CULTURAL DIFFERENCES IN INDECISIVENESS

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Abstract

East Asians endorse naïve dialecticism, a lay belief system that tolerates contradictory information (Peng & Nisbett, 1999). Accordingly, individuals of East Asian (vs. European) cultural backgrounds are more likely to hold and less likely to change ambivalent attitudes (Ng et al., 2012). If East Asians have a heightened tendency to see both positive and negative aspects of an object or issue, but less inclination to resolve these inconsistencies, they may experience more difficulty in committing to an action, and thus be more indecisive than other cultural groups. This, in turn, may have a negative impact on life satisfaction. These propositions were tested in four studies. In Study 1 (N = 59) I examined how indecisive tendency differed between East Asian Canadian and European Canadian participants using a real educational decision. Results indicated that East Asian Canadian participants exhibited different manifestations of indecisiveness (i.e., decision difficulty, post-decision regret, decision latency) to a higher degree than did European Canadian participants. In Study 2 (N = 511) I investigated cultural differences in chronic indecisiveness and how naïve dialecticism and need for cognition might contribute to these differences by comparing East Asian Canadians, South Asian Canadians, and European Canadians. It was found that East Asian (vs. European and South Asian) Canadian participants exhibited more chronic indecisiveness, and naïve dialecticism and need for cognition mediated the relationship between culture and indecisiveness in opposite directions. In Study 3 (N = 104) I tested again the mediating role that naïve dialecticism plays in explaining cultural differences in chronic indecisiveness and examined how these differences might have negative

downstream consequences for life satisfaction. Results indicated that East Asian (vs. European) Canadian participants had lower life satisfaction, which was mediated serially by naïve dialecticism through chronic indecisiveness. In Study 4 (N = 109) I established the causal effect of naïve dialecticism on indecision using a priming method and tested whether evaluative ambivalence would explain this effect in a consumer choice task. It was found that European Canadian participants who were primed with a dialectical mindset were more indecisive when choosing a computer, relative to those not primed, and this effect was mediated by evaluative ambivalence toward the chosen alternative. Findings of this dissertation contribute to the indecisiveness literature by showing individual and cultural variations in indecisiveness as well as their antecedents, mechanisms, and consequences.

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Chapter 1

Introduction

Knowledge of cultural differences in choice and decision making has important implications in areas such as career counseling, medical decision making, political psychology, and marketing, as our world is increasingly marked by cultural diversity. However, research examining how cultural factors may affect individuals' choice and decision making processes and outcomes is still fairly limited. The present dissertation research aims to make a contribution to the literature by investigating how indecisiveness varies between individuals of different cultural backgrounds as well as its underlying mechanism and downstream consequences.

Indecisiveness

What should I eat for dinner? Which computer should I buy? Which university should I go to? What career should I pursue? Who should I date? Should I get married now? We are constantly bombarded with choices and decisions. Although having the opportunity to make one's own decisions and choose what one wants seems desirable, decision making can also be demanding or stressful at times. Some people, however, are chronically indecisive in that they have a general tendency to experience decision difficulty across domains and situations (Germeijs & de Boeck, 2002). According to Germeijs and de Boeck (2002), there are several behavioural, cognitive, and affective indicators of indecisiveness, including long decision latency, deferring decisions, leaving decisions to someone else, not knowing how to decide, perceived difficulty

when making a decision, avoiding decisions, worrying about decisions made, and regretting decisions made.

Past research on indecisiveness mostly came from applied areas. In marketing, researchers have examined choice deferral in the consumer context. For example, Dhar (1997) found that people are more likely to postpone their purchase decisions when confronted with options that are similarly attractive, compared to options that vary more substantially in their attractiveness (see Tversky & Shafir, 1992, for similar findings). In educational psychology, it has been demonstrated in a longitudinal study that general indecisiveness assessed in the last year of high school predicted less commitment to the chosen major in the first year of postsecondary education (Germeijs & Verschueren, 2011). In the related area of vocational counseling, practitioners have reported that some clients seem to experience considerable difficulty in choosing a career as well as staying in a career. Accordingly, there has been some research effort devoted to the assessment and treatment of career indecision (e.g., Ferrari, Nota, & Soresi, 2012; Slaney, 1988). Another area of research on indecisiveness comes from clinical psychology. For clinical researchers, indecisiveness has been examined in terms of the role it plays in psychological disorders. For instance, chronic indecisiveness has been found to be associated with both depressive symptoms (Rassin, Muris, Franken, Smit, & Wong, 2007) and obsessive-compulsive tendencies (Gayton, Clavin, Clavin, & Broida, 1994; Rassin & Muris, 2005). Curiously, and in contrast to applied areas of research, indecisiveness has not received as much attention from basic researchers.

Culture and Indecisiveness

Cross-cultural theories can inform the development of psychological models that explain variations at both the individual and the group levels (Berry, Poortinga, Segall, & Dasen, 2002). Looking at the phenomenon of indecisiveness through a cultural lens can therefore not only document and provide possible explanations of cultural variations in indecisive tendency, but also shed light on the basic processes underlying indecisive behaviours. A review of the literature revealed only a handful of studies in which researchers investigated cultural differences in indecisiveness. In an early study on marketing decision making with business executives from mainland China, Hong Kong, and Canada using an alternative preference rating task, Tse, Lee, Vertinsky, and Wehrung (1988) found that mainland Chinese managers were less indecisive than both Hong Kong Chinese managers and Canadian managers, whereas the latter two groups did not differ from each other. In another study, the Melbourne Decision Making Questionnaire (Mann, Burnett, Radford, & Ford, 1997) was administered to university students from Japan, Hong Kong, Taiwan, Australia, New Zealand, and the United States (Mann et al., 1998). Based on this measure, East Asian participants were more likely to exhibit decision avoidance behaviours, such as procrastination and buck-passing, than their Western counterparts. More recently, researchers examined how thorough participants from different cultures were when deliberating between two alternatives on a general knowledge test (Yates, Ji, Oka, Lee, Shinotsuka, & Sieck, 2010). It was found that Japanese participants spent more time on each item and

generated more arguments for each item compared to Chinese and European American participants, indicating more indecisiveness.

As a whole, the results of these past studies are quite mixed and difficult to reconcile into a coherent picture of cultural differences in indecisiveness. Importantly, these seemingly discrepant findings are not amenable to direct comparison because each study tapped into a specific aspect of indecisiveness and within a specific domain (cf. Mann et al., 1998). Hence, it may be more fruitful to turn to studies in which researchers examined cultural differences in general indecisiveness using the same comprehensive measure of indecisiveness – the Indecisiveness Scale (IS; Frost & Shows, 1993). In a study conducted in the United States, Americans of East Asian cultural backgrounds scored higher on the IS than did Americans of European cultural backgrounds (Wengrovitz & Patalano, 2004, as cited in Patalano & Wengrovitz, 2006). However, when these same researchers conducted a cross-national study comparing Chinese participants with American ones, they did not find any cultural differences (Patalano & Wengrovitz, 2006). Also using the IS, Yates and colleagues (2010) found that Japanese participants were more indecisive than Chinese and American participants, with the Chinese no more indecisive than American participants. In sum, even when researchers use the same measure of general indecisiveness, the results remain inconsistent across studies. When interpreting these findings, however, there are certain issues that need to be considered.

The first issue concerns the potential confounding of culture-contingent internal and external factors. There are two sources of cultural influences on chronic

indecisiveness – internal and external. First, people with certain cultural backgrounds may be more indecisive than people with other cultural backgrounds because of internalized cultural values or worldviews that can affect the perceived difficulty of choice and decision making. Second, certain cultural contexts may create the experience of decision difficulty because of environmental inputs. One source of greater decision difficulty could come from the society's political system. Individuals in nations with more of a capitalist orientation tend to have a greater number of options available to them, compared to individuals in nations with more of a socialist orientation. A prototypical example is the United States, which is famous for the abundance of choices that are available in all aspects of life (Schwartz, 2004). From this perspective, it is reasonable to expect that people in the United States have to face a larger number of options when a choice needs to be made, and thus are more likely to be indecisive compared with people in mainland China, for example. On the other hand, it is possible that in environments in which people have to frequently choose from a large number of alternatives, people may become more experienced in decision making, and thus find it less demanding over time. In any case, an attempt to separate culture-contingent internal and external factors should be useful in gaining a more nuanced understanding of the relationship between culture and indecisiveness.

When taking into consideration these two distinct types of cultural influences on indecisiveness, some insights into the seemingly inconsistent results of past research become possible. In the only study in which the socio-cultural environment was kept constant (i.e., the United States), participants of East Asian cultural backgrounds

experienced more indecisiveness than did participants of European cultural backgrounds. Hence, when the larger socio-political environment is held relatively constant, the results seem to suggest that there are culture-contingent internal factors that make East Asian Americans more indecisive. Comparing this study with the cross-national study that tested mainland Chinese and American participants but revealed no cultural differences in chronic indecisiveness, it implies the possibility that, relative to the American context, the Chinese context may provide fewer choices and opportunities that makes decision-making less demanding. With regard to the previous cross-national study that found that Japanese participants were more indecisive than mainland Chinese participants (Yates et al., 2010), this may reflect a more capitalist system in Japan, compared with mainland China. Taking these factors into account, it seems that East Asians may be more indecisive than Westerners when the influence of culture-contingent external factors is minimized.

The second issue is that most of these studies did not test for the mediating effect of a cultural factor, rendering the reason for cultural differences unclear. The only exception is one study by Yates and colleagues (2010, Study 2), who found that social values associated with indecisive behaviours mediated the cultural differences in indecisiveness. However, it remains unclear exactly what cultural antecedents give rise to these social values, which in turn translate into indecisive behaviours.

The third limitation concerns potential measurement biases. To the best of my knowledge, past cross-cultural studies on indecisiveness did not address measurement

invariance. Without first ensuring that no measurement item is culturally biased, group mean differences or lack thereof cannot be meaningfully interpreted.

Naïve dialecticism and indecisiveness. The primary goal of the present dissertation was to isolate a culture-contingent internal factor that might explain cultural variations in indecisiveness. I proposed that naïve dialecticism, a set of lay theories of the world that is common among East Asians, might mediate the relationship between culture and indecisiveness. One way to conceptualize culture is that members from a cultural group tend to share implicit theories of the world; that is, they are likely to hold a common set of folk theories or naïve epistemologies that guide them to see, to know, and to reason about objects and events in their physical and social milieu. Individuals from a particular group acquire those lay theories through socialization and enculturation and this lay belief system differs substantially from culture to culture. The impact of culture-specific implicit theories on peoples' thinking, judgment, and behaviour has been documented extensively (e.g., Menon, Morris, Chiu, & Hong, 1999; Tata, 2000; Paletz, & Peng, 2008). One relevant construct that comes from research adopting an implicit theory approach to culture is that of naïve dialecticism (Peng & Nisbett, 1999; Spencer-Rodgers, Williams, & Peng, 2010).

As influenced by Taoism, naïve dialecticism represents a lay belief system that guides East Asians to make sense of their world (Peng, Spencer-Rodgers, & Nian, 2006; Spencer-Rodgers et al., 2010). Dialectical thinking[1] encompasses three principles:

[1] Naïve dialecticism, dialectical thinking, and dialectical worldview refer to the same construct and are used interchangeably in this dissertation.

principle of change, principle of holism, and principle of contradiction. By contrast, it has been suggested that Western people (e.g., European North Americans), as influenced distally by Aristotelian logic, endorse a set of lay theories of knowledge that emphasizes constancy, noncontradiction, and an excluded middle. In East Asian dialectical thinking, the principle of change suggests that our world is in constant flux. Consequently, objects and events are flexible and are always altering and changing. The principle of contradiction refers to a belief that as change is constant, contradiction ought to follow. Hence, two seemingly opposing things could coexist in harmony. The principle of holism states that as change and contradiction are constant, any object or event could not be isolated from the context. In essence, everything is connected to everything else, both temporally and spatially. The following Chinese proverb "Sāi Wēng Lost his Horse" nicely captures this dialectical worldview:

> Sāi Wēng lived on the border and he raised horses for a living. One day he lost a horse and his neighbour felt sorry for him, but Sāi Wēng didn't care about the horse, because he thought it wasn't a bad thing to lose a horse. After a while the horse returned with another beautiful horse, and the neighbour congratulated him on his good luck. But Sāi Wēng thought that maybe it wasn't a good thing to have this new horse. His son liked the new horse a lot and often took it riding. One day his son fell off the horse and broke his leg. Because of his broken leg, he couldn't go off to the war, as was expected of all the young men in the area. Most of them died. ("Chinese Proverbs – Sai", 2009)

This proverb illustrates the principles of change and contradiction such that something seemingly good might become bad and something seemingly bad might become good. Thus, one never knows what is bad and what is good.

Dialectical thinking tendency among Chinese people was empirically demonstrated in a series of studies conducted by Kaiping Peng and Richard Nisbett. In one study (Peng & Nisbett, 1999, Study 3), the authors examined culture-specific ways of social reasoning and their results render how the Chinese apply dialectical thinking in resolving social conflicts. They found, for example, that when confronted with mother-daughter interpersonal conflict, American participants preferred a more noncompromising resolution (e.g., "the mother should pay more respect to the daughter's freedom"), whereas Chinese participants were inclined toward a more compromising solution (e.g., "both parties should communicate more and pay more respect to each other's concerns"). These authors also demonstrated that Chinese participants have greater tolerance of apparent contradiction than American participants (Peng & Nisbett, 1999, Study 5). The authors presented their participants with two scientific reports that were somewhat contradictory to each other but differed in plausibility. When they showed their participants the two reports separately, both Chinese and American participants rated the same one report as more plausible than the other. However, in another condition, they presented both reports to their participants and herein clear cultural differences emerged. For American participants, their belief of the more plausible article was greater relative to the other group of American participants who saw that article alone. It appears that Americans are more inclined to

make a principled choice between the two options such that their ratings of plausibility diverge, rendering a clear choice (even though their participants were not asked to choose one article to believe). However, when Chinese participants were shown the two pieces of contradicting information, their ratings of plausibility for both reports depolarize, or converged to a "middle ground" that was almost the same for the two reports, when compared to the Chinese participants who saw only one of the two passages alone. Peng and Nisbett's results seem to suggest that Chinese tend to retain elements of both contradicting pieces of information rather than deciding to trust one piece of information and leaning toward that one side entirely. Similarly, other research suggests that not only do East Asians have greater tolerance for contradictory information and less inclination to resolve inconsistent viewpoints, they are also more inclined to have mixed emotions, especially negative emotions in seemingly positive situations (Bagozzi, Wong, & Yi, 1999; Hui, Fok, & Bond, 2009; Leu et al., 2010), compared with European North Americans.

