

Time and Time Again:
Cultural Differences in Construal Levels

by

Deanna L. Messervey

A thesis submitted to the Department of Psychology
in conformity with the requirements for
the degree of Doctor of Philosophy

Queen's University
Kingston, Ontario, Canada

February 2008

Copyright © Deanna L. Messervey, 2008

Abstract

People mentally represent information, objects, and events in a variety of ways. The purpose of the present program of research was to investigate how culture affects the way people represent temporal information. I hypothesized that increased temporal distance would lead Canadians to think more abstractly, and that this shift toward abstraction would be smaller, or non-existent, among Chinese. To test this hypothesis, I ran three studies with 490 participants in Canada and China (237 Canadian participants and 253 Chinese participants). In Study 1, Canadians preferred to describe actions more abstractly in the distant future than near future, and Chinese did not show this shift. In Study 2, Canadians generated fewer categories in the distant future than in the near future, whereas Chinese did not differ across time. In Study 3, Canadians recalled information about a target event either within two days after the event occurred or approximately two weeks later. Consistent with my hypotheses, Canadians' coded responses shifted toward abstraction with increased temporal distance, and Chinese did not show such a shift. A meta-analysis based on all three studies revealed that Canadians mentally represent distal events and objects more abstractly and in a less detailed way than proximal events and objects, and that Chinese showed no time effect.

Acknowledgements

This thesis reflects the support I received from numerous people. I wish to extend my gratitude to my supervisor, Dr. Li-Jun Ji. Since the time you agreed to be my mentor, you have encouraged me to grow and to progress professionally. Thank you for giving me the assistance needed to make this dissertation a reality. As well, I sincerely appreciate your support and understanding while I was dealing with some health challenges outside of school, both at the beginning of my doctoral program and more recently as I had what seemed to be never ending morning sickness.

I would also like to thank Dr. Lee Fabrigar and Dr. Jill Jacobson for their direction and guidance. You both have surpassed my expectations of the role a committee member plays. From teaching me statistical procedures to providing me with thoughtful and insightful advice in a timely manner, you have been consistently helpful. Furthermore, I truly believe I would be defending after my baby is born had you not decided to be on my committee.

I thank everybody in my lab for their contribution, although I would like to extend a special note of gratitude to Tieyuan Guo and Quan Lam for their insight. In addition, I thank the dedicated research assistants who helped me collect the data for this thesis, especially Wei Cao, Karen Fung, Crystal Ka Leng Hoi, Christopher Humphries, Rachel Leung, and Sara-Lyn Moore.

To my very special friends in Kingston and beyond, I thank you for your encouragement and friendship, including the Angela Chen, Zhilin Chen, Michelle DeLisle, Anna Ebel-Lam, Ruili Fang, Chris Howe, Hon Lam, Jason Keough, Carmen Tam, and Terence Tam.

Lastly, I want to thank my family for helping me reach this goal. My parents have been incredibly supportive during this journey. Moreover, I will never forget the love, support and encouragement I received from my husband Peter Arnold while I pursued my doctoral degree, especially when the times were tough. I thank you with all of my heart.

Table of Contents

Abstract.....	ii
Acknowledgements.....	iii
Table of Contents.....	v
List of Tables.....	vii
List of Figures.....	viii
CHAPTER 1: General Introduction.....	1
Construal Level Theory.....	1
Temporal Construal.....	3
Social Construal.....	7
Spatial Construal.....	8
Hypotheticality.....	9
Cultural Perspectives.....	10
Cultural Differences in Perceptions of Time	11
Cultural Differences in Abstract Thought.....	14
Cultural Differences in Attention to Context.....	17
Culture and Construal Level Theory.....	20
CHAPTER 2: Behavioral Identification Form (Study 1).....	23
Method.....	23
Results.....	25
Discussion.....	30
CHAPTER 3: Categorization Study (Study 2).....	32
Method.....	33

Results.....	36
Discussion.....	37
CHAPTER 4: First Day of School Study (Study 3).....	41
Method.....	42
Results.....	44
Discussion.....	47
CHAPTER 5: General Discussion.....	49
Meta-analysis.....	52
Possible Mechanism	56
Implications and Future Directions	58
References.....	62
Appendix A: Experimental Materials for Study 1.....	76
Appendix B: Experimental Materials for Study 2.....	81
Appendix C: Experimental Materials for Study 3.....	87

List of Tables

Table 1	Mean Ratings as a Function of Temporal Condition for Canadians (Study 1).....	28
Table 2	Mean Ratings as a Function of Temporal Condition for Chinese (Study 1).....	29

List of Figures

Figure 1	Mean degree of concreteness as a function of temporal distance and culture (Study 1).....	27
Figure 2	Mean number of categories as a function of temporal distance and culture (Study 2).....	38
Figure 3	Degree of concreteness as a function of temporal distance and culture (Study 3).....	48

Chapter 1

General Introduction

People perceive, interpret, and understand their social world by developing mental construals, in which they go “beyond the information given” (Bruner, 1957, p. 41) and fill in the gaps. Thus, the same situation can be construed in numerous ways. For example, one person may describe the first snowfall of the year as *precipitation*, whereas another person may describe the same occurrence as *flakes of snow falling from the sky*. Yet another person may describe the state of affairs as a *snowstorm*. The term *precipitation* denotes a general classification of snow that includes other forms of weather, including rain and hail. The phrase *flakes of snow falling from the sky* highlights the large quantity of snow, yet the description *snowstorm* underscores the unified nature of the snowfall. Consequently, the same situation can be construed in different ways depending on a variety of factors. The purpose of this thesis was to address whether culture influences the way people construe events and objects.

Construal Level Theory

Construal level theory (CLT) accounts for how psychological distance shapes human thought and behaviour (Trope & Liberman, 2003). Precisely, increased psychological distance leads people to make more abstract representations, in which psychologically distal events (and objects) are represented more abstractly than psychologically proximal events (Trope, Liberman, & Wakslak, 2007). Wakslak, Trope, Liberman, and Alony (2006) describe psychological distance as indirect experiences that extend beyond the present. In general, psychologically distal events refer to events occurring in the distant future, events taking place in a spatially far away location, events

that seem unlikely to occur, or events that involve others that are at a social distance from oneself.

People can construe the same event or object at either a high-level and or a low-level. High-level construals tend to be abstract, superordinate, and decontextualized characterizations of events or objects that impart their basic qualities. In addition, high-levels construals emphasize the importance of reaching a particular end-state, such as a desirable outcome. Low-level construals, on the other hand, are represented in a concrete and contextualized manner that conveys subordinate details. Moreover, low-level construals underscore the importance of how people reach particular end-states, such as the feasibility of an outcome. The act of taking a hike, for instance, can be construed as “being active” (high-level construal) or as “placing one foot in front of the other” (low-level construal). Research has shown that the greater the psychological distance between an individual and an event (or object), the more abstractly the individual will construe the event (see Trope & Liberman, 2003).

Apparently people represent distal events more abstractly than proximal events because they rely excessively on mental short-cuts about the relationship between distal information and abstraction (Trope & Liberman, 2003), even though these short-cuts may lead to biased judgments. In particular, details about distal events generally do not become apparent until they are closer to the “here and now.” When driving, for instance, background scenery that is spatially close is seen more concretely and in more detail than scenery that is spatially farther away. Likewise, when making forecasts regarding task completion times, contextual information that may cause delays often do not become apparent until a later time (Buehler, Griffin & Ross, 1994). Thus, people may form

associations between construal levels and distal events, in which distal events are represented more abstractly than proximal events. Moreover, this association may be used even in situations where detailed, contextual information is available for distal events.

Presently, CLT researchers (Bar-Anan, Liberman, Trope, & Algom, 2007; Fujita, Henderson, Eng, Trope & Liberman, 2006; Henderson, Fujita, Trope, & Liberman, 2006; Smith & Trope, 2006; Wakslak et al., 2006) have delineated four components of psychological distance: temporal distance, social distance, spatial distance, and hypotheticality.

Temporal construal

The most well-researched component of psychological distance is temporal construal (Eyal, Liberman, Trope, & Walther, 2004; Förster, Friedman, & Liberman, 2004; Henderson, Trope, & Carnevale, 2006; Liberman, Sagristano, & Trope, 2002; Liberman & Trope, 1998; Liberman, Trope, McCrea, & Sherman, 2007; Nussbaum, Liberman, & Trope, 2006; Nussbaum, Trope, & Liberman, 2003). In 1998, Liberman and Trope published their seminal paper on temporal construal theory that led to a surge of research investigating mental representations. According to their theory, distal future events are prone to be construed at a high-level that is characterized by abstract, superordinate, and decontextualized attributes, whereas proximal future events are likely to be construed at a low-level that is represented by concrete, subordinate, and contextualized features. Their research drew heavily on Vallacher and Wegner's action identification theory (Vallacher & Wegner, 1985; 1987; 1989; Wegner & Vallacher, 1986), which states that actions can be identified in numerous ways, and that these

identities range from lower levels (i.e., subordinate goals that address how one engages in a behaviour) to higher levels (i.e., superordinate goals that address why one engages in a behaviour).

To test action identification theory empirically, Vallacher and Wegner (1989) developed the Behavioral Identification Form (BIF), an individual difference measure that assesses levels of personal agency. The questionnaire assesses people's preferences for high or low level identifications by describing an action (e.g., making a list) and then asking participants to indicate their preference for a high-level description that highlights why you perform a given behaviour (e.g., getting organized) or a low-level description that emphasizes how you perform a given behaviour (e.g., writing things down).

Liberman and Trope (1998, Study 1) extended action identification theory by using the BIF to demonstrate that distant future events are construed in terms of high-level superordinate goals, whereas near future events are construed in terms of low-level subordinate goals.

Temporal construal also affects the way people categorize objects (Liberman et al., 2002). If people think about the near future more concretely than the distant future, then people should create more categories when classifying objects in the near future than distant future. In one experiment, Liberman and colleagues asked participants to categorize a list of items that would be used in the near or distant future, such as camping trip items. Participants created fewer classifications for distant future activities than near future activities (Liberman et al., 2002, Study 1). In another experiment, participants reported that positive and negative events in the distant future would be more prototypical and schematic than in the near future (Liberman et al., 2002, Study 2). For

instance, people who thought about having a good day tomorrow indicated that the day would be filled with more diverse experiences, including more neutral and negative events, than people who thought about having a good day next year. When Liberman and colleagues used multidimensional scaling to assess preferences for activities in the near and distant future, distant future preferences had a simpler structure and fewer dimensions than near future preferences (Liberman et al., 2002, Study 4).

Other researchers have applied CLT to self-conceptions. In this manner, people have numerous self-conceptions that are activated at any given time, such as idealistic selves and pragmatic selves (Kivetz & Tyler, 2007). An idealistic self-conception entails mentally representing oneself in accordance with one's principles and morals at the expense of pragmatic concerns, whereas a pragmatic self-conception entails mentally representing oneself in manner that takes practical concerns more into consideration than idealistic principles. For example, when choosing a bank in the distant future, people are more concerned with whether the bank treats clients with respect and appreciation (idealistic principles) than with obtaining low interest rates (pragmatic concerns). Hence, the idealistic self is superordinate to the pragmatic self in the distant future.

Researchers have also found that temporal distance affects the way people make self-predictions regarding their future performance (Gilovich, Kerr, & Medvec, 1993; Manger & Teigen, 1988; Nisan, 1972; Nussbaum et al., 2006), in which people rely less on contextual information in the distant future than in the near future when generating predictions. When predicting performance on an upcoming task, people expected to perform better on a task that was described as taking place in the distant future than in the near future (Gilovich et al., 1993). Likewise, students who indicated their predicted

grade on an exam eight months prior to the exam were much more optimistic than students who indicated their expectations two months before the exam (Manger & Teigen, 1988). When making confidence judgments for their future behaviour, people tend to largely ignore contextual details when the task is temporally distant as compared to temporally near (Nussbaum et al., 2006). Temporal distance not only affects self-predictions, but also affects the way people make predictions for others. For example, researchers have found that people are more likely to underestimate the role of context when predicting others' behaviours in the distant future than in the near future (Nussbaum et al., 2003, Study 1).

Apparently temporal distance leads people to generate abstract future representations that lack low-level information. These findings are consistent with the overconfidence literature, in which distant future representations tend to be abstract, decontextualized oversimplifications, including the planning fallacy (Buehler et al., 1994; Buehler, Messervey, & Griffin, 2005), affective forecasting (Wilson, Wheatley, Meyers, Gilbert & Axson, 2000), and situational construal (Griffin, Dunning, & Ross, 1990). For example, a cognitive account of the planning fallacy suggests that people ignore contextual information and details that may lead people to complete upcoming tasks later than predicted (Buehler et al., 1994). Consistent with construal level theory, a great deal of research supports the notion that Westerners represent the distant future more abstractly than the near future, in which they pay insufficient attention to contextual information.

Recently, researchers have begun to explore whether the relationship between construal levels and psychological distance can be reversed (Lieberman et al., 2007). In

the past, researchers have largely focused on whether distal events are construed at a higher level than proximal events (Liberman & Trope, 1998). Liberman and associates (Liberman et al., 2007), however, examined the inverse relationship by exploring how psychological distance, such as temporal distance, affects construal levels. They found that mentally representing an event concretely (e.g., how you will reach a particular goal) led people to report that the event would take place sooner than representing an event abstractly (e.g., why you will want to reach a particular goal).

Social Construal

In addition to temporal distance, social distance is another component of construal level theory that has empirical support from both classic and recent sources, in which greater social distance leads to greater abstract and decontextualized thinking. Jones and Nisbett (1972) argue that people tend to attribute their own behaviour to situational factors and the behaviours of others to internal dispositions. Numerous researchers have provided empirical support for the theory that people perceive the actions of others more abstractly and dispositionally than they perceive their own actions (Nisbett, Caputo, Legant & Marecek, 1973; Saulnier & Perlman, 1981; Schoeneman & Rubanowitz, 1985).

More recently, Ebert (2005) found that people's judgments for themselves and others are influenced by psychological distance. She presented participants with four scenarios that had short-term costs (i.e., concrete low-level construal) or long-term benefits (i.e., abstract high-level construal). Next, half the participants rated the importance of the long-term benefits and short-term costs for themselves, whereas the other half of participants made ratings for others. Ebert found that people placed more emphasis on the short-term costs when they made importance ratings for themselves than

when they made importance ratings others, indicating that people think more abstractly about events that are relevant to others than personally relevant events. In a similar vein, Nan (2007) found that abstractly framed messages are more influential when people make judgments for others than for themselves, and messages that are framed in a concrete manner are more influential when making judgments pertaining to oneself rather than distal others.

Priming research has demonstrated the role social power has on construal levels for tasks involving categorization, intuitive and abstract reasoning, perception, and hemispheric activation. People in positions of power are more likely to perceive the big picture than people who hold positions with little power, possibly because the position requires the ability to achieve central goals and make future plans (Smith & Trope, 2006). In one experiment, participants described a situation when they either had power over others (high power priming condition) or when others had power over them (low power priming condition). Participants primed with high power thought more abstractly than those primed with low power, even when abstract thinking led to inferior performance (Smith & Trope, 2006, Study 4). In another experiment, participants primed with high power generated fewer categories that tended to include more atypical exemplars than participants primed with low power (Smith & Trope, 2006, Study 1). These findings illustrate that the perception of having power leads people to think more abstractly and at a higher-level than those without power.

Spatial Construal

Spatial construal refers to how an individual's mental representations are dependent on his or her proximity to an event or object, in which events and objects

closer in space are represented more concretely than those that are further away (Fujita et al., 2006; Henderson et al., 2006). For example, Henderson and colleagues presented participants with a silent cartoon of characters who went on a camping trip that was described as being either spatially near or spatially distant. Participants pushed a button on a keyboard to indicate meaningful segments of behaviour. Henderson and colleagues found that those who imagined the cartoon being filmed nearby generated more behavioural units than those who imagined the cartoon taking place in a distant location. Thus, participants assigned to the spatially near condition thought about the cartoon in a more detailed and concrete manner than those assigned to the spatially distant condition.

