $p < .05$ , <sup>q+</sup>  $p < .10$  for quantity of contact predicting change

<sup>d</sup>  $p < .05$ , <sup>d+</sup>  $p < .10$  for quantity of deep contact predicting a change

*Table 8. Study 2: Daily Diary Cultural Practice Engagement and Intergroup Contact Quality and Quantity Descriptive Statistics*

This table provides descriptive statistics for daily diary measures. Responses for each question were averaged across the five daily diary days for each participant, and those means were utilized to calculate these descriptive statistics across all participants.

Predictor		Mean	SD	Minimum	Maximum
Activity-based Cultural Practice Engagement	Independent	4.51	1.11	1.48	6.76
	Interdependent	4.29	1.06	1.40	6.76
	Relatively independent	0.35	0.90	-0.96	4.32
Emotion-based Cultural Practice Engagement	Independent	2.41	0.53	1.10	3.40
	Interdependent	2.59	0.48	1.50	3.44
	Relatively independent	-0.21	0.38	-1.08	0.83
Intergroup contact	Contact-based condition quality	33.00	5.61	12.20	43.00
	General contact quality	4.78	1.35	-1.87	6.33
	Contact quantity	103.85	108.89	0.00	474.00
	Deep contact quantity	60.72	83.16	0.00	376.00

Table 9. Study 1: Self-Construal Correlations

This table presents Pearson correlations between average independent and interdependent self-construals across each of the four timepoints.

	TP1 Independence	TP2 Independence	TP3 Independence	TP4 Independence	TP1 Interdependence	TP2 Interdependence	TP3 Interdependence	TP4 Interdependence
TP1 Independence	1	.315	.170	.547*	-.400*	-.160	-.288	.019
TP2 Independence	.315	1	.598**	.579*	.028	.464**	.138	.181
TP3 Independence	.170	.598**	1	.670**	-.211	.419*	.120	.335
TP4 Independence	.547*	.579*	.670**	1	-.332	.333	-.345	.395
TP1 Interdependence	-.400*	.028	-.211	-.332	1	.272	.219	.022
TP2 Interdependence	-.160	.464**	.419*	.333	.272	1	.342	.507*
TP3 Interdependence	-.288	.138	.120	-.345	.219	.342	1	-.131
TP4 Interdependence	.019	.181	.335	.395	.022	.507*	-.131	1

\*Correlation is significant at the 0.05 level (2-tailed). \*\*Correlation is significant at the 0.01 level (2-tailed).

Table 10. Study 2: Self-Construal Correlations

This table presents Pearson correlations between independent and interdependent self-construals at pretest, post-test 1, and post-test 2.

	Pre: Independence	Pre: Interdependence	Post1: Independence	Post1: Interdependence	Post2: Independence	Post2: Interdependence
Pre: Independence	1	.226	.674**	.265*	.629**	.099
Pre: Interdependence	.226	1	.310*	.494**	.237	.518**
Post1: Independence	.674**	.310*	1	.498**	.688**	.246
Post1: Interdependence	.265*	.494**	.498**	1	.385**	.621**
Post2: Independence	.629**	.237	.688**	.385**	1	.272
Post2: Interdependence	.099	.518**	.246	.621**	.272	1

\*Correlation is significant at the 0.05 level (2-tailed).

\*\*Correlation is significant at the 0.01 level (2-tailed).

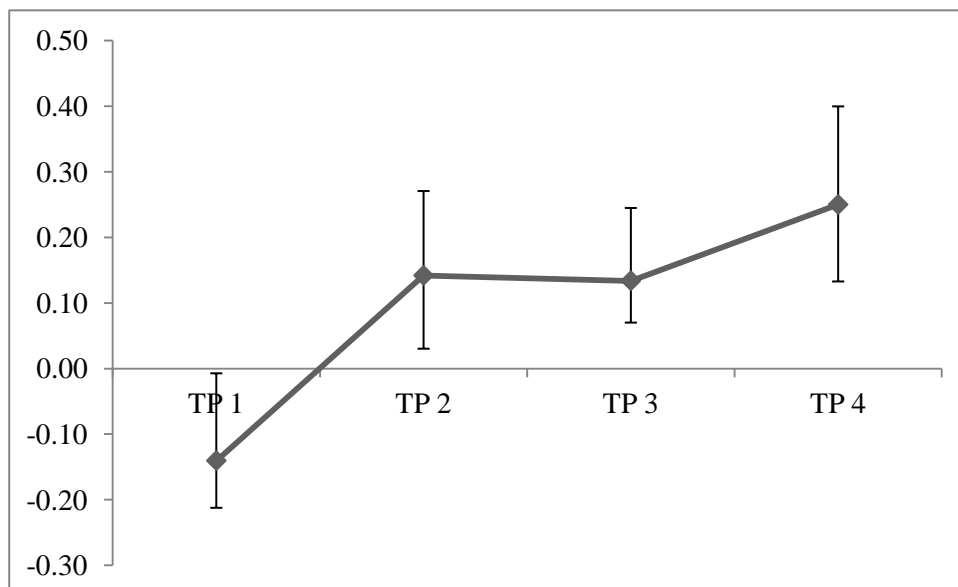
*Table 11. Study 2: Cultural Practice Engagement Correlations*

