THE ROLE OF CULTURE IN CONCEPTS UNDERLYING APPROACH
AND AVOIDANCE MOTIVATION IN MULTIPLE DOMAINS

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Motivation in Multiple Domains

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ABSTRACT OF THE THESIS

The Role of Culture in Concepts Underlying Approach and Avoidance Motivation in Multiple Domains

by

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Approach motivation and avoidance motivation are two motivational systems that influence cognition, affect, and behavior. Approach motivation is the direction of behavior toward positive events, objects, and consequences. Avoidance motivation is the direction of behavior away from negative events, objects, and consequences. Previous research shows that East Asians are more likely than Westerners to be guided by avoidance motivation, and that Westerners are more likely than East Asians to be guided by approach motivation. However, little research has compared cultural patterns in different domains (e.g., social interaction, personal achievement). In addition, researchers have yet to examine approach/avoidance motivation when interacting with the natural environment and little research examined cultural differences in incentives and threats that underlie approach and avoidance motivation. The present research aimed to: (1) investigate cultural differences in approach and avoidance motivation across different domains, (2) explore cultural differences in concepts of incentives (i.e., positive stimuli) and threats (i.e., negative stimuli) underlying approach and avoidance motivation, and (3) examine implications of approach-avoidance motivation in nature for pro-environmental attitudes. Fifty-seven Chinese adults and 36 European American adults were recruited as participants. Participants completed surveys that included open-ended questions about concepts of threats and incentives underlying approach/avoidance motivation in different domains, and Likert scale ratings of motivation to approach and avoid these incentives and threats. Surveys also included a measure of approach and avoidance tendencies in which participants were asked to list goals in daily life. Scale measures were included to assess independent and interdependent self-construal, as well as orientations and attitudes toward the natural environment. Cultural background information was collected to determine cultural group membership. Overall, the results for cultural differences in approach vs. avoidance motivation were not consistent with previous research. There were no significant cultural differences in numbers of incentives and threats that participants listed or in approach- vs. avoidance-focused goals in daily life. There was a significant cultural difference in ratings of motivation related to incentives and threats, but the difference was in the opposite direction compared to previous research: Chinese participants were more approach-focused than European American participants. Although both Chinese and European American participants exhibited a more independent self-construal, interdependent self-construal was significantly negatively correlated with approach motivation for European American participants and was significantly positively correlated with avoidance motivation for Chinese participants, which is consistent with previous research. Concerning domain differences, both Chinese and European American participants exhibited stronger approach motivation in the personal achievement domain compared to the
nature domain and the social interaction domain. In addition, there was an approaching-significant interaction between culture and domain for concepts of incentives, such that Chinese participants were more likely than European American participants to provide a nature-related response as an incentive for interacting with the natural environment. Other results showed that there was greater overlap between egoistic (self-focused) and altruistic (other-focused) orientations toward nature for Chinese participants. For European American participants, a stronger tendency to protect the environment for others was associated with stronger avoidance motivation. Limitations and future directions are discussed.
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CHAPTER 1

INTRODUCTION

There is substantial evidence suggesting that approach motivation and avoidance motivation are two basic motivation systems that guide cognition, attention and behavior (Cacioppo & Bernston, 1994; Dweck & Elliot, 1983; Elliot, 1999, 2006; Elliot & Convington, 2001; Higgins, 1998; Mehrabian, 1976). According to Elliot (2006), approach motivation is “the energization of behavior by, or the direction of behavior toward, positive stimuli (objects, events, possibilities)”, and avoidance motivation is “the energization of behavior by, or the direction of behavior away from, negative stimuli (objects, events, possibilities)” (p. 112). Previous research has revealed cross-cultural differences in approach and avoidance motivation (Elliot, Chirkov, Kim, & Sheldon, 2001; Hamamura, Meijer, Heine, Kamaya, & Hori, 2009; Heine et al., 2001; Lee, Aaker & Gardner, 2000; Lockwood, Marshall, & Sadler, 2005; Ouschan, Boldero, Kashima, Wakimoto, & Kashima, 2007). However, very little research has examined cross-cultural differences in approach and avoidance motivation across different domains (such as the domain of social interaction vs. the domain of personal achievement) and researchers have not yet investigated approach and avoidance motivation in the domain of the natural environment. Research is needed to compare cross-cultural differences in concepts of incentives (i.e. positive stimuli) and risks (i.e. negative stimuli) across these domains, as well as potential implications for outcomes such as pro-environmental attitudes and behaviors.

APPROACH AND AVOIDANCE MOTIVATION ACROSS CULTURES

Neurological research has provided evidence for two limbic systems that map on to approach motivation and avoidance motivation: the behavioral activation system (BAS) and the behavioral inhibition system (BIS) respectively (Fowles, 1994; Gray, 1971, 1982, 1987). The BAS responds to reward and non-punishment, and the BIS responds to non-reward and punishment. These distinct motivation systems have multiple implications for cognition, including attention, recall, and regulatory focus (e.g., Crowe & Higgins, 1997; Derryberry &
Reed, 1994; Strachman & Gable, 2006). For instance, Strachman and Gable (2006) found that approach and avoidance motives affect recall of information. They asked participants to read a story that contained negative, positive, and neutral information of social relationships and to rewrite the story. The results showed that individuals who had avoidance-focused social motives recalled more negative information than positive information, whereas the individuals who had more approach-focused social motives recalled more positive information than negative information. In spite of evidence for the biological basis of approach and avoidance motivation, studies have also revealed individual differences. For example, Zelensky and Larsen (1999) found that extroversion is positively related to the BAS and reward sensitivity while introversion is positively related to the BIS and punishment sensitivity.

A great deal of research examining individual differences in approach and avoidance motivation has focused on cross-cultural differences and extent to which approach and avoidance motivation vary as a function of culture. The vast majority of this research includes comparisons of “Eastern” vs. “Western” cultures, with Eastern cultures including various East Asian countries as well as Asian Americans and Asian Canadians, and Western cultures including Europeans, North Americans, Americans, or European Americans. Often when these labels are used, very little information is provided regarding the methods used to identify cultural group membership. In what follows, the labels used in descriptions of previous research are those used by the researchers themselves, with additional information provided when available.

Hamamura et al. (2009) presented adults who were born in Japan (students in a Japanese university) and North America (college students in the United States) with a list of every day approach events (e.g., gorgeous weather for hiking), avoidance events (e.g., stuck in the traffic jam), and neutral events (e.g., went to a post office and mailed some letters). Participants were asked to recall events four days later. The results showed that Japanese participants had a higher frequency of recalling avoidance events than approach events, and that the reverse was true for North American participant. In another study, Hamamura et al. (2009) coded reviews for each top-ten selling books in Amazon.com in Japan and in the United States as either approach content (focusing on the presence or absence of positive characteristics of a book) or avoidance content (focusing on the presence or absence of
negative characteristics of a book) and presented these reviews to adults born in Japan vs.
North America. Japanese individuals were more likely to consider avoidance content helpful,
whereas American individuals are more likely to consider approach content helpful.

According to Triandis (1994, 1995a, 1995b), individualism and collectivism may help
to explain cross-cultural differences in approach and avoidance motivation. In individualist
cultures, the individual is the reference framework of thinking, and personal goals are more
important than goals of the in-groups. An individualistic cultural orientation fosters more
independent self-construal in which an individual’s concept of self is defined by internal
attributes and independence from close others (Nisbett, Peng, Choi, & Norenzayan, 2001). In
collectivist cultures, the group or the collective is the reference framework of thinking, and
goals of the in-group are more important than personal goals (Kitayama, 2010; Oyserman,
Coon, & Kemmelmeier, 2002). A collectivist cultural orientation fosters more interdependent
self-construal in which an individual’s concept of self is defined by relatedness and
interdependence of self with close others. There is substantial evidence that Easterners tend
to be more collectivist and are more likely to develop interdependent self-construal compared
to Westerners, and that Westerners tend to be more individualistic and are more likely to
develop independent self-construal compared to Easterners (Markus & Kitayama, 1991,
2010; Oishi, 2000; Oyserman et al., 2002; Triandis, 1993; Triandis & Gelfand, 2012).