Other researchers have found that construal levels affect the way people process spatial information. Bar-Anan, Liberman, and Trope (2006) found associations between words that express spatial distance and abstraction on the Implicit Association Test (IAT; Greenwald, McGhee, & Schwarz, 1998). For example, people processed abstract words that were paired with spatially distant words faster than abstract words that were paired with spatially proximal words.

Hypotheticality

The fourth aspect of psychological distance, hypotheticality, refers to the finding that low-level, contextually based construals of events lead people to believe that those events are more probable than high-level, abstract construals (Bar-Anan et al., 2006). In earlier studies, Sherman and colleagues (Sherman, Cialdini, Schwartzman, & Reynolds, 1985; Sherman, Zehner, Johnson, & Hirt, 1983) found that simply imagining an outcome leads people to believe that the outcome is more likely to happen than not imagining it. For example, these researchers asked students to imagine a disease that had symptoms

that were either easy-to-imagine (low-level construal) or difficult-to-imagine (high-level construal). Students who were assigned to the easy-to-imagine condition reported that they were more likely to contract the disease than were students assigned to the difficult-to-imagine condition.

More recently, Wakslak et al. (2006) found that increasing the probability of an event led to more concrete contextualized construals, whereas decreasing the probability led to more abstract construals. When given an unanticipated recall task, for example, participants who believed that it was highly *likely* that they would engage in a future event (high probability condition) provided more detailed written descriptions than participants who thought it was highly *unlikely* that they would engage in the event (low probability condition).

Researchers have found support for CLT by explicitly testing the link between hypotheticality and construal levels using the IAT (Bar-Anan et al., 2006) and a modified version of the Stroop task (Bar-Anan et al., 2007). Using the IAT, for instance, Bar-Anan et al. (2006) found hypothetically distal terms (e.g., imaginary, hallucination) were processed faster when they were paired with abstract terms (e.g., general, abstract) as compared to concrete terms (e.g., details, specific). Conversely, hypothetically proximal terms (e.g., realism, authentic) were processed more rapidly when they were paired with concrete terms rather than abstract terms.

Cultural Perspectives

Although a great deal of research has examined the four dimensions of CLT for a myriad of domains, little or no published research has demonstrated that CLT is universal. There are strong theoretical reasons, however, to propose that CLT may not be

generalizable to East Asians¹, and in particular to Chinese. In the following review, I compare East Asian cultures, such as Chinese, Japanese, and Koreans, to Western cultures, such as Canadians, Americans, Italians, and Israelis. A review of the literature suggests that although East Asian cultures and Western cultures differ on some social psychological dimensions within their respective cultures (e.g., Galtung, 1981; Yates, Lee, Shinotsuka, Patalano, & Sieck, 1998), there are more intercultural psychological differences than intracultural psychological differences in a variety of realms (Choi, Nisbett, & Norenzayan, 1999; Fiske, Kitayama, Markus, & Nisbett, 1998; Nisbett, Peng, Choi, & Norenzayan, 2001).

Cultural Differences in Perceptions of Time

Several lines of research have shown that East Asians and Westerners tend to have different conceptions of time. For example, Chinese have a cyclical view of time, in which Chuang Tzu claims the “succession of decline, growth, fullness, and emptiness go in a cycle, each end becoming a new beginning” (see Chan, 1963, p. 206 -207). Westerners, on the other hand, tend to have a linear view of time that is characterized as progressively unidirectional (Cheng, 1974; Liu, 1974). Moreover, scholars from a variety of fields have found that Chinese are apt to value both the future and the past more than Westerners (Brislin & Kim, 2003; Fang, 2003). Bond and others formed a global network of researchers who were interested in investigating the degree people endorse Chinese values (Chinese Culture Connection, 1987). Students from 22 countries completed the Chinese Value Survey (CVS), a measure that assesses fundamental Chinese values. They found that East Asians, namely Hong Kong Chinese, Taiwanese,

¹ In this paper, I use the term East Asians to refer to Chinese, Japanese, and Koreans and the term Westerners to refer to Canadians, Americans, Israelis, and Western Europeans.

Japanese, and South Koreans, were more likely to indicate that values associated with a past-orientation and a future-orientation were more important to them than other nationalities, including Americans and Canadians. For example, East Asians were more likely to endorse *respect for tradition* (past-orientation), *thrift* (future-orientation), and *persistence* (future-orientation) than Westerners.

Hofstede (1991, 2001), who studied cross-cultural work-related values and published his results in *Culture's Consequences* (1980), incorporated the findings of the Chinese Culture Connection in his later work. In particular, he added an additional dimension of culture variability called *long-term orientation*. Cultures that are high in long-term orientation, such as Mainland Chinese, Hong Kong Chinese, Taiwanese, Japanese, and South Koreans, tend to persist at tasks, show thrift, have a keen sense of shame, and are sensitive to hierarchy. Cultures on the low end of long-term orientation, such as Canadians, Americans, and Pakistanis, do not value the virtues associated with future rewards to the same degree as Chinese.

More recently, Ji, Guo, Zhang, and Messervey (2007) found that Chinese perceive past temporal information differently than Canadians. In one study, participants read a scenario about a student living in residence who had money stolen from her room. Chinese students tended to consider clues that pertained to the past as more relevant to solving the case than Canadian students did. In another related study, they found that Chinese are more likely to see the past as being subjectively closer to the present than Canadians do. When Canadian and Chinese students indicated how far away the present month, one year ago felt to them, Chinese reported that the same month one year ago felt subjectively closer to them than Canadians did. Accordingly, Chinese represent the distal

past differently than Canadians. Other research illustrates that Chinese also perceive future events as being closer to the present (Guo, Ji, & Meng, 2007). In particular, Chinese indicated that upcoming future exams felt subjectively closer to the present than Canadians did, even though the actual temporal distances were similar across cultures. Expressed differently, Chinese tend to perceive distal information, both past and future, as being closer to the present than Canadians do.

The empirical research cited above is consistent with writings in other disciplines. For example, some scholars have found that Chinese have a strong past-temporal orientation that emphasizes tradition and respect of history (Burkhardt, 1953; Klukhohn & Strodbeck, 1961). Cheng (1974), a Chinese philosopher, posits that Chinese strive to understand historical events in a detailed manner. According to the Confucian perspective, it is essential to pay attention to history so that people are guided in their present behaviours (Beauchamp, 2001; Liu, 1974). Some Chinese intellectuals even claim that most Chinese have a sense of enduring pride related to their ancient cultural traditions (Link, 1992). Indeed, it is important to have proficiency in traditional Chinese learning to gain status as an intellectual in China (Lin, 1996). This view contrasts with the Western scientific perspective that stresses the importance of replacing old assumptions and findings with the latest knowledge (Gergen, 1997). In a similar vein, researchers who examined the frequency of citations from the recent and remote past in the social and physical sciences found that Chinese were more likely to use older citations than English-speakers (Bloch & Chi, 1995). Likewise, academics in the humanities have found that Chinese literature often draws upon history and tradition to illustrate difficult situations that are presently experienced (Beauchamp, 2001). Education

researchers have found that education plays an important role in connecting the past to the future (Chan, 1999; Yee, 1989). As well, education provides a way to train future leaders (Yee, 1989). Overall, there are strong theoretical and empirical grounds to conclude that Chinese tend to mentally represent the past and future differently than Canadians and other Westerners. Accordingly, it is likely that Chinese may represent near and distal information in a more similar manner than Canadians do.

Cultural Differences in Abstract Thought

In general, East Asians, including Chinese, Japanese and Koreans, rely on abstraction differently than their Western counterparts (Bond & Cheung, 1983; Rhee, Uleman, Lee, & Roman, 1995). Most researchers have found that Westerners think more abstractly than East Asians do (Kanagawa, Cross, & Markus; 2001; Maass, Karasawa, Politi, & Suga, 2006), although a few researchers have found that East Asians use abstraction more than Westerners in some contexts (Cousins, 1989; Menon, Morris, Chiu, & Hong, 1999). For instance, Cousins (1989) found that Japanese made less abstract self-descriptions than Americans when they completed the standard Twenty Statements Test (TST; Kuhn & McPartland, 1954); yet, Japanese made more abstract descriptions than Americans when they were given a contextualized version of the TST². Cousins (1989) argues that these differences stem from differential worldviews. Expressly,

² Bond and Cheung (1983) found that Japanese who completed the TST generated less abstract statements than Americans and Hong Kong Chinese. It is worth noting that the study was conducted when Hong Kong was a British colony. Some theorists argue that modernization leads to greater abstract thinking (see Cousins, 1989). There is some empirical support for this argument. For example, previous research has shown that Hong Kong Chinese and Singapore Chinese think differently than Mainland Chinese and Taiwanese on a categorization task (Ji, Zhang, & Nisbett, 2004). Similarly, Mainland Chinese managers who worked in Hong Kong felt their subordinates were more inclined to criticize their supervisors as compared to Hong Kong managers who worked in Mainland China (Selmer, Ling, Shiu, & de Leon, 2003). Other researchers have found that Taiwanese that scored high on a modernity scale tended to be more individualistic than Taiwanese that scored low on a modernity scale (Yang, 1981). It is possible that Hong Kong Chinese may think differently than Mainland Chinese in a variety of domains.

Japanese tend to think more abstractly when the context is explicitly specified because they see themselves as being connected to others and embedded in a social world. Americans, on the other hand, tend to see themselves as uninfluenced by context; thus, they tend to generate abstract self-descriptions that largely ignore the role of context. In this manner, when the context is specified, such as in the contextualized TST, abstract traits no longer have the same meaning, because Americans are no longer able to generalize their self-perceptions across a wide-range of situations. Other researchers have found that Koreans who completed the TST made fewer abstract statements than Americans did (Rhee et al., 1995). Likewise, research comparing Chinese and American responses on the TST demonstrated that Americans were more likely to use abstract descriptions than Chinese did (Ip & Bond, 1995; Triandis, McCusker, & Hui, 1990). Thus, Westerners appear to rely on abstraction more than East Asians when making judgments pertaining to the self-concept, unless the context is explicitly specified.

Research on person representation supports the notion that East Asians think less abstractly than Westerners. In one study, Italians and Japanese described an individual that they knew well and a target group (Maass et al., 2006). Researchers coded participants' responses using the Linguistic Categorization Model (LCM; Semin & Fiedler, 1988), in which written responses are coded on a continuum that ranges from the least abstract to the most abstract. These researchers found that Italians use more abstract words to describe the behaviours of others than Japanese did. Likewise, researchers have found that American children engaged in spontaneous trait inference, but Puerto Rican children did not (Newman, 1991). These findings are consistent with research with Indians on person perception. For example, Shweder and Bourne (1982) found that some

Indians engage in concrete and context-specific thought when describing other people. Likewise, research on attributions for behaviour provides support for the argument that Americans tend to think more abstractly than Indians (Miller, 1984).

Regulatory focus (Higgins, 1998), which states that people attain goals by either focusing on obtaining desirable outcomes (promotion focus) or by focusing on avoiding undesirable outcomes (prevention focus), provides converging evidence that Westerners tend to process abstract information differently than East Asians. For example, research shows that Chinese have a prevention regulatory focus when thinking about goal attainment, whereas Americans had a promotion regulatory focus (Zhang & Mittal, 2007). This finding is consistent with research demonstrating that people who have a dominant independent self-construal tend to focus on promotion goals, whereas people who have a dominant interdependent self-construal tend to focus on prevention goals (Lee, Aaker, & Gardner, 2000). Because a promotion regulatory focus is associated more with abstraction than a prevention regulatory focus (Förster & Higgins, 2005; Semin, Higgins, de Montes, Estourget, & Valencia, 2005), Americans tend to think more abstractly than Chinese when thinking about goal attainment.

Thus far, most of the research discussed comparing East Asians and Westerners have found support for the argument that Westerners are more likely to think abstractly than East Asians. There appears to be one caveat, however, when East Asians tend to make more abstract judgments than Westerners. In particular, East Asians may think more abstractly than Westerners when making attributions for and when stereotyping collectives. In this manner, researchers have found that East Asians make greater dispositional attributions for groups, whereas Westerners are more likely than East

Asians to make dispositional attributions for individuals (Menon et al., 1999). For example, when Chinese and Americans read about either an individual making a transgression or a collective making a transgression, Americans made more dispositional attributions at the individual level than Chinese. Of importance, Chinese made more abstract dispositions for collectives than Americans. Similar findings have been found in the culture and stereotyping literature (Spencer-Rodgers, Williams, Hamilton, Peng, & Wang, 2007). Whereas making an attribution entails ascribing causal reasons for a person's behaviour, stereotyping involves assigning traits to an entire social group and then inferring characteristics based on an individual's group membership. When Spencer-Rodgers and colleagues examined how East Asians and Westerners make stereotypic inferences for collectives, they also found that East Asians relied more on abstraction than Westerners. For instance, when Chinese and Americans made inferences about two bogus social groups, Chinese made more stereotypical trait inferences than Americans.

Cultural Differences in Attention to Context

Previous research illustrates that East Asians are more likely to attend to contextual information more than Westerners. In one program of research investigating the role of context across cultures, Masuda and Nisbett (2001) presented participants with underwater scenes and asked participants to report their observations. Scenes contained focal fish, active objects, inert objects, and background information. Although Japanese and American participants were just as likely to notice focal information, Japanese participants were much more likely to notice the context, such as inert objects and background information.

In a similar vein, Ji, Peng, and Nisbett (2000) gave Chinese and American students a perception test that was based on Witkin's rod-and-frame test (RFT; Witkin, Lewis, Hertzman, Machover, Meissner, & Karp, 1954). The RFT is made of a box (also called frame), and a black line (also called rod) at the end of the box. The frame and the rod can be turned independently of each other. When European American and East Asian (mainly Chinese) participants made perceptual judgments about the position of the rod, Ji and her colleagues found that the position of the frame affected Asians' perceptions of the rod more than Americans' perceptions. Apparently, Americans are more field independent, in which they tend to separate the focal object from its context. On the contrary, Chinese had a field dependent cognitive style that emphasizes making perceptual judgments based on the relationship between the focal object and the background.

Cultural differences in attention to contextual information are not limited to perceptual tasks. Researchers have also found that East Asians are more sensitive than Westerners to background information in social domains (Choi & Nisbett, 1998). For example, Americans are susceptible to the correspondence bias: the tendency to attribute the causes of behaviours to the internal characteristic of an actor, even when the actor's actions are clearly influenced by situational factors (Jones & Harris, 1967; Ross, 1977). Choi and Nisbett (1998) found, however, that when situational factors were salient, Koreans were less prone to the correspondence bias than were Americans. Similarly, other researchers have found cultural differences in the correspondence bias. Van Boven, Kamada, and Gilovich (1999) instructed American students to give speeches that were inconsistent with their personal beliefs to small groups of observers. They found that Americans tended to overestimate the extent to which observers would make

dispositional attributions for their behaviour. When the investigators compared American and Japanese estimates of observers' tendencies to make dispositional attributions using a different paradigm, they found that Americans misjudged the extent to which observers would make dispositional attributions whereas Japanese did not.

Likewise, Morris and Peng (1994) found that American and Chinese journalists tend to focus on different information when explaining the causes of social events. When investigating the causes of murders, American journalists were more likely to focus on the unfavourable attributes of the murderers as compared to Chinese journalists. Chinese journalists, on the other hand, tended to focus on situational information that might have influenced the murderer. Similarly, American sports writers tend to make more dispositional attributions than Hong Kong sport writers (Lee, Hallahan, & Herzog, 1996). These cultural differences underscore how East Asians attend more to contextual information than Westerners when making causal attributions (Choi et al., 1999).