*This table presents Pearson correlations between average independent and interdependent cultural practice engagement across the five daily diary days.*

	Independent activity- based engagement	Interdependent activity-based engagement	Independent emotion-based engagement	Interdependent emotion-based engagement
Independent activity- based engagement	1	.857**	.469**	.356**
Interdependent activity-based engagement	.857**	1	.464**	.407**
Independent emotion-based engagement	.469**	.464**	1	.790**
Interdependent emotion-based engagement	.356**	.407**	.790**	1

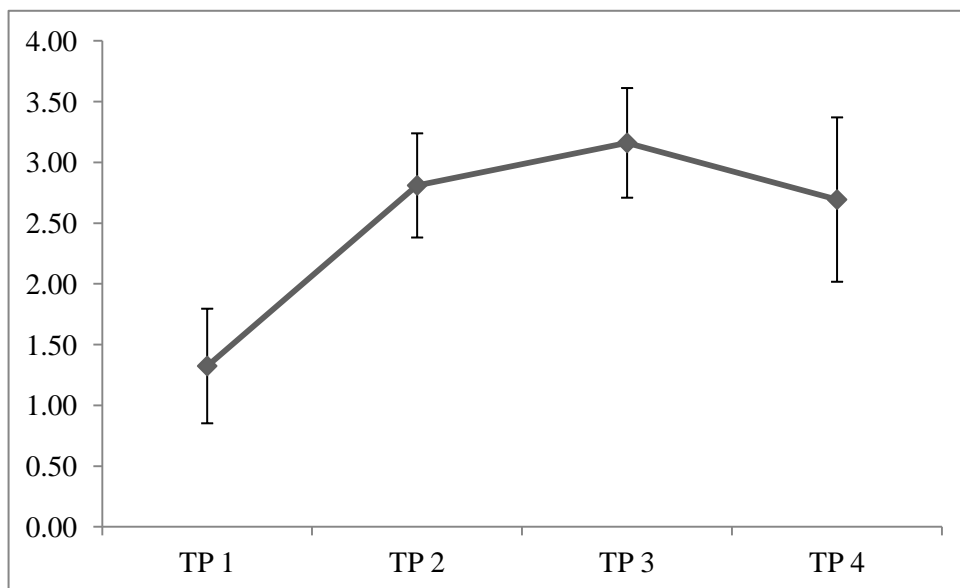
\*\*Correlation is significant at the 0.01 level (2-tailed).

*Figure 1. Study 1: Relative Independence Means - Singelis Scale*



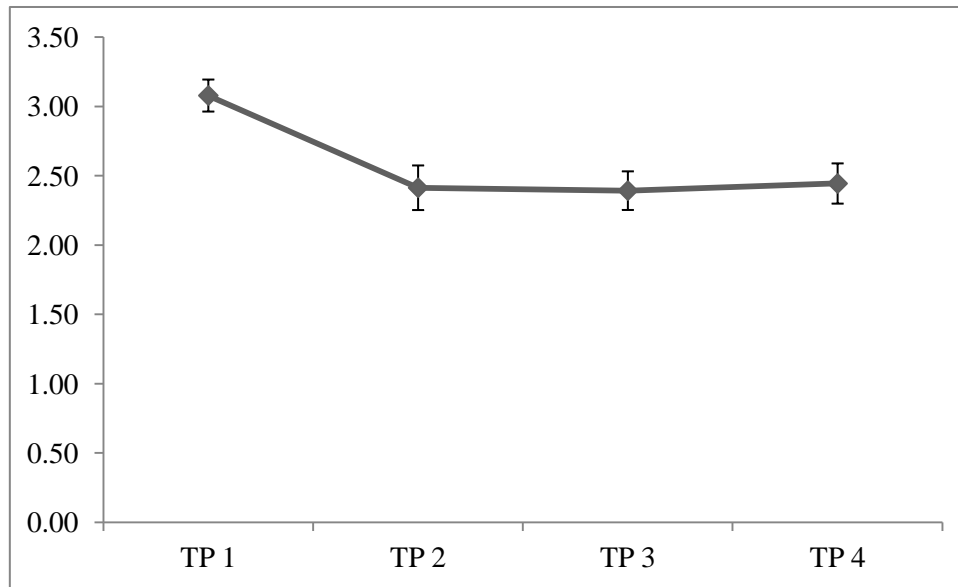
Error bars represent 1 standard error above and below the mean.