Elliot et al. (2001) found evidence for an association between
independent/interdependent self-construal and approach/avoidance motivation in the domain
of personal achievement. Specifically, they found that interdependent self-construal is
positively correlated with avoidance personal goals and independent self-construal is
positively correlated with approach personal goals. Elliot et al. (2001), also compared Asian
American undergraduate participants with European American undergraduate participants,
South Korean participants with European American participants, and Russian participants
with European American participants. Across these studies, Asian Americans, Koreans, and
Russians, who were assumed to have interdependent self-construal, adopted more avoidance-
focused personal goals than European Americans, who were assumed to have more
interdependent self-construal.

Lockwood et al. (2005) built a model to specify the relationship between cultural
background, self-construal, regulatory focus as well as motivation by negative and positive
role models. In this model, individuals with an interdependent construal of self are prevention-focused (focusing more on avoiding failure than gaining success) and are more likely to be motivated by negative role models, whereas individuals with an independent construal of self are promotion-focused (focusing more on gaining success than avoiding failure) and are more likely to be motivated by positive role models. They recruited Asian Canadian and European Canadian undergraduates from the University of Toronto in their studies to test this model. The data from the results fit the model well: Asian Canadian participants were more likely to be motivated by negative role models (e.g., “a person who graduated couldn’t get the job”) than European Canadian participants, and European Canadian participants were more likely to be motivated by positive role models (e.g., “someone from my major who is getting As”) than Asian Canadian participants. Building on this work, Ouschan et al. (2007) found that Japanese and Asian Australian participants were more likely to endorse prevention strategies (strategies to avoid failure) than European Australian participants, whereas European Australian participants were more likely endorse promotion strategies (strategies to gain success).

Interestingly, Lee et al. (2000) found that priming independent self-construal or interdependent self-construal affects the tendency to focus on promotion-focused vs. prevention-focused information. They primed independent self-construal by presenting scenarios involving descriptions of a personal goal, and they primed interdependent self-construal by presenting scenarios involving descriptions of a group goal. Participants were then asked to rate the importance of winning rewards (promotion frame) vs. losing rewards (prevention frame). Participants who were primed to activate an independent self-construal were more likely to rate promotion frames as important and participants who were primed to activate an interdependent self-construal were more likely to rate prevention frames as important.

Why should independent/interdependent self-construal be so strongly associated with approach and avoidance motivation? Heine, Lehman, Markus, and Kitayama (1999) proposed that in individualist cultures (including Western European and European American cultures), where the self is more likely to be construed as independent, there is a need to enhance and maintain positive self-views. However, in collectivist cultures (including many East Asian cultures), where the self is more likely to be construed as interdependent, there is
a need to self-criticize. Biased attention to positive information about the self is one of the consequences of the need for maintaining positive self-views in individualist cultures. There is evidence that the distribution of self-esteem scores is negatively skewed for European Canadians (Heine & Lehman, 1997), which suggests that the majority of European Canadians have positive self-views. In contrast, the distribution of self-esteem scores for the Japanese adults who have never lived outside of Japan is normal, which suggests that the Japanese individuals do not self-enhance as frequently as European Canadians.

Research conducted by Heine et al. (2001) showed that European Canadians and Japanese undergraduates reacted differently to success feedback and failure feedback. Specifically, the Japanese participants persisted longer to finish a task when they received failure feedback in the previous task than when they received success feedback. The European Canadian participants persisted longer to finish a task when they received success feedback in the previous task than when they received failure feedback. Heine et al. (2001) explained that European Canadians tended to have a more self-enhancing motivation than self-improving motivation in achievement and that individuals from Japan tended to have a more self-improving motivation than self-enhancing motivation in achievement. In other words, North Americans looked for positive information about the self to maintain the positive view of the self, which was self-enhancing, whereas individuals from East Asian cultures looked for negative information about the self in an effort to improve the negative aspects of self.

These findings highlight the important role that culture plays in approach and avoidance motivation. Importantly, however, very little research has compared cross-cultural differences in approach and avoidance motivation across specific domains (e.g., social interaction vs. personal achievement vs. interacting with the natural environment).

**APPROACH AND AVOIDANCE MOTIVATION ACROSS DIFFERENT DOMAINS**

Three domains of approach and avoidance motivation are of interest in the present research, including the domain of social interaction, the domain of personal achievement, and the domain of interacting with the natural environment. The goal of including multiple domains in the present research is to investigate differences in patterns of approach and avoidance motivation across domains and to explore whether cultural differences are
generalized across all domains (i.e., domain general) or whether particular cultural patterns are specific to a domain (i.e., domain specific). For example, it is possible that East Asians might be more avoidance motivated in the domain of social interaction compared to European Americans, but that this pattern might be less pronounced in the domain of personal achievement. In research examining cross-cultural differences in perspective taking, Leung and Cohen (2007) found that East Asians were more likely than European Americans to take the perspective of a main protagonist in a social scenario, but were less likely to take the perspective of a main protagonist in a non-social scenario, suggesting important effects of social vs. non-social contexts in East-West comparisons.

The Domain of Social Interaction and Personal Achievement

Although researchers have examined approach and avoidance motivation in the domain of social interaction and personal achievement (Elliot, 1997, 1999; Elliot, Gable & Mapes, 2006; Gable & Impett, 2012; Strachman & Gable, 2006), very little research has directly compared responses in these domains. In the domain of social interaction, Gable and Impett (2012) proposed that hope for affiliation, intimacy and friendship were typical approach motives, whereas jealousy, humiliation, fear of loneliness and fear of rejection were typical avoidance motives. There are some early explorations in approach and avoidance motivation in the social domain. Research by Murray (1938) about the need for affiliation, which is the human need related to social bonds, has received much attention. Murray proposed that a series of psychological needs such as achievement, affiliation and power existed in people’s minds developed from his definition of the concept of “need”, which is a force in the brain region that organizes perception, intellection and action in the direction to a satisfying situation. Atkinson, Heyns, and Veroff (1954) defined the need for affiliation as “establishing, maintaining, or restoring a positive affective relationship with another person(s)” (p. 405). They found that the need for affiliation was positively related to approval-seeking behavior and negatively related to popularity. They proposed that there were two types of needs for affiliation: a hope for affiliation and a fear of rejection. Mehrabian (1976) developed a model that differentiated two types of social motives: approach affiliation motives and avoidance affiliation motives.
There has been little, if any research to explore cultural differences in approach and avoidance motivation in the domain of social interaction. Specifically, there is a dearth of research examining the cultural differences and similarities in the extent to which social behavior is guided by approach vs. avoidance motivation, or the way in which people from various cultures such as East Asian cultures and Western cultures perceive incentives and threats associated with social interaction.

In the domain of personal achievement, Elliot (2006) proposed that achievement motivation was the guidance of behavior that was oriented toward the attainment of competence or the avoidance of incompetence. There have been multiple approaches to study approach and avoidance motivation in the achievement domain, such as Achievement Need Approach (McClelland, Atkinson, Clark, & Lowell, 1953; Murray, 1938) and Achievement Goal Approach (Dweck & Elliot, 1983). According to Murray (1938), the need for achievement is “To overcome obstacles and attain a high standard. To excel one’s self. To rival and surpass others. To increase self-regard by the successful exercise of talent” (p. 164) and the need for avoidance is “To quit embarrassing situations or to avoid conditions which may lead to belittlement” (p. 192). Elliot developed ideas about Achievement Goal Approach through a proposal that the approach-avoidance distinction exists in achievement goal pursuit. It was found that children in school settings responded to failure with different patterns, and proposed that children may have different goals in an achievement situation (Dweck, 1975; Dweck & Elliot, 1983). Dweck (1975) identified two types of achievement goals: (1) learning goals (focusing on developing competence), and (2) performance goals (focusing on demonstrating one’s competence). Elliot (1999) Extended Dweck’s research and proposed four types of achievement goals” (1) mastery-approach goals, which focused on attainment of task mastery, (2) mastery-avoidance goals, which focused on avoidance of task incompetence, (3) performance-approach goals, which focused on outperforming others, and (4) performance-avoidance goals, which focused on avoiding performance that is worse than the performance of others.