Thus far, I have drawn upon the cultural psychology literature to demonstrate that Easterners are more likely to focus on contextual information than Westerners and that this tendency influences the way they make perceptual judgments and causal attributions. Research from the affective forecasting domain provides further evidence that Westerners pay too much attention to focal information at the expense of not paying sufficient attention to contextual information. For instance, Wilson et al., (2000) have found that Americans tend to overestimate how long their affective reactions to future events will last. They argue that this bias in affective forecasting is partly explained by focalism - the tendency to attend too much to a salient event and to pay insufficient attention to the consequences of other future events. In this manner, people tend to largely ignore

contextual information that may lessen their affective reactions. Interestingly, investigators found that East Asians were less likely to overestimate the impact of future target events on their emotional states than Canadians were (Lam, Buehler, McFarland, Ross, & Cheung, 2005).

Altogether, the research suggests that East Asians are apt to think more contextually than Westerners. In addition, East Asians may think less abstractly than Westerners in numerous situations, unless they are stereotyping and making attributions for collectives. Moreover, literature from a myriad of fields suggests that Chinese value the past and future more than other Westerners do. Consequently, Chinese feel that distal events are subjectively closer to the present than Canadians do.

Culture and Construal Level Theory

Generally, research in support of CLT posits that people who adopt a distal temporal perspective tend to view information more abstractly, and less contextually, than people who adopt a proximal temporal perspective. In other words, greater temporal distance leads Westerners to shift toward more abstract thinking. Past CLT research, however, has been largely limited to Western samples. Because temporal perspectives are influenced by culture, it is important to explicitly test whether CLT can be applied to non-Westerners. In particular, it is unclear whether CLT applies to Chinese in the same manner that it applies to Westerners.

Chinese are more past-oriented and future-oriented than Canadians, in which they perceive distal events and objects as being subjectively closer to the present than Canadians do. Thus, Chinese may demonstrate a weaker time effect than Canadians, in which they would be more likely than Canadians to represent near and distal information

in a similar manner. Moreover, abstraction and context are distinguishing features of high-level and low-level mental construals, yet research illustrates that Chinese generally pay greater attention to contextual information and rely on abstraction less than Westerners in many situations. Therefore, I did not expect Chinese to demonstrate the pattern of findings associated with CLT to the same extent as Canadians. Expressly, I expected that greater temporal distance would lead Canadians to shift toward more abstract thinking, and that Chinese would be less likely to shift toward more abstraction with increased temporal distance. Consequently, I anticipated that Canadians assigned to the distal condition would make more abstract judgments than Canadians assigned to the proximal condition. Among Chinese, however, I did not expect that participants assigned to the distal condition would significantly differ from Chinese assigned to the proximal condition. In other words, I expected to find a significant interaction between culture and time. As previously mentioned, a great deal of cultural psychology research has illustrated that Chinese think less abstractly and more contextually than other Westerners. Therefore, I expected a main effect of culture, in which Chinese would make fewer abstract judgments than Canadians.

The purpose of the present paper was to investigate whether, and how, CLT applies to Chinese. In three studies, I compared how differently Canadians and Chinese mentally represent temporally near, and distant, events and objects. In Study 1, Canadians and Chinese indicated their preferences for events that take place in the near or distant future, whereas in Study 2 participants categorized objects they might use in the proximal or distal future. Study 3 extended this program of research by exploring how mental representations of past events are affected by culture. Across all three studies, I had one

main hypothesis and one secondary hypothesis. My main hypothesis was that I expected to find a significant culture by time interaction, in which Canadians shift toward abstraction with greater temporal distance, and that Chinese show this pattern of findings to a lesser extent or not at all. Specifically, I hypothesized that Canadians assigned to the distal condition would significantly differ from Canadians assigned to the proximal condition. Furthermore, I expected this difference between the distal and proximal conditions to be smaller for Chinese. My secondary hypothesis was that I expected Chinese to make fewer abstract judgments than Canadians.

CHAPTER 2

Behavioral Identification Form (Study 1)

In Study 1, participants completed a slightly revised Behavioral Identification Form (BIF: Vallacher & Wegner, 1989), in which they indicated their preferences for either temporally near or distant events. My main hypothesis was that I anticipated Canadians would select significantly more abstract activities in the distant future than in the near future, and that this difference would be smaller among Chinese. As a secondary hypothesis, I expected that Chinese would select more concrete responses than Canadians overall.

Method

Participants

I recruited 160 undergraduate students in total, in which 85 students (23 males, 61 females, and 1 unknown) completed the study at Queen's University in Ontario, Canada and 75 students (28 males, 46 females, and 1 unknown) completed the study at Central China Normal University in Wuhan, China³. Canadian students ranged in age from 17 – 41 years ($M = 18.70$, $SD = 3.31$) and Chinese students ranged in age from 18 – 27 ($M = 20.84$, $SD = 1.41$)⁴. Canadians received course credit and Chinese received payment for their participation.

Procedure

I recruited participants by advertising on the psychology on-line participant pool in Canada and by making announcements in China. Upon entering the laboratory or

³ There was no significant main effect of gender or any interaction effects in Study 1. In Study 2, there were an insufficient number of males to have a meaningful comparison involving gender. In Study 3, there were no main effects or interactions involving gender. Therefore, gender is not mentioned further.

⁴ For Studies 1 – 3, age did not significantly correlate with any of the dependent variables; therefore, it is not mentioned further.

classroom, participants received a combined consent and letter of information form (see Appendix A for Study 1 materials). In addition, the experimenter told participants that participation was voluntary, they were free to omit the answers to any questions they did not feel comfortable answering, and that they could withdraw from the study at any time without penalty. After participants read the consent form, they completed a questionnaire that is based on Vallacher and Wegner's Behavior Identification Form (BIF: Vallacher & Wegner, 1989). To ensure cultural equivalence, I asked five bicultural judges to read the list of items that were based on the BIF and to identify items that may not be culturally appropriate. Based on judges' recommendations, I deleted several items from the scale, including "measuring a room for carpet" and "travelling by car." Thus, the final BIF questionnaire consisted of 16 items. In particular, participants read:

Any behaviour can be identified in many ways. For example, one person might describe a behaviour as "typing a paper", while another might describe the behaviour as "pushing keys". Yet another person might describe the behaviour as "expressing thoughts". We are interested in your personal preferences for how a number of different behaviours should be described. On the following pages you will find several different behaviours listed. After each behaviour will be two choices of different ways in which the behaviour might be identified. Here is an example:

1. Attending class
 - a. sitting in a chair
 - b. looking at the blackboard

Participants read that they should select the option that best describes the behaviour. In addition, they read that there were no correct or incorrect responses, and that we were simply interested in their personal preferences.

Next, participants viewed a table comprised of four columns. The first column was labelled "Action" and had a list of 14 actions: (1) Making a list, (2) Reading, (3) Cleaning the house, (4) Painting the room, (5) Caring for houseplants, (6) Locking a

door, (7) Filling out a personality test, (8) Toothbrushing, (9) Taking a test, (10) Greeting somebody, (11) Resisting temptation, (12) Eating, (13) Having a cavity filled, and (14) Talking to a child⁵. The action column indicated participants' assigned condition, namely near future or distant future. In other words, half the participants read the action followed by the word "tomorrow" and the other half of participants read the action followed by the words "next year". In the second column labelled "A" and the third column labelled "B", participants read two behavioural identifications. Half of the identifications in columns A and B were abstract, whereas the other half were concrete. In the fourth column, labelled "Select A or B", participants indicated the option they thought best described the action.

In addition to completing a revised BIF, participants filled out a demographic questionnaire that included questions pertaining to age, sex, and ethnicity. All materials were first developed in English, translated into simplified Chinese, and then back-translated into English to ensure the accuracy to the translation (Brislin, 1970).

Results

In Canada, 85 participants completed the revised BIF questionnaire and in China 75 participants completed the questionnaire. I omitted 8 participants in Canada because two participants were not of European descent and six participants demonstrated a response set (e.g., participants alternating between a and b systematically), and I omitted six Chinese participants who demonstrated a response set. There were a total of 146 participants remaining for the analyses.

⁵ I included two more items in the test, namely paying the rent and washing clothes, but then dropped them from the final analyses, because they were deemed to be culturally inappropriate. In particular, it is uncommon for Chinese students to pay the rent with cheques and to use a washing machine to clean their clothes.

To test the prediction that Canadians would provide more concrete responses in the near future condition than in the distant future condition and that this difference would be smaller for Chinese, I conducted a 2 (Culture: Canadian vs. Chinese) X 2 (Time: Near vs. Distant) X 14 (Question type: Questions 1 – 14) mixed-model ANOVA. Culture and time were between-subjects factors and question type was treated as a within-subjects factor. The dependent variable was the composite score of the averaged ratings.

My main hypothesis was that Canadians would shift more toward abstraction with greater temporal distance, and that Chinese would show a smaller shift or no shift at all. As expected, there was a significant interaction between culture and time, $F(1, 142) = 5.04, p = .03$ (See Figure 1). Canadians assigned to the near future condition ($M = 1.44, SD = .21$) tended to select more concrete options than Canadians assigned to the distant future condition ($M = 1.35, SD = .16$), $t(75) = 1.90, p = .06$, (See Table 1). The hypothesis that Chinese would not show this pattern of findings to the same extent was also confirmed. Chinese participants assigned to the near future condition ($M = 1.30, SD = .20$) were not significantly more likely to provide more concrete judgments than Chinese assigned to the distant future condition ($M = 1.37, SD = 0.20$), $t(67) = 1.31, p = .20$ (see Table 2). The effect size for this interaction was partial $\eta^2 = .03$ and the observed power was .61. In addition, I found that Canadians assigned to the near future condition endorsed more concrete options than Chinese assigned to the near future condition, $t(70) = 2.64, p = .01$. Canadians and Chinese assigned to distant future condition did not differ from each other, $t(70) = .36, p = .72$.

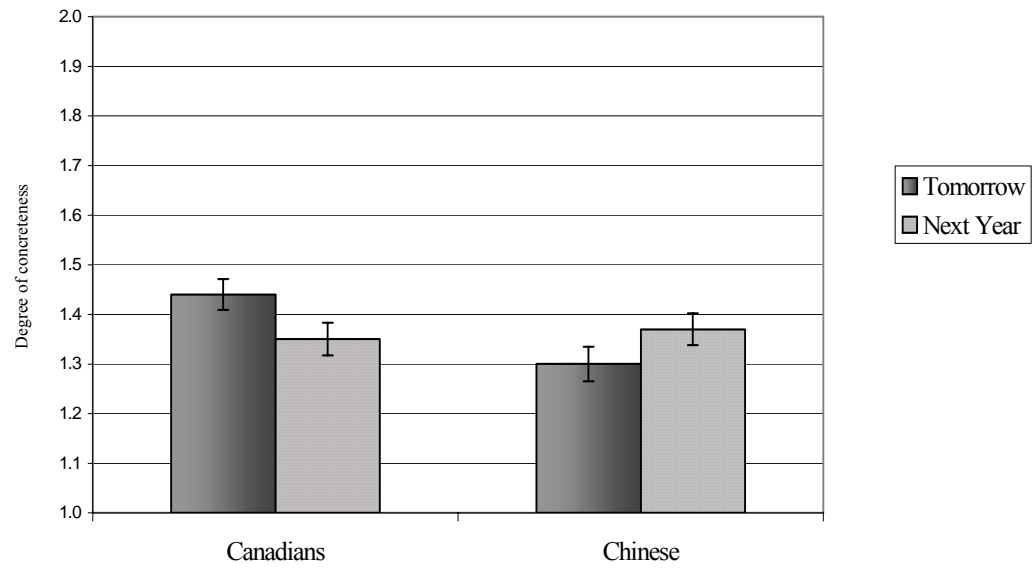


Figure 1. Mean degree of concreteness as a function of temporal distance and culture (Study 1).

Table 1

Mean Ratings as a Function of Temporal Condition for Canadians (Study 1)

Actions		Temporal Condition	
		Tomorrow (n = 41)	Next Year (n = 36)
Making a list	<i>M</i>	1.29	1.25
	<i>SD</i>	0.46	0.44
Reading	<i>M</i>	1.10	1.06
	<i>SD</i>	0.30	0.23
Cleaning the house	<i>M</i>	1.56	1.42
	<i>SD</i>	0.50	0.50
Painting the room	<i>M</i>	1.29	1.22
	<i>SD</i>	0.46	0.42
Caring for houseplants	<i>M</i>	1.83	1.69
	<i>SD</i>	0.38	0.47
Locking a door	<i>M</i>	1.17	1.11
	<i>SD</i>	0.38	0.32
Filling out a personality test	<i>M</i>	1.59	1.39
	<i>SD</i>	0.50	0.49
Toothbrushing	<i>M</i>	1.17	1.11
	<i>SD</i>	0.38	0.32
Taking a test	<i>M</i>	1.59	1.50
	<i>SD</i>	0.50	0.51
Greeting somebody	<i>M</i>	1.46	1.47
	<i>SD</i>	0.51	0.51
Resisting temptation	<i>M</i>	1.56	1.58
	<i>SD</i>	0.50	0.50
Eating	<i>M</i>	1.24	1.28
	<i>SD</i>	0.44	0.45
Having a cavity filled	<i>M</i>	1.80	1.47
	<i>SD</i>	0.40	0.51
Talking to a child	<i>M</i>	1.44	1.39
	<i>SD</i>	0.50	0.49

Table 2

Mean Ratings as a Function of Temporal Condition for Chinese (Study 1)

Actions		Temporal Condition	
		Tomorrow (n = 31)	Next Year (n = 38)
Making a list	<i>M</i>	1.23	1.39
	<i>SD</i>	0.43	0.50
Reading	<i>M</i>	1.23	1.13
	<i>SD</i>	0.43	0.34
Cleaning the house	<i>M</i>	1.19	1.26
	<i>SD</i>	0.40	0.50
Painting the room	<i>M</i>	1.06	1.03
	<i>SD</i>	0.25	0.16
Caring for houseplants	<i>M</i>	1.52	1.55
	<i>SD</i>	0.51	0.50
Locking a door	<i>M</i>	1.19	1.16
	<i>SD</i>	0.40	0.37
Filling out a personality test	<i>M</i>	1.23	1.34
	<i>SD</i>	0.43	0.48
Toothbrushing	<i>M</i>	1.32	1.39
	<i>SD</i>	0.48	0.50
Taking a test	<i>M</i>	1.45	1.47
	<i>SD</i>	0.51	0.51
Greeting somebody	<i>M</i>	1.13	1.29
	<i>SD</i>	0.34	0.46
Resisting temptation	<i>M</i>	1.61	1.55
	<i>SD</i>	0.50	0.51
Eating	<i>M</i>	1.39	1.47
	<i>SD</i>	0.50	0.51
Having a cavity filled	<i>M</i>	1.29	1.61
	<i>SD</i>	0.46	0.50
Talking to a child	<i>M</i>	1.42	1.50
	<i>SD</i>	0.50	0.51

The ANOVA revealed no significant main effect of time, $F(1, 142) < 1, p = .78$. There was, however, a main effect of question type, $F(13, 130) = 21.23, p < .001$, indicating that participants' responses varied by question type. There was no interaction effect of question type and time, $F(13, 130) < 1, p = .90$. However, there was a significant interaction between question type and culture $F(13, 130) = 5.87, p < .001$, which indicates that Canadians and Chinese tend to endorse concrete or abstract responses differently depending on the question type. There was no three-way interaction between culture, time and question type, $F(13, 130) = 1.43, p = .16$.