Figure 2. Study 1: Relative Independence Means - Five Statements Test (Index)



Error bars represent 1 standard error above and below the mean.

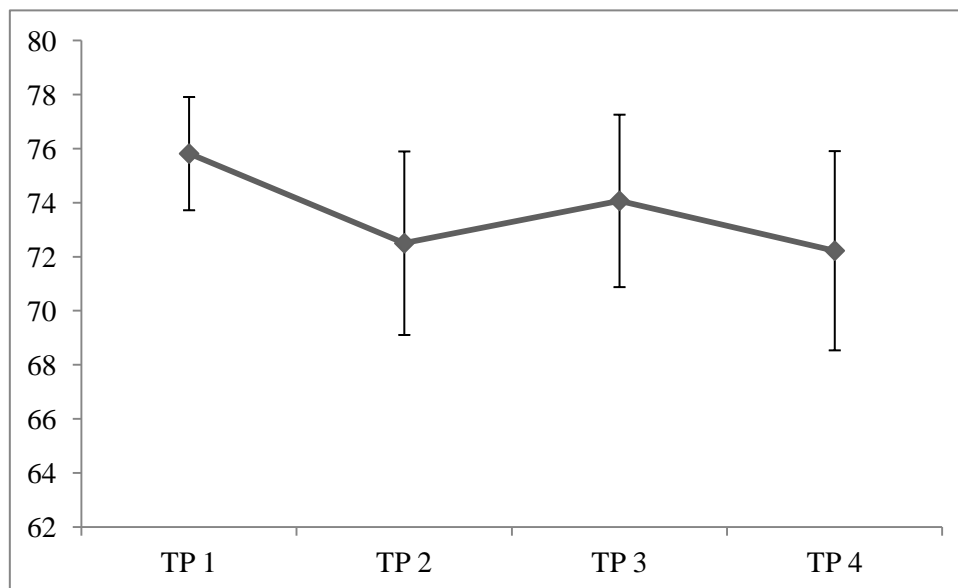
Figure 3. Study 1: Preference for Associating with Americans over Asians



Error bars represent 1 standard error above and below the mean.