There is some cross-cultural research that is relevant to approach and avoidance motivation in the domain of personal achievement, even though these researchers did not directly mention the term approach and avoidance. In addition to research described above (Elliot et al., 2001; Heine et al., 2001; Lockwood et al., 2005; Ouschan et al., 2007) showing
cross-cultural differences in developing approach and avoidance goals, responding to success and failure feedback, and responding to role models demonstrating success or failure, there is evidence to suggest that causal attribution of success and failure also varies across Eastern and Western cultures. According to Kitayama, Takagi, and Matsumoto (1995) and Stevenson and Stiger (1992), East Asians were more likely to attribute success (competence) to effort or luck and were more likely to attribute failure (incompetence) to lack of abilities or talents. In contrast, Westerners were more likely to attribute success to abilities or talents and to attribute failure to lack of effort or luck. Research (Heine & Lehman, 1995, 1997; Kitayama et al., 1995) suggested that Westerners had a strong self-enhancing motivation and East Asians had strong self-criticizing motivation and self-improving motivation. Attributing one’s success to talents and attributing one’s failure to lack of luck mean that one is competent, which provides a chance to self-enhance (collecting information about one’s own positive characteristics). On the contrary, attributing one’s success to luck and attributing one’s failure to lack of talents means that one is incompetent, which provides a chance to self-criticize and improve oneself (criticizing one’s own weaknesses and correcting them). Divergent causal attributions between the two types of cultures imply that East Asians focus on avoiding their own weaknesses, whereas Westerners focus on pursuing their own strengths.

Although there is some research examining approach and avoidance motivation in the domain of personal achievement, more research is needed to examine the differences and similarities in how people from various cultures such as East Asian cultures and Western cultures perceive incentives and threats in this domain, and to compare cultural patterns in this domain with cultural patterns in other domains.

**Approach and Avoidance Motivation toward the Natural Environment**

Very little research has examined approach and avoidance motivation related to the natural environment. The present research explored cross-cultural differences in approach and avoidance motivation related to this domain. Although there is a dearth of research in this area, a growing body of research on individual differences (including cultural differences) in orientations toward nature has emerged. A summary of this literature is provided in the following paragraphs.
Previous research suggests that there are different orientations toward nature. For example, Schultz (2000) had obtained evidence for three distinct types of environmental concerns: egoistic concerns, social-altruistic concerns, and biospheric concerns. In egoistic concerns, the self is the center of concern when humans interact with nature (i.e., caring about nature for the sake of benefits to oneself); in social-altruistic concerns, the human society is the center of concern (i.e., caring about nature for the sake of benefits to all humans); and in biospheric concerns, nature itself is the center of concern (i.e., caring about nature for the benefits to nature). Schultz (2000) had suggested that these three levels of concerns embody three types of notions of the self. For example, the biospheric concern implies that the self is connected with everything in environment. Therefore the scope of the self is extended when individuals have biospheric or social-altruistic concerns.

Consistent with a proposal for different orientations toward nature, Bang, Medin, and Atran (2007) have obtained evidence for cross-cultural differences in the likelihood to think of humans or oneself as ‘a part of’ versus ‘apart from’ nature. In one study, they investigated anthropocentrism (i.e., privileging humans as a basis for reasoning about nature) among three groups of younger and older children: Urban European American children, rural European American children, and rural Menominee Native American children. They found that Menominee Native American children were least likely to exhibit anthropocentric tendencies at any age; rural European American children exhibited anthropocentrism at early ages which diminished later in development; and urban European American children were most likely to exhibit anthropocentric tendencies across all age groups. In another study, Bang et al. (2007) asked adults from the same three communities to talk about five things they would want their children to learn about the biological world. In their responses, Menominee adults were more likely than European American adults to talk about people as “a part of” nature. In addition, Bang et al. (2007) examined the outdoor activities of European American and Menominee adults and children. Consistent with cultural differences in perceptions of the relationship between people and nature, Menominee people reported spending more time in practices where nature is fore-grounded (e.g., walking through the forest) compared to European Americans, and European Americans reported spending more time in practices where nature is back-grounded (e.g., sport fishing, snowmobiling).
Interestingly, there is very little research comparing orientations toward the natural environment in Eastern and Western cultures, though there are a few relevant studies. For instance, Eisler, Eisler, and Yoshida (2003) found that compared to Westerners, East Asians appraise the natural environment as being less pleasant. Eisler et al. (2003) examined appraisal of seven components of nature among participants from Japan, the United States, Sweden and Germany. Three of the seven components were an image of the sea, an image of the mountain and an image of the river. The Japanese participants rated the images as significantly less pleasant compared to the other three groups. Eisler et al. (2003) provided one possible explanation to the cultural differences discovered in their research. Social norms in the Japanese culture prefer “discreet and modest” evaluations, whereas social norms in western cultures allow more extreme expressions of personal emotions and affects, so that westerners have more positive attitudes toward the beauty of nature than the Japanese.

In other research, Lai, Brennan, Chan, and Tao (2003) used the Chinese version of the Environmental Appraisal Inventory (EAI-C; Schmidt & Gifford, 1989) in a study with participants from Hong Kong, Japan, and Ireland. The Environmental Appraisal Inventory is designed to quantitatively assess the degree to which individuals perceive environmental hazards as threatening. The most striking result from the Hong Kong sample is that the scores for the dimension of the threat to the self are higher compared to other samples. The authors attributed these differences to cultural differences in the tendency to self-enhance versus self-criticize (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997).

Previous research about approach and avoidance motivation in the domain of the natural environment did not touch the topics of how individuals perceive incentives and threats in the natural environment and cultural patterns of these perceptions. It did not either touch topics of how cultural patterns of approach and avoidance motivation in the natural environment vary from cultural patterns in other domains.

**CURRENT RESEARCH**

The purpose of the current research was to investigate (1) cultural patterns of approach motivation and avoidance motivation in the domains of social interaction, personal achievement, and interacting with natural environment, (2) cross-cultural differences in the concepts of incentives that individuals try to approach and threats that individuals try to
avoid in each domain, and (3) implications of cultural differences in approach-avoidance motivation for pro-environmental attitudes.

The current research included participants from two cultural groups: European American and Chinese adults. To investigate participants’ cultural background, basic demographic information was collected, and the measurement of independent vs. interdependent self-construal was included.

To explore the concepts of risks and incentives, participants were asked a series of open-ended questions. These questions asked participants to write about their ideas about positive and negative consequences associated with activities in each domain, including personal achievement, social interaction, and interacting with the natural environment. Participants were also asked to rate to what extent they would like to approach each positive consequence and avoid each negative consequence that they listed within each domain. Each concept of incentive and threat that participants listed across the three domains were coded as incentive/threats that included nature and as incentive/treats that included other people.

To evaluate cultural differences in approach and avoidance motivation, the current research also included the measure of endorsement of approach and avoidance in their goals that individuals strive in daily life (see Elliot et al., 2001). This measurement helped to understand to what degree participants from different cultures focused on approach goals or avoidance goals in their life, indicating a preference for approach motivation or avoidance motivation. Independent and interdependent self-construal and cultural background were also assessed.

To investigate whether cultural differences in approach and avoidance motivation were generalized across domains or are more domain-specific, interactions between culture and domain type were examined. Participants’ orientations toward nature and attitudes toward nature were also measured in order to examine whether individuals’ orientations and attitudes toward nature were related to approach and avoidance motivation in the natural environment.

**Predictions**

Consistent with previous research (Elliot et al., 2001; Hamamura et al., 2009; Heine et al., 2001; Lee et al., 2000; Lockwood et al., 2005), it was predicted that there would be a
main effect of culture in approach and avoidance motivation. Across the domains of interacting with the natural environment, personal achievement and social interaction the following predictions were made: (1) Chinese participants would list more threats than incentives and European American participants will list more incentives than threats, (2) Chinese participants would exhibit a stronger tendency to avoid threats than to approach incentives, whereas European American participants would exhibit a stronger tendency to approach incentives than to avoid threats, (3) Chinese participants would list more avoidance goals in daily life, whereas European American participants would list more approach goals in daily life.

Given the lack of research comparing approach and avoidance motivation across different domains, one goal of the present research was to investigate the extent to which cultural differences in approach and avoidance motivation are consistent across domains (i.e., domain-general) or diverse across domains (i.e., domain-specific). Cultural patterns are complex and may vary depending on various contexts and settings. For example, as mentioned above, Leung and Cohen (2007) found that when East Asians and European Americans were asked to imagine situations where social interaction was present, East Asians were more likely to take a protagonist’s perspective than European Americans. In contrast, when asked to imagine situations where social interaction was absent, East Asians were less likely to take a protagonist’s perspective than European Americans. This study suggests that culture is a complex system involving interactions between cognitive tendencies and context.