As you may recall, my secondary hypothesis was that Chinese would endorse more concrete options than Canadians. The ANOVA revealed a marginally significant main effect of culture, $F(1, 142) = 3.16, p = .08$. Contrary to expectations, I found that there was a trend for Canadians ($M = 1.40, SD = 0.19$) to endorse more concrete responses than Chinese ($M = 1.34, SD = .20$). The effect size for the main effect of culture was partial $\eta^2 = .02$ and the observed power was .42.

Discussion

Overall, the findings from Study 1 are consistent with my main hypothesis: As temporal distance increases, Canadians tend to shift toward greater abstraction, and Chinese did not show such a shift. In particular, Canadians tend to select more abstract options in the distant future than in the near future, as indicated by the marginally significant difference between the near and distant future conditions. Chinese assigned to the near future condition did not significantly differ from Chinese assigned to the near future condition. As a result, I found a significant culture by time interaction: Canadians

are more likely to shift toward abstraction as temporal distance increases whereas Chinese do not shift toward abstraction.

Although I found the hypothesized culture by time interaction, I did not find support for my secondary hypothesis, namely that Chinese would select more concrete responses than Canadians. Instead, I found a trend for Canadians to endorse more concrete responses than Chinese. This finding is contrary to expectations and a large body of research in cultural psychology. Although the main effect was only marginally significant, it warrants additional research to determine whether this finding is reliable and robust.

In Study 1, participants indicated their preferred way of describing actions that take place in the near and distant future. In the second study, I explore whether Canadians classify information more abstractly in the distant future than near future, and whether Chinese would show such a tendency.

CHAPTER 3

Categorization Study (Study 2)

Study 1 demonstrated that Canadians preferred more concrete descriptions of actions in the near future than in the distant future and that this difference was smaller for Chinese. The purpose of Study 2 was to build upon and extend the results of Study 1 in two ways. First, it is unclear whether the marginal effect that Canadians make more concrete judgments than Chinese is reliable. This trend is inconsistent with a large body of research in cultural psychology and merits further investigation. Second, it is important to illustrate that the interaction effect found in Study 1 can be replicated using a different dependent measure and a different set of procedures, such as a categorization task.

Categorization allows people to reduce the amount of information that they have to work with (Benjafield, 1997). Rosch and colleagues (Rosch, Mervis, Gray, Johnson, & Boyes-Braem, 1976) found that high-level, abstract, superordinate categories are more inclusive than low-level, concrete, subordinate categories. For example, students listed more attributes for items described in subordinate terms (e.g., upright piano, four-door sedan car) than items that were described in superordinate terms (e.g., musical instrument, vehicle). Because CLT theorists posit that psychologically distal objects are deemed superordinate and psychologically near objects are considered subordinate, it is reasonable to surmise that people classify psychologically distal objects into fewer groups than psychologically proximal objects. Indeed, researchers have found that people categorize temporally near objects into more categories than temporally distal objects (Liberman et al., 2002). In other words, construing objects at a higher level that

is more abstract leads people to generate fewer categories than construing objects at a lower level.

In the present study, Canadian and Chinese participants read that they would be going on a trip in either the near or distant future. Their task was to classify the items that they would bring on their trip into categories. My main hypothesis was that Canadians would be more likely to think abstractly as temporal distance increased, and that Chinese would be less likely to show this shift toward abstraction. In particular, I hypothesized that Canadians assigned to the temporally distal condition would generate fewer categories than Canadians assigned to temporally near condition, and that Chinese would show this pattern to a lesser extent. As a secondary hypothesis, I expected a main effect of culture, in which Chinese would create more categories overall as compared to Canadians.

Method

Participants

A total of 253 participants completed the study in Canada and in China in the fall of 2007. I recruited 117 participants (18 males, 91 females, and 8 unknown, mean age = 18.40) in Canada in two ways. First, I made announcements in first year large classrooms on campus, in which I invited students to stay after class to complete a questionnaire package. Second, I recruited introductory psychology students from the Queen's participant pool⁶. Canadian participants received either a chocolate bar or course credit toward their psychology grade. One hundred and thirty-six Chinese

⁶ Canadians who completed the study in classrooms did not significantly differ from Canadians who completed the study in the lab.

participants (60 males and 76 females; mean age = 20.29) participated in the study in Wuhan, China at Central China Normal University. In Wuhan, students participated in large classrooms and received payment for their participation.

Procedure

Before commencing the study, participants read and signed a combined consent form and letter of information (See Appendix B for the materials used in Study 2). Next, participants received a questionnaire package that included several questionnaires, including the categorization study. In particular, participants read a scenario, in which they were told that they were going on a trip in the future and were asked to categorize a list of items they would bring on the trip. Half of the participants read that they would be taking the trip in the near future; whereas the other half of participants were informed that they would be taking the trip in the distant future. The exact English instructions for participants assigned to the near future condition read as follows (instructions for participants assigned to the distant future condition are in parentheses):

Imagine that you are going with friends on a weeklong trip that takes place **this weekend (a year from today)**. Below is a list of objects you will bring on the trip. Categorize the following objects by putting them into separate groups. In other words, place the items that belong together into the same group. Please make sure to include every item, even if you would not use the item in reality. Place each item in only one group and number each grouping.

After reading the instructions, participants categorized the following list of items:

hairbrush, toothbrush, sweater, shoes, snacks, camera, sunglasses, travel guide, deck of cards, soap, blow-dryer, umbrella, underwear, coat, cigarettes, sewing kit, shampoo, alarm clock, mp3 player, skin care products, first-aid kit, journal, novel, money belt, passport, cell phone, socks, watch, money, pen, backpack, key ring, pyjamas, gum,

scissors, carry-on mirror, extra shoe laces, flashlight, batteries, phone card, towels, toilet paper, plastic bags, sandals, knife, nail clippers, photographs, medicine, harmonica, maps, and iron. This paradigm was adopted from Liberman and colleagues (Liberman et al., 2002, Study 1).

To ensure that participants attended to the temporal information, I included a manipulation check that was disguised as a memory test. In particular, participants read, “We are interested in understanding people’s short-term memory. Please answer the following questions without flipping back to the pages you already completed.” The phrase “without flipping back to the pages you already completed” was bolded and in much larger font than the rest of the instructions. Participants completed six questions, of which half were filler items to add credibility to the cover story. Two other questions pertained to other studies. Of interest to the trip categorization study was the following question: “You categorized a list of items that you will bring on a future trip. According to the scenario, **when** in the future will you go on the future trip?” If participants assigned to the near future condition indicated that the event would take place in the next week, they passed the manipulation check. Likewise, if participants assigned to the distant future condition indicated that the trip will take place months in the future, then they passed the manipulation check. Otherwise, they failed the manipulation check. In addition to completing the categorization study and the manipulation check, participants provided their demographic information, including age, sex and ethnicity.

All materials were first developed in English, translated into simplified Chinese, and then back-translated into English to ensure the accuracy to the translation (Brislin, 1970).

Results

Although 253 participants filled out questionnaires, analyses were conducted with only participants who passed the manipulation check. Consequently, 32 Canadians (25 assigned to the near future condition and 7 assigned to the distant future condition) and 68 Chinese (39 assigned to the near future condition and 29 assigned to the distant future condition) were excluded from the analyses⁷. Thus, 85 Canadians (41 assigned to the near future condition and 44 assigned to the distant future condition) and 68 Chinese (28 assigned to the near future condition and 40 assigned to the distant future condition) remained in the analyses.

To test the main hypothesis that Canadians would generate fewer categories in the distant future condition than in the near future condition and that Chinese would show less of such an effect or no effect at all, I conducted a 2 (Culture: Canadian vs. Chinese) X (Time: Near vs. Distant) between-subjects ANOVA on the number of categories participants generated. Contrary to expectations, my secondary hypothesis was not confirmed, in which the main effect of culture was non-significant, $F(1, 149) < 1, p = .74$. In particular, Canadians ($M = 4.76, SD = 1.26$) did not differ from Chinese ($M = 4.69, SD = 1.79$). The main effect of time, however, was significant, $F(1, 149) = 4.00, p = .05$. Participants assigned to the near future condition ($M = 5.03, SD = 1.59$) created

⁷ To determine whether the number of people who failed the manipulation check was dependent on culture and condition, I computed a Pearson Chi-Square statistic for culture and the number of people who passed or failed the manipulation check for both the near and distant future. Results showed that a higher percentage of Canadians assigned to the near future condition (62.1%) passed the manipulation check than Chinese assigned to the near future condition (41.8%), $\chi^2(1, N = 133) = 5.51, p = .02$. Similarly, a higher percentage of Canadians assigned to the distant future condition (86.3%) passed the manipulation check than Chinese assigned to the distant future condition (58.0%), $\chi^2(1, N = 120) = 11.12, p = .001$. In addition, I found that a higher percentage of Canadians assigned to the distant future condition (86.3%) passed the manipulation check as compared to Canadians assigned to the near future condition (62.1%), $\chi^2(1, N = 117) = 8.45, p = .004$. Likewise, I found that a trend for Chinese assigned to the distant future condition (58.0%) to be more likely to pass the manipulation check than Chinese assigned to the near future condition (41.8%), $\chi^2(1, N = 136) = 3.56, p = .06$.

more categories than participants assigned to the distant future condition ($M = 4.49$, $SD = 1.41$). The effect size for the time effect was partial $\eta^2 = .03$ and the observed power was .51. There was a non-significant trend, in which the time effect varied between cultures, $F(1, 149) = 2.53$, $p = .11$ (See Figure 2). The effect size for the time by culture interaction was partial $\eta^2 = .02$ and the observed power was .35⁸.

As expected, Canadians who thought about going on a trip this weekend ($M = 5.22$, $SD = 1.46$) created more categories than Canadians who thought about going on a trip a year from today ($M = 4.34$, $SD = .86$), $t(83) = 3.41$, $p = .001$. Meanwhile, Chinese who thought about going on a trip this weekend ($M = 4.75$, $SD = 1.86$) did not significantly differ from Chinese who thought about going on a trip a year from today ($M = 4.65$, $SD = 1.83$), $t(66) < 1$, $p = .82$. Canadians assigned to the near future condition did not differ from Chinese assigned to the near future condition, $t(67) = 1.21$, $p = .23$. Likewise, Canadians assigned to the distant future condition did not differ from Chinese assigned to the distant future condition, $t(54) = .97$, $p = .34$.

Discussion

In summary, Canadians who thought about taking a trip a year from today generated fewer categories than Canadians who thought about taking a trip this weekend. In other words, Canadians were significantly more likely to think more abstractly as

⁸ When participants who failed the manipulation check were included in the analyses, the interaction effect was considerably weakened, $F(1, 249) = .42$, $p = .52$. All other significant differences remained intact. Canadians assigned to the near future condition ($M = 4.97$, $SD = 1.35$) created more categories than Canadians assigned to the distant future condition ($M = 4.41$, $SD = .92$), $t(115) = 2.54$, $p = .01$. Chinese assigned to the near future condition ($M = 4.82$, $SD = 1.64$) did not differ from Chinese assigned to the distant future condition ($M = 4.51$, $SD = 1.77$), $t(134) = 1.07$, $p = .29$. The main effect of time remained significant, $F(1, 249) = 5.35$, $p = .02$, and the main effect of culture remained non-significant, $F(1, 249) = .02$, $p = .89$.

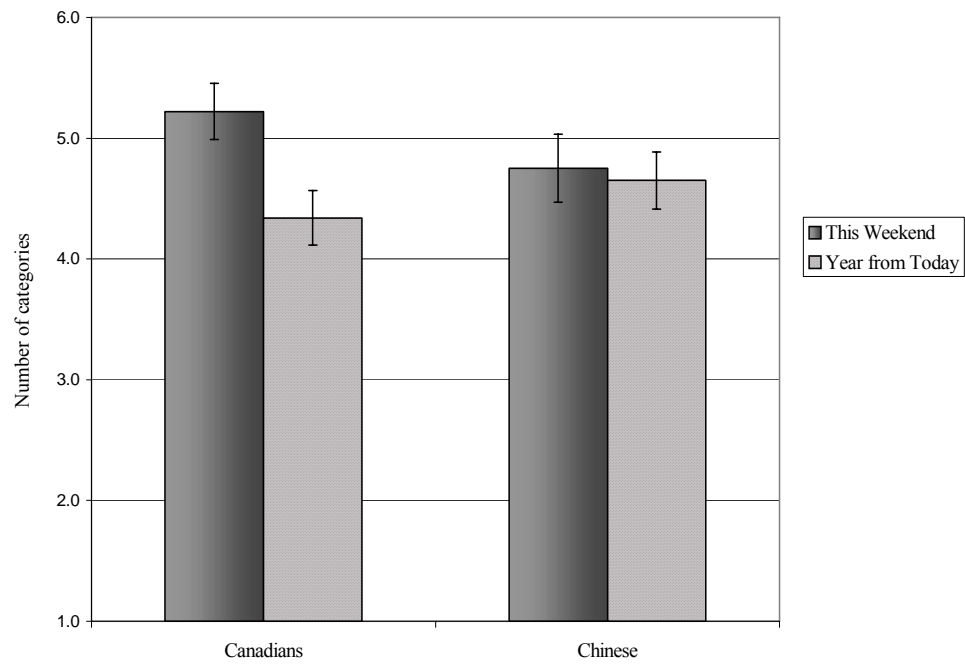


Figure 2. Mean number of categories as a function of temporal distance and culture (Study 2).

temporal distance increased. Consistent with my main hypothesis, Chinese participants who thought about taking a trip a year from now did not differ from Chinese participants who considered taking a trip this weekend. Unfortunately, the interaction term did not reach significance levels.

Several reasons may account for the non-significant findings. For example, participants completed several questionnaires in one sitting, in which some of the other measures tested temporal processing. It is possible that participants' responses on the categorization task were influenced by the information contained in other questionnaires. In addition, participants were not informed that they would be completing a memory test at the end of the study; hence, they may have been more focused on the act of categorizing information than on the instructions that outlined the temporal information, even though the temporal information was highlighted. In other words, it is possible that the temporal information for the trip task was not sufficiently salient, which led to a lessening of the hypothesized effect. A better design would entail making the temporal information more salient, such as by presenting participants with a visual timeline that spans from the present to the following year. Participants who imagine going on the trip in the near future would see that *this weekend* is close to the present, whereas participants who envisioned taking the trip in this distant future would see that *a year from today* is further removed from the present.

It appears that participants assigned to the near future condition were less likely to pay attention to the temporal information than those assigned to the distant future condition. In this manner, 51% of people who were assigned to the temporally near condition failed the manipulation check as compared to 31.3% of people assigned to the

temporally distant condition. This pattern of findings occurred irrespective of cultural background. Thus, it appears that temporally near information is not as prominent as temporally distant information. It is possible that classifying objects that you will use a year from now is more unusual than classifying objects you will use tomorrow; therefore, distal information may be more salient than proximal information. The design could be improved by making the near and distal information equally salient, such as by describing the temporal information in the same units (e.g., 4 days from now versus 362 days for now).

In Study 1, I found that there was a trend for Canadians to endorse more concrete responses than Chinese. My original secondary hypothesis, however, was that Chinese would generate more concrete judgments than Canadians. Results from Study 2 showed no support for my secondary hypothesis. That is, neither Canadians nor Chinese were apt to make more concrete judgments. There was no significant cultural differences overall in terms of responding concretely or abstractly using this categorization task.

As mentioned before, the interaction effect did not reach significance. Regardless, it is notable that greater temporal distance led to a greater shift toward abstraction among Canadians, as indicated by the significant difference between Canadians assigned to the near and distal conditions. In addition, Chinese did not shift toward abstraction, in which Chinese assigned to the near and distal conditions did not differ from each other.