Tolerance for inconsistent information is also exhibited in how East Asians view and evaluate themselves. Choi and Choi (2002) demonstrated that Koreans are more flexible and inconsistent in their self-concepts. In particular, their Korean participants' answers to personality measures were more influenced by the direction of the question when compared to their American counterparts. On the same note, Spencer-Rodgers, Peng, Wang, and Hou (2004) extended dialectical thinking tendency to self-evaluations of Chinese people. That is, it has been found that Chinese (vs. European American) participants exhibited more ambivalence (i.e., simultaneous positive and negative

evaluations; Thompson, Zanna, & Griffin, 1995) in their self-evaluations. The tendency to exhibit ambivalent self-evaluation among Chinese has also been found using implicit measures (Boucher, Peng, Shi, & Wang, 2009), thus making it unlikely that an acquiescent response bias is the main explanation for endorsing opposing items on a self-report questionnaire. In a similar vein, my earlier research has provided some evidence to suggest that, compared with European Canadians, East Asian Canadians are more likely to hold ambivalent attitudes toward some everyday objects (e.g., dormitories, cake, mosquitoes; Ng, Hynie, & McDonald, 2010), and are less motivated to resolve these conflicted evaluations (Ng, Hynie, & McDonald, 2012).

If East Asians (vs. Westerners) are more likely to hold ambivalent attitudes because they recognize both positive and negative aspects of an object or an issue simultaneously, it may be more difficult for them to commit to an action and they may be more indecisive. For example, a person who holds a clearly positive or negative attitude toward dormitories may find it fairly easy to decide whether or not to live on campus. By comparison, a person who holds an ambivalent attitude toward dormitories may find it relatively more difficult to make this decision because neither alternative is entirely satisfying, and this person may feel pulled in opposite directions by his or her conflicting attitudinal components. There indeed is evidence to suggest this possibility. van Harreveld, Rutjens, Rotteveel, Nordgren, and van der Pligt (2009) found that ambivalence toward a new labour law induced psychological discomfort when a relevant decision needed to be made. This suggests the possibility that dialectical East Asians (vs.

Westerners) may be more likely to experience difficulty or stress when making a decision because of a higher inclination to evaluate objects ambivalently.

Culture and Life Satisfaction

In addition to explaining cultural differences in indecisiveness, another goal of the present dissertation was to explore how these differences might have negative downstream consequences for people's well-being. There is substantial evidence that individuals of East Asian cultural backgrounds report lower levels of life satisfaction than those of European cultural backgrounds (e.g., Diener, Diener, & Diener, 1995; Lee & Wu, 2008; Oishi, Akimoto, Richards, & Suh, 2013; Schkade & Kahneman, 1998). Cultural variations in life satisfaction are multiply determined. Life satisfaction has been found to be related to a number of variables, such as self-evaluative ambivalence (Spencer-Rodgers et al., 2004), self-enhancing memory bias (Oishi, 2002), and the feeling that one is accurately understood by others (Oishi, Krochik, & Akimoto, 2010). However, I contend that general indecisiveness may also contribute to cultural differences in life satisfaction.

Having problems making decisions can be a burden in people's lives. First, indecisive (vs. decisive) individuals tend to gather more information before arriving at a decision (Rassin, Muris, Franken, Smit, & Wong, 2007). Because people generally need to make a large number of choices and decisions in the course of life, chronic indecisiveness will drain a lot of time and energy. Moreover, the tendency to experience post-decision regret, a marker of indecisiveness (Germeijs & de Boeck, 2002), may be especially likely to lower one's life satisfaction. As a global evaluation of the degree to

which one is satisfied with his or her life, life satisfaction is unsurprisingly correlated with the degree of satisfaction in several important domains, including career (Lent et al., 2011), marriage (Shek, 1995), friends (Diener & Diener, 1995), and finances (Diener & Diener, 1995). If people have the inclination to doubt whether they have made the right choice across domains and situations, it follows that they should be less satisfied with their current choices and their life in general. Hence, compared to Westerners, if East Asians exhibit more general indecisiveness, they may also exhibit less life satisfaction. Indeed, a negative association between indecisiveness and life satisfaction was observed in a study conducted with Dutch participants (Rassin & Muris, 2005). Although a relationship between two variables observed within one culture does not necessarily mean that one variable would explain cultural differences in the other variable, their finding do suggest the possibility that lower life satisfaction among East Asians (vs. Westerners) can be explained in part by their higher indecisiveness.

Research Overview

The overall objective of the present research was to investigate cultural differences in indecisiveness. To control for the potential effects of culture-contingent external factors, such as the abundance of choices available in the environment, we conducted all studies in one location (i.e., Toronto, Canada) and compared indecisive tendencies between different ethnocultural groups. Moreover, measurement invariance was tested on all relevant scales.

In Study 1, I examined how three markers of indecision – decision difficulty, post-decision regret, and decision latency (Germeijs & de Boeck, 2002) – might differ

across cultural groups in a real educational decision that was common to all participants choosing one's program of study. In Study 2, I investigated how naïve dialecticism might contribute to cultural differences in chronic indecisiveness. In Study 3, I examined how cultural differences in chronic indecisiveness induced by naïve dialecticism might contribute to cultural differences in life satisfaction. In Study 4, I established the causal effect of naïve dialecticism on indecision in a consumer choice task and tested whether evaluative ambivalence toward the alternatives explained this effect.

Chapter 2

Study 1

In Study 1, in addition to testing participants in the same country to minimize the influence of culture-contingent external factors, I specifically examined one real-life decision that was common to all of our student participants (i.e., choice of university program) while statistically controlling for the number of alternatives. I hypothesized that East Asian Canadian students would experience more decision difficulty and post-decision regret, and take a longer time to decide which university program to attend, compared with European Canadian students.

Method

Participants

Fifty-nine students at York university in Toronto, Canada, including 23 East Asian Canadians (12 female, 11 male; M_{age} = 20.7 years) and 36 European Canadians (28 female, 8 male; M_{age} = 23.3 years), completed an online survey about their university application experience. For the 23 self-identified East Asian Canadian participants, 12 were born in an East Asian country (e.g., South Korea) and 11 were born in Canada. For the 36 European Canadian participants, 29 were born in Canada and 7 were born in the United States or a European country (e.g., Hungary).

Measures and Procedure

Consenting participants first answered some demographic questions (e.g., gender, age, ethnicity). Participants then answered the following questions regarding their university application experience: (1a) “How many universities did you apply to in

the year before you started studying at the current university?" (1b) "For each university, please indicate the number of programs that you applied to." (2) "In the year you accepted the offer to study at the current university, how many university/program offers did you receive?" (number of offers) (3) "Did you accept the offer from the current university before you received all your acceptance/rejection letters?" (4) "How many days after you received your final acceptance/rejection letter did it take for you to make your final decision?" (decision latency) (5) "Please indicate the degree of difficulty you experienced in deciding which university/program to attend." (decision difficulty; 1 = *very easy*, 7 = *very difficult*) (6) "After you had chosen the university/program to attend and accepted the offer, did you believe that you had made the wrong choice?" (post-decision regret; 1 = *not at all*, 7 = *very much*). Participants were also given the opportunity to describe the reasons behind their choice of university program as well as the thoughts and feelings that crossed their minds while they were making their decisions.[2] All materials were presented in English. At the end of the experimental session, participants were thanked and fully debriefed.

Results

Data analyses were conducted on those who received multiple offers (68% of the total sample), including 16 East Asian Canadians (7 male, 9 female) and 24 European Canadians (7 male, 17 female).[3] The proportion of those who received multiple offers

[2] Responses did not suggest discernable differences between how East Asian Canadian students and European Canadian students selected their university programs. For both cultural groups, some common reasons behind their choice of university program include reputation of the school/program, opinions of their family/friends, and logistic concerns.

[3] Number of programs applied for did not differ between the two cultural groups (East Asian Canadians: $M = 3.22$, $SD = 1.41$; European Canadians: $M = 2.94$; $SD = 1.47$), $t(57) = 0.71$, $p = .48$, $d = 0.19$. Number

did not differ between cultures, $\chi^2(1, N = 59) = 0.54$, $p = .82$. For those who received multiple offers, gender composition did not differ between cultures, $\chi^2(1, N = 40) = 0.90$, $p = .34$, and age did not differ between cultures[4] (East Asian Canadians: $M = 20.1$, $SD = 2.39$; European Canadians: $M = 22.1$, $SD = 5.98$), $t(36) = -1.23$, $p = .23$, $d = 0.44$.

One-way ANCOVAs with culture (East Asian vs. European) as the independent variable and number of offers as the covariate revealed the following findings[5]. First, East Asian Canadians ($M = 4.63$, $SD = 2.03$) experienced higher levels of decision difficulty than did European Canadians ($M = 2.58$, $SD = 1.50$), $F(1, 37) = 12.49$, $p = .001$, $\eta_p^2 = .25$, and number of offers was not a significant covariate, $F(1, 37) = 0.13$, $p = .72$, $\eta_p^2 < .01$. Second, East Asian Canadians ($M = 3.44$, $SD = 2.16$) experienced higher levels of post-decision regret[6] than did European Canadians ($M = 2.22$, $SD = 1.41$), $F(1, 36) = 4.06$, $p = .05$, $\eta_p^2 = .10$. Number of offers was not a significant covariate, $F(1, 36) = 0.58$, $p = .45$, $\eta_p^2 = .02$. Third, East Asian Canadians ($M = 16.1$ days, $SD = 23.2$ days) reported a longer decision latency[7], compared with European Canadians ($M = 5.2$ days,

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of offers received did not differ between the two cultural groups (East Asian Canadians: $M = 2.48$, $SD = 1.44$; European Canadians: $M = 2.19$; $SD = 1.28$), $t(57) = 0.79$, $p = .43$, $d = 0.21$. After controlling for the number of programs applied for, the difference between the two cultural groups in the number of offers received remained statistically non-significant, $F(1, 56) = 0.14$, $p = .72$, $\eta_p^2 < .01$.

[4] One East Asian Canadian participant and one European Canadian participant did not report their age.

[5] The assumption of homogeneity of regression slopes was supported for all dependent variables, ps > .22.

[6] One European Canadian participant did not answer the post-decision regret question.

[7] Five participants did not answer the decision latency question. Decision latency was positively skewed, so this ANCOVA was conducted using the square root of decision latency as the dependent variable. If the original decision latency variable was used, results were marginally significant (culture: $F(1, 32) = 3.72$, $p = .06$, $\eta_p^2 = .10$; number of offers: $F(1, 32) = 3.40$, $p = .08$, $\eta_p^2 = .10$).

SD = 6.6 days), $F(1, 32) = 5.84$, $p = .02$, $\eta_p^2 = .15$. Here, number of offers was a significant positive covariate, $F(1, 32) = 4.18$, $p = .05$, $\eta_p^2 = .12$.

Finally, decision difficulty, post-decision regret, and decision latency were positively correlated among each other for both cultural groups (*r*s ranged from .40 to .79; see Table 1), consistent to the contention that these are all manifestations of indecisiveness (Germeijs & de Boeck, 2002).

Discussion

The present results are consistent with research evidence that in North America, individuals of East Asian cultural backgrounds reported more chronic indecisiveness than those of European cultural backgrounds (Wengrovitz & Patalano, 2004, as cited in Patalano & Wengrovitz, 2006). Extending previous research, in the present study, we examined a real-life decision while statistically controlling for the number of alternatives and found that East Asian Canadian participants exhibited different manifestations of indecisiveness (i.e., decision difficulty, post-decision regret, decision latency) to a higher degree than did European Canadian participants.

Table 1. Correlations among Variables in Study 1

	Decision Latency	Decision Difficulty
	East Asian Canadians	
Decision Difficulty	.47*	
Post-Decision Regret	.44	.79***
	European Canadians	
Decision Difficulty	.40*	
Post-Decision Regret	.40*	.59***

Note: *$p < .05$ (two-tailed); **$p < .01$ (two-tailed); ***$p < .001$ (two-tailed)

Chapter 3

Study 2[8]

In Study 2 I investigated cultural differences in chronic indecisiveness and how naïve dialecticism may contribute to these differences by comparing East Asian Canadians, South Asian Canadians, and European Canadians. It is theoretically informative to look at a third cultural group to enrich a two-culture comparison. South Asian culture was included as a second control group because South Asian culture, in many respects, is more similar to East Asian culture (e.g., collectivism, power distance, Hofstede, 2001) than to North American culture. Yet, East Asian and South Asian cultures differ in philosophical and religious traditions. Specifically, as naïve dialecticism is believed to have originated in Taoism, the increased indecisive tendency might be an exclusively East Asian phenomenon. For this reason, I expected that East Asian Canadians would exhibit higher levels of chronic indecisiveness than would European Canadians and South Asian Canadians. If South Asian Canadians exhibited levels of indecisiveness similar to European Canadians but significantly lower than that of East Asian Canadians, increased levels of indecisiveness among East Asian Canadians should not be related to other cultural characteristics that are supposed to be shared by East Asian and South Asian cultures, such as collectivism (Hofstede, 2001).

In addition to naïve dialecticism, I also examined another variable that might influence cultural variations in general indecisiveness; that is, need for cognition, or the "tendency to engage in and enjoy effortful cognitive endeavors" (Cacioppo & Petty,

[8] This study was published in Ng & Hynie (2014).

1982). Sanders, Gass, Wiseman, and Bruschke (1992) found that their Asian American participants[9] reported lower need for cognition than did their European American and Hispanic American participants. People who are high in need for cognition expend more effort to process issue-relevant information, and their attitudes toward an issue are more predictive of their issue relevant behaviour at a later time (Cacioppo, Petty, Kao, & Rodriguez, 1986). Moreover, Weary and Edwards (1994) found that people who are intrinsically motivated to expend cognitive effort are less likely to have a feeling of uncertainty. As feeling uncertain about an issue can be conceived of as an aspect of indecisiveness, it is reasonable to expect that people who are relatively high in need for cognition would also be relatively low in indecisiveness. Indeed, more recent research did find a negative correlation between need for cognition and indecisiveness (Curşeu, 2006). Thus, it is also important to examine cultural differences in need for cognition and how these might contribute to cultural variations in indecisiveness, and whether naïve dialecticism is still a significant mechanism underlying cultural differences in indecisiveness when the effect of need for cognition is controlled for. Furthermore, as people who are more (vs. less) intrinsically motivated to engage in cognitive activities may be more inclined to resolve opposing or seemingly contradictory viewpoints, they may be less likely to endorse both of these contradictory beliefs. Hence, I also expected that need for cognition might be negatively associated with naïve dialecticism.