In the domains of social interaction and the domain of personal achievement, it was predicted that cultural background would be associated with individual differences in approach motivation and avoidance motivation. In particular, it was predicted that the Chinese participants would be more likely to exhibit avoidance motivation in terms of numbers of incentives and threats they list, how strongly they would like to approach incentives and avoid threats, and how frequently they would like to list avoidance goals and approach goals. In the research on personal achievement, there is evidence (Elliot et al., 2001; Hamamura et al., 2009; Heine et al., 2001) showing that East Asians are more avoidance focused whereas Westerners are more approach focused. Based on these evidence, it is predicted that the Chinese participants will be more likely to show avoidance motivation
than approach motivation, whereas the European American participants are more likely to show stronger approach motivation than avoidance motivation in the personal achievement domain. Concerning the social interaction domain, there is lack of relevant cross-cultural comparison studies in the previous literature, so that no specific predictions of cultural patterns in social interaction are made. It is possible that the pattern in this domain is consistent with the pattern in the personal achievement domain. However, based on the implications by Leung and Cohen (2007), the pattern in the domain of social interaction might be reversed.

In the domain of interaction with nature, cultural differences in approach and avoidance motivation toward nature may be mediated by cultural differences in attitudes toward nature. Based on previous research (Eisler et al., 2003; Lai et al., 2003), it was predicted that Chinese participants would have a less pleasant attitude toward the natural environment than European American participants, and should therefore be more avoidance-focused and less approach-focused than European American participants.
CHAPTER 2

METHODS

PARTICIPANTS

Ninety-three participants’ data were collected and analyzed (N = 93). Twenty-nine were male and 62 were female. Ages ranged from 17 to 33 (M = 21.66, SD = 3.37). There were 57 Chinese participants and 36 European American participants. Chinese participants were recruited from international student organizations at SDSU. Twenty-one of the Chinese participants were male, 36 were female, and ages ranged from 17 to 33 (M = 22.93, SD = 3.29). European American participants were recruited from the psychology participant pool at SDSU. Eight of European American participants were male, 28 were females, and ages ranged from 18 to 29 (M = 19.64, SD = 2.38).

PROCEDURE AND MATERIALS

Participants were asked to read a consent form and to sign if they were willing to participate in the study. Participants then received a survey packet. Multiple scales and questions were included in the survey questionnaire packet. The survey questionnaire packet that were delivered to Chinese participants was the Chinese translation version. First, multiple questions were asked to evaluate the concepts of incentives and threats in the following domains: interacting with nature, social interaction, and personal achievement (see Appendix A). The questions in the domain of interacting with the natural environment were “List any events, objects and consequences associated with being in nature that are positive to you. Please list all of them that come to mind,” and “List any events, objects and consequences associated with being in nature that are negative to you. Please list all of them that come to mind.” The questions in the domain of personal achievement were “List any events, objects and consequences associated with your own personal achievement that are positive to you. Please list all of them that come to mind,” and “List any events, objects and consequences associated with your own personal achievement that are negative to you. Please list all of them that come to mind.” The questions in the domain of social interaction...
were “List any events, objects and consequences associated with social interaction that are positive to you. Please list all of them that come to mind.” and “List any events, objects and consequences associated with social interaction that are negative to you. Please list all of them that come to mind.” Participants were also asked to rate the degree to which they would approach each incentive or avoid each threat using a 7-point Likert scale, “1” indicating “not at all” and “7” indicating “a great deal”. Also, to assess every participant’s concept of nature, they were asked a question to define nature after they answer previous questions. Specifically, two questions were asked. One of them explores the participants’ concepts of nature: “What is your definition of nature? When you saw the word ‘nature’ in previous questions, what did nature mean to you?” The other question explores how participants understand the phrase “being in nature”: “What are the different ways that you imagined being in nature when you saw that phrase in the previous questions?” Approach goals and avoidance goals were assessed with the method used by Elliot et al. (2001). Participants were asked to list 8 goals that they strive in everyday life.

Second, the following questionnaires were presented in a counterbalanced order to participants: the 14 item reduced version of the Self-Construal Scale (Sivadas, Bruvold, & Nelson, 2008; see Appendix B), the Environmental Motives Scale (Schultz, 2000; see Appendix C), the Emotional Affinity with Nature by Adults (Kals, Schumacher, & Montada, 1999; see Appendix D).

Singelis, Triandis, Bhawuk, and Gelfand (1995) developed a 32-item self-Construal Scale that measured interdependent self-construal and independent self-construal. Sivadas et al. (2008) developed a 14-item reduced version of this scale which had higher validity and reliability than the original version. In the scale, the participants are asked to read 14 items as if each of them is referred to them. They need to rate to what degree they agree or disagree each of the items. Some items used to measure independent self-construal including “I often do ‘my own things’”, “competition is the law of nature”, and “I am a unique individual”. Some items used to measure interdependent self-construal including “My happiness depends very much on the happiness of those around me” and “if a coworker gets a prize, I would feel proud”.

The Environmental Motives scale (EMS; Schultz, 2000) measures three types of concerns (concern for the self, concern for others, and concern for the environment itself)
about environmental problems. The scale asks “I am concerned about environmental problems because of the consequences for __”. 12 objects (including plants, my life style, my health, children, my children, people in my country, birds, animals and marine life) are listed and participants rate their importance on a Likert scale from 1 (not important) to 7 (supreme important).

The Emotional Affinity with Nature by Adults scale (EATNA; Kals et al., 1999) was designed to measure the extent to which individuals feel love or affection toward nature. It consists of four subscales: Love of Nature, Feelings of Freedom, Feelings of Safety and Feelings of Oneness. In the scale, participants will be asked “How do you feel?”, and participants will rate each response with 6-point Likert scale, ranging from 1 (complete disagreement) to 6 (complete agreement). Some items are “These days getting in contact with nature makes feel happy and satisfied”, “Whenever I spend time in nature now I do it with all my heart”, “Surrounded by nature today I get calmer and I feel home” and “When I spend time in nature today a feeling like security arises”.

Basic demographics and cultural background information were collected through the Cultural Background Questionnaire (Unsworth, Sears, & Pexman, 2005; see Appendix E). This questionnaire includes questions about participants’ sex, age, country of origin, parents’ country of origin, how long they have lived in the United States, the degree to which they practice the cultural tradition of their country of origin, and the degree to which they practice the cultural traditions of their parents’ country of origin. They were also asked about the languages they spoke, including their first language, whether they spoke English, how many languages they spoke, and what they spoke in their family’s home.

After participants completed the survey packet, they were debriefed regarding the purpose of the study.
CHAPTER 3

RESULTS

CODING OF QUALITATIVE DATA

For open-ended questions about positive and negative consequences associated with each domain, concepts of incentives and threats were coded as containing content about nature and people. For instance, “air”, “sunshine”, and “forest” refer to objects in nature, so they were coded as “nature”. Responses coded as containing content about other people included: “the whole family is healthy and happy”, “new friends”, and “someone to go on adventures with.” The proportion of total responses that were about “nature” and “people” in each domain for each participant was calculated.

For the question about the definition of “nature”, each participant’s answer was coded as “not human made” (nature is the environment that are not created by humans), “environment for survival” (nature provides sufficient environment and materials for living creatures’ survival), “things in nature/outdoors/wild” (listing of concrete examples/nature is outdoors/nature is wild), “law of nature” (some laws/regularities are going on in nature), and/or “positive emotions” (participants had positive emotions toward nature when they answered the question). For the question about the definition of “being in nature”, identifying separable themes was more challenging, and participants’ responses were not coded.

For the open-ended question about daily goals, each goal was coded as an approach goal or an avoidance goal. Both the proportion of total goals that were approach goals and the proportion of total goals that were avoidance goals were calculated.

CULTURAL DIFFERENCES IN CONCEPTS OF INCENTIVES AND THREATS AS WELL AS APPROACH AND AVOIDANCE MOTIVATION

Cultural differences in concepts of incentives and threats as well as approach and avoidance motivation were investigated and analyzed. Differences in the numbers of incentives and threats (DNIT), Difference in scores of approach motivation and avoidance
motivation (DAA), and daily goals were defined and analyzed to examine the cultural
differences in approach and avoidance motivation.