CHAPTER 4

First Day of School Study (Study 3)

In the previous studies, I examined the way people mentally represent future events and objects. For instance, in Study 1 I demonstrated that Canadians shifted toward more abstract action identifications as temporal distance increased, and that Chinese did not demonstrate such a shift. In Study 2, I found a non-significant trend for Canadians to generate fewer categories in the distant future than in the near future, and that Chinese did not illustrate this shift toward abstraction. Both Studies 1 and 2, however, examined how Canadians and Chinese think about the future. The main purpose of Study 3 was to extend the current program of research by addressing how culture affects the way people think about events that have taken place in the past. In particular, I investigated whether increasing temporal distance for past events leads Canadians to make more abstract and less detailed recollections, and whether Chinese demonstrate this shift toward abstraction to a lesser extent.

Research suggests that temporal information affects mental representations for past events. For example, Semin and Smith (1999) have found that distal past events are described with more abstract language than proximal past events. Moreover, they found that abstract cues led to more distal memories and concrete cues led to more recent memories. These findings are consistent with CLT, in which temporally distant information is mentally represented more abstractly than recent events. An investigation of cultural differences may shed light on how mental representation of past events is affected by temporal distance. Chinese philosophers argue that Chinese are highly cognizant of their history, which is depicted in a manner that is rich in concrete detail

while lacking abstraction (Cheng, 1974; Liu, 1974). Other academics have supported the contention that Chinese are past-oriented (Burkhardt, 1953; Kluckhohn & Strodtbeck, 1961; Yau, 1988). Americans, on the other hand, are much less past-oriented than Chinese and other East Asians (Brislin & Kim, 2003). In one program of research, Ji and colleagues (Ji et al., 2007) demonstrate that Chinese consider past information as being more relevant when making judgments and decisions, and that past events are perceived as being subjectively closer to the present as compared to Canadians. If Chinese are both more past-oriented and future oriented than Canadians, then Chinese should be less influenced by changes in temporal information.

In Study 3, Canadians and Chinese recalled information about the first day of class at two points in time, specifically two or three days after the target event (recent past) or two weeks later (remote past). In line with CLT, I expected Canadians to represent the remote past (distal temporal distance) in less detail than the recent past (proximal temporal distance). Because Chinese are more past-oriented than Canadians, I anticipated that Chinese would demonstrate this tendency to a lesser degree. In other words, my main hypothesis was that I expected greater temporal distance would lead Canadians to think more abstractly, and that this shift toward abstraction would be smaller, or non-existent, among Chinese. Furthermore, as a secondary hypothesis, I expected that Chinese to think more concretely than Canadians overall.

Method

Participants

Thirty-five Canadians of European descent (13 males and 22 females) completed the study in Canada at Queen's University and 42 Chinese participants (20 males and 22

females) completed the study in Beijing, China at Beijing University. Canadian students ranged in age from 17- 25 years ($M = 17.94$, $SD = 1.35$), whereas Chinese participants ranged in age from 17 – 20 years ($M = 18.14$, $SD = 0.52$). Participants in Canada received chocolate bars as compensation and participants in China received payment.

Procedure

Participants in Canada and in China participated in a psychology study on either the second or third day of classes of 2007 (i.e., September 11 and September 12). Both schools involved started their classes on the same day, specifically on Sept 10th of 2007. After participants signed a letter of information and consent form, the experimenter informed participants that they had 10 minutes to fill out the questionnaire. The experimenter then gave participants a questionnaire, in which participants read “Think about **the first day of class for this term (on Sept. 10th)**. Please recall as much information as you can about **the first day of class** when answering the questions below.” Next, participants answered the following eight questions: (A) List the names of the people that you spoke with, (B) List the places you went to, (C) List the things you did, (D) List the content of your conversations with the people listed in A. Please write one or two sentences for each person you spoke with, (E) List any other things you observed, (F) List any other things you experienced, (G) List any emotions and feelings you remember experiencing, and (H) List any events or stories that were in the news on that day. Items A – G tap into participants’ memory for personally relevant events and item H involves recalling a neutral event. Participants had 10 minutes to complete the task. Approximately two weeks later (September 24 – 27th), participants who completed the questionnaire at Time 1 also completed the same questionnaire at Time 2. All

materials were first developed in English, translated into simplified Chinese, and then back-translated into English to ensure the accuracy to the translation (Brislin, 1970).

Results

One participant from China was excluded from the analysis because she completed the study outside the experimental period (i.e., on September 13th). Another student from Canada was excluded because he did not complete the questionnaire at Time 2. The final analysis included 75 participants, in which 34 were from Canada and 41 were from China.

The main hypothesis was that Canadians would shift toward abstraction with increased temporal distance and that this difference would be smaller, or non-existent, for Chinese. To test this hypothesis, two bilingual coders coded the content of participants' recollections for a subset of the questions. Because the memory task was timed, some participants did not report their memories of all eight questions. Most participants, however, answered the first four questions. Therefore, coders only rated three of the four questions that were presented on the first page of the questionnaire. Coders did not code the first question (i.e., list the names of the people that you spoke with) because it was unlikely that names would change over time. Therefore, coders rated the following three questions: (1) list the places you went to, (2) list the things you did, and (3) list the content of your conversations with the people you spoke with. In particular, each item that participants recalled was coded for abstraction and concreteness. Items that were considered abstract were coded as -1 and items considered concrete were coded as +1. Items that were neither concrete nor abstract were coded as 0. Each item was assigned a single code; thus, an item could not be both abstract and concrete. Coders performed the

ratings for participants' recollections for both Time 1 (two days after the first day of school) and Time 2 (two weeks after the first day of school).

Because what may be considered concrete for one question may not be considered concrete for a different question, the coding scheme addressed each question type separately. For the question 'list the places you went to', coders rated general locations (e.g., café) as abstract and specific locations (e.g., Café 4th or Lazy Scholar Café) as concrete. For the question 'list the things you did', coders rated items as concrete when participants qualified items with spatial locations (e.g., went to hair salon to buy flowers), people (e.g., spoke to my parents on the phone), or temporal information (e.g., ran in the morning). For the question 'list the content of your conversations with the people you spoke with', coders rated items as concrete if participants mentioned their feelings about a particular topic (e.g., overwhelmed about class size), elaborated on a topic (e.g., I asked my friend why she was crying and she said it was because she was overwhelmed), or mention specific details about a question (e.g., discussed how difficult the class would be). Coders rated items as abstract if participants simply mentioned general conversation topics (e.g., class). I conducted an analysis of inter-rater reliability using the Kappa statistic to ascertain consistency between the two raters. The analysis showed that there was adequate agreement (Kappa = .68).

I ran a 2 (Culture: Canadian vs. Chinese) X 2 (Time: Recent vs. Distant) mixed-model ANOVA, where culture was treated as a between subjects factor and time was repeated, on the abstraction/concreteness ratings for Time 1 and Time 2 respectively⁹.

⁹ In addition to treating the coded data as the dependent variable, I also ran a 2 (Culture: Canadian vs. Chinese) X 2 (Time: Recent vs. Distant) mixed-model ANOVA, where culture is treated as a between subjects factor and time is repeated, on the averaged number of items recalled at Time 1 and Time 2 respectively. The ANOVA revealed that there was a main effect of time, in which participants recalled

Higher numbers indicate greater concreteness. The ANOVA revealed that the main effect of time was non-significant, in which the abstraction/concreteness ratings for Time 1 ($M = .28, SD = .41$) did not differ from Time 2 ($M = .22, SD = .42$), $F(1, 73) = 2.31, p = .13$. Contrary to my secondary hypothesis, I did not find a main effect of culture, in which Chinese ($M = .21, SD = .31$) did not significantly differ from Canadians ($M = .30, SD = .41$), $F(1, 73) = 1.12, p = .29$. Most importantly, the main hypothesis was confirmed, in which there was a time by culture interaction, $F(1, 73) = 6.57, p = .01$, effect size partial $\eta^2 = .08$ and observed power = .72 (Refer to Figure 3). Consistent with CLT, Canadians represented the distal past ($M = .20, SD = .48$) more abstractly than the proximal past ($M = .40, SD = .44$). Among Chinese, the difference between the distal past ($M = .24, SD = .37$) and proximal past ($M = .19, SD = .37$) was non-significant. I also found that Canadians represented Time 1 more concretely than Chinese did at Time 1, $t(73) = 2.25, p = .03$. The items that Canadians and Chinese generated at Time 2 did not differ in degree of abstraction, $t(62) = .35, p = .73$.

Discussion

The findings from Study 3 lend additional support to the hypothesis that Canadians shift to more abstract thinking as temporal distance increases, and that Chinese do not show such an effect. As expected, Canadians generated more abstract information pertaining to the distant past than recent past, and this difference was non-existent for

more information at Time 1 ($M = 5.13, SD = 2.33$) than at Time 2 ($M = 3.47, SD = 1.85$), $F(1, 73) = 62.61, p = .001$, partial $\eta^2 = .46$, and observed power = 1.0. There was also a main effect of culture, in which Chinese ($M = 4.67, SD = 2.01$) recalled more items than Canadians ($M = 3.85, SD = 1.55$), $F(1, 73) = 3.87, p = .05$, partial $\eta^2 = .05$, and observed power = .49. There was a time by culture interaction, $F(1, 73) = 10.22, p = .002$, partial $\eta^2 = .12$, and observed power = .88. Canadians recalled more information about the recent past ($M = 5.06, SD = 2.27$) than distant past ($M = 2.63, SD = 1.51$). Among Chinese, the difference between the recent past ($M = 5.19, SD = 2.41$) and distant past ($M = 4.16, SD = 1.83$) was smaller. The number of items recalled did not correlate with the abstraction/concreteness codings ($r = -.05, p = .66$), indicating that the two dependent variable measure different constructs.

Chinese. Further investigation of this interaction illustrates that Canadians generated more concrete judgments than Chinese did for proximal events. For distal events, however, Chinese and Canadians did not differ in the degree of abstraction. In addition, I did not find support for my secondary hypothesis, namely that Chinese would represent the past more concretely overall than Canadians would. This finding is inconsistent with a great deal of research that shows Chinese think less abstractly than Westerners do.

In the previous studies, I assessed how temporal information affects construal levels for future events. In the present study, I examined how people mentally represent events that have taken place in the past. Regardless of whether an event takes place in the future or in the past, it appears that Canadians shift toward abstraction with increased temporal distance, and that Chinese do not demonstrate this tendency.

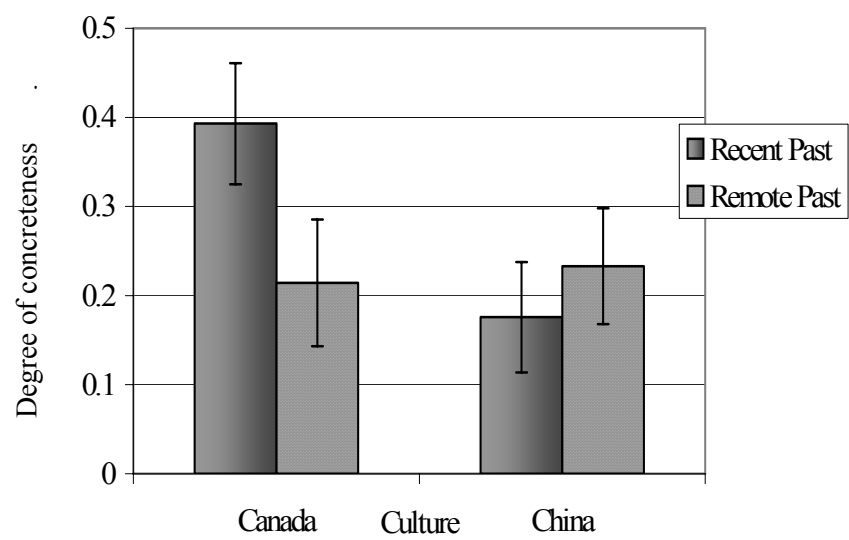


Figure 3. Degree of concreteness as a function of temporal distance and culture (Study 3).

CHAPTER 5

General Discussion

Taken together, this research demonstrates that culture affects the way people mentally represent past and future events that are temporally near and distant. Expressly, Canadians shift toward greater abstraction as temporal distance increases, and this shift is non-existent for Chinese. In Study 1, I used the BIF to investigate whether Canadians endorse behavioural actions that are described more abstractly in the distant future than in the near future, and whether Chinese would demonstrate this effect. Replicating past research and consistent with my main hypothesis, I found that Canadians preferred to use more abstract descriptions of events in the distant future than in the near future. The pattern of results for Chinese, however, did not yield significant results. In other words, Chinese were equally likely to endorse concrete descriptions in the near and distant future. Consequently, Canadians were more likely to select abstract responses as temporal distance increased, and this shift toward abstraction was not present among Chinese. Although I obtained the expected culture by time interaction effect, I did not find support for my secondary hypothesis. In particular, I expected that Chinese would select more concrete responses than Canadians; however, there was a trend for Canadians to endorse more concrete responses overall as compared to Chinese.

Study 2 offered an opportunity to determine whether the culture by time interaction was robust using a different set of procedures and dependent variable. In addition, Study 2 allowed me to test whether the unexpected findings from Study 1 were replicable. Consistent with my main hypothesis, Canadians generated significantly more categories in the distant future than in the near future. Thus, Canadians were more likely

to think abstractly as temporal distance increased. The Chinese data were in the expected direction, in which the number of categories Chinese generated did not differ across time. Unfortunately, the interaction between culture and time was insufficient to yield a significant difference. Methodological concerns, such as the salience of temporal information, may account for the null interaction effect. Future research is needed to determine whether a stronger design will produce significant results. In addition, I found that there was no main effect of culture, in which Canadians and Chinese were equally likely to generate the same number of categories overall. This finding is inconsistent with my secondary hypothesis, in which I expected Chinese to be significantly more likely to generate more concrete responses than Canadians did.

According to Trope and Liberman (2003), CLT may be applied to past events as well as to future events. The purpose of Study 3 was to determine if increased temporal distance for past events would lead Canadians to think more abstractly, and if Chinese were likely to demonstrate this shift toward abstraction. In this manner, recent past events (proximal temporal distance) might be represented in a more concrete manner than remote past events (distal temporal distance). Consistent with CLT, Canadians represented recent past events more concretely than remote past events. For Chinese, however, the degree of concreteness for the recent past and the remote did not differ. The results of Study 3 provide compelling evidence that Canadians represent the distal past more abstractly than the proximal past, and that this difference is non-existent among Chinese.

Across all three studies, the interaction between culture and time was driven by Canadians assigned to the proximal condition. This pattern of findings is inconsistent

with expectations. In particular, I anticipated that the interaction would be driven by Canadians and Chinese assigned to the distal condition, and that Canadians and Chinese assigned to the proximal condition would not significantly differ. Contrary to expectations, I found that Canadians assigned to the distal condition did not differ from Chinese assigned to the distal condition, whereas Canadians assigned to proximal condition tended to differ from the three other conditions.

One reason why the interaction term may be driven by Canadians assigned to the proximal condition may relate to temporal orientation. It is possible that Canadians are incorporating information pertaining to the near future into the present timeframe. Some researchers have found that Westerners, such as Americans, tend to be more present-oriented than Chinese and other East Asian cultures are (Brislin & Kim, 2003; Hofstede, 1991). For example, Brislin and Kim (2003) assert that American work appraisal systems emphasize immediate returns. East Asian companies, however, are more likely to adopt a long-term perspective where often employees work for the same company for their entire career. In Study 1, the near future condition was operationalized as ‘tomorrow’. In Study 2, the near future was represented by ‘this weekend’, and in Study 3, two days ago represented the recent past. Although these timeframes take place in the near future, it is possible that Canadians may have incorporated events that take place in the near future as being part of the present timeframe. Thus, having a present temporal orientation may lead Canadians to think more concretely about events and objects.