[9] Sanders and colleagues (1992) did not differentiate between East Asian Americans and South Asian Americans, so their Asian American sample might include Americans of both East Asian and South Asian cultural backgrounds.

To the best of my knowledge, there is no prior research examining cultural differences in naïve dialecticism between East Asians and South Asians. However, because naïve dialecticism is grounded in East Asian philosophies (Peng & Nisbett, 1999), I predicted that East Asian Canadians would be more dialectical and thus more indecisive, compared with South Asian Canadians. Hence, I made the following hypotheses: (H1) East Asian Canadians would exhibit more naïve dialecticism than European Canadians and South Asian Canadians; (H2) East Asian Canadians would exhibit more chronic indecisiveness than European Canadians and South Asian Canadians; and (H3) naïve dialecticism would mediate the relationship between culture and indecisiveness.

As mentioned above, one limitation of previous research on culture and chronic indecisiveness concerns potential measurement biases. My reading of the literature indicates that past studies in this area did not address measurement invariance (van de Vijver & Leung, 1997). Without first ensuring that no measurement item in a scale is culturally biased, group mean differences (or lack thereof) cannot be meaningfully interpreted as true differences (or lack thereof) in the latent construct concerned (Byrne & Watkins, 2003). To address this issue, measurement invariance was tested on all scales in this and subsequent studies.

Method

Participants

Two hundred and three European Canadian students (147 female, 56 male), 209 East Asian Canadian students (120 female, 89 male), and 99 South Asian Canadian

students (69 female, 30 male) participated in this study. Gender composition differed among the three cultural groups, Gender: $\chi^2(2, N = 511) = 11.13$, $p < .01$. For the 203 self-identified European Canadian participants, 159 were born in Canada and 44 were born in the United States or a European country (e.g., Croatia). For the 209 self-identified East Asian Canadian participants, 84 were born in an East Asian country (e.g., China) and 121 were born in Canada[10]. For the 99 self-identified South Asian Canadian participants, 45 were born in a South Asian country (e.g., Bangladesh) and 54 were born in Canada. Age differed among the three cultural groups (European Canadians[11]: $M = 19.9$, $SD = 3.79$; East Asian Canadians[12]: $M = 19.1$, $SD = 1.79$; South Asian Canadians[13]: $M = 18.8$, $SD = 1.43$), $F(2, 493) = 6.76$, $p < .01$, $\eta_p^2 = .03$. Post-hoc analyses with p-values adjusted for multiple comparisons using Sidak correction revealed that European Canadian participants were statistically significantly older than both East Asian Canadian participants, $p = .01$, and South Asian Canadian participants, $p = .01$, while the latter two groups did not differ from each other, $p = .81$. The effects of gender and age were therefore estimated in all analyses. All participants were recruited from the undergraduate psychology participant pool of York University in Toronto.

Measures

Naïve dialecticism. Individual differences in naïve dialecticism were assessed using the 32-item Dialectical Self Scale (DSS; Spencer-Rodgers et al., 2011; see

[10] Four East Asian Canadian participants did not answer the country of birth question.
[11] Three European Canadian participants did not provide their age.
[12] Nine East Asian Canadian participants did not provide their age.
[13] Three South Asian Canadian participants did not provide their age.

Appendix A), which uses a 7-point response scale (1 = *strongly disagree*; 7 = *strongly agree*). Sample items include: "When I hear two sides of an argument, I often agree with both" and "There are always two sides to everything, depending on how you look at it." The DSS has been demonstrated to possess good reliability (αs ranged from .69 to .87; Spencer-Rodgers, Boucher, Peng, & Wang, 2009) and predictive validity (Spencer-Rodgers et al., 2004).

Need for cognition. Need for cognition was measured by the Need for Cognition scale (NFC; Cacioppo & Petty, 1982; see Appendix B), consisting of 18 items rated on a 5-point response scale (1 = *strongly disagree*; 5 = *strongly agree*). Sample items include: "I find satisfaction in deliberating hard and for long hours" and "I only think as hard as I have to" (reverse-scored). The NFC has been shown to have good reliability (αs ranged from .74 to .97), and convergent and discriminant validity (Cacioppo, Petty, Feinstein, & Jarvis, 1996).

Indecisiveness. Consistent with most prior research, I used the Indecisiveness Scale (IS; Frost & Shows, 1993; see Appendix C) to assess individual differences in general indecisiveness. The IS consists of 15 items, rated on a 7-point response scale (1 = *strongly disagree*; 7 = *strongly agree*). Sample items include: "I become anxious when making a decision" and "I try to put off making decisions." The IS has been demonstrated to possess good reliability (α = .87, Frost & Shows, 1993; α = .86, Rassin & Muris, 2005) and predictive validity (Frost & Shows, 1993).

Procedure

After indicating consent, participants completed an online survey including a brief demographics questionnaire (e.g., gender, age, racial background), the DSS, the NFC, and the IS (see Table 2 for αs) for course credit. All materials were presented in English. At the end of the study, participants were thanked and fully debriefed.

Results

Differential Item Functioning Analyses

There is increasing attention being paid to ensuring that scale scores are comparable between groups in cross-cultural research. A commonly adopted method in assessing measurement invariance is statistical analyses of item response data. Mean differences can be meaningfully interpreted only when no item functions differentially across the cultural groups. In other words, respondents from different cultural backgrounds with the same level of the latent construct should have the same probability of endorsing an item (or having the same score for that item). The absence of these equivalent probabilities is known as differential item functioning (DIF), and when DIF is detected in one or more items of an instrument cross-cultural comparisons using the observed mean scores will be biased by the differentially functioning items. Ordinal logistic regression is commonly used to detect DIF (Zumbo, 1999) and this was the

Table 2. Descriptive Statistics of Variables in Study 2

	European Canadians			East Asian Canadians			South Asian Canadians		
	α	*M*	*SD*	α	*M*	*SD*	α	*M*	*SD*
Need for Cognition Scale	.89	3.21	0.64	.82	3.02	0.50	.78	3.20	0.46
Dialectical Self Scale	.74	3.70	0.51	.77	3.95	0.49	.80	3.78	0.56
Indecisiveness Scale	.87	2.93	0.68	.84	3.18	0.60	.85	2.95	0.63

approach adopted in the present research. Briefly, a set of logistic regression models are fitted on each item to detect uniform DIF and non-uniform DIF. In Model 1, the item score is regressed onto the total score. In Model 2, the item score is regressed onto both the total score and group membership. In Model 3, the item score is regressed onto the total score, group membership, and their interaction term. Model comparisons, using likelihood ratio chi-square tests, are then conducted to evaluate potential DIF. Specifically, a difference between Models 1 and 2 indicates uniform DIF because group membership explains additional variance of item scores above and beyond what the latent score explains. Difference between Models 2 and 3, on the other hand, indicates a non-uniform DIF because the interaction term explains additional variance of item scores above and beyond what the main effects explain, suggesting that the effect of group membership depends on the level of the latent construct. Finally, total DIF (the combination of uniform DIF and non-uniform DIF) is tested by comparing Models 1 and 3. It has been recommended that both statistical significance and effect size should be taken into account in determining whether an item is differentially functioning across groups.

All DIF analyses were performed using an SPSS Macro (Zumbo, 1999). For each item, three likelihood ratio χ^2 statistics (Model 1 vs. Model 2 for uniform DIF; Model 2 vs. Model 3 for non-uniform DIF; Model 1 vs. Model 3 for total DIF) and three associated pseudo-R^2 values were used to evaluate the presence of DIF. According to Zumbo (1999), an item is classified as displaying DIF when $p < .01$ (to control for inflated familywise error) and pseudo-$R^2 > .13$. As there were three cultural groups in

this study, three different sets of DIF tests were conducted with two cultural groups being compared at a time.

Need for Cognition Scale. Focusing on total DIF (Model 1 vs. Model 3), which provides an overall test of DIF (i.e., including the effects of both uniform-DIF and non-uniform-DIF), no item functioned differentially across cultural groups. Comparing responses from European Canadian and East Asian Canadian participants, the likelihood ratio χ^2 statistic was statistically significant for two items, ps < .01, but with small effect sizes, pseudo-R^2s < .04 (see Table 3). Comparing responses from European Canadian and South Asian Canadian participants, the likelihood ratio χ^2 statistic was statistically non-significant for all items, ps > .01, pseudo-R^2s < .03 (see Table 4). Comparing responses from East Asian Canadian and South Asian Canadian participants, likelihood ratio χ^2 statistics was statistically non-significant for all items, ps > .02, pseudo-R^2s < .03 (see Table 5). Moreover, no item functioned differentially across gender groups; the likelihood ratio χ^2 statistic was statistically significant for two items, ps < .01, but with small effect sizes, pseudo-R^2s < .03 (see Table 6).

Dialectical Self Scale. Focusing on total DIF (Model 1 vs. Model 3), no item functioned differentially across cultural groups. Comparing responses from European Canadian and East Asian Canadian participants, the likelihood ratio χ^2 statistic was statistically significant for five items, ps < .01, but with small effect sizes, pseudo-R^2s < .05 (see Table 7). Comparing responses from European Canadian and South Asian Canadian participants, likelihood ratio χ^2 statistic was statistically significant for one

Table 3. Differential Item Functioning Analyses of Need for Cognition Scale between European Canadians and East Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	168.49	0.37	175.93	0.38	177.35	0.38	7.44	0.01	0.01	1.43	0.00	0.23	8.86	0.02	0.01
2	224.40	0.47	224.70	0.47	228.33	0.47	0.31	0.00	0.58	3.63	0.01	0.06	3.93	0.01	0.14
3	180.32	0.39	181.77	0.39	182.91	0.40	1.45	0.00	0.23	1.14	0.00	0.29	2.58	0.00	0.27
4	297.87	0.57	300.40	0.57	301.66	0.58	2.53	0.00	0.11	1.26	0.00	0.26	3.79	0.01	0.15
5	234.43	0.47	240.21	0.48	240.42	0.48	5.79	0.01	0.02	0.21	0.00	0.65	6.00	0.01	0.05
6	123.78	0.28	132.46	0.30	139.15	0.31	8.69	0.02	0.00	6.69	0.01	0.01	15.37	0.03	0.00
7	164.86	0.36	177.55	0.38	177.72	0.38	12.69	0.02	0.00	0.17	0.00	0.68	12.86	0.02	0.00
8	84.71	0.20	88.02	0.21	89.73	0.21	3.31	0.00	0.07	1.70	0.00	0.19	5.02	0.01	0.08
9	151.83	0.35	154.75	0.35	155.08	0.35	2.92	0.01	0.09	0.33	0.00	0.57	3.25	0.01	0.20
10	125.87	0.29	127.39	0.29	127.69	0.29	1.53	0.00	0.22	0.30	0.00	0.58	1.83	0.00	0.40
11	216.32	0.47	216.53	0.47	217.84	0.48	0.20	0.00	0.65	1.31	0.00	0.25	1.51	0.00	0.47
12	211.45	0.44	212.86	0.45	215.32	0.45	1.41	0.00	0.24	2.46	0.01	0.12	3.87	0.01	0.14
13	144.75	0.32	146.29	0.33	149.39	0.33	1.54	0.00	0.21	3.10	0.00	0.08	4.64	0.01	0.10
14	167.29	0.37	167.47	0.37	169.49	0.37	0.18	0.00	0.67	2.02	0.00	0.16	2.20	0.00	0.33
15	201.35	0.44	201.36	0.44	201.52	0.44	0.01	0.00	0.94	0.16	0.00	0.69	0.16	0.00	0.92
16	72.98	0.17	73.09	0.17	80.44	0.19	0.11	0.00	0.73	7.35	0.02	0.01	7.46	0.02	0.02
17	130.31	0.29	130.69	0.29	134.09	0.30	0.37	0.00	0.54	3.40	0.01	0.07	3.78	0.01	0.15
18	34.71	0.09	34.71	0.09	35.03	0.09	0.00	0.00	1.00	0.33	0.00	0.57	0.33	0.00	0.85

Table 4. Differential Item Functioning Analyses of Need for Cognition Scale between European Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	130.72	0.38	136.21	0.39	137.97	0.40	5.49	0.01	0.02	1.77	0.00	0.18	7.25	0.02	0.03
2	189.46	0.52	189.52	0.52	189.65	0.52	0.06	0.00	0.80	0.12	0.00	0.73	0.19	0.00	0.91
3	119.37	0.37	119.47	0.37	119.49	0.37	0.09	0.00	0.76	0.02	0.00	0.88	0.12	0.00	0.94
4	206.96	0.55	208.99	0.55	209.14	0.55	2.02	0.00	0.15	0.16	0.00	0.69	2.18	0.00	0.34
5	150.33	0.42	151.91	0.42	152.00	0.42	1.59	0.00	0.21	0.09	0.00	0.77	1.67	0.00	0.43
6	127.03	0.37	129.41	0.38	130.58	0.39	2.38	0.01	0.12	1.17	0.00	0.28	3.55	0.01	0.17
7	126.90	0.36	134.73	0.38	135.63	0.38	7.83	0.02	0.01	0.90	0.00	0.34	8.73	0.02	0.01
8	46.67	0.16	46.74	0.16	46.97	0.16	0.07	0.00	0.79	0.23	0.00	0.63	0.30	0.00	0.86
9	104.39	0.33	104.56	0.33	108.68	0.34	0.17	0.00	0.68	4.13	0.01	0.04	4.29	0.01	0.12
10	102.76	0.33	102.84	0.33	102.91	0.33	0.08	0.00	0.77	0.07	0.00	0.79	0.15	0.00	0.93
11	149.00	0.45	157.03	0.46	157.05	0.46	8.03	0.01	0.00	0.02	0.00	0.89	8.05	0.01	0.02
12	185.73	0.51	186.05	0.51	186.15	0.51	0.32	0.00	0.57	0.10	0.00	0.75	0.43	0.00	0.81
13	87.34	0.27	87.36	0.27	87.52	0.27	0.02	0.00	0.88	0.16	0.00	0.69	0.18	0.00	0.91
14	111.74	0.34	112.00	0.34	112.94	0.34	0.26	0.00	0.61	0.94	0.00	0.33	1.21	0.00	0.55
15	142.26	0.42	142.79	0.42	142.81	0.42	0.53	0.00	0.47	0.02	0.00	0.89	0.54	0.00	0.76
16	82.08	0.25	84.65	0.26	84.65	0.26	2.57	0.01	0.11	0.00	0.00	0.96	2.58	0.01	0.28
17	80.07	0.24	80.59	0.24	80.96	0.24	0.52	0.00	0.47	0.37	0.00	0.54	0.88	0.00	0.64
18	24.36	0.08	24.38	0.08	24.60	0.08	0.02	0.00	0.90	0.21	0.00	0.64	0.23	0.00	0.89