**DNIT**

Differences in the numbers of incentives and threats (DNIT) were calculated for each
participant. Positive values indicate higher numbers of incentives than threats (i.e., approach-
focus). A mixed-model 3 (Domain: Nature, Social Interaction, Achievement) x 2 (Culture:
European American, Chinese) Analysis of Variance (ANOVA) was conducted, with DNIT as
the dependent variable. The main effect of Domain was statistically significant, $F(2, 278) = 3.75, MSE = 25.22, p < .05$ (see Figure 1). Using Bonferroni correction to account for family-
wise error rate, the results of follow-up t-tests showed that DNIT in the domain of personal
achievement was higher than DNIT in interacting with nature, and that this difference
approached significance, $t(92) = 2.62, SE = .39, p = .05$ ($M = 1.15$ vs. .13, respectively).
Similarly, DNIT in the domain of personal achievement was higher than DNIT in social
interaction, and this difference also approached significance, $t(92) = 2.61, SE = .29, p = .05$
($M = 1.15$ vs. .40, respectively). The difference in DNIT for interacting with nature and for
social interaction was not statistically significant, $t(92) = -.69, SE = .39, p = .24$. The main
effect of Culture was not statistically significant, $F < 1$ ($M = .73$ for European Americans and
$M = .45$ for Chinese). In addition, the interaction between Domain and Culture was not
statistically significant, $F(2, 278) = 1.15, MSE = 7.71, p = .32$.

**DAA**

Difference in scores of approach motivation and avoidance motivation (DAA) in the
domains of interacting with the natural environment, personal achievement and social
interaction for each participant were calculated. Positive values indicate more approach
oriented than avoidance oriented. A mixed-model 3 (Domain: Nature, Achievement, Social
interaction) x 2 (Culture: Chinese, European American) ANOVA was conducted, in which
DAA as the dependent variable. The results showed that the main effect of Culture was
statistically significant, $F(1, 178) = 23.98, MSE = 111.53, p = < .001$ (see Figure 2). Using
Bonferroni correction to account for family-wise error rate, the results of the follow-up t-test
showed that the mean for the Chinese participants ($M = 1.83$) was significantly higher than
the mean for the European American participants ($M = .53$), $t(91) = 4.85, SE = .14, p < .01$. 
Figure 1. Mean DNIT for the three domains (interacting with nature, personal achievement, and social interaction).

Figure 2. Mean DAA for the Chinese participants and for the European American participants.
The main effect of Domain was not statistically significant, $F(2, 278) = 2.37$, $MSE = 11.00$, $p = 0.10$ (M= .87 for the nature domain, M = 1.67 for the personal achievement domain, M = 1.48 for the social interaction domain). The interaction of Domain and Culture was not statistically significant, $F(2, 278) = 1.49$, $MSE = 6.91$, $p = .23$.

**Daily Goals**

For daily goals, a mixed-model 2 (Culture: Chinese, European American) x 2 (Goal Type: Proportion of approach goals, Proportion of avoidance goals) ANOVA was conducted. The main effect of Goal Type was statistically significant, $F(1, 185) = 467.91$, $MSE = 20.27$, $p < .001$. In the follow-up t-test (using Bonferroni correction), the mean of proportion of approach goals (M = .74) was significantly higher than the mean of proportion of avoidance goals (M = .07), $t(92) = 20.40$, $SE = .03$, $p < .001$. The main effect of Culture was not statistically significant, $F(1, 185) = 1.24$, $MSE = .05$, $p = .26$. The interaction between Culture and Goal Type was not statistically significant, $F < 1$.

**Incentives and Threats**

Inter-rater reliability was calculated for incentives/threats that included nature and that included other people. The Cohen’s Kappa for incentives/threats that included nature was statistically significant, Kappa = .72, $p < .001$. The Cohen’s Kappa for incentives/threats that included other people was statistically significant, Kappa = .32, $p < .001$, indicating that it was higher than chance, but was rather low. Lower inter-rater reliability for coding concepts that included other people is possibly due to the fact that there were different understandings of concepts that included phrases about personal relationships between rater A and rater B. Some concepts did not indicate other people, but they indicated relationships among individuals such as “Jealousy” and “friendship”. Rater A coded these types of concepts as incentives/threats that included other people whereas rater B did not.

Four mixed-model 3 (Domain: Nature, Achievement, Social interaction) x 2 (Culture: Chinese, European American) ANOVAs were conducted to analyze differences in concepts of incentives and threats that included nature and people. For concepts of incentives that included nature, the main effect of Culture was not statistically significant, $F(2, 287) = 2.12$, $MSE = .09$, $p = .14$, but the main effect of Domain was statistically significant, $F(2, 287) = 271.74$, $MSE = 12.23$, $p < 0.001$, and this main effect was qualified by an interaction between
Domain and Nature that approached statistical significance, $F (2, 287) = 3.01, MSE = .14, p = .05$. The nature of the interaction was explored with three follow-up t-tests (Bonferroni correction was used; see Figure 3). The results of the t-test comparing the means of the cultural groups in the nature domain showed that Chinese participants were more likely to list nature as an incentive than European American participants, ($M = .71$ and $.58$, respectively), and this difference approached significance, $t (91) = 1.76$, $SE = .07$, $p = .05$. The results of the t-test comparing the means of the cultural groups in the achievement domain showed that there was no statistically significant difference in the likelihood to list nature as an incentive, $t < 1$, ($M = .02$ for the Chinese participants, $M = .04$ for the European American participants). The results of the t-test comparing the means of the cultural groups in the social interaction domain could not be conducted because the means for both groups zero.

![Figure 3. Mean proportions of incentives that included nature for the three domains (nature, personal achievement, and social interaction) between Chinese participants and European American participants.](image)

For concepts of threats that included nature, the main effect of Domain was statistically significant, $F (2, 287) = 284.93, MSE = 12.36, p < 0.001$. The three follow-up tests of the main effect of domain were conducted, using Bonferroni correction. The mean for concepts of threats in the nature domain that included nature was statistically significantly higher than the mean of concepts of threats in the personal achievement domain that included
nature, \(M = .64\) vs. 0, respectively), \(t (92) = 18.04, SE = .04, p < .001\). The mean for concepts of threats in the nature domain that included nature was also statistically significantly higher than the mean of concepts of threats in the social interaction domain that included nature \(M = 0\), \(t (92) = 18.04, SE = .04, p < .001\). Because the mean for concepts of threats in the personal achievement domain and the mean for concepts of threats in the social interaction domain were both zero, the t-test could not be conducted. The main effect of Culture was not statistically significant, \(F < 1\), and the interaction between Domain and Culture was not statistically significant, \(F < 1\).

For concepts of incentives that included people, the main effect of Domain was statistically Significant, \(F (2, 287) = 50.33, MSE = 2.45, p < 0.001\). Three follow-up tests were conducted (using Bonferroni correction). The mean for concepts of incentives that included people in the nature domain \(M = .04\) was significantly lower than the mean for concepts of incentives that included people in the personal achievement domain \(M = .14\), \(t (92) = -5.08, SE = .02, p < .001\). The mean for concepts of incentives that included people in the nature domain \(M = .04\) was significantly lower than the mean for concepts of incentives that included people in the social interaction domain \(M = .35\), \(t (92) = -9.12, SE = .03, p < .001\). The mean for concepts of incentives that included people in the personal achievement domain was significantly lower than the mean for concepts of incentives that included people in the social interaction domain, \(t (92) = -5.8, SE = .04, p < .001\). The main effect of Culture was not statistically significant, \(F < 1\), and the interaction between Domain and Culture was not statistically significant, \(F (2, 287) = 1.73, MSE = .08, p = .18\).

For concepts of threats that included people, the main effect of Domain was statistically significant, \(F (2, 287) = 17.30, MSE = .67, p < 0.001\). Three follow-up tests were conducted (using Bonferroni correction). The mean for concepts of threats that included people in the nature domain \(M = .02\) was significantly lower than the mean for concepts of incentives that included people in the personal achievement domain \(M = .13\), \(t (92) = -5.46, SE = .02, p < .001\). The mean for concepts of incentives that included people in the nature domain \(M = .02\) was significantly lower than the mean for concepts of incentives that included people in the social interaction domain \(M = .19\), \(t (92) = -6.19, SE = .03, p < .001\). The mean for concepts of incentives that included people in the personal achievement domain was significantly lower than the mean for concepts of incentives that included people
in the social interaction domain, \( t = -2.19, \ SE = .03, p < .05 \). The main effect of Culture was not statistically significant, \( F < 1 \), and the interaction between Domain and Culture was not statistically significant, \( F < 1 \).