In addition, I expected that Chinese would tend to be more concrete than Canadians would. Contrary to expectations and previous research, I did not find support for this hypothesis. One reason why I may not have found evidence for this hypothesis

relates to cultural differences in attention to context. According to Cousins (1989), East Asians think more abstractly when the context is specified. For example, when Japanese and Americans were given the standard TST, Americans thought more abstractly than Japanese. When these two cultural groups were given a version of the TST that specified context, Japanese tended to think more abstractly than Americans. It is possible that Chinese participants who participated in Studies 1-3 may have treated time as contextual information. If Chinese perceived temporal information as being part of the context, then the specified context may have promoted more abstract thinking.

Meta-Analysis

As indicated earlier, the interaction effect for Study 2 did not reach significance levels. When Study 2 is considered in view of the other two studies, however, a consistent pattern emerges. Specifically, Canadians shift toward abstraction as temporal distance increases, and Chinese demonstrate this shift to a lesser extent. Meta-analysis, a statistical technique used to combine the results of more than one study to develop generalizations, provides compelling evidence that the observed pattern of findings is reliable and robust. According to Rosenthal (1984; 1991), meta-analyses can be conducted with as few as two independent studies. Meta-analysis as a statistical approach has the advantage of decreasing the likelihood of committing a Type II error (i.e., when the researcher fails to reject a null hypothesis that is false), and allows researchers to quantify the results of more than one study.

I adopted the combining z 's approach to meta-analysis (Rosenthal, 1984; 1991), in which I combined the levels of significance for the interaction terms across Studies 1 – 3. In particular, I found the corresponding z -scores associated with each p -level and then

I combined the p -levels across all three studies. The combined p -levels give an estimate of the likelihood that the p -values would have been obtained if the null hypothesis (i.e., there is no relationship between culture and time) were true. Because all three studies were in the same direction (i.e., Canadians moved toward abstraction with greater temporal distance, and Chinese showed no such shift), all the z -scores had the same sign.

The combined sample size across the three studies amounted to 374 participants, such that Study 1 had 146 participants, Study 2 had 153 participants, and Study 3 had 75 participants. Each study was treated equally, in which the interaction term for all three studies was used in the meta-analysis. I anticipated that the meta-analysis would reveal a significant and reliable effect, namely that Canadians would mentally represent temporally distal events and objects more abstractly than temporally near events, and that Chinese would not show such a pattern. To determine whether or not Chinese and Canadians were responding differently to the proximal and distal conditions as I hypothesized, I conducted a meta-analysis of the pairwise comparisons between the proximal and distal means for the Chinese and Canadian participants (i.e., a subset of the follow up tests reported in the results sections for each of the three studies).

Consequently, I had six pairwise comparisons for which I found the corresponding z -scores associated with each p -level and then I combined the p -levels across all six t -tests. Overall, the mean effect size r was .13 (Cohen's $d = .26$), which was significantly different from zero, $Z = 2.37$, $p < .001$, and evidence of a medium effect¹⁰. As expected, however, the heterogeneity value for the combined significance levels was significant, χ^2

¹⁰ The z -score for combination is obtained by calculating the mean significance level for a set of p -values by first finding the standard normal deviate (Z) for each p -value and then averaging these Z s. The mean effect size r and Cohen's d provide estimates of the magnitude of the relationship between culture and construal level. In meta-analysis, the χ^2 statistic measures heterogeneity (i.e., variations in results between studies).

= 17.39, $p < .001$, indicating that moderator analyses could yield important information about different responses to the time manipulations. (Likewise, I found that a diffuse comparison of effect sizes yielded a significant heterogeneity value, $\chi^2 = 16.99$, $p < .001$).

Next, I blocked the results by culture to determine if culture served as such a moderator. As I hypothesized, the effect for the Canadians was positive (i.e., they represent distal information more abstractly than proximal information) and significant, z -score for combination = 4.43, $p < .001$, mean effect size $r = .34$, and Cohen's $d = .70$, but the effect for the Chinese was not significantly different from zero (i.e., the Chinese did not respond differently to the time orientation manipulation), z -score for combination = -1.07, $p = .40$, mean effect size $r = -.09$, and Cohen's $d = -.17$. Moreover, the Canadian data were homogenous as demonstrated by the diffuse comparison of significance levels, $\chi^2 = 1.01$, $p = .30$, and the diffuse comparison of effect sizes, $\chi^2 = 1.47$, $p = .48$, as was the Chinese grouping the diffuse comparison of significance levels, $\chi^2 = 1.21$, $p = .27$, and the diffuse comparison of effect sizes, $\chi^2 = 1.26$, $p = .48$. Consequently the groups could not be broken down further or, in other words, no additional moderators could be pursued.

One of the concerns with meta-analysis as a statistical technique is that unpublished studies that have not been included in the meta-analysis could undermine any obtained significant results. Rosenthal (1984) refers to non-significant study or studies with unexpected findings that are unpublished as the file drawer problem. To deal with this issue, meta-analysts can calculate a fail-safe number for the meta-analysis (Rosenthal, 1991). The term *fail-safe number* refers to the number of studies that would

need to have an effect size equal to zero to eradicate the observed effects found using meta-analysis. In the meta-analysis that I conducted, I would need to add 12 studies that have null findings to eliminate the observed findings. Thus, the meta-analysis provides further support for the hypothesis that Canadians represent events and objects that are temporally distal more abstractly and in less detail than temporally near events and objects. Moreover, Chinese show this pattern of findings to a lesser extent.

These findings are consistent with recent findings that mental representations are shaped by self-construals. When Kivetz and Tyler (2007) primed people to think either in an interdependent or independent manner in the near and distant future, they found that people primed with independent self-construals replicated previous CLT research. In particular, people primed with independent self-construals made more abstract judgments in the distant future than in the near future. Those primed with interdependent self-construals, however, did not make more abstract judgments in the distant future than in the near future. Independent self-construals, often used to describe Western societies, entail valuing uniqueness, pursuing personal goals, and expressing one's needs. On the other hand, interdependent self-construals are more frequently found in East Asian cultures and refer to a self-conception that values group membership, pursues the goals of group members, and maintains group harmony (Markus & Kitayama, 1991). Thus, the finding that Chinese construe temporal information differently than Canadians is consistent with Kivetz and Tyler's (2007) research.

Possible Mechanism

According to Trope and Liberman (2003), construal levels are dependent on psychological distance, because people rely excessively on mental short-cuts about the

relationship between distal information and abstraction. For instance, details about distant future events are generally not evident until they are closer to the present timeframe. Even when people have the same information about the near and distant future, they still tend to mentally represent the distant future in less detail than the near future. The results of the present program of research suggest that Chinese do not use this cognitive short-cut to the same extent as Canadians do.

Cultural differences in temporal orientation may explain why Canadians are more likely to shift toward abstraction with increased temporal distance, and why Chinese are less likely to demonstrate this shift. In particular, Chinese are more past-oriented and future oriented than Canadians. For example, numerous scholars have stated that Chinese value the past and respect tradition (Brislin & Kim, 2003; Burkhardt, 1953; Cheng, 1974; Chinese Culture Connection, 1987; Fang, 2003; Klukhohn & Strodbeck, 1961; Liu, 1974). Cheng (1974) asserts that Chinese do not simply know historical dates and events; however, they seek to understand historical events with respect to the context that they are embedded in. According to Brislin and Kim (2003), Chinese people are both past-oriented and future-oriented, and past-oriented and future-oriented cultures tend to have long-term perspectives. In a similar vein, Hofstede (1991) argues that Chinese are high in long-term orientation, in which they value the qualities that are associated with future rewards, such as perseverance and thrift. Westerners, such as Americans and Canadians, are characterized as being on the low end of the long-term orientation dimension, in which they do not value virtues associated with future rewards to the same extent as Chinese. In general, it appears that Chinese have a long-term perspective of past and future events as compared to Westerners.

The finding that Canadians represent distal information more abstractly than proximal information, and that Chinese show this pattern of findings to a lesser extent is consistent with previous research in cultural psychology. Nisbett and colleagues (Nisbett et al., 2001) demonstrated that East Asians have a different system of thought than Westerners. East Asians, especially Chinese, have a holistic reasoning style, in which people pay attention to contextual information, rely little on formal logic, and engage in dialectical reasoning. Westerners, on the other hand, have an analytic reasoning style, in which they pay attention to focal objects, tend to categorize objects, and rely on formal rules.

One characteristic of systems of thought that is especially pertinent to the present program of research is the degree to which a culture is sensitive to abstract information. Specifically, East Asians use abstract thought less than Westerners when making judgments pertaining to self-conceptions (Rhee et al., 1995), spontaneous trait inference (Maass et al., 2006), and goal attainment (Zhang & Mittal, 2007). It appears that Chinese may also be more sensitive to concrete information than Westerners for tasks involving time, such as the remote past and distant future.

Overall, the literature suggests that Chinese are more past-oriented and future-oriented than Canadians. Likewise, there is considerable empirical evidence suggesting that Chinese rely less on abstraction than Westerners. If Chinese are more sensitive to concrete information that takes place in the remote past and distant future, then they may be less likely to use mental short-cuts about the relationship between distal information and abstraction.

Implications and Future Directions

Research on culture and temporal construal has implications for a wide-range of areas. Burrus and Roese (2006) found that temporal construal strengthened fate attributions, in which people who thought about the distant past focused more on the role of fate than those who thought about the recent past. In this manner, Chinese may be more fatalistic than Canadians. Consistent with this rationale, recent research on culture and fatalism has found that Chinese Canadians are more fatalistic than European Canadians (Norenzayan & Lee, 2007). In gambling research, Sagristano and colleagues (Sagristano, Trope, & Liberman, 2002) illustrated that payoffs (e.g., the amount of money received from winning in a game of chance) are represented at a more abstract, higher level construal than the probability of winning. When people are led to believe that they will gamble in the distant future, they are more affected by payoffs than by the probability of winning, whereas people who believe that they will gamble in the near future are more influenced by probabilities. Additional research is needed to determine whether Chinese are less influenced by payoff information than Westerners when thinking about gambling in the far future.

Researchers investigating creativity and problem solving have shown that construal levels can facilitate or impede performance, depending on the type of task (Förster et al., 2004). Participants who adopted a distant future time perspective performed better than those with a near future time perspective on creativity tasks that require abstract thought (Förster et al., 2004, Studies 4 and 5). Conversely, participants who adopted a proximal temporal perspective performed better than people who had a distal perspective on problem solving tasks that necessitate concrete thinking styles

(Förster et al., 2004, Study 6). More research is needed to explore whether Chinese performance on problem solving tasks would be affected by temporal information.

When applied to consumer psychology, CLT may lead consumers to experience regret when making purchases, such as when they purchase tickets for a show months in advance and then later realize the aggravation involved in getting to the show as it becomes closer in time. Because Canadians represent proximal information in more detail than distal events, and Chinese show this pattern to a smaller degree, Chinese may be less likely to experience consumer regret. Similarly, social distance may lead to interpersonal conflict when people buy others an unsuitable gift, because they make erroneous assumptions about the preferences of others (Lynch & Zauberan, 2007). If Chinese attend more to context than Canadians, they may be more apt to notice others' preferences. As a result, they may be less prone to interpersonal conflict. Other researchers studying consumer behaviour found that consumers are more likely to spend money on indulgences instead of necessities when the consequences of their decisions are experienced in the distant future (Kivetz & Simonson, 2002). If Chinese see the difference between the distant future and near future as being smaller than Westerners, then they may be less likely to spend money on indulgences, even when the consequences of their decisions will not be experienced until a time in the distant future.

Construal level research has important ramifications for health and well-being, including assessments of health risks and self-control. For example, investigators have found that temporal framing affects risk perceptions of contracting a virus (Chandran & Menon, 2004). In particular, if a message was framed in a temporally near manner (e.g., the number of people who contract the virus *every day*), then people thought their

chances of contracting a virus was higher than when the message was framed in a temporally distant manner (e.g., the number of people who contract the virus *every year*). Chinese may be less likely than Canadians to be influenced by temporally framed persuasive messages. Other researchers have found that abstract construals can lead to greater self-control than concrete construals (Fujita, Trope, Liberman, & Levin-Sagi, 2006). For example, people primed to think in a more abstract manner were able to conduct a test of physical endurance for longer periods than people who were primed to think in a concrete manner. If Canadians represent psychologically distal information more abstractly than psychologically near information, and this difference is smaller among Chinese, then Chinese may be less likely than Westerners to endure physical pain.

Future research may address how CLT applies to other aspects of psychological distance, such as social distance, spatial distance, and hypotheticality. For example, researchers have found that East Asians are more sensitive to contextual information in social domains than Americans are (Choi & Nisbett, 1998; Morris & Peng, 1994). Based on previous research, Canadians may represent socially distal information (e.g., enemy) more abstractly than socially proximal information (e.g., friend). A direction of future research could be to explore whether this expected difference is smaller among Chinese.

In sum, the present program of research provides empirical evidence that Chinese mentally represent temporal information differently than Canadians. In particular, Canadians represent distal information more abstractly than proximal information, and Chinese show this pattern to a lesser extent. More research is needed to understand whether this pattern of findings would be replicated in other areas of psychological distance, such as social distance and hypotheticality.

References

- Bar-Anan, Y., Liberman, N., & Trope, Y. (2006). The association between psychological distance and construal level: Evidence from an Implicit Association Test. *Journal of Experimental Psychology: General*, *135*, 609 – 622.
- Bar-Anan, Y., Liberman, N., Trope, Y., & Algom, D. (2007). Automatic processing of psychological distance: Evidence from a Stroop task. *Journal of Experimental Psychology: General*, *136*, 610 - 622.
- Beauchamp, F. (2001). Chinese literature in the Confucian and modern traditions. In H. Giskin & B. S. Walsh (Eds.), *An introduction to Chinese culture through the family* (pp. 139 – 162). Albany, NY: State University of New York Press.
- Benjafield, J. G. (1997). *Cognition* (2nd ed.). New Jersey: Prentice Hall.
- Bloch, J., & Chi, L. (1995). A comparison of the use of citations in Chinese and English academic discourse. In D. Belcher & G. Braine (Eds.), *Academic writing in a second language* (pp. 231 – 274). Norwood, NJ: Ablex.
- 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.
- Brislin, R. W. (1970). Back-translation for cross-cultural research. *Journal of Cross-Cultural Research*, *1*, 185-216.
- Brislin, R. W., & Kim, E. (2003). Cultural diversity in people's understanding and uses of time. *Applied Psychology: An International Review*, *52*, 363-382.

- Bruner, J. S. (1957). Going beyond the information given. In H. Gruber, K. R. Hammond, & R. Jessor (Eds.), *Contemporary approaches to cognition* (pp. 41 – 69). Cambridge, MA: Harvard University Press.
- Buehler, R., Griffin, D., & Ross, M. (1994). Exploring the “planning fallacy”: Why people underestimate their task completion times. *Journal Personality and Social Psychology*, 67, 366 – 381.
- Buehler, R., Messervey, D. L., & Griffin, D. (2005). Collaborative planning and prediction: Does group discussion affect optimistic biases in time estimation? *Organizational Behavior and Human Decision Processes*, 97, 47-63.
- Burkhardt, V. R. (1953). *Chinese creeds and customs*. Hong Kong: South China Morning Post Ltd.
- Burrus, J., & Roese, N. J. (2006). Long ago it was meant to be: The interplay between time, construal, and fate beliefs. *Personality and Social Psychology Bulletin*, 32, 1050 – 1058.
- Chan, S. (1999). The Chinese learner – a question of style. *Education and Training*, 41, 294 – 304.
- Chan, W. T. (1963). *A Source Book in Chinese Philosophy*. Princeton, NJ: Princeton University Press.
- Chandran, S., & Menon, G. (2004). When a day means more than a year: Effects of temporal framing on judgments of health risk. *Journal of Consumer Research*, 31, 375 – 389.