Table 5. Differential Item Functioning Analyses of Need for Cognition Scale between East Asian Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	87.16	0.26	87.33	0.26	87.64	0.26	0.17	0.00	0.68	0.31	0.00	0.58	0.48	0.00	0.79
2	115.52	0.34	116.37	0.34	117.96	0.35	0.86	0.00	0.35	1.59	0.00	0.21	2.44	0.01	0.29
3	101.27	0.31	103.04	0.32	103.35	0.31	1.77	0.01	0.18	0.31	0.00	0.58	2.08	0.00	0.35
4	184.75	0.51	184.89	0.51	185.14	0.51	0.14	0.00	0.71	0.25	0.00	0.62	0.39	0.00	0.82
5	150.39	0.42	150.78	0.43	150.78	0.43	0.38	0.00	0.53	0.00	0.00	0.96	0.39	0.00	0.82
6	52.15	0.17	52.68	0.18	53.33	0.18	0.52	0.00	0.47	0.66	0.00	0.42	1.18	0.00	0.55
7	95.32	0.30	95.33	0.30	97.10	0.31	0.01	0.00	0.91	1.77	0.00	0.18	1.78	0.00	0.41
8	58.13	0.19	59.67	0.19	61.79	0.20	1.54	0.00	0.21	2.12	0.01	0.15	3.66	0.02	0.16
9	64.56	0.22	65.16	0.22	67.36	0.22	0.60	0.00	0.44	2.20	0.01	0.14	2.80	0.01	0.25
10	70.09	0.22	71.02	0.23	71.02	0.23	0.93	0.00	0.33	0.00	0.00	0.97	0.93	0.00	0.63
11	111.68	0.35	118.56	0.37	118.82	0.37	6.88	0.02	0.01	0.26	0.00	0.61	7.14	0.02	0.03
12	115.33	0.35	115.40	0.35	117.19	0.35	0.07	0.00	0.79	1.79	0.01	0.18	1.86	0.01	0.39
13	108.18	0.31	109.07	0.32	109.88	0.32	0.89	0.00	0.35	0.81	0.00	0.37	1.70	0.00	0.43
14	146.11	0.42	146.26	0.42	146.27	0.42	0.16	0.00	0.69	0.01	0.00	0.93	0.16	0.00	0.92
15	107.88	0.35	108.24	0.35	108.25	0.35	0.36	0.00	0.55	0.01	0.00	0.93	0.37	0.00	0.83
16	22.79	0.08	23.84	0.08	27.63	0.09	1.05	0.00	0.31	3.79	0.01	0.05	4.84	0.02	0.09
17	97.71	0.29	98.78	0.29	99.43	0.29	1.07	0.00	0.30	0.65	0.00	0.42	1.72	0.01	0.42
18	16.14	0.05	16.15	0.05	16.15	0.05	0.00	0.00	0.96	0.00	0.00	1.00	0.00	0.00	1.00

Table 6. Differential Item Functioning Analyses of Need for Cognition Scale between females and males

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	192.38	0.34	199.74	0.35	202.56	0.36	7.36	0.01	0.01	2.82	0.01	0.09	10.18	0.02	0.01
2	267.53	0.45	267.57	0.45	267.82	0.45	0.04	0.00	0.84	0.25	0.00	0.62	0.29	0.00	0.87
3	199.60	0.36	199.60	0.36	199.77	0.36	0.00	0.00	0.96	0.17	0.00	0.68	0.17	0.00	0.92
4	348.50	0.55	351.22	0.55	352.01	0.55	2.73	0.00	0.10	0.79	0.00	0.37	3.51	0.00	0.17
5	272.25	0.45	275.12	0.45	275.40	0.45	2.87	0.00	0.09	0.28	0.00	0.60	3.15	0.00	0.21
6	148.14	0.28	152.05	0.28	156.08	0.29	3.90	0.01	0.05	4.04	0.01	0.04	7.94	0.01	0.02
7	199.25	0.35	209.91	0.36	210.53	0.37	10.67	0.01	0.00	0.62	0.00	0.43	11.29	0.01	0.00
8	97.18	0.19	97.60	0.19	97.66	0.19	0.41	0.00	0.52	0.06	0.00	0.80	0.48	0.00	0.79
9	160.18	0.30	160.63	0.30	164.67	0.31	0.45	0.00	0.50	4.05	0.01	0.04	4.49	0.01	0.11
10	151.83	0.29	152.05	0.29	152.20	0.29	0.22	0.00	0.64	0.15	0.00	0.70	0.36	0.00	0.83
11	240.87	0.43	248.17	0.44	248.27	0.44	7.30	0.01	0.01	0.10	0.00	0.75	7.40	0.01	0.02
12	257.33	0.44	257.97	0.44	258.19	0.44	0.64	0.00	0.42	0.22	0.00	0.64	0.86	0.00	0.65
13	168.38	0.30	168.60	0.30	169.41	0.30	0.22	0.00	0.64	0.81	0.00	0.37	1.04	0.00	0.60
14	211.91	0.38	212.23	0.38	214.15	0.38	0.32	0.00	0.57	1.93	0.00	0.17	2.25	0.00	0.33
15	228.67	0.41	229.08	0.41	229.19	0.41	0.41	0.00	0.52	0.11	0.00	0.74	0.52	0.00	0.77
16	87.09	0.17	89.26	0.17	90.48	0.17	2.17	0.00	0.14	1.22	0.00	0.27	3.39	0.01	0.18
17	153.53	0.27	153.76	0.27	155.52	0.28	0.23	0.00	0.63	1.76	0.00	0.18	1.99	0.00	0.37
18	37.78	0.08	37.79	0.08	38.12	0.08	0.01	0.00	0.91	0.32	0.00	0.57	0.34	0.00	0.84

Table 7. Differential Item Functioning Analyses of Dialectical Self Scale between European Canadians and East Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	73.08	0.16	73.08	0.16	73.37	0.16	0.00	0.00	0.97	0.29	0.00	0.59	0.29	0.00	0.87
2	55.31	0.13	56.43	0.13	56.43	0.13	1.12	0.00	0.29	0.00	0.00	0.97	1.13	0.00	0.57
3	2.77	0.01	10.46	0.02	10.80	0.03	7.69	0.02	0.01	0.34	0.00	0.56	8.03	0.02	0.02
4	41.24	0.10	42.94	0.11	47.88	0.11	1.70	0.00	0.19	4.94	0.01	0.03	6.64	0.01	0.04
5	125.29	0.27	125.70	0.28	126.57	0.28	0.41	0.00	0.52	0.87	0.00	0.35	1.28	0.00	0.53
6	65.15	0.16	65.34	0.16	66.11	0.16	0.20	0.00	0.66	0.76	0.00	0.38	0.96	0.00	0.62
7	53.92	0.13	53.92	0.13	56.45	0.13	0.00	0.00	0.95	2.52	0.00	0.11	2.53	0.00	0.28
8	89.35	0.20	90.62	0.20	97.54	0.21	1.28	0.00	0.26	6.91	0.01	0.01	8.19	0.01	0.02
9	130.78	0.29	134.09	0.29	134.41	0.29	3.31	0.00	0.07	0.32	0.00	0.57	3.63	0.00	0.16
10	30.19	0.08	31.32	0.08	31.45	0.08	1.13	0.00	0.29	0.13	0.00	0.72	1.26	0.00	0.53
11	79.07	0.18	79.43	0.18	79.95	0.18	0.36	0.00	0.55	0.52	0.00	0.47	0.88	0.00	0.64
12	73.71	0.18	74.47	0.18	84.12	0.20	0.76	0.00	0.38	9.66	0.02	0.00	10.42	0.02	0.01
13	150.11	0.32	155.49	0.33	159.13	0.34	5.38	0.01	0.02	3.64	0.01	0.06	9.02	0.02	0.01
14	167.59	0.34	176.82	0.36	177.22	0.36	9.23	0.02	0.00	0.40	0.00	0.53	9.63	0.02	0.01
15	146.99	0.31	159.96	0.33	161.06	0.34	12.97	0.02	0.00	1.11	0.00	0.29	14.08	0.02	0.00
16	144.09	0.31	148.76	0.31	149.28	0.32	4.67	0.01	0.03	0.52	0.00	0.47	5.19	0.01	0.07
17	76.13	0.19	76.27	0.19	76.79	0.19	0.14	0.00	0.71	0.52	0.00	0.47	0.66	0.00	0.72
18	79.66	0.18	88.08	0.20	89.05	0.20	8.42	0.02	0.00	0.97	0.01	0.32	9.39	0.02	0.01
19	52.89	0.12	55.11	0.13	59.59	0.14	2.21	0.01	0.14	4.48	0.01	0.03	6.69	0.01	0.04
20	18.87	0.05	27.88	0.07	28.02	0.07	9.01	0.02	0.00	0.14	0.00	0.71	9.15	0.02	0.01
21	110.04	0.24	112.99	0.25	117.17	0.25	2.96	0.00	0.09	4.18	0.01	0.04	7.14	0.01	0.03
22	38.84	0.10	55.81	0.14	55.87	0.14	16.97	0.04	0.00	0.06	0.00	0.81	17.03	0.04	0.00
23	94.22	0.21	94.23	0.21	94.93	0.21	0.00	0.00	0.94	0.70	0.00	0.40	0.70	0.00	0.70
24	22.80	0.05	23.29	0.06	23.87	0.06	0.49	0.00	0.49	0.58	0.00	0.45	1.07	0.00	0.59
25	45.09	0.11	47.49	0.11	47.50	0.11	2.40	0.01	0.12	0.01	0.00	0.94	2.41	0.01	0.30
26	75.11	0.18	75.33	0.18	76.20	0.18	0.22	0.00	0.64	0.88	0.00	0.35	1.10	0.00	0.58
27	1.15	0.00	1.30	0.00	1.31	0.00	0.16	0.00	0.69	0.01	0.00	0.92	0.17	0.00	0.92
28	33.54	0.08	33.63	0.08	34.67	0.08	0.09	0.00	0.77	1.05	0.00	0.31	1.13	0.00	0.57
29	39.80	0.09	40.18	0.09	43.85	0.10	0.38	0.00	0.54	3.67	0.01	0.06	4.06	0.01	0.13
30	59.80	0.15	62.23	0.15	64.71	0.16	2.43	0.01	0.12	2.48	0.01	0.12	4.91	0.01	0.09
31	50.57	0.12	52.43	0.12	52.89	0.13	1.86	0.00	0.17	0.46	0.00	0.50	2.32	0.00	0.31
32	0.32	0.00	1.04	0.00	1.05	0.00	0.72	0.00	0.39	0.00	0.00	0.96	0.73	0.00	0.70

item, $p < .01$, with a small effect size, pseudo-$R^2 = .04$ (see Table 8). Comparing responses from East Asian Canadian and South Asian Canadian participants, the likelihood ratio χ^2 statistic was statistically significant for one item, $p < .001$, but with a small effect size, pseudo-$R^2 = .05$ (see Table 9). Moreover, no item functioned differentially across gender groups; the likelihood ratio χ^2 statistic was statistically significant for one item, $p = .001$, but with a small effect size, pseudo-R^2s = .03 (see Table 10).

Indecisiveness Scale. Focusing on total DIF (Model 1 vs. Model 3), no item functioned differentially across cultural groups. Comparing responses from European Canadian and East Asian Canadian participants, the likelihood ratio χ^2 statistic was statistically significant for three items, ps < .01, but with small effect sizes, pseudo-R^2s < .04 (see Table 11). Comparing responses from European Canadian and South Asian Canadian participants, the likelihood ratio χ^2 statistics was statistically significant for one item, $p < .001$, but with a small effect size, pseudo-$R^2 = .05$ (see Table 12). Comparing responses from East Asian Canadian and South Asian Canadian participants, the likelihood ratio χ^2 statistics was statistically significant for one item, $p < .01$, but with a small effect size, pseudo-$R^2 = .02$ (see Table 13). Moreover, no item functioned differentially across gender groups; the likelihood ratio χ^2 statistic was statistically significant for one item, $p < .001$, but with a small effect size, pseudo-R^2s = .03 (see Table 14).