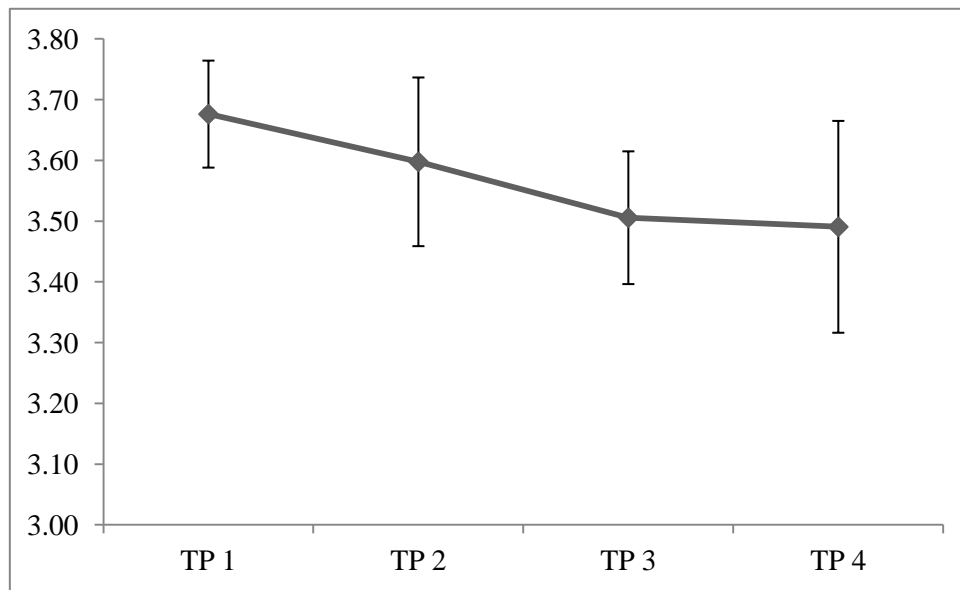


Figure 4. Study 1: Thermometer Ratings for European Americans



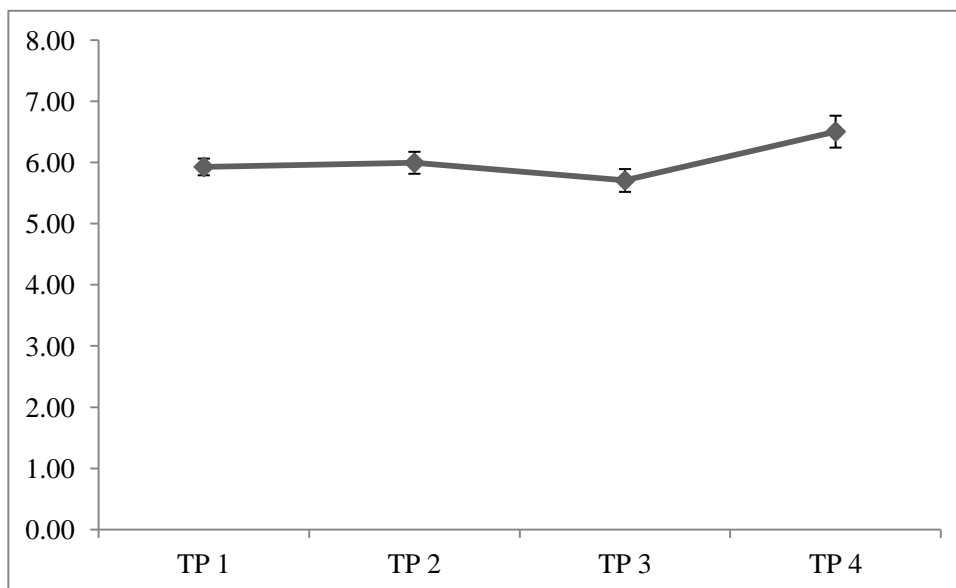
Error bars represent 1 standard error above and below the mean.

Figure 5. Study 1b: Liking of American Artifacts



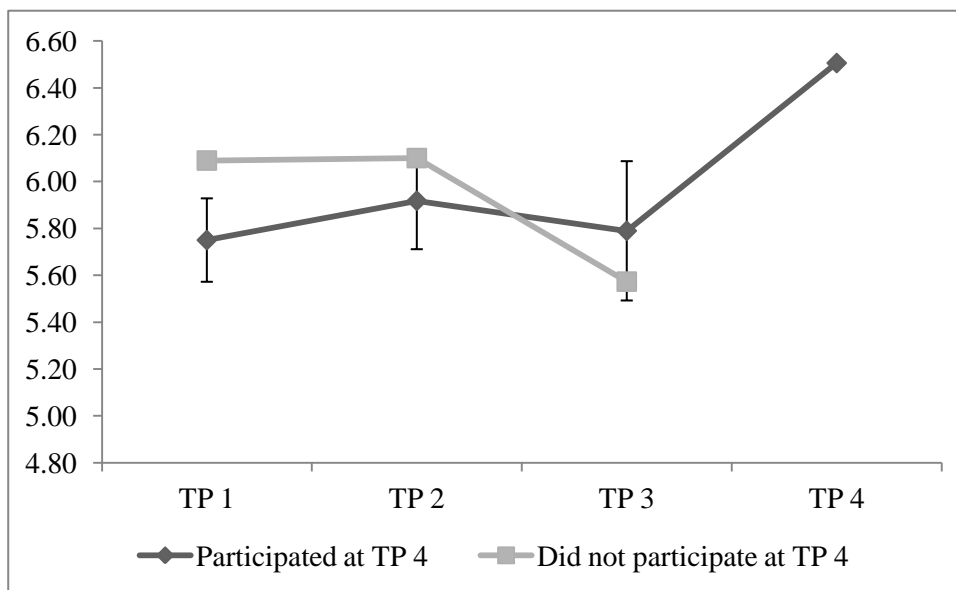
Error bars represent 1 standard error above and below the mean.

*Figure 6. Study 1: Identification with American Culture*



Error bars represent 1 standard error above and below the mean.

Figure 7. Study 1: Identification with American Culture, by TP4 participation



Error bars represent 1 standard error above and below the mean.