- Cheng, C. Y. (1974). Greek and Chinese views on time and timeless. *Philosophy East and West*, 24, 155 – 159.
- The Chinese Culture Connection (1987). Chinese values and the search for culture-free dimensions of culture. *Journal of Cross-Cultural Psychology*, 18, 143 – 164.
- Choi, I., & Nisbett, R. E. (1998). Situational salience and cultural differences in the correspondence bias and actor-observer bias. *Personality and Social Psychology Bulletin*, 24, 949-960.
- Choi, I., Nisbett, R. E., & Norenzayan, A. (1999). Causal attribution across cultures: Variation and universality. *Psychological Bulletin*, 125, 47-63.
- Cousins, S. D. (1989). Culture and self-perception in Japan and the United States. *Journal of Personality and Social Psychology*, 56, 124 – 131.
- Ebert, J. E. J. (2005). Self-Sympathy in the Short-Term: Self-Other Differences in Long-Term Benefits and Short-Term Costs. *Advances in Consumer Research*, 32, 182 – 183.
- Eyal, T., Liberman, N., Trope, Y., & Walther, E. (2004). The pros and cons of temporally near and distant action. *Journal of Personality and Social Psychology*, 86, 781 – 795.
- Fang, T. (2003). A critique of Hofstede's fifth national culture dimension. *International Journal of Cross Cultural Management*, 3, 347 – 368.
- Fiske, A. P., Kitayama, S., Markus, H. R., & Nisbett, R. E. (1998). The cultural matrix of social psychology. In D. T. Gilbert, S. T. Fiske, & G. Lindzey (Eds.), *Handbook of social psychology* (pp. 915-981). New York: McGraw-Hill.

- Förster, J., Friedman, R. S., & Liberman, N. (2004). Temporal construal effects on abstract and concrete thinking: Consequences for insight and creative cognition. *Journal of Personality and Social Psychology, 87*, 177 – 189.
- Förster, J., & Higgins, E.T. (2005). How global versus local perception fits regulatory focus. *Psychological Science, 16*, 631 - 636.
- Fujita, K., Henderson, M. D., Eng, J., Trope, Y., & Liberman, N. (2006). Spatial distance and mental construal of social events. *Psychological Science, 17*, 278 – 282.
- Fujita, K., Trope, Y., Liberman, N., Levin-Sagi, M. (2006). Construal levels and self-control. *Journal of Personality and Social Psychology, 90*, 351 – 367.
- Galtung, J. (1981). Structure, culture, and intellectual style: An essay comparing Saxonic, Teutonic, Gallic, and Nipponic approaches. *Social Science Information, 6*, 817 – 856.
- Gergen, K. (1997). Social psychology as social construction: The emerging vision. In C. McGarty & S. A. Haslam (Eds.), *The message of social psychology: Perspectives on the mind in society* (pp. 113-128). Oxford: Blackwell.
- Gilovich, T., Kerr, M. & Medvec, V. H. (1993). Effect of temporal perspective on subjective confidence. *Journal of Personality and Social Psychology, 64*, 552 – 560.
- Greenwald, A. G., McGhee, D. E., & Schwarz, J. L. K. (1998). Measuring individual differences in implicit cognitions: The Implicit Association Test. *Journal of Personality and Social Psychology, 74*, 1464 – 1480.

- Griffin, D. W., Dunning, D., & Ross, L. (1990). The role of construal in processes in overconfident predictions about self and others. *Journal of Personality and Social Psychology, 59*, 1128 – 1139.
- Guo, T., Ji, L. J., & Meng, N. (2007). Cultural differences in subjective temporal distance for future events. Unpublished manuscript, Queen's University.
- Henderson, M. D., Fujita, K., Trope, Y., & Liberman, N. (2006). Transcending the “here”: The effect of spatial distance on social judgment. *Journal of Personality and Social Psychology, 91*, 845 – 856.
- Henderson, M. D., Trope, Y., & Carnevale, P. J. (2006). Negotiation from a near and distant time perspective. *Journal of Personality and Social Psychology, 91*, 712 – 729.
- Higgins, E. T. (1998). Promotion and prevention: Regulatory focus as a motivational principle. In M. P. Zanna (Ed.). *Advances in experimental social psychology* (vol. 30, pp. 1– 46). New York: Academic Press.
- Hofstede, G. (1980). *Culture's consequences: International differences in work-related values*. Beverly Hills, CA: Sage.
- Hofstede, G. (1991). *Cultures and organizations: Software of the mind*. London: McGraw-Hill.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Thousand Oaks: Sage Publications.
- Ip, G. W. M., & Bond, M. H. (1995). Culture, values, and the spontaneous self-concept. *Asian Journal of Personality, 1*, 29 – 35.

- Ji, L. J., Guo, T., Zhang, Z., & Messervey, D. L. (2007). Looking beyond the present: Cultural differences in perception and representation of past information. Unpublished manuscript, Queen's University.
- Ji, L., Peng, K., & Nisbett, R. E. (2000). Culture, control, and perception of relationships in the environment. *Journal of Personality and Social Psychology*, 78, 943-955.
- Ji, L. J., Zhang, Z., & Nisbett, R. E. (2004). Is it culture or is it language? Examination of language effects in cross-cultural research on categorization. *Journal of Personality and Social Psychology*, 87, 57–65.
- Jones, E. E., & Harris, V. A. (1967). The attribution of attitudes. *Journal of Experimental Social Psychology* 3, 1–24.
- Jones, E. E., & Nisbett, R. E. (1972). The actor and the observer: Divergent perceptions of causality. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, B. Weiner (Eds.), *Attributions: Perceiving the causes of behavior* (pp. 79 – 94). Morristown, NJ: General Learning Press.
- Kanagawa, C., Cross, S. E., & Markus, H. R. (2001). “Who am I?” The Cultural psychology of the conceptual self. *Personality and Social Psychology Bulletin*, 27, 90 – 103.
- Kluckhohn, F., & Strodtbeck, F. (1961) *Variations in Value Orientations*. Evanston, IL: Row, Peterson.
- Kivetz, Y., & Simonson, I. (2002). Self-control for the righteous: Toward a theory of precommitment to indulgence. *Journal of Consumer Research*, 29, 199 – 217.

- Kivetz, Y., & Tyler, T. R. (2007). Tomorrow I'll be me: The effect of time perspective on the activation of idealistic versus pragmatic selves. *Organizational Behavior and Human Decision Processes*, *102*, 193 – 211.
- Kuhn, M., & McPartland, T. (1954). An empirical investigation of self-attitudes. *American Sociological Review*, *19*, 68-76.
- Lam, K. C. H., Buehler, R., McFarland, C., Ross, M., & Cheung, I. (2005). Cultural differences in affective forecasting: The role of focalism. *Personality and Social Psychology Bulletin*, *31*, 1296-1309.
- Lee, A. Y., Aaker, J. L., & Gardner, W. L. (2000). The pleasures and pains of distinct self-construals: The role of interdependence in regulatory focus. *Journal of Personality and Social Psychology*, *78*, 1122-1134.
- Lee, F., Hallahan, M., & Herzog, T. (1996). Explaining real-life events: How culture and domain shape attributions. *Personality and Social Psychology Bulletin*, *22*, 732 – 741.
- Liberman, N., Sagristano, M. D., & Trope, Y. (2002). The effect of temporal distance on level of mental construal. *Journal of Experimental Social Psychology*, *38*, 523 – 534.
- Liberman, N., & Trope, Y. (1998). The role of feasibility and desirability considerations in near and distant future decisions: A test of temporal construal theory. *Journal of Personality and Social Psychology*, *75*, 5 – 18.

- Liberman, N., Trope, Y., McCrea, S. M., & Sherman, S. J. (2007). The effect of construal on the temporal distance of activity enactment. *Journal of Experimental Social Psychology, 43*, 143 – 149.
- Lin, W. T. (1966). Chinese value orientation in Hong Kong. *Sociological Analysis, 27*, 53 – 66.
- Link, P. (1992). *Evening chats in Beijing*. New York: W. W. Norton & Company.
- Liu, S. H. (1974). Time and temporality: The Chinese perspective. *Philosophy East and West, 24*, 145 – 153.
- Lynch, J. G., & Zauberman, G. (2007). Construing consumer decision making. *Journal of Consumer Psychology, 17*, 107-112.
- Maass, A., Karasawa, M., Politi, F., Suga, S. (2006). Do verbs and adjectives play different roles in different cultures? A cross-linguistic analysis of person representation. *Journal of Personality and Social Psychology, 90*, 734 – 750.
- Manger, T., & Teigen, K. H. (1988). Time horizon in students' predictions of grades. *Scandinavian Journal of Educational Research, 32*, 77 – 91.
- Markus, H., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98*, 224-253.
- Masuda, T., & Nisbett, R. A. (2001). Attending holistically versus analytically: Comparing the context sensitivity of Japanese and Americans. *Journal of Personality and Social Psychology, 81*, 922–934.

- Menon, T., Morris, M. W., Chiu, C. Y., & Hong, Y. Y. (1999). Culture and construal of agency: Attribution to individual versus group dispositions. *Journal of Personality and Social Psychology, 76*, 701 – 171.
- Miller, J.G. (1984). Culture and the development of everyday social explanation. *Journal of Personality and Social Psychology, 46*, 961–978.
- Morris, M. W., & Peng, K. (1994). Culture and cause: American and Chinese attributions for social and physical events. *Journal of Personality and Social Psychology, 67*, 949 – 971.
- Nan, X. (2007). Social distance, framing, and judgment: A construal level perspective. *Human Communication Research, 33*, 489 – 514.
- Newman, L. S. (1991). Why are traits inferred spontaneously? A developmental approach. *Social Cognition, 9*, 221 – 253.
- Nisan, M. (1972). Dimension of time in relation to choice behavior and achievement orientation. *Journal of Personality and Social Psychology, 75*, 5 – 18.
- Nisbett, R. E., Caputo, C., Legant, P. & Marecek, J. (1973). Behavior as seen by the actor and as seen by the observer. *Journal of Personality and Social Psychology, 27*, 154-164.
- Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic vs. analytic cognition. *Psychological Review, 108*, 291-310.
- Norenzayan, A., & Lee, A. (2007). Fate attributions across cultures and religions. Unpublished manuscript, University of British Columbia.

- Nussbaum, S., Liberman, N., & Trope, Y. (2006). Predicting the near and distant future. *Journal of Experimental Psychology: General*, *135*, 152 – 161.
- Nussbaum, S., Trope, Y., & Liberman, N. (2003). Creeping dispositionism: The temporal dynamics of behavior prediction. *Journal of Personality and Social Psychology*, *84*, 485 – 497.
- Rhee, E., Uleman, J. S., Lee, H. K., & Roman, R. J. (1995). Spontaneous self-descriptions and ethnic identities in individualistic and collectivistic cultures. *Journal of Personality and Social Psychology*, *69*, 142 – 152.
- Rosch, E. H., Mervis, C. B., Gray, W. D., Johnson, D. M., & Boyes-Braem, P. (1976). Basic objects in natural categories. *Cognitive Psychology*, *8*, 382- 439.
- Rosenthal, R. (1984). *Meta-Analytic Procedures for Social Research*. Newbury Park, CA: Sage Publications.
- Rosenthal, R. (1991). *Meta-Analytic Procedures for Social Research*. Newbury Park, CA: Sage Publications.
- Ross, L. (1977). The intuitive psychologist and his shortcomings: Distortions in the attribution process. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (vol. 10). New York: Academic Press.
- Sagristano, M. D., Trope, Y., & Liberman, N. (2002). Time-dependent gambling: Odds now, money later. *Journal of Experimental Psychology: General*, *131*, 364 – 376.
- Saulnier, K., & Perlman, D. (1981). The actor-observer bias is alive and well in prison: A sequel to Wells. *Personality and Social Psychology Bulletin*, *7*, 559 – 564.

- Schoeneman, T. J., & Rubanowitz, D. E. (1985). Attributions in the advice columns: Actors, observers, causes and reasons. *Personality and Social Psychology Bulletin, 11*, 315 – 325.
- Selmer, J., Ling, E. S. H., Shiu, L. S. C., & de Leon, C. T. (2003). Reciprocal adjustment? Mainland Chinese managers in Hong Kong vs. Hong Kong Chinese managers on the mainland. *Cross Cultural Management, 10*, 58 – 79.
- 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*, 558-568.
- Semin, G. R., Higgins, T., de Montes, L., Estourget, Y., & Valencia, J. F. (2005). Linguistic signatures of regulatory focus: How abstraction fits promotion more than prevention. *Journal of Personality and Social Psychology, 89*, 36 – 45.
- Semin, G. R., & Smith, E. R. (1999). Revisiting the past and back to the future: Memory systems and the linguistic representation of social events. *Journal of Personality and Social Psychology, 76*, 877 – 892.
- Sherman, S. J., Cialdini, R. B., Schwartzman, D. F., & Reynolds, K. D. (1985). Imagining can heighten or lower perceived likelihood of contracting a disease: The mediating effect of ease of imagery. *Personality and Social Psychology Bulletin, 11*, 118 – 127.
- Sherman, S. J., Zehner, K. S., Johnson, J., & Hirt, E. R. (1983). Social explanation: The role of timing, set, and recall on subjective likelihood estimates. *Journal of Personality and Social Psychology, 44*, 1127 – 1143.

- Shweder, R. A., & Bourne, E. J. (1982). Does the concept of the person vary cross-culturally? In A. J. Marsalla & G. M. White (Eds.), *Cultural conceptions of mental health and therapy* (pp. 97 – 137). Boston: Reidel.
- Smith, P. K., & Trope, Y. (2006). You focus on the forest when you're in charge of the trees: Power priming and abstract information processing. *Journal of Personality and Social Psychology, 90*, 578 – 596.
- Spencer-Rodgers, J., Williams, M. J., Hamilton, D. L., Peng, K., & Wang, L. (2007). Culture and group perception: Dispositional and stereotypic inferences about novel and national groups. *Journal of Personality and Social Psychology, 93*, 525 – 543.
- Triandis, H. C., McCusker, C., & Hui, C. H. (1990). Multimethod probes of individualism and collectivism: Cross-cultural perspectives on self-in group relationships. *Journal of Personality and Social Psychology, 59*, 1006 – 1020.
- Trope, Y., & Liberman, N. (2003). Temporal construal. *Psychological Review, 110*, 403 – 421.
- Trope, Y., Liberman, N., & Wakslak, C. (2007). Construal levels and psychological distance: Effects of representation, prediction, evaluation, and behavior. *Journal of Consumer Psychology, 17*, 83 – 95.
- Vallacher, R. R., & Wegner, D. M. (1985). *A theory of action identification*. Hillsdale, NJ: Erlbaum.
- Vallacher, R. R., & Wegner, D. M. (1987). What do people think they're doing? Action identification and human behavior. *Psychological Review, 94*, 3 – 15.

- Vallacher, R. R., & Wegner, D. M. (1989). Levels of personal agency: Individual variation in action identification. *Journal of Personality and Social Psychology*, *57*, 660 – 671.
- Van Boven, L., Kamada, A., & Gilovich, T. (1999). The perceiver as perceived: Everyday intuitions about the correspondence bias. *Journal of Personality and Social Psychology*, *77*, 1188 – 1199.
- Wakslak, C. J., Trope, Y., Liberman, N., & Alony, R. (2006). Seeing the forest when entry is unlikely: Probability and the mental representation of events. *Journal of Personality and Social Psychology*, *135*, 641 – 653.
- Wegner, D. M., & Vallacher, R. R. (1986). Action identification. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 550 – 582). New York: Guilford.
- Wilson, T. D., Wheatley, T., Meyers, J. M., Gilbert, D. T., & Axsom, D. (2000). Focalism: A source of durability bias in affective forecasting. *Journal of Personality and Social Psychology*, *78*, 821 – 836.
- Witkin, H. A., Lewis, H. B., Hertzman, M., Machover, K., Meissner, P. B., & Karp, S. A. (1954). *Personality through perception: An experimental and clinical study*. New York: Harper.
- Yang, K. S. (1981). Social orientation and individual modernity among Chinese students in Taiwan. *The Journal of Social Psychology*, *113*, 159 – 170.
- Yau, O. H. (1988). Chinese cultural values: Their dimensions and marketing implications. *European Journal of Marketing*, *22*, 44-58.