Table 8. Differential Item Functioning Analyses of Dialectical Self Scale between European Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	68.91	0.20	70.89	0.21	71.61	0.22	1.98	0.01	0.16	0.72	0.00	0.40	2.70	0.01	0.26
2	37.59	0.12	37.88	0.12	38.30	0.12	0.29	0.00	0.59	0.42	0.00	0.52	0.71	0.00	0.70
3	0.14	0.00	1.77	0.01	2.79	0.01	1.63	0.01	0.20	1.01	0.00	0.31	2.64	0.01	0.27
4	18.40	0.06	18.54	0.06	18.91	0.06	0.14	0.00	0.71	0.37	0.00	0.55	0.51	0.00	0.78
5	76.91	0.23	79.73	0.24	79.76	0.24	2.81	0.01	0.09	0.03	0.00	0.86	2.84	0.01	0.24
6	48.63	0.16	48.69	0.16	49.31	0.16	0.07	0.00	0.80	0.61	0.00	0.43	0.68	0.00	0.71
7	32.94	0.11	33.38	0.11	35.14	0.12	0.44	0.00	0.51	1.76	0.01	0.18	2.20	0.01	0.33
8	39.22	0.13	43.90	0.14	44.21	0.14	4.69	0.01	0.03	0.31	0.00	0.58	4.99	0.01	0.08
9	76.72	0.24	76.72	0.24	77.67	0.24	0.01	0.00	0.93	0.94	0.00	0.33	0.95	0.00	0.62
10	18.60	0.06	25.48	0.08	25.79	0.08	6.89	0.02	0.01	0.30	0.00	0.58	7.19	0.02	0.03
11	51.23	0.16	52.04	0.16	52.04	0.16	0.81	0.00	0.37	0.00	0.00	0.97	0.82	0.00	0.66
12	68.76	0.22	68.90	0.22	71.30	0.22	0.14	0.00	0.71	2.41	0.00	0.12	2.55	0.00	0.28
13	123.53	0.35	124.03	0.35	124.11	0.35	0.50	0.00	0.48	0.08	0.00	0.78	0.58	0.00	0.75
14	104.22	0.30	105.27	0.30	105.77	0.30	1.04	0.00	0.31	0.51	0.00	0.48	1.55	0.00	0.46
15	91.47	0.27	91.52	0.27	91.94	0.27	0.06	0.00	0.81	0.42	0.00	0.52	0.48	0.00	0.79
16	107.01	0.32	107.09	0.32	107.11	0.32	0.08	0.00	0.78	0.02	0.00	0.88	0.10	0.00	0.95
17	62.25	0.20	62.29	0.20	62.30	0.20	0.03	0.00	0.85	0.01	0.00	0.91	0.05	0.00	0.98
18	54.05	0.17	54.11	0.17	54.17	0.17	0.06	0.00	0.80	0.06	0.00	0.80	0.12	0.00	0.94
19	58.05	0.18	58.77	0.18	59.32	0.18	0.72	0.00	0.40	0.55	0.00	0.46	1.27	0.00	0.53
20	20.85	0.07	30.13	0.10	32.14	0.11	9.27	0.03	0.00	2.02	0.01	0.16	11.29	0.04	0.00
21	99.58	0.28	101.88	0.29	103.12	0.29	2.30	0.01	0.13	1.24	0.00	0.26	3.54	0.01	0.17
22	20.39	0.07	21.63	0.07	23.91	0.08	1.24	0.00	0.27	2.29	0.01	0.13	3.53	0.01	0.17
23	79.35	0.23	79.95	0.23	79.95	0.23	0.60	0.00	0.44	0.00	0.00	1.00	0.60	0.00	0.74
24	23.00	0.08	23.34	0.08	27.78	0.09	0.34	0.00	0.56	4.44	0.01	0.04	4.78	0.02	0.09
25	37.77	0.12	41.38	0.13	41.80	0.14	3.61	0.01	0.06	0.41	0.00	0.52	4.03	0.02	0.13
26	63.92	0.20	63.94	0.20	63.97	0.20	0.03	0.00	0.87	0.03	0.00	0.86	0.06	0.00	0.97
27	0.98	0.00	1.07	0.00	1.12	0.00	0.09	0.00	0.77	0.05	0.00	0.83	0.13	0.00	0.94
28	29.46	0.10	29.74	0.10	33.74	0.11	0.28	0.00	0.60	4.00	0.01	0.05	4.28	0.01	0.12
29	15.62	0.05	17.12	0.06	17.64	0.06	1.50	0.01	0.22	0.52	0.00	0.47	2.02	0.01	0.36
30	50.43	0.17	52.59	0.17	53.53	0.18	2.16	0.01	0.14	0.94	0.00	0.33	3.09	0.01	0.21
31	19.25	0.07	23.93	0.08	25.63	0.08	4.68	0.01	0.03	1.70	0.01	0.19	6.38	0.02	0.04
32	2.24	0.01	2.46	0.01	3.22	0.01	0.22	0.00	0.64	0.77	0.00	0.38	0.99	0.00	0.61

Table 9. Differential Item Functioning Analyses of Dialectical Self Scale between East Asian Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	58.35	0.17	60.92	0.18	62.73	0.18	2.57	0.01	0.11	1.82	0.01	0.18	4.39	0.01	0.11
2	35.70	0.11	35.73	0.11	36.12	0.11	0.03	0.00	0.87	0.39	0.00	0.53	0.41	0.00	0.81
3	0.16	0.00	15.40	0.05	15.69	0.05	15.25	0.05	0.00	0.29	0.00	0.59	15.54	0.05	0.00
4	51.78	0.16	54.62	0.17	56.83	0.18	2.84	0.01	0.09	2.21	0.01	0.14	5.05	0.02	0.08
5	82.70	0.25	84.26	0.26	84.71	0.26	1.56	0.00	0.21	0.45	0.00	0.50	2.01	0.01	0.37
6	42.02	0.14	42.12	0.14	42.12	0.14	0.09	0.00	0.76	0.00	0.00	1.00	0.09	0.00	0.95
7	59.44	0.18	60.62	0.19	60.63	0.19	1.18	0.01	0.28	0.00	0.00	0.96	1.19	0.01	0.55
8	107.90	0.30	109.92	0.31	113.74	0.32	2.02	0.00	0.16	3.82	0.01	0.05	5.84	0.01	0.05
9	73.45	0.22	76.06	0.23	76.60	0.23	2.61	0.01	0.11	0.53	0.00	0.47	3.15	0.01	0.21
10	14.71	0.05	18.31	0.07	18.39	0.07	3.59	0.01	0.06	0.08	0.00	0.77	3.68	0.01	0.16
11	65.03	0.20	65.25	0.20	65.62	0.20	0.23	0.00	0.63	0.36	0.00	0.55	0.59	0.00	0.74
12	32.96	0.11	32.98	0.11	33.83	0.12	0.03	0.00	0.87	0.84	0.00	0.36	0.87	0.00	0.65
13	107.69	0.31	109.07	0.32	111.24	0.32	1.39	0.00	0.24	2.16	0.01	0.14	3.55	0.01	0.17
14	100.36	0.29	102.18	0.29	102.31	0.29	1.82	0.00	0.18	0.13	0.00	0.72	1.95	0.00	0.38
15	77.05	0.23	85.59	0.26	85.59	0.26	8.54	0.02	0.00	0.01	0.00	0.93	8.54	0.02	0.01
16	95.99	0.29	98.03	0.29	98.62	0.30	2.04	0.00	0.15	0.59	0.01	0.44	2.63	0.01	0.27
17	64.00	0.21	64.24	0.21	64.91	0.21	0.24	0.00	0.62	0.67	0.00	0.41	0.91	0.00	0.63
18	59.39	0.18	64.78	0.20	65.04	0.20	5.40	0.01	0.02	0.26	0.00	0.61	5.66	0.02	0.06
19	32.18	0.10	32.23	0.10	33.47	0.11	0.05	0.00	0.82	1.24	0.00	0.27	1.29	0.00	0.52
20	31.40	0.10	31.85	0.10	33.21	0.11	0.45	0.00	0.50	1.36	0.01	0.24	1.81	0.01	0.40
21	77.65	0.23	77.72	0.23	78.29	0.23	0.08	0.00	0.78	0.57	0.00	0.45	0.64	0.00	0.72
22	27.57	0.10	31.15	0.11	35.20	0.12	3.58	0.01	0.06	4.05	0.01	0.04	7.63	0.03	0.02
23	70.82	0.21	71.51	0.21	71.94	0.21	0.69	0.00	0.41	0.43	0.00	0.51	1.12	0.00	0.57
24	38.23	0.12	38.36	0.12	41.09	0.14	0.13	0.00	0.72	2.73	0.01	0.10	2.86	0.01	0.24
25	38.37	0.13	38.70	0.13	38.88	0.13	0.33	0.00	0.57	0.18	0.00	0.67	0.51	0.00	0.77
26	60.25	0.19	60.93	0.19	61.91	0.19	0.68	0.00	0.41	0.98	0.00	0.32	1.66	0.00	0.44
27	0.51	0.00	0.88	0.00	0.89	0.00	0.37	0.00	0.54	0.01	0.00	0.92	0.38	0.00	0.83
28	46.63	0.14	46.79	0.14	48.27	0.15	0.15	0.00	0.69	1.48	0.00	0.22	1.63	0.00	0.44
29	46.59	0.14	49.85	0.15	50.82	0.15	3.27	0.01	0.07	0.96	0.00	0.33	4.23	0.01	0.12
30	34.90	0.12	34.90	0.12	35.24	0.12	0.00	0.00	0.96	0.34	0.00	0.56	0.35	0.00	0.84
31	26.13	0.09	26.73	0.09	30.37	0.10	0.61	0.00	0.44	3.64	0.01	0.06	4.24	0.01	0.12
32	1.27	0.00	2.67	0.01	3.46	0.01	1.39	0.01	0.24	0.79	0.00	0.37	2.18	0.01	0.34

Table 10. Differential Item Functioning Analyses of Dialectical Self Scale between females and males

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	100.85	0.18	102.41	0.18	102.89	0.18	1.57	0.00	0.21	0.48	0.00	0.49	2.04	0.00	0.36
2	64.28	0.12	64.80	0.12	65.15	0.12	0.52	0.00	0.47	0.36	0.00	0.55	0.88	0.00	0.65
3	1.68	0.00	1.95	0.00	3.32	0.01	0.28	0.00	0.60	1.37	0.00	0.24	1.65	0.00	0.44
4	52.35	0.10	52.35	0.10	53.13	0.10	0.00	0.00	1.00	0.78	0.00	0.38	0.78	0.00	0.68
5	145.60	0.26	148.32	0.26	148.45	0.26	2.73	0.00	0.10	0.13	0.00	0.72	2.85	0.00	0.24
6	79.49	0.16	79.62	0.16	80.45	0.16	0.13	0.00	0.72	0.83	0.00	0.36	0.96	0.00	0.62
7	73.05	0.14	73.36	0.14	75.71	0.14	0.31	0.00	0.57	2.35	0.00	0.13	2.66	0.00	0.26
8	113.55	0.21	119.15	0.21	120.00	0.21	5.59	0.01	0.02	0.85	0.00	0.36	6.45	0.01	0.04
9	145.53	0.26	145.71	0.26	146.89	0.26	0.18	0.00	0.67	1.18	0.00	0.28	1.36	0.00	0.51
10	32.79	0.07	40.02	0.08	40.34	0.08	7.23	0.01	0.01	0.33	0.00	0.57	7.56	0.01	0.02
11	98.49	0.18	99.46	0.18	99.48	0.18	0.97	0.00	0.32	0.03	0.00	0.87	1.00	0.00	0.61
12	87.02	0.17	87.16	0.17	91.72	0.17	0.15	0.00	0.70	4.55	0.00	0.03	4.70	0.00	0.10
13	196.40	0.34	197.94	0.34	198.22	0.34	1.54	0.00	0.21	0.28	0.00	0.60	1.82	0.00	0.40
14	191.71	0.32	194.73	0.33	195.30	0.33	3.02	0.00	0.08	0.57	0.00	0.45	3.59	0.01	0.17
15	163.82	0.29	164.44	0.29	165.10	0.29	0.62	0.00	0.43	0.67	0.00	0.41	1.29	0.00	0.53
16	178.57	0.31	179.24	0.31	179.24	0.31	0.67	0.00	0.41	0.00	0.00	0.97	0.67	0.00	0.72
17	102.81	0.20	102.82	0.20	102.82	0.20	0.01	0.00	0.94	0.00	0.00	0.97	0.01	0.00	1.00
18	100.69	0.18	101.51	0.18	101.74	0.19	0.83	0.00	0.36	0.22	0.00	0.64	1.05	0.00	0.59
19	70.09	0.13	71.22	0.13	72.36	0.13	1.13	0.00	0.29	1.14	0.00	0.29	2.27	0.00	0.32
20	32.38	0.07	45.01	0.09	46.94	0.09	12.63	0.02	0.00	1.94	0.01	0.16	14.57	0.03	0.00
21	143.36	0.25	146.22	0.26	148.19	0.26	2.86	0.01	0.09	1.97	0.00	0.16	4.83	0.01	0.09
22	39.49	0.08	43.48	0.09	45.44	0.09	4.00	0.01	0.05	1.96	0.00	0.16	5.95	0.01	0.05
23	124.35	0.22	124.76	0.22	124.80	0.22	0.42	0.00	0.52	0.04	0.00	0.85	0.45	0.00	0.80
24	40.36	0.08	40.94	0.08	45.50	0.09	0.58	0.00	0.45	4.56	0.01	0.03	5.14	0.01	0.08
25	59.65	0.12	63.85	0.12	64.12	0.13	4.21	0.01	0.04	0.27	0.00	0.61	4.47	0.01	0.11
26	100.13	0.19	100.14	0.19	100.15	0.19	0.02	0.00	0.89	0.00	0.00	0.95	0.02	0.00	0.99
27	1.31	0.00	1.34	0.00	1.36	0.00	0.03	0.00	0.86	0.03	0.00	0.87	0.06	0.00	0.97
28	54.85	0.10	55.06	0.10	59.26	0.11	0.20	0.00	0.65	4.20	0.01	0.04	4.40	0.01	0.11
29	50.12	0.09	51.23	0.10	52.29	0.10	1.11	0.00	0.29	1.05	0.00	0.31	2.16	0.00	0.34
30	74.73	0.15	77.70	0.16	79.00	0.16	2.97	0.01	0.08	1.30	0.00	0.25	4.27	0.01	0.12
31	49.10	0.10	54.05	0.10	55.34	0.11	4.94	0.01	0.03	1.29	0.00	0.26	6.23	0.01	0.04
32	1.43	0.00	1.46	0.00	2.10	0.00	0.02	0.00	0.88	0.64	0.00	0.42	0.67	0.00	0.72