**Cultural Differences in Definitions of Nature**

The percentage of participants’ answers that were categorized as “not human made” did not differ significantly by culture, \( \chi^2 (1, N = 92) = .04, p = .85 \). The difference of the percentage of participants’ answers that were categorized as “environment for survival” by culture was approaching significance, \( \chi^2 (1, N = 92) = 3.58, p = .06 \). Chinese participants’ answers (n = 11 out of 56) were more likely to be categorized as this theme than European American participants’ answers (n = 2 out of 36). The percentage of participants’ answers that were categorized as “things in nature/outdoor/wild” differed significantly by culture, \( \chi^2 (1, N = 92) = .26.80, p < .001 \). The European American participants’ answers (n = 25 out of 36) were more likely to be categorized as this theme than Chinese participants’ answers (n = 9 out of 56). The percentage of participants’ answers that were categorized as “law of nature” differed significantly by culture, \( \chi^2 (1, N = 92) = 4.00, p < .05 \). Chinese participants’ answers (n = 9 out of 56) were more likely to be categorized as this theme than European American participants’ answers (n = 1 out of 36). The percentage of participants’ answers that were categorized as “positive emotions/affects” did not differ by culture, \( \chi^2 (1, N = 92) = 2.17, p = .14 \).

**Cultural Differences in the Self-Construal Scale, EMS, and EATNA**

For the Self-Construal Scale, a mixed-model 2 (Culture: Chinese, European American) x 2 (Self-construal: Independent, Interdependent) was conducted. The main effect of Culture was statistically significant, \( F (1, 185) = 9.07, MSE = 5.82, p < .01 \). In the follow-up t-test, the mean of Chinese participants (M = 4.83) was significantly lower than the mean of European American participants (M = 5.20), \( t (184) = -2.93, SE = .12, p < .01 \). The main effect of Self-construal was statistically significant, \( F (1, 185) = 9.53, MSE = 6.11, p < .01 \). In the follow-up t-test, the mean of Independent Self-construal (M = 5.18) was significantly higher than the mean of Dependent Self-construal (M = 4.78), \( t (184) = 3.34, SE = .12, p \)
The interaction between Culture and Self-construal was not statistically significant, $F(1, 185) = 1.11, MSE = .71, p = .29$.

For EMS, two confirmatory factor analyses were conducted to test whether the factor loadings for each cultural group were similar to the results of the factor analysis reported in Schultz (2000). The rotated component matrix for the European American participants was similar to the results reported by Schultz (see Table 1). However, for the Chinese participants, the item ‘My health’ loaded on the third factor (altruistic orientation) instead of the second factor (egoistic orientation; see Table 1). Also, the item ‘All people’ is almost equally but not strongly correlated with the first factor ($r = .446$) and the second factor ($r = .471$). The composite scores of three orientations of EMS for the Chinese participants were recalculated based on the results of the EMS factor analysis.

A mixed-model 3 (Orientation: Egoistic, Altruistic, Biospheric) x 2 (Culture: Chinese, European American) ANOVA was conducted, in which composite score for each orientation was the dependent variable. The main effect of Orientation was statistically significant, $F(2, 278) = 7.07, MSE = 7.17, p < .001$. Three follow-up t-tests (using Bonferroni correction) were conducted to examine the differences among the means of three orientations. The mean of Egoistic orientation ($M = 6.28$) was significantly higher than the mean of Altruistic orientation ($M = 5.91$), $t(92) = 3.16, SE = .12, p < .01$. The mean of Egoistic orientation was significantly higher than the mean of Biospheric orientation ($M = 5.50$), $t(92) = 4.06, SE = .19, p < .001$. The mean of Altruistic orientation was significantly higher than the mean of Biospheric orientation, $t(92) = 2.34, SE = .18, p < .05$. The main effect of Culture was not statistically significant, $F < 1$. The interaction between Orientation and Culture was approaching statistically significant, $F(2, 278) = 2.36, MSE = 3.59, p = .10$. Three follow-up t-tests (using Bonferroni correction) were conducted to examine the differences of means of two cultural groups in each orientation (see Figure 4). For the egoistic orientation, the mean of the Chinese participants ($M = 6.35$) was not statistically significant from the mean of the European American participants ($M = 6.10$), $t(91) = 1.25, SE = .20, p = .11$. For the altruistic orientation, the mean of the Chinese participants ($M = 6.10$) was not statistically significant from the mean of the European American participants ($M = 5.83$), $t(91) = 1.09, SE = .24, p = .14$. For the biospheric orientation, the mean of the Chinese participants ($M = 5.32$) was lower than the mean of the European American participants.
<table>
<thead>
<tr>
<th>Component</th>
<th>Biospheric</th>
<th>Egoistic</th>
<th>Altruistic</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Chinese EA</td>
<td>Chinese EA</td>
<td>Chinese EA</td>
</tr>
<tr>
<td>BIO Plants</td>
<td>.845</td>
<td>.891</td>
<td>-.060</td>
</tr>
<tr>
<td>EGO My Lifestyle</td>
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<td>.007</td>
<td>.424</td>
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<td>EGO My Health</td>
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<td>-.207</td>
<td>.627</td>
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<td>ALTR Children</td>
<td>.073</td>
<td>-.121</td>
<td>.836</td>
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<tr>
<td>ALTR My children</td>
<td>-.233</td>
<td>.252</td>
<td>.831</td>
</tr>
<tr>
<td>ALTR People In My Country</td>
<td>.449</td>
<td>.098</td>
<td>.693</td>
</tr>
<tr>
<td>BIO Birds</td>
<td>.918</td>
<td>.934</td>
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<tr>
<td>BIO Marine Life</td>
<td>.950</td>
<td>.931</td>
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<td>EGO Me</td>
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<td>-.178</td>
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<td>EGO My Future</td>
<td>-.031</td>
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<tr>
<td>ALTR All People</td>
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<td>.039</td>
<td>.471</td>
</tr>
</tbody>
</table>

Note. BIO = Biospheric; EGO = Egoistic; ALTR = Altruistic; EA = European American
Figure 4. Mean Likert scale responses for egoistic orientation, altruistic orientation, and biospheric orientation between Chinese participants and European American participants are presented.

participants (M = 5.78) and this difference approached significance, \( t(91) = -1.40, SE = .33, p = 0.08 \).

For EATNA, four independent two-sample t-tests were conducted to examine the differences in the means for the four sub-scales between Chinese participants and European American participants. For Feeling of Freedom, the mean for Chinese participants (M = 4.26) is significantly lower than the mean for European American participants (M = 4.56), \( t(91) = -2.20, SE = .13, p < .05 \). For Feeling of Oneness, the mean for Chinese participants (M = 4.58) is significantly higher than the mean for European American participants (M = 4.19), \( t(91) = 2.06, SE = .19 p < 0.05 \). For Feeling of Safety, the mean for Chinese participants (M = 4.08) is almost significantly lower than the mean for European American participants (M = 4.35), \( t(91) = -1.54, SE = .18 p = 0.06 \). For Love of Nature, the result was not statistically not statistically significant (M = 4.62 for Chinese participants vs. M = 4.53 for European American participants), \( t(91) = .53, SE = .19, p = .30 \)

**Correlations Among All Variables Within Cultures**

There were cultural differences in correlations among eight motivation measures for Chinese participants and European American participants (see Table 2). Measures of
Table 2. The Correlation Matrix for Eight Motivation Variables for Both Cultural Groups

<table>
<thead>
<tr>
<th>Culture</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
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<tbody>
<tr>
<td>1. DNIT (Nature)</td>
<td>--</td>
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<td></td>
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<tr>
<td>2. DNIT (Achieve)</td>
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<td>.05</td>
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<tr>
<td>3. DNIT (Social)</td>
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<td>.09</td>
<td>-.09</td>
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<td></td>
<td></td>
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<tr>
<td>4. DAA (Nature)</td>
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<td>.36**</td>
<td>.07</td>
<td>.01</td>
<td>--</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. DAA (Achieve)</td>
<td>Chinese</td>
<td>.26**</td>
<td>.13</td>
<td>-.18</td>
<td>.55**</td>
<td>--</td>
<td></td>
</tr>
<tr>
<td>6. DAA (Social)</td>
<td>Chinese</td>
<td>.27*</td>
<td>.19</td>
<td>.04</td>
<td>.48**</td>
<td>.69**</td>
<td>--</td>
</tr>
<tr>
<td>7. Approach daily goals</td>
<td>Chinese</td>
<td>.11</td>
<td>.26</td>
<td>.04</td>
<td>-.09</td>
<td>.23</td>
<td>.41*</td>
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<tr>
<td>8. Avoidance daily goals</td>
<td>Chinese</td>
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<td>-.11</td>
<td>-.07</td>
<td>-.03</td>
<td>-.23</td>
<td>-.24</td>
</tr>
</tbody>
</table>

Note. * p < .05, ** p < .01; EA = European American

approach/avoidance motivation in the nature domain were positively correlated with measures of approach/avoidance motivation in other domains for Chinese participants but not for European American participants. However, the DAA measures of approach/avoidance motivation in the domains of achievement and social interaction were positively correlated with one another in both cultural groups. Interestingly, for European American participants, DNIT in the achievement domain was negatively correlated with avoidance daily goals, and DNIT in the social domain was positively correlated with approach daily goals. These correlations were not present for Chinese participants.