- Yates, J. F., Lee, J. W., Shinotsuka, H., Patalano, A. L. & Sieck, W. R. (1998). Cross-cultural variations in probability accuracy: Beyond general-knowledge overconfidence. *Organizational Behavior & Human Decision Processes*, 74, 89-117.
- Yee, A. (1989). Cross-Cultural Perspectives on Higher Education in East Asia: Psychological Effects upon Asian Students. *Journal of Multilingual and Multicultural Development*, 10, 213 - 232.
- Zhang, Y., & Mittal, V. (2007). The attractiveness of enriched and impoverished options: Culture, self-construal, and regulatory focus. *Personality and Social Psychology Bulletin*, 33, 588 – 598.

Appendix A

Experimental Materials for Study 1

QUEEN'S UNIVERSITY: INFORMED CONSENT STATEMENT
FUTURE JUDGMENTS

INFORMATION

The purpose of this study is to learn more about how people make judgments about activities. You will be presented with a list of activities that is re-stated in two ways. Your task is to select the restatement that best describes the activity.

RISKS

There are no foreseeable risks.

BENEFITS

You will have the opportunity to observe directly the methods that researchers use to study people's thoughts and judgments concerning future events, thus, enhancing your understanding of psychological research methods. By participating you will also be contributing to the growing body of knowledge concerning people's judgments about future events.

CONFIDENTIALITY

Your responses will remain completely confidential and anonymous. That is, all questionnaires will be assigned a number and will not be identified by name. In addition, only authorized researchers and research assistants will see your responses. The questionnaires will be stored in a locked room within the psychology department that can be accessed only by these researchers. All data will be destroyed seven years after the completion of this study, in accordance with the American Psychological Association guidelines.

COMPENSATION

You will receive will receive 0.5 credit for participating in the study today. Participants who begin the study, but choose to withdraw prior to its completion or ask to have their responses deleted, will still receive 0.5 credit.

CONTACT

If you have questions at any time about the study or the procedures, you may contact the principle investigator, Deanna Messervey, at the Psychology Department, Queen's University, 533-6000 ext. 75617 or the supervising researcher, Dr. Li-Jun Ji, same number and address. This project has been reviewed and approved by the University Research Ethics Board. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact, the Head of the Department of Psychology at 613-533-2492, or the Queen's University General Research Ethics Board at 533-6081 with any questions or complaints.

PARTICIPATION

Your participation in this study is completely voluntary. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. You are also free to omit the answer to any question, or to have your responses (on the questionnaires) returned to you or destroyed.

CONSENT

I have read and understand the Letter of Information and had all my questions answered to my satisfaction. I have also read this consent form and agree to participate in this study.

Participant's name _____ Date _____

Participant's signature _____

Any behaviour can be identified in many ways. For example, one person might describe a behaviour as “typing a paper”, while another might describe the behaviour as “pushing keys”. Yet another person might describe the behaviour as “expressing thoughts”. We are interested in your personal preferences for how a number of different behaviours should be described. On the following pages you will find several different behaviours listed. After each behaviour will be two choices of different ways in which the behaviour might be identified. Here is an example:

1. Attending class

a. sitting in a chair

b. looking at the blackboard

Your task is to choose the identification, a or b, that best describes the behaviour for you. Simply write the letter A or B in the column labelled “Select A or B”. Please select only option A or B for each pair. Of course, there are no right or wrong answers. People simply differ in their preferences for the different behaviour descriptions, and we are interested in your personal preferences. Be sure to mark your choice for each behaviour. Remember, choose the description that you personally believe is more appropriate in each pair.

Action	A	B	Select A or B
Making a list tomorrow	Getting organized	Writing things down	
Reading tomorrow	Following the lines of print	Gaining knowledge	
Washing clothes tomorrow	Removing odours from clothes	Putting clothes into the machine	
Cleaning the house tomorrow	Sweeping the floor	Maintaining hygiene	
Painting the room tomorrow	Making the room look fresh	Applying brush strokes	
Paying the rent tomorrow	Writing a check	Maintaining a place to live	
Caring for houseplants tomorrow	Making the room look nice	Watering plants	
Locking a door tomorrow	Putting a key into the lock	Securing the house	
Filling out a personality test tomorrow	Gathering knowledge about yourself	Answering questions	
Toothbrushing tomorrow	Moving a brush around one's mouth	Preventing tooth decay	
Taking a test tomorrow	Using one's knowledge	Answering questions	
Greeting somebody tomorrow	Saying hello	Expressing friendliness	
Resisting temptation tomorrow	Having moral courage	Saying “no”	
Eating tomorrow	Chewing and swallowing	Getting nutrition	
Having a cavity filled tomorrow	Protecting your teeth	Going to the dentist	
Talking to a child tomorrow	Using simple words	Teaching a child something	

Any behaviour can be identified in many ways. For example, one person might describe a behaviour as “typing a paper”, while another might describe the behaviour as “pushing keys”. Yet another person might describe the behaviour as “expressing thoughts”. We are interested in your personal preferences for how a number of different behaviours should be described. On the following pages you will find several different behaviours listed. There will be two choices after each behaviour of different ways in which the behaviour might be identified. Here is an example:

1. Attending class

a. sitting in a chair

b. looking at the blackboard

Your task is to choose the identification, a or b, that best describes the behaviour for you. Simply write the letter A or B in the column labelled “Select A or B”. Please select only option A or B for each pair. Of course, there are no right or wrong answers. People simply differ in their preferences for the different behaviour descriptions, and we are interested in your personal preferences. Be sure to mark your choice for each behaviour. Remember, choose the description that you personally believe is more appropriate in each pair.

Action	A	B	Select A or B
Making a list sometime next year	Getting organized	Writing things down	
Reading sometime next year	Following the lines of print	Gaining knowledge	
Washing clothes sometime next year	Removing odours from clothes	Putting clothes into the machine	
Cleaning the house sometime next year	Sweeping the floor	Maintaining hygiene	
Painting the room sometime next year	Making the room look fresh	Applying brush strokes	
Paying the rent sometime next year	Writing a check	Maintaining a place to live	
Caring for houseplants sometime next year	Making the room look nice	Watering plants	
Locking a door sometime next year	Putting a key into the lock	Securing the house	
Filling out a personality test sometime next year	Gathering knowledge about yourself	Answering questions	
Toothbrushing sometime next year	Moving a brush around one's mouth	Preventing tooth decay	
Taking a test sometime next year	Using one's knowledge	Answering questions	
Greeting somebody sometime next year	Saying hello	Expressing friendliness	
Resisting temptation sometime next year	Having moral courage	Saying “no”	
Eating sometime next year	Chewing and swallowing	Getting nutrition	
Having a cavity filled sometime next year	Protecting your teeth	Going to the dentist	
Talking to a child sometime next year	Using simple words	Teaching a child something	

Please complete the following information about yourself:

Age _____ Gender _____

What year of university are you in? _____

What region are your ancestors from? (please check the most appropriate box)

- Europe (Caucasian)
- First Nations
- East Asia
- Latin America
- Africa
- Middle-East
- Other (specify: _____)

Please indicate what specific country or countries most of your ancestors originate from?

- **Describe your (or your families') socio-economic status** (circle your answer)

Lower Class Working- Class Middle Class Upper-Middle Class Upper Class

Thank You!

Appendix B

Experimental Materials for Study 2

INFORMED CONSENT & LETTER OF INFORMATION

INFORMATION

The purpose of this study is to learn more about how people categorize information. During this session you will group items. The study takes less than 30 minutes to complete.

RISKS

There are no foreseeable risks.

BENEFITS

You will have the opportunity to observe directly the methods that researchers use to study people's judgments, thus, enhancing your understanding of psychological research methods. You will also be contributing to the growing body of knowledge concerning judgments.

CONFIDENTIALITY

The only information we will be recording is your responses during the study. Only the researchers will have access to this information, as outlined by APA guidelines. Your confidentiality is guaranteed and your performance will not be connected to your name in the data files or in any publication.

PARTICIPATION AND COMPENSATION

Your participation in this study is completely voluntary. You may withdraw from the study at any time without penalty. You are also free to have any or all of your responses returned to you or destroyed.

You will receive a chocolate bar for participating today. Participants who begin the study, but choose to withdraw prior to its completion, or ask to have their responses deleted, will still receive full compensation.

CONTACT

For further information, please feel free to contact the principal researcher, Deanna Messervey, or her supervising investigator Dr. Li-Jun Ji at 533-6000 ext. 75617. You may also contact the Head of the Department of Psychology at Queen's University, Dr. Vern Quinsey (533-2492), or the Chair of the Queen's University General Research Ethics Board, Dr. Joan Stevenson, (613) 533-6000 ext. 74579, email stevensj@post.queensu.ca.

CONSENT

I have read and understand this combined Letter of Information and Consent Form. I had all of my questions answered to my satisfaction and I agree to participate in this study.

Participant's name _____ Date _____

Participant's signature _____

Imagine that you are going with friends on a weeklong trip that takes place **this weekend**. Below is a list of objects you will bring on the trip. Categorize the following objects by putting them into separate groups. In other words, place the items that belong together into the same group. Please make sure to include every item, even if you would not use the item in reality. Place each item in only one group and number each grouping.

List of items:

Hairbrush	Toothbrush	Sweater	Shoes
Snacks	Camera	Sunglasses	Travel Guide
Deck of Cards	Soap	Blow-dryer	Umbrella
Underwear	Coat	Cigarettes	Sewing Kit
Shampoo	Alarm Clock	MP3 Player	Skin care products
First-Aid Kit	Journal	Novel	Money belt
Passport	Cell phone	Socks	Watch
Money	Pen	Backpack	Key ring
Pyjamas	Gum	Scissors	Carry-on mirror
Extra shoe laces	Flashlight	Batteries	Phone card
Towels	Toilet paper	Plastic bags	Sandals
Knife	Nail clippers	Photographs	Medicine
Harmonica	Maps	Iron	

Imagine that you are going with friends on a weeklong trip that takes place **a year from today**. Below is a list of objects you will bring on the trip. Categorize the following objects by putting them into separate groups. In other words, place the items that belong together into the same group. Please make sure to include every item, even if you would not use the item in reality. Place each item in only one group and number each grouping.

List of items:

Hairbrush	Toothbrush	Sweater	Shoes
Snacks	Camera	Sunglasses	Travel Guide
Deck of Cards	Soap	Blow-dryer	Umbrella
Underwear	Coat	Cigarettes	Sewing Kit
Shampoo	Alarm Clock	MP3 Player	Skin care products
First-Aid Kit	Journal	Novel	Money belt
Passport	Cell phone	Socks	Watch
Money	Pen	Backpack	Key ring
Pyjamas	Gum	Scissors	Carry-on mirror
Extra shoe laces	Flashlight	Batteries	Phone card
Towels	Toilet paper	Plastic bags	Sandals
Knife	Nail clippers	Photographs	Medicine
Harmonica	Maps	Iron	

We are interested in understanding people's short-term memory. Please answer the following questions **without flipping back to the pages you already completed.**

1.) On the first page of the questionnaire, you imagined doing a job in the future. **When** in the future will you do the data entry job? _____

2.) On the second page, you imagined staying at an acquaintance's home. **Where** was your acquaintance's home? _____

3.) On the third page, you categorized a list of items that you will bring on a future trip. According to the scenario, **when** in the future will you go on the future trip?

4.) On the third page, you categorized a list of items you would bring on a future trip. Was "shampoo" on the list? _____

5.) On the fourth page, you categorized a list of items you would sell over the internet. According to the scenario, **when** in the future will you sell items over the internet?

6.) On the fourth page, you categorized a list of items you will sell over the internet. Was "computer" on the list? _____

Please complete the following information about yourself:

Age _____ Gender _____

What year of university are you in? _____

What region are your ancestors from? (please check the most appropriate box)

- Europe (Caucasian)
- First Nations
- East Asia
- Latin America
- Africa
- Middle-East
- Other (specify: _____)

Please indicate what specific country or countries most of your ancestors originate from?

- **Describe your (or your families') socio-economic status** (circle your answer)

Lower Class Working- Class Middle Class Upper-Middle Class
Upper Class

Thank You!

Appendix C

Experimental Materials for Study 3

QUEEN'S UNIVERSITY: INFORMED CONSENT STATEMENT

INFORMATION

The purpose of this study is to learn more about how people remember the past. You will be asked to remember a variety of events that pertain to the first day of classes.

RISKS

There are no foreseeable risks.

BENEFITS

You will have the opportunity to observe directly the methods that researchers use to study people's thoughts and judgments concerning past events, thus, enhancing your understanding of psychological research methods. By participating you will also be contributing to the growing body of knowledge concerning people's judgments about future events.

CONFIDENTIALITY

Your responses will remain completely confidential and anonymous. That is, all questionnaires will be assigned a number and will not be identified by name. In addition, only authorized researchers and research assistants will see your responses. The questionnaires will be stored in a locked room within the psychology department that can be accessed only by these researchers. All data will be destroyed seven years after the completion of this study, in accordance with the American Psychological Association guidelines.

COMPENSATION

You will receive will receive 0.5 credit for participating in the study today. Participants who begin the study, but choose to withdraw prior to its completion or ask to have their responses deleted, will still receive 0.5 credit.

CONTACT

If you have questions at any time about the study or the procedures, you may contact the principle investigator, Deanna Messervey, at the Psychology Department, Queen's University, 533-6000 ext. 75617 or the supervising researcher, Dr. Li-Jun Ji, same number and address. This project has been reviewed and approved by the University Research Ethics Board. If you feel you have not been treated according to the descriptions in this form, or your rights as a participant in research have been violated during the course of this project, you may contact, the Head of the Department of Psychology at 613-533-2492, or the Queen's University General Research Ethics Board at 533-6081 with any questions or complaints.

PARTICIPATION

Your participation in this study is completely voluntary. If you decide to participate, you may withdraw from the study at any time without penalty and without loss of benefits to which you are otherwise entitled. You are also free to omit the answer to any question, or to have your responses (on the questionnaires) returned to you or destroyed.

CONSENT

I have read and understand the Letter of Information and had all my questions answered to my satisfaction. I have also read this consent form and agree to participate in this study.

Participant's name _____ Date _____

Participant's signature _____

MEMORY STUDY

Think about **the first day of class for this term (on Sept 10th)**. Please recall as much information as you can about **the first day of class** when answering the questions below. If you don't remember much about a certain question, you may leave that question unanswered.

A. List the names of the people that you spoke with **on that day**. (please number each item)

(1)

B. List the places you went to **on that day**. Be specific. (please number each item)

(1)

C. List the things you did in **on that day**. (please number each item)

(1)

D. List the content of your conversations **on that day** with the people listed in A. Please write one or two sentences for each person you spoke with. (please number each item)

(1)

E. List any other things you observed **on that day**. (please number each item)

(1)

F. List any other things you experienced **on that day**. (please number each item)

(1)

G. List any emotions and feelings you remember experiencing **on that day**. (please number each item)

(1)

H. List any events or stories that were in the news on that day **on that day**. (please number each item)

(1)

Please complete the following information about yourself:

Age _____ Gender _____

What year of university are you in? _____

What region are your ancestors from? (please check the most appropriate box)

- Europe (Caucasian)
- First Nations
- East Asia
- Latin America
- Africa
- Middle-East
- Other (specify: _____)

Please indicate what specific country or countries most of your ancestors originate from?

- **Describe your (or your families') socio-economic status** (circle your answer)

Lower Class Working- Class Middle Class Upper-Middle Class Upper-Class

Thank You!