Table 11. Differential Item Functioning Analyses of Indecisiveness Scale between European Canadians and East Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	169.58	0.35	176.46	0.36	176.47	0.36	6.88	0.01	0.01	0.01	0.00	0.91	6.89	0.01	0.03
2	200.23	0.41	205.41	0.42	205.49	0.42	5.18	0.01	0.02	0.08	0.00	0.78	5.26	0.01	0.07
3	238.72	0.47	241.14	0.47	250.75	0.49	2.42	0.00	0.12	9.61	0.02	0.00	12.03	0.02	0.00
4	271.43	0.52	275.23	0.53	276.97	0.54	3.80	0.01	0.05	1.74	0.00	0.19	5.54	0.01	0.06
5	312.48	0.57	312.73	0.57	312.73	0.57	0.24	0.00	0.62	0.00	0.00	0.95	0.25	0.00	0.88
6	275.26	0.53	288.96	0.55	289.03	0.55	13.70	0.02	0.00	0.07	0.00	0.78	13.77	0.02	0.00
7	199.30	0.43	200.26	0.43	200.53	0.43	0.96	0.00	0.33	0.26	0.00	0.61	1.22	0.00	0.54
8	148.14	0.33	148.25	0.33	148.62	0.33	0.11	0.00	0.74	0.37	0.00	0.54	0.48	0.00	0.79
9	132.39	0.30	133.83	0.30	134.09	0.30	1.44	0.00	0.23	0.26	0.00	0.61	1.70	0.00	0.43
10	157.75	0.34	159.58	0.34	161.18	0.34	1.83	0.00	0.18	1.60	0.00	0.21	3.42	0.01	0.18
11	95.88	0.24	108.28	0.26	110.23	0.27	12.39	0.02	0.00	1.95	0.01	0.16	14.35	0.03	0.00
12	130.44	0.30	130.48	0.30	130.51	0.30	0.05	0.00	0.83	0.02	0.00	0.88	0.07	0.00	0.97
13	117.86	0.26	120.08	0.27	123.47	0.28	2.21	0.01	0.14	3.39	0.01	0.07	5.61	0.01	0.06
14	150.58	0.33	151.24	0.33	151.63	0.33	0.66	0.00	0.42	0.38	0.00	0.54	1.04	0.00	0.59
15	177.11	0.38	178.94	0.38	179.02	0.38	1.83	0.00	0.18	0.07	0.00	0.79	1.90	0.00	0.39

Table 12. Differential Item Functioning Analyses of Indecisiveness Scale between European Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	112.68	0.33	112.86	0.33	112.87	0.33	0.18	0.00	0.67	0.01	0.00	0.93	0.18	0.00	0.91
2	161.33	0.44	162.56	0.44	162.64	0.44	1.24	0.00	0.27	0.08	0.00	0.78	1.32	0.00	0.52
3	240.88	0.59	243.81	0.59	243.82	0.59	2.93	0.00	0.09	0.00	0.00	0.96	2.94	0.00	0.23
4	212.66	0.54	214.23	0.54	215.54	0.55	1.57	0.00	0.21	1.30	0.01	0.25	2.87	0.01	0.24
5	235.20	0.59	235.39	0.59	235.40	0.59	0.20	0.00	0.66	0.00	0.00	0.95	0.20	0.00	0.90
6	224.74	0.57	228.14	0.58	228.29	0.58	3.41	0.01	0.06	0.15	0.00	0.70	3.56	0.01	0.17
7	112.91	0.35	113.18	0.35	118.17	0.36	0.27	0.00	0.61	4.99	0.01	0.03	5.26	0.02	0.07
8	108.74	0.34	110.43	0.34	112.52	0.34	1.69	0.00	0.19	2.09	0.01	0.15	3.78	0.01	0.15
9	99.04	0.30	102.61	0.31	104.50	0.31	3.57	0.01	0.06	1.89	0.01	0.17	5.46	0.02	0.07
10	92.78	0.28	93.23	0.28	93.42	0.28	0.45	0.00	0.50	0.19	0.00	0.67	0.64	0.00	0.73
11	85.84	0.29	103.02	0.34	103.15	0.34	17.18	0.05	< .01	0.13	0.00	0.72	17.31	0.05	< .01
12	92.88	0.29	93.63	0.30	94.00	0.30	0.75	0.00	0.39	0.36	0.00	0.55	1.11	0.01	0.57
13	72.00	0.23	77.59	0.24	78.14	0.25	5.59	0.02	0.02	0.55	0.00	0.46	6.14	0.02	0.05
14	104.87	0.32	108.72	0.33	109.16	0.33	3.85	0.01	0.05	0.45	0.00	0.50	4.30	0.01	0.12
15	131.07	0.38	131.30	0.38	133.40	0.39	0.23	0.00	0.63	2.10	0.01	0.15	2.32	0.01	0.31

Table 13. Differential Item Functioning Analyses of Indecisiveness Scale between East Asian Canadians and South Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	123.59	0.35	130.58	0.37	130.63	0.37	6.99	0.02	0.01	0.06	0.00	0.81	7.05	0.02	0.03
2	134.02	0.38	143.89	0.41	144.12	0.41	9.87	0.02	< .01	0.23	0.00	0.64	10.10	0.02	0.01
3	159.56	0.44	159.67	0.44	166.33	0.45	0.11	0.00	0.74	6.66	0.02	0.01	6.77	0.02	0.03
4	193.68	0.51	193.70	0.51	193.71	0.51	0.02	0.00	0.88	0.01	0.00	0.94	0.03	0.00	0.99
5	214.54	0.54	215.29	0.55	215.31	0.55	0.75	0.00	0.39	0.03	0.00	0.87	0.77	0.00	0.68
6	195.33	0.51	196.73	0.51	196.74	0.51	1.40	0.00	0.24	0.02	0.00	0.90	1.41	0.00	0.49
7	118.84	0.37	119.17	0.37	125.67	0.38	0.33	0.00	0.57	6.50	0.02	0.01	6.83	0.02	0.03
8	90.30	0.28	93.79	0.28	94.74	0.29	3.48	0.01	0.06	0.95	0.00	0.33	4.43	0.01	0.11
9	105.95	0.32	106.54	0.32	107.43	0.32	0.58	0.00	0.45	0.89	0.00	0.35	1.47	0.00	0.48
10	126.34	0.36	126.37	0.36	126.86	0.36	0.03	0.00	0.86	0.50	0.00	0.48	0.53	0.00	0.77
11	54.42	0.18	55.55	0.18	57.77	0.19	1.13	0.00	0.29	2.22	0.01	0.14	3.35	0.01	0.19
12	97.30	0.29	98.04	0.29	98.40	0.29	0.74	0.00	0.39	0.36	0.00	0.55	1.09	0.00	0.58
13	103.51	0.30	104.46	0.30	104.99	0.30	0.95	0.00	0.33	0.53	0.00	0.47	1.48	0.00	0.48
14	90.53	0.28	92.09	0.28	92.13	0.28	1.57	0.00	0.21	0.04	0.00	0.85	1.60	0.00	0.45
15	109.71	0.32	111.55	0.32	113.72	0.33	1.84	0.00	0.18	2.18	0.01	0.14	4.01	0.01	0.13

Table 14. Differential Item Functioning Analyses of Indecisiveness Scale between females and males

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	207.43	0.35	207.47	0.35	207.51	0.35	0.05	0.00	0.82	0.03	0.00	0.86	0.08	0.00	0.96
2	245.45	0.41	245.65	0.41	245.65	0.41	0.21	0.00	0.65	0.00	0.00	1.00	0.21	0.00	0.90
3	318.33	0.50	321.59	0.50	322.16	0.50	3.26	0.00	0.07	0.57	0.00	0.45	3.83	0.00	0.15
4	339.25	0.52	341.63	0.53	343.46	0.53	2.38	0.00	0.12	1.83	0.00	0.18	4.21	0.01	0.12
5	383.32	0.57	383.39	0.57	383.39	0.57	0.07	0.00	0.79	0.00	0.00	0.96	0.07	0.00	0.96
6	343.04	0.53	349.48	0.54	349.55	0.54	6.44	0.01	0.01	0.07	0.00	0.79	6.51	0.01	0.04
7	217.95	0.39	218.48	0.39	221.73	0.40	0.53	0.00	0.47	3.26	0.01	0.07	3.78	0.01	0.15
8	175.42	0.32	176.54	0.32	178.49	0.32	1.12	0.00	0.29	1.95	0.00	0.16	3.06	0.00	0.22
9	168.33	0.30	172.41	0.31	174.31	0.31	4.09	0.01	0.04	1.89	0.00	0.17	5.98	0.01	0.05
10	189.53	0.33	190.46	0.33	191.10	0.33	0.93	0.00	0.34	0.64	0.00	0.42	1.57	0.00	0.46
11	120.94	0.24	139.74	0.27	139.75	0.27	18.80	0.03	< .01	0.01	0.00	0.94	18.81	0.03	< .01
12	162.08	0.30	162.77	0.30	163.13	0.30	0.69	0.00	0.41	0.36	0.00	0.55	1.05	0.00	0.59
13	145.39	0.26	151.45	0.27	152.84	0.27	6.06	0.01	0.01	1.40	0.00	0.24	7.45	0.01	0.02
14	175.66	0.32	179.58	0.32	180.21	0.32	3.92	0.00	0.05	0.63	0.00	0.43	4.55	0.01	0.10
15	208.27	0.36	208.28	0.36	209.62	0.36	0.01	0.00	0.93	1.34	0.00	0.25	1.35	0.00	0.51

Conclusions. Through statistical analyses of item response data, we did not find any evidence to suggest that any item of any one of the three scales functions differentially across any two of the three cultural groups or the two gender groups. As a result, group means in need for cognition, naïve dialecticism, and indecisiveness can be meaningfully compared.

Group Differences in Naïve Dialecticism

First, I examined H1 that East Asian Canadians would be more dialectical, compared with European Canadians and South Asian Canadians. I also included gender as an independent variable in this and subsequent analyses to 1) explore potential gender differences and 2) to see whether cultural differences were confounded by gender differences as gender proportion differed among the three cultural groups. I conducted a 3 (culture: European Canadian vs. East Asian Canadian vs. South Asian Canadian) × 2 (gender: male vs. female) between-subjects ANCOVA on naïve dialecticism with age as the covariate. Age was a significant covariate, such that younger participants exhibited higher levels of naïve dialecticism, $F(1, 488) = 6.64$, $p =. 01$, $\eta_p^2 = .01$. More importantly, the predicted main effect of culture emerged, $F(2, 488) = 10.21$, $p < . 001$, $\eta_p^2 = .04$. Post hoc analyses with p-values adjusted using Bonferroni correction revealed that East Asian Canadian participants exhibited higher levels of dialectical thinking than did European Canadian, $F(1, 394) = 20.86$, $p < . 001$, $\eta_p^2 = .05$, and South Asian Canadian participants, $F(1, 290) = 6.46$, $p = .04$, $\eta_p^2 = .02$, while the latter two groups did not differ from each other, $F(1, 291) = 2.96$, $p = .26$, $\eta_p^2 = .01$ (see Table 2 for *M*s

and *SD*s), supporting H1. No other effects reached statistical significance, *F*s < 3.57, *p*s > .05.

Group Differences in Indecisiveness

Second, I examined H2 that East Asian Canadians would be more indecisive, compared with European Canadians and South Asian Canadians. We conducted a 3 (culture: European Canadian vs. East Asian Canadian vs. South Asian Canadian) × 2 (gender: male vs. female) between-subjects ANCOVA on indecisiveness with age as the covariate. Age was a significant covariate, such that younger participants exhibited higher levels of indecisiveness, $F(1, 488) = 4.26$, $p =. 04$, $\eta_p^2 = .01$[14]. More importantly, the predicted main effect of culture emerged, $F(2, 488) = 7.27$, $p =. 001$, $\eta_p^2 = .04$. Post hoc analyses with p-values adjusted using Bonferroni correction revealed that East Asian Canadian participants exhibited higher levels of indecisiveness than did European Canadian, $F(1, 394) = 12.58$, $p = .001$, $\eta_p^2 = .03$, and South Asian Canadian participants, $F(1, 290) = 7.86$, $p = .02$, $\eta_p^2 = .03$, while the latter two groups did not differ from each other, $F(1, 291) = 0.11$, $p > .99$, $\eta_p^2 < .01$ (see Table 2 for *M*s and *SD*s), supporting H2. No other effects reached statistical significance, *F*s < 0.57, *p*s > .56.

Group Differences in Need for Cognition

Third, I explored whether need for cognition varied across the present three cultural groups as need for cognition is known to negatively covary with indecisiveness

[14] This finding should be interpreted with caution because the variability of age is severely restricted and the distribution of age was positively skewed.

(Curşeu, 2006). I conducted a 3 (culture: European Canadian vs. East Asian Canadian vs. South Asian Canadian) × 2 (gender: male vs. female) between-subjects ANCOVA on need for cognition with age as the covariate. Age was a significant covariate, such that older participants exhibited higher levels of need for cognition, $F(1, 489) = 11.91$, $p = .001$, $\eta_p^2 = .02$.[15] In addition, there was a main effect of gender, $F(1, 489) = 5.51$, $p = .019$, $\eta_p^2 = .01$, such that male participants ($M = 3.19$, $SD = 0.54$) exhibited higher levels of need for cognition than did female participants ($M = 3.10$, $SD = 0.57$). Finally, there was also a main effect of culture, $F(2, 489) = 8.02$, $p < .001$, $\eta_p^2 = .03$. Post hoc analyses with p-values adjusted using Bonferroni correction revealed that East Asian Canadian participants exhibited lower levels of need for cognition than did European Canadian, $F(1, 395) = 12.39$, $p = .001$, $\eta_p^2 = .03$, and South Asian Canadian participants, $F(1, 291) = 9.87$, $p = .01$, $\eta_p^2 = .03$, while the latter two groups did not differ from each other, $F(1, 291) = 0.01$, $p > .99$, $\eta_p^2 < .01$ (see Table 2 for *M*s and *SD*s). The interaction effect was not significant, $F(2, 489) = 1.41$, $p = .24$, $\eta_p^2 < .01$.

Mediational Analyses

As East Asian Canadians were more dialectical, had less need for cognition, and were more indecisive, compared with both European Canadians and South Asian Canadians, I performed mediational analyses to test whether naïve dialecticism and need for cognition could explain this cultural difference in indecisiveness (see Table 15 for

[15] This finding should be interpreted with caution because the variability of age was severely restricted and the distribution of age was positively skewed.