There were also cultural differences in correlations among motivation measures and other measures (see Table 3). For the Chinese participants, DNIT (Personal Achievement) was positively correlated with Feeling of Freedom, DAA (Social interaction) was negatively
Table 3. Correlations among Motivation Variables and Non-Motivation Measures for Both Cultural Groups

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Note. *p < .05, **p < .01; Ach. = Achieve; Nat. = Nature; Apr. G = approach goals; Avo. G = avoidance goals; EA = European American; LN = Love of Nature; FF = Feeling of freedom; FS = Feeling of safety; FO = Feeling of oneness.
correlated with interdependent self-construal, Approach daily goals was positively correlated with interdependent self-construal and egoistic orientation, Avoidance daily goals was negatively correlated with independent self-construal, biospheric orientation, Love of Nature, and Feeling of Safety. For the European American participants, DNIT (Nature) was positively correlated with Feeling of Oneness, and was negatively correlated with both interdependent self-construal and altruistic orientation, and Avoidance daily goals was negatively correlated with altruistic orientation.

There were also some similarities between the Chinese participants and the European American participants. In both cultures, egoistic orientation was positively correlated with altruistic orientation, biospheric orientation was significantly correlated with feeling of freedom, and the four sub-constructs of EATNA were inter-correlated (except that feeling freedom was not correlated with feeling of safety for the Chinese cultural participants; see Table 4).

<table>
<thead>
<tr>
<th>Table 4. The Correlation Matrix for Four Sub-Constructs of EATNA for Both Cultures</th>
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<td>3. Feeling of Safety</td>
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<td>4. Feeling of Oneness</td>
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<tr>
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Note. * p < .05, ** p < .01; EA = European American
CHAPTER 4

DISCUSSION

Overall, the results for cultural differences in approach and avoidance motivation did not support findings from previous research (e.g., Elliot et al., 2001). There were no significant cultural differences for both DNIT and Daily Goals. Participants in both groups were more approach-focused than avoidance-focused. In fact, the cultural difference in DAA was in the opposite direction: Chinese participants were more approach-focused than European American participants. Interestingly, the results for independent and dependent self-construal were also different from previous findings (e.g., Oyserman et al., 2002; Triandis & Gelfand, 2012). Both Chinese and European American participants were more likely to have independent self-construal than dependent self-construal, and European Americans had higher scores on both of these measures compared to Chinese participants. Importantly, however, correlations between independent/dependent self-construal and approach/avoidance motivation were consistent with previous research for both cultural groups, supporting previous research (Elliot et al., 2001). For European Americans, dependent self-construal was negatively correlated with approach motivation (DAA), and for Chinese participants, dependent self-construal was positively correlated with avoidance motivation (Daily Goals). Together, these findings suggest that independent and dependent self-construal might be more reliable predictors of approach/avoidance motivation than cultural group membership, which is also consistent with previous findings (Elliot et al., 2001).

Some predicted cultural differences in approach and avoidance motivation between European American participants and Chinese participants were not observed in this research. For example, the cultural differences in approach and avoidance goals did not emerge in this study. There is a possible explanation for this phenomenon. It is probable that the Chinese participants in this study were more westernized, more individualist, and less collectivist compared to Chinese participants from previous research. The Chinese participants in the current study were more likely to come from urban middle or upper class families, who tend
to have a more individualist and more westernized life style. The cultural patterns of these participants may be more consistent with patterns of European American participants, so that the cultural differences were not obvious as predicted.

There were, however, some interesting differences in approach and avoidance motivation across multiple domains. DNIT in the personal achievement domain was on average higher than DNIT in the nature domain and the social interaction domain. This result indicates that participants across the two cultural groups were more approach-focused in the personal achievement domain compared to the nature domain and the social interaction domain. This finding is original in that no previous research in related fields compared the strength of approach and avoidance motivation across these domains.

Concerning concepts of incentives and threats that underlie approach and avoidance motivation, it is noteworthy in the nature domain, the Chinese participants listed more incentives that included nature than the European American participants. This cultural difference did not emerge for concepts of threats. There were no cultural differences in concepts of incentives and threats that included nature in other domains, European American participants may have been more likely to think of outdoor activities and sports as incentives for interacting with nature, rather than nature being an incentive in and of itself. It is unclear why this would be the case, and more research is needed to better understand these cultural differences. Although it can be predicted that Chinese participants might be more likely that European American participants to think about other people when describing concepts of incentives and threats underlying approach and avoidance motivation, there were no cultural differences in concepts that included other people in any of the domains. This finding aligns with the findings in the present research for cultural differences in self-construal. It is possible that Chinese participants who are more explicitly collectivist would be more likely to list other people in their concepts of incentives and threats.

Both European American participants and Chinese participants were asked to define nature in their own language. A question is worth asking about the differences in understanding of the term “nature” in different languages. It is possible that the meaning of “nature” in English is not identical with the meaning of the parallel word “自然”(means “nature”) in Chinese. This situation brings about an issue that the differences in definition of nature is partially due to the linguistic differences of English and Chinese. In addition, the
proportion of graduate students among Chinese participants was higher than the proportion of graduate students among European American participants. Graduate students’ thinking styles may vary from undergraduates’ thinking styles that graduate students’ level of abstractness of thinking may be higher than undergraduates’ level of abstractness. It is possible that Chinese participants were more likely to define nature with more abstract terms than European American participants did.

The patterns of correlations among independent/interdependent self-construal and motivation measures for Chinese participants and European American participants were varied. In other words, the strengths and directions of these correlations between the two cultures were not completely consistent. This cultural difference may suggest that individuals form the two cultures had different understandings of independent and interdependent self-construals. Namely, the concepts of independent self-construal and interdependent self-construal in European American culture were not identical with the concepts of independent self-construal and interdependent self-construal in Chinese culture. More complex cultural patterns about self-construals might exist underlying the phenomenon of varied correlations between independent/interdependent self-construal and motivation measures for the two cultures.

There are some implications from the results for concepts of nature and pro-environmental attitudes. First, there were several cultural differences in concepts of nature. Chinese participants were more likely to include themes of survival and law of nature in their definitions of nature, whereas European Americans were more likely to define nature by listing plants, animals, and natural kinds in nature or simply referring to the outdoors or the wile. It is possible that for Chinese participants, exposure to nature includes more indirect sources, such as textbooks and social media, because they tended to write about nature through knowledge from physics or biology textbooks and abstract themes instead of concrete examples. On the contrary, European American participants may be more likely to know about nature through outdoor activities, such as hiking, swimming and climbing, which are more “direct” experiences with nature. More research is needed to determine whether cultural differences are due to differences in direct exposure to nature or to differences in concepts of nature that develop through cultural worldviews. In addition, more research is
needed with a larger sample to examine the relationship between concepts of nature and approach/avoidance motivation or environmental attitudes.

Regarding the Environmental Motives Scale (Schultz, 2000), the results showed that for Chinese participants, there was overlap between egoistic and biospheric orientations, but European Americans did not show this pattern. In particular, the item “My health” loaded onto the egoistic orientation in Schultz’s (2000) results and for the European American participants in the present research, but it loaded onto the altruistic orientation for the Chinese participants. It is likely that individuals’ health is also closed related to their couples and families for the Chinese people. Similarly, the item “All people” was equally strongly related to the egoistic orientation and the altruistic orientation for Chinese participants, but was more strongly related to the altruistic orientation for European American participants. These findings are consistent with Markus and Kitayama’s (1991) propositions about interdependent self-construal. In an interdependent construal of self, the concept of self is overlapped with concepts of important others such as mother, father and close friends. In addition, there was a negative correlation between altruistic orientation and avoidance-focused daily goals for European Americans, but not for Chinese participants. For European Americans, the more likely they were to endorse pro-environmental attitudes for altruistic reasons, the less avoidance-motivated they were in their daily lives.