Table 15. Correlations among Variables in Study 2

	Need for Cognition	Naïve Dialecticism
	East Asian Canadians	
Naïve Dialecticism	-.15*	
Indecisiveness	-.29**	.37**
	European Canadians	
Naïve Dialecticism	-.21**	
Indecisiveness	-.36**	.47**
	South Asian Canadians	
Naïve Dialecticism	-.14	
Indecisiveness	-.12	.57**

Note: *$p < .05$ (two-tailed); **$p < .01$ (two-tailed)

correlations among variables). A multiple mediation model was tested using a bootstrapping technique with 5000 resamples with age and gender as the covariates, culture (East Asian Canadian vs. European Canadian and South Asian Canadian) as the independent variable, naïve dialecticism and need for cognition as the mediators, and indecisiveness as the dependent variable (see Figure 1). Both mediators were significant predictors of indecisiveness (naïve dialecticism: $t(489) = 10.60$, $p < .001$; need for cognition: $t(489) = -5.78$, $p < .001$), albeit influencing indecisiveness in opposite directions. Importantly, the indirect effects of culture on indecisiveness, mediated through the effect of each of the two mediators, were significant (naïve dialecticism: point estimate = .11; 95% biased-corrected confidence interval of .06 to .16, supporting H3; need for cognition: point estimate = .05, 95% biased-corrected confidence interval of .02 to .09).

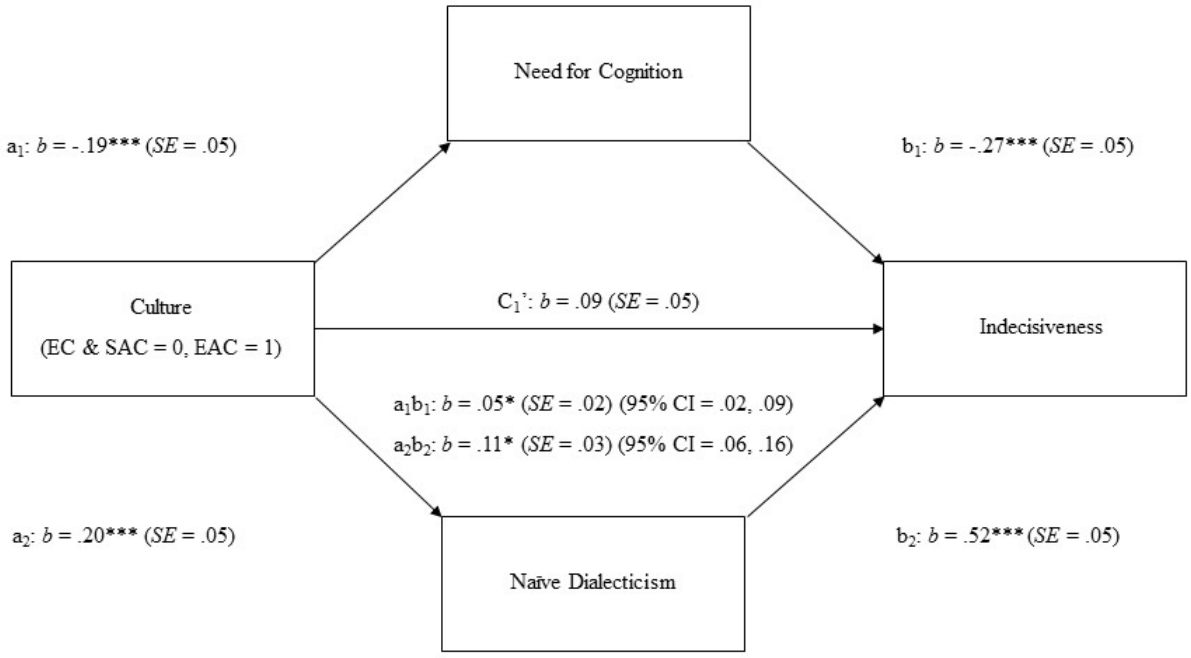

Figure 1. The Multiple Mediation Model of the Relationship between Culture and Indecisiveness in Study 2

Note: EC = European Canadians; SAC = South Asian Canadians; EAC = East Asian Canadians; *$p < .05$; **$p < .01$; ***$p < .001$

Age and gender were used as covariates (not shown in the figure).

Age: $b = -.002$, $SE = .01$, $t(489) = -.19$, $p = .85$; Gender (male = 0, female = 1): $b = .08$, $SE = .05$, $t(489) = 1.42$, $p = .16$

Discussion

In the present study chronic indecisiveness was shown to vary as a function of culture. Moreover, indecisiveness was related to the culturally-encouraged worldview of East Asians, that of naïve dialecticism. As hypothesized, East Asian Canadians endorsed a dialectical worldview to a greater extent than members of the other groups and showed a higher degree of chronic indecisiveness, with naïve dialecticism partially accounting for these cultural differences in chronic indecisiveness. Although not hypothesized, it was also found that, compared to European Canadians and South Asian Canadians, East Asian Canadians were lower in need for cognition and this also mediated the relationship between culture and indecisiveness. Speculations about why individuals of East Asian cultural backgrounds tend to have a relatively low need for cognition are offered in the *General Discussion.*

Chapter 4

Study 3

The goal of Study 3 was to replicate and extend the findings of Study 2. Specifically, I tested again the mediating role that naïve dialecticism plays in explaining cultural differences in chronic indecisiveness and examined how these differences might have negative downstream consequences for life satisfaction. This study was conducted at York University in Toronto, comparing participants of East Asian and European cultural backgrounds. The study tested the following hypotheses: (H1) East Asian Canadians will exhibit more naïve dialecticism than European Canadians; (H2) East Asian Canadians will exhibit more chronic indecisiveness than European Canadians; (H3) East Asian Canadians will be less satisfied with their lives, compared with European Canadians; and (H4) naïve dialecticism and indecisiveness will statistically explain cultural differences in life satisfaction.

Method

Participants

One hundred and four students at York University in Toronto, including 44 East Asian Canadians (16 female, 28 male) and 60 European Canadians (42 female, 18 male), completed this study online. The gender proportion differed between the two cultural groups, χ^2 (1, N = 104) = 11.64, $p < .01$. Age did not differ between the two cultural groups (East Asian Canadians: M = 19.3, SD = 1.90; European Canadians: M = 20.1, SD = 3.14), $t(100) = -1.44$, $p = .15$, $d = 0.30$.[16] For the 44 self-identified East Asian

[16] One East Asian Canadian participant and one European Canadian participant did not report their age.

Canadian participants, three were born in China and 41 were born in Canada. For the 60 self-identified European Canadian participants, 50 were born in Canada and nine were born in the United States or a European country (e.g., Ukraine).[17]

Measures

Naïve dialecticism. As in Study 2, the 32-item Dialectical Self Scale (DSS; Spencer-Rodgers, Srivastava, & Peng, 2011) was used to measure naïve dialecticism, using a 7-point response scale (1 = *strongly disagree*, 7 = *strongly agree*).

Chronic indecisiveness. As in Study 2, chronic indecisiveness was assessed using the 15-item Indecisiveness Scale (IS; Frost & Shows, 1993), using a 5-point response scale (1 = strongly disagree, 7 = strongly agree).

Life satisfaction. The 5-item Satisfaction with Life Scale (SLS; Diener, Emmons, Larsen, & Griffin, 1985; see Appendix D) was used to measure life satisfaction. The SLS uses a 7-point response scale (1 = strongly disagree, 7 = strongly agree). Sample items include: "I am satisfied with my life" and "If I could live my life over, I would change almost nothing."

Procedure

After indicating consent, participants first answered some demographic questions (e.g., gender, age, ethnicity) and then completed the following measures in this order: DSS, IS, and SLS. All materials were presented in English. At the end of the study, participants were thanked and fully debriefed.

[17] One European Canadian participant did not report his or her country of birth.

Results

Differential Item Functioning Analyses of the Satisfaction with Life Scale

As in Study 2, DIF analyses were performed using an SPSS Macro (Zumbo, 1999). Focusing on total DIF (Model 1 vs. Model 3), no item functioned differentially across cultural groups. None of the likelihood ratio χ^2 statistics were statistically significant, *p*s > .16, pseudo-R^2s < .02 (see Table 16). Moreover, no item functioned differentially across gender groups; all likelihood ratio χ^2 statistics were nonsignificant, *p*s > .05, pseudo-R^2s < .03 (see Table 17).

Group Differences in Naïve Dialecticism

Two-way ANOVAs with culture (East Asian vs. European) and gender (male vs. female) as the independent variables and naïve dialecticism as the dependent variable revealed the following findings. First, replicating Study 2 and in support of H1, the main effect of culture was significant, with East Asian Canadians (M = 4.03, SD = 0.49, α = .77) reporting higher levels of naïve dialecticism than European Canadians (M = 3.70, SD = 0.42, α = .72), $F(1, 100) = 7.84$, $p < .01$, $\eta_p^2 = .07$. Second, the main effect of gender was significant, with male participants (M = 4.01, SD = 0.46) reporting higher levels of naïve dialecticism, relative to female participants (M = 3.71, SD = 0.46), $F(1, 100) = 5.46$, $p = .02$, $\eta_p^2 = .05$. Third, the interaction effect of culture and gender was not significant, $F(1, 100) < 0.01$, $p = .97$, $\eta_p^2 < .001$.

Table 16. Differential Item Functioning Analyses of Satisfaction with Life Scale between European Canadians and East Asian Canadians

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	107.70	0.68	107.70	0.68	107.86	0.68	0.00	0.00	0.96	0.16	0.00	0.69	0.16	0.00	0.92
2	98.73	0.68	98.80	0.68	99.17	0.68	0.07	0.00	0.79	0.37	0.00	0.54	0.44	0.00	0.80
3	160.55	0.84	160.61	0.84	160.64	0.84	0.06	0.00	0.81	0.03	0.00	0.87	0.09	0.00	0.96
4	113.47	0.70	113.53	0.70	115.42	0.71	0.05	0.00	0.82	1.89	0.01	0.17	1.95	0.01	0.38
5	86.09	0.59	86.71	0.60	86.73	0.60	0.62	0.00	0.43	0.02	0.00	0.88	0.64	0.01	0.73

Table 17. Differential Item Functioning Analyses of Satisfaction with Life Scale between Females and Males

	Model 1 (M1)		Model 2 (M2)		Model 3 (M3)		M1 vs. M2 (df = 1)			M2 vs. M3 (df = 1)			M1 vs. M3 (df = 2)		
item	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p	χ^2	pseudo-R^2	p
1	107.70	0.68	108.43	0.68	109.00	0.69	0.73	0.00	0.39	0.57	0.00	0.45	1.30	0.01	0.52
2	98.73	0.68	101.82	0.69	104.66	0.70	3.09	0.01	0.08	2.85	0.01	0.09	5.94	0.02	0.05
3	160.55	0.84	160.81	0.84	161.83	0.84	0.26	0.00	0.61	1.02	0.00	0.31	1.28	0.00	0.53
4	113.47	0.70	113.90	0.70	117.17	0.71	0.43	0.00	0.51	3.28	0.01	0.07	3.70	0.01	0.16
5	86.09	0.59	88.02	0.60	88.06	0.60	1.93	0.01	0.16	0.04	0.00	0.84	1.97	0.01	0.37

Group Differences in Chronic Indecisiveness

Two-way ANOVAs with culture (East Asian vs. European) and gender (male vs. female) as the independent variables and chronic indecisiveness as the dependent variable revealed the following results. First, as expected and replicating Study 2, the main effect of culture was significant, with East Asian Canadians (M = 3.19, SD = 0.50, α = .77) reporting higher levels of chronic indecisiveness than European Canadians (M = 2.79, SD = 0.66, α = .88), $F(1, 100) = 9.79$, $p < .01$, $\eta_p^2 = .09$, supporting H2. Second, the main effect of gender was not significant (male participants: M = 3.03, SD = 0.62; female participants: M = 2.90, SD = 0.63), $F(1, 100) < 0.01$, $p = .95$, $\eta_p^2 < .001$. Third, the interaction of culture and gender was not significant, $F(1, 100) = 0.09$, $p = .78$, $\eta_p^2 = .001$.

Group Differences in Life Satisfaction

A two-way ANOVA with culture (East Asian vs. European) and gender (male vs. female) as the independent variables and life satisfaction as the dependent variable revealed the following findings. Supporting H4, the main effect of culture was significant. East Asian Canadians (M = 4.01, SD = 1.13, α = .82) reported lower levels of life satisfaction than did European Canadians (M = 5.02, SD = 1.07, α = .83), $F(1, 100) = 14.82$, $p < .001$, $\eta_p^2 = .13$. The main effect of gender was not significant (male participants: M = 4.23, SD = 1.28; female participants: M = 4.88, SD = 1.05), $F(1, 100) = 1.86$, $p = .18$, $\eta_p^2 = .02$. The interaction of culture and gender was not significant, $F(1, 100) = 2.12$, $p = .15$, $\eta_p^2 = .02$.

The Mediating Roles of Naïve Dialecticism and Chronic Indecisiveness on the Relationship between Culture and Life Satisfaction

To examine our hypothesized mediation model that culture would exert an influence on life satisfaction through the effect of naïve dialecticism and chronic indecisiveness in succession (i.e., culture → naïve dialecticism → chronic indecisiveness → life satisfaction), we used a bootstrapping technique with 10,000 resamples (Hayes, 2013) (see Table 18 for correlations among variables). Results indicated that the serial multiple mediation model was significant at the level of $p < .01$, point estimate = -.09, 99% biased-corrected confidence interval of -.31 to -.01, supporting H4 (see Figure 2).[18]

Discussion

Replicating the previous study, the current findings indicate that, relative to European culture, East Asian culture promotes a higher level of dialectical thinking tendency, which in turn contributes to more chronic indecisiveness. Extending the previous study, the present results also show that chronic indecisiveness induced by a dialectical worldview leads to reduced life satisfaction. While previous studies have shown that individuals of East Asian (vs. European) cultural backgrounds or dialectical (vs. non-dialectical) thinkers tend to report lower life satisfaction (e.g., Diener et al., 1995; Spencer-Rodgers et al., 2004), the current study is the first to show that chronic indecisiveness could contribute to these cross-cultural and individual differences. The

[18] As there was no effect involving gender on life satisfaction and gender was not my research focus, I did not include gender in the mediation model. In another model, I added gender as a covariate and found that the serial multiple mediation model remained significant at the level of $p < .01$, point estimate = -.08, 99% biased-corrected confidence interval = -.28 to -.01.