Some interesting findings were found for the EATNA. Compared to European American participants, the Chinese participants’ scores were lower on the Feeling of Freedom and Feeling of Safety subscales (the latter finding approached significance), and were higher on Feeling of Oneness. These results suggest that European Americans tend to feel freer and safer in the natural environment, but that Chinese participants are more likely to incorporate the concept of nature into their concept of self. Interestingly, however, a feeling of oneness in nature was positively correlated with approach motivation in the nature domain for European Americans, but there was no correlation between feeling of oneness and motivation in the nature domain for Chinese participants. There were no other significant correlations between attitudes toward nature and approach/avoidance motivation in the nature domain for either cultural group.

Finally, there were cultural differences in correlations among measures of approach/avoidance motivation. For instance, approach motivation in the nature domain was
positively correlated with approach motivation in other domains for Chinese participants but not for European American participants. This finding suggests the possibility of more domain-general motivation processes for Chinese participants than for European American participants. In contrast, for European American participants, DNIT in the achievement domain was negatively correlated with avoidance daily goals, and DNIT in the social domain was positively correlated with approach daily goals, suggesting more domain-specific motivation processes.

**LIMITATIONS**

In this study, one primary limitation was sample size. For instance, sample sizes were too small to thoroughly examine variation within cultures that may be accounted for by differences in concepts of nature, and findings that were approaching significance may become statistically significant with more power. In addition, most of the European American participants were undergraduates whose ages ranged from 19 years old to 20 years old. The Chinese participants included both undergraduate and graduate students. It is possible that there are developmental differences between the groups.

The translation of experiment materials was not perfect. In this study, all study materials originated from English sources. These materials were translated, but the original meanings of the materials may be somewhat distorted through translation. In future research, a back-translation method should be used before data collection begins. It is also possible that the motivations for participating in the study differed between groups. The Chinese participants received ten dollars as the compensation and the European American participants received extra credit in an undergraduate level course. It is possible that the Chinese participants were more motivated to “do well” in the study.

The experimental design of this study was not perfect. Some of the participants had difficulty understanding certain questions. For example, some of the participants asked the experimenter what “personal achievement” meant, and some of them could not think of even one concept related to personal achievement. It is possible that the category “personal achievement” is not salient in daily life, so that some of the participants did not know what concepts fell into this category. Other participants indicated difficulty interpreting Likert
scales for avoiding threats (which is a double negative). Future research should include a pilot study to assess interpretability of items.

**Future Research**

The current study was an exploration to examine the cultural differences in approach and avoidance motivation. Future studies can be conducted to deepen and broaden the understanding in this field. In the future research, the methods that investigated the concepts of incentives and threats as well as approach and avoidance motivation across multiple domains can be improved. The current experiment can be replicated with more rigorous experimental designs. Participants from more diverse backgrounds and age range can help to make the findings more generalizable, and can allow for an examination of within-culture differences (including differences in independent vs. interdependent self-construal among Chinese adults). Larger samples can also increase power and allow for more thorough analysis of both between-culture and within-culture variation. In the future research, relationships between the pro-environmental attitudes and approach/avoidance motivation in the domain of interacting with nature can be further explored, which brings practical implications that can make the world a better place through protecting and sustaining the natural environment.

In the current study, the domain of interacting with nature included multiple aspects such as landscapes, plants and animals, and outdoor activities. The domain of personal achievement also included multiple aspects such as academic work, personal growth, and relationships with others. In the future research, approach and avoidance motivation can be studied through dividing the three general domains into more specific domains. This may bring more detailed information about the mechanism of approach and avoidance motivation in each aspect of individuals’ lives.
REFERENCES


Elliot, A. J. (1997). Integrating the “classic” and “contemporary” approaches to achievement motivation: A hierarchical model of approach and avoidance achievement motivation. *Advances in Motivation and Achievement, 10*(7), 143-179.


APPENDIX A

EVALUATION OF CONCEPTS OF INCENTIVES AND THREATS IN THREE DOMAINS
List any events, objects and consequences associated with being in nature that are \textbf{positive} to you. Please list \textbf{all} of them that come to mind.

List any events, objects and consequences associated with being in nature that are \textbf{negative} to you. Please list \textbf{all} of them that come to mind.

List any events, objects and consequences associated with your own \textbf{personal achievement} that are \textbf{positive} to you. Please list all of them that come to mind.

List any events, objects and consequences associated with your own \textbf{personal achievement} that are \textbf{negative} to you. Please list all of them that come to mind.

List any events, objects and consequences associated with \textbf{social interaction} that are \textbf{positive} to you. Please list all of them that come to mind.

List any events, objects and consequences associated with \textbf{social interaction} that are \textbf{negative} to you. Please list all of them that come to mind.

What is your definition of nature? When you were thinking about being in nature, what did nature mean to you?
APPENDIX B

14-ITEM REDUCED VERSION OF SELF-CONSTRUCTION SCALE
This is a questionnaire that measures a variety of feelings and behaviors in various situations. Listed below are a number of statements. Read each one as if it referred to you. Then, click on the button to the left of the phrase that best matches your degree of agreement or disagreement with each statement. Please respond to every statement. Thank you.

1. My happiness depends very much on the happiness of those around me.
2. I would do what would please my family, even if I detested that activity.
3. I usually sacrifice my self-interest for the benefit of my group.
4. I enjoy working in situations involving competition with others.
5. The well-being of my co-workers is important to me.
6. I enjoy being unique and different from others in many ways.
7. Children should feel honored if their parents receive a distinguished award.
8. I often “do my own thing”.
9. Competition is the law of nature.
10. If a co-worker gets a prize, I would feel proud.
11. I am a unique individual.
12. I would sacrifice an activity that I enjoy very much if my family did not approve of it.
13. Without competition it is not possible to have a good society.
14. I feel good when I cooperate with others.
APPENDIX C

ENVIRONMENTAL MOTIVES SCALE
People around the world are generally concerned about environmental problems because of the consequences that result from harming nature. However, people differ in the consequences that concern them the most. Please rate each of the following items from 1 (not important) to 7 (supreme important) in response to the question. I am concerned about environmental problems because of the consequences for ____

_____Plants  ____My Lifestyle  ____My Health

_____Children  ____My Children  ____People in my country

_____Birds  ____Animals  ____Marine Life

_____Me  ____My Future  ____All People
APPENDIX D

THE EMOTIONAL AFFINITY WITH NATURE BY ADULTS SCALE
On a scale of 1 (complete disagreement) to 6 (complete agreement), please rate the following statements. How do you feel?

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1. When I spend time in nature today I feel free and easy.
2. Whenever I’m surrounded by nature nowadays, I have the feeling I can move without obligations.
3. At present I have the feeling I can live my life to the fill in nature.
4. I do not feel especially unrestrained and free when I spend time in nature today.
5. Surrounded by nature today I get calmer and I feel home.
6. When I spend time in nature today a feeling like security arises.
7. I feel relaxed and have a pleasant feeling of intimacy when spending time in nature at present.
8. Through direct contact with nature there is no feeling of home whatsoever nowadays.
9. These days getting in contact with nature makes me feel happy and satisfied.
10. Whenever I spend time in nature now I do it with all my heart.

11. Today I am often very absorbed through nature (landscapes, plants, animals or water etc.) and I do not notice how time goes by.

12. These days I do not feel especially at ease whenever I spend time in nature.

13. Today by direct contact with nature I feel respect for its peculiarity.

14. Spending time in nature today, I feel a deep feeling of love towards nature.

15. By getting in touch with nature today I have the feeling of the same origin.

16. Whenever I spend time in nature nowadays I do not experience a close connection to it.
APPENDIX E

CULTURAL BACKGROUND QUESTIONNAIRE
What is your age?

What is your sex?

Were you born in the United States?

If not, what is your country of origin?

How long have you lived in the United States?

On a scale from 1 to 5, to what extent do you still practice the cultural traditions of your country of origin?

1  2  3  4  5

Never  Always

What is your parents’ country of origin?

If they are from a country other than the United States, to what extent do you practice the cultural traditions of your parents’ country of origin (on a scale from 1 to 5)?

1  2  3  4  5

Never  Always

Is English your first language?

If not, what is your first language?

How long have you spoken English?

How many languages do you speak?

If you speak more than one language and you have not yet listed them all, please list them here.

What is the primary language spoken in your family’s home?