Table 18. Correlations among Variables in Study 3

	Naïve Dialecticism	Indecisiveness
	East Asian Canadians	
Indecisiveness	.31*	
Satisfaction with Life	-.24	-.49**
	European Canadians	
Indecisiveness	.35**	
Satisfaction with Life	-.55**	-.42**

Note: *$p < .05$ (two-tailed); **$p < .01$ (two-tailed)

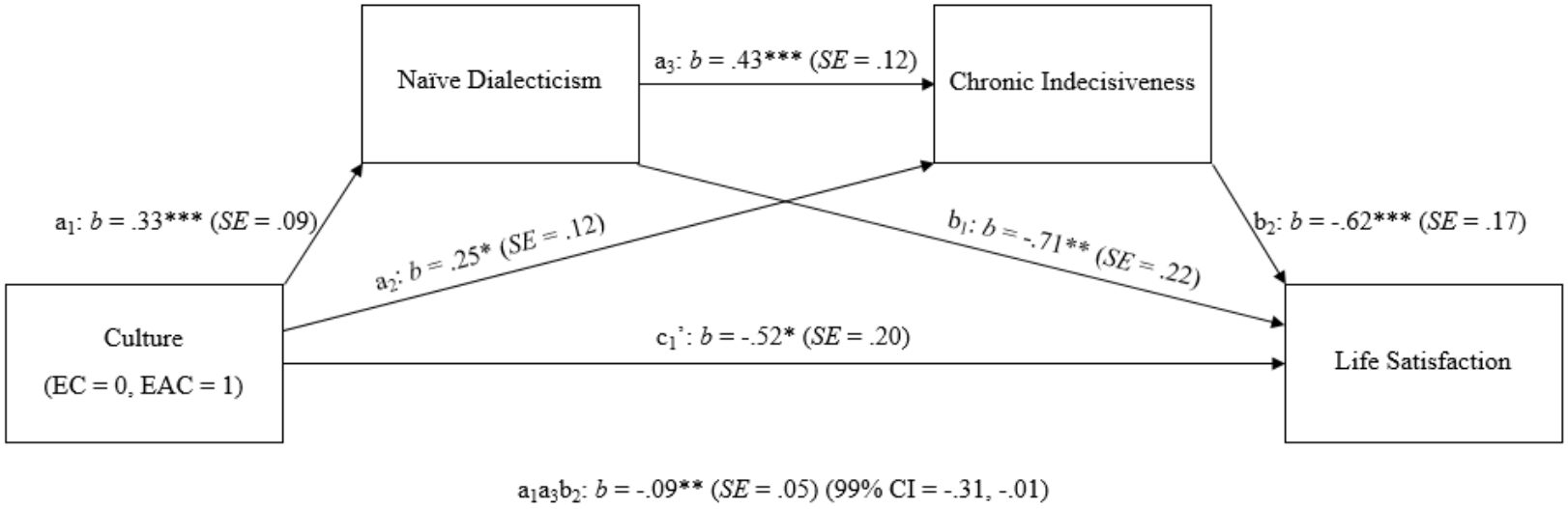

Figure 2. The Serial Multiple Mediation Model of the Relationship between Culture and Life Satisfaction in Study 3

Note: EC = European Canadians; EAC = East Asian Canadians; *$p < .05$; **$p < .01$; **$p < .001$

present finding is consistent to my proposition that if individuals have a chronic tendency to doubt whether they have made the right decision across domains, then they would be less satisfied with their lives.

Chapter 5

Study 4

I have demonstrated in Studies 2 and 3 that naïve dialecticism is positively correlated with chronic indecisiveness. The goal of Study 4 was to establish the causal effect of naïve dialecticism on indecision and to test a mediating mechanism that might explain this effect in a consumer choice task. Following recent experimental cultural psychology work (Oyserman & Lee, 2008), a priming method was used in the present study to test the causal effect of naïve dialecticism on indecision. The dialectical mindset prime used in the present study was adapted from Spencer-Rodgers and colleagues (2004) who demonstrated with this prime that participants with an induced dialectical mindset (vs. controls) scored lower on a self-esteem measure. In the present study I expected that participants who were primed with a dialectical mindset would exhibit higher levels of indecision and were more likely to defer their choice, compared to those who were not primed with such a mindset.

As reviewed previously, dialectical (vs. non-dialectical) thinkers have a higher tendency to evaluate objects as simultaneously positive and negative (e.g., Spencer-Rodgers et al., 2004). This evaluative ambivalence might create tension when one needs to decide whether to choose an object or not (see van Harreveld et al., 2009). Accordingly, I expected that the effect of naïve dialecticism on indecision and choice deferral would be explained by evaluative ambivalence.

Previous research suggests that the effect of culture on choice related consequences (e.g., post-choice cognitive dissonance reduction) might be moderated by

the target for whom the individual is making the choice. Whereas individualistic European Americans, but not East Asians, would demonstrate post-choice justification (i.e., evaluating the chosen object more positive and/or evaluating the unchosen object less positive after making the choice) when choosing for oneself (Heine & Lehman, 1997), collectivistic East Asians (vs. European Canadians) would show more post-choice spread of alternatives when choosing an object for a close friend (Hoshino-Browne, Zanna, Spencer, Zanna, Kitayama, & Lackenbauer, 2005). Thus, it is important to examine whether the effect of naïve dialecticism on indecision would generalize across decisions made for the self and decisions made for another person.

Method

Participants

In this study I recruited participants of the same cultural background to control for potential confounding variables while isolating the causal effect of naïve dialecticism on indecision. One hundred and nine European Canadian undergraduates (84 female, 25 male; M_{age} = 20.6 years, SD_{age} = 5.90) at York University in Toronto, completed the present study online for course credit[19].

Measures and Procedure

After indicating consent, participants first answered some demographic questions (e.g., gender, age, academic major). They were then randomly assigned to either the dialectical prime condition (n = 51) or the no-prime control condition (n = 58). Following Spencer-Rodgers and colleagues (2004), participants in the dialectical prime

[19] Four participants did not provide their age.

condition were told to describe in writing a time in their lives that was full of contradictions and uncertainty (see Appendix E). Participants in the no-prime control condition did not complete this exercise. Participants then completed the DSS (see Study 2) assessing dialectical thinking tendency (α = .82), as a manipulation check.

After completing the DSS, participants were randomly assigned to either the self condition (n = 54) or the other condition (n = 55), and completed a consumer choice task. In this task, participants first read the descriptions of four models of laptop computers, shown on the same page, and were told to imagine that they needed to choose one to buy for themselves (self condition) or to recommend to their boss (other condition). The four laptop models varied in terms of attractiveness of four attributes (i.e., processor speed, hard drive capacity, RAM size, weight) but overall (assuming equal weights of the attributes) they are equally attractive (see Figure 3). Specifically, each alternative had a superior attribute and an inferior attribute compared to the other three alternatives. Participants were also told that these models were in an acceptable price range for themselves (or their boss), so price was not a concern. After reading the information about the four models, participants were shown the information about each model again on separate pages and were asked to indicate, for each model, their overall evaluations ("How favorable/unfavorable is your evaluation of Model X"; -5 = *extremely unfavorable*, +5 = *extremely favorable*), positive attitude ("Just thinking about the positive aspects of Model X while ignoring the negative aspects of Model X, how good is Model X"; 0 = *not good at all*, 3 = *very good*), and negative attitude ("Just thinking about the negative aspects of Model X while ignoring

	Model 1	Model 2	Model 3	Model 4
Processor speed	2.2 GHz	2.0 GHz	1.8 GHz	1.6 GHz
Hard drive capacity	750 GB	500 GB	250 GB	1000 GB
RAM size	4 MB	2 MB	8 MB	6 MB
Weight	2.7 Kg	1.8 Kg	2.1 Kg	2.4 Kg

Figure 3. The descriptions of the four models of laptop computers in Study 4

the positive aspects of Model X, how bad is Model X"; 0 = *not bad at all*, 3 = *very bad*). Following this, participants were asked, "Are you ready to make a decision at this time?" (choice deferral; 0 = "No, I prefer not to make a decision now"; 1 = "Yes, I'm ready to make a decision now") Participants were then shown the descriptions of the four models on the same page one more time and asked to choose one model to buy (or recommend) even if they preferred to make a decision later.

After completing the consumer choice task, participants were asked to indicate their levels of indecision using three items adapted from the IS ("I find it difficult to decide which laptop computer to buy (or recommend)"; "I feel confident that my choice is a good one", reverse scored; "I worry about making the wrong choice"; 1 = *strongly disagree*, 7 = *strongly agree*; $\alpha = .84$). At the end of the study, participants were thanked and fully debriefed.

Results

Manipulation Check

I first tested the intended effect of our manipulation of dialectical mindset and found that participants in the dialectical prime condition ($M = 3.87$, $SD = 0.55$) reported higher levels of dialectical thinking tendency, as measured by the DSS, than did those in the no-prime control condition ($M = 3.60$, $SD = 0.50$), $t(107) = 2.72$, $p < .01$, $d = 0.51$, indicating that our manipulation was successful.

The Effect of Dialectical Prime on Indecision

A 2 (prime condition: dialectical prime vs. no-prime control) × 2 (target: self vs. other) between-subjects ANOVA on indecision revealed two main effects. As

anticipated, participants in the dialectical prime condition (M = 4.61, SD = 1.58) exhibited more indecision, compared with those in the no-prime control condition (M = 3.56, SD = 1.39), $F(1, 105) = 13.98$, $p < .001$, $\eta_p^2 = .12$. Furthermore, participants in the other condition (M = 4.33, SD = 1.56) experienced more indecision, compared with those in the self condition (M = 3.77, SD = 1.54), $F(1, 105) = 3.78$, $p = .05$, $\eta_p^2 = .04$, suggesting that choosing for someone else was more difficult than choosing for oneself, probably because of the uncertainty about what the other person wanted or needed. Importantly, the interaction effect was not statistically significant, $F(1, 105) = 0.30$, $p = .59$, $\eta_p^2 < .01$, suggesting that the effect of dialectical prime on indecision did not vary as a function of whether one is choosing for oneself or another person (see Figure 4). Hence, for the mediational analyses that follow, I collapsed across target conditions.

The Effect of Dialectical Prime on Choice Deferral

It was expected that being induced a dialectical mindset would increase the probability of deferring choice. For participants who chose for themselves (i.e., self condition; n = 34),[20] those who were primed with a dialectical mindset (24%) were nominally more likely to defer their choice, compared with controls (12%). Likewise, for participants who chose for their boss (i.e., other condition; n = 44),[21] those who were primed with a dialectical mindset (27%) were nominally more likely to defer their

[20] Twenty participants in the self condition skipped the choice deferral question.
[21] Eleven participants in the other condition skipped the choice deferral question.

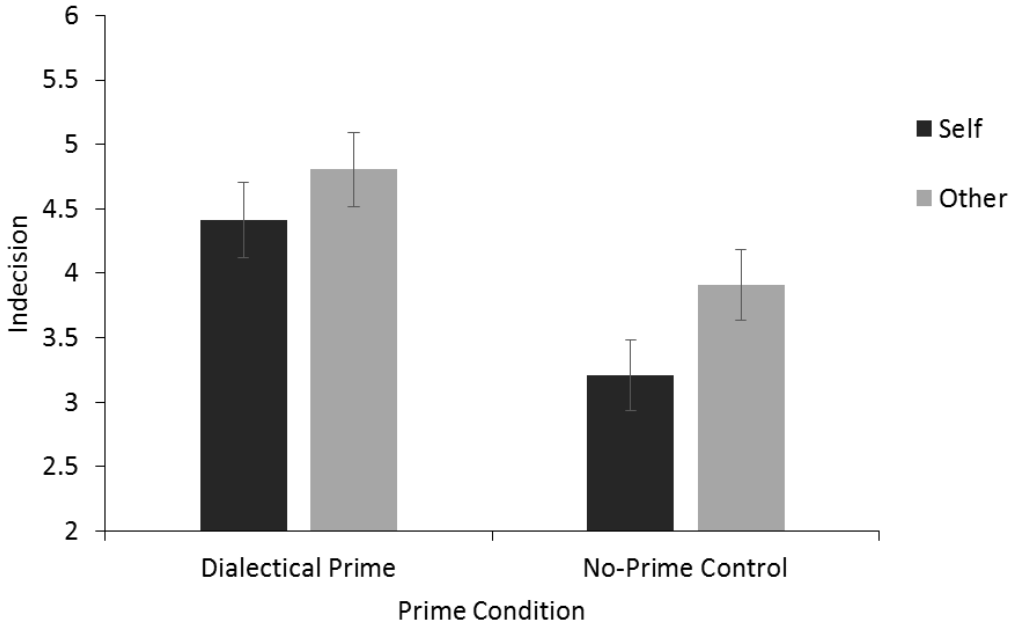

Figure 4. Indecision as a function of prime condition and target in Study 4. Error bars indicate standard errors.

choice, compared with controls (14%).[22] Collapsing across target conditions (n = 78), those who were primed with a dialectical mindset (26%) were nominally more likely to defer their choice, compared with controls (13%), $\chi^2(1) = 2.06$, $p = .15$.

The Mediating Role of Evaluative Ambivalence

There are a few different formulae to compute ambivalence (see Breckler, 1994; Thompson, Zanna, & Griffin, 1995 for review and Riketta, 2000, for an examination of discriminative power of different formulae). Among all formulae, the Griffin formula is the one which is the most widely employed, and one that reflects a similarity-intensity view of ambivalence. That is, ambivalence is conceptualized as a joint function of (a) the similarity between the two attitude components and (b) the average intensity of the two attitude components. That means that when similarity is held constant, the greater the intensity of the two components the greater the ambivalence. Likewise, when intensity is held constant, the greater the similarity of the two components, the greater the ambivalence.

I first computed an ambivalence score for each of the four alternatives using the Griffin formula (Thompson et al., 1995), where ambivalence = (positive + negative)/2 – |positive – negative|, and then added 1.5 to all ambivalence scores for ease of interpretation (0 = minimal ambivalence, 4.5 = maximal ambivalence). I then isolated the ambivalence score for the laptop model that was eventually chosen by the participant (ambivalence toward chosen alternative) because this variable should be more directly

[22] For both target conditions, two cells had expected count less than 5.

related to our indecision measure (e.g., "I feel confident that my choice is a good one", reverse scored).

A mediation model was tested using a bootstrapping technique with 10,000 resamples (Hayes, 2013) with prime condition as the independent variable, ambivalence toward chosen alternative as the mediator, and indecision as the dependent variable.[23] First, participants in the dialectical prime condition exhibited more ambivalence toward the chosen alternative (M = 2.27, SD = 1.09) than those in the control condition (M = 1.85, SD = 1.06), $t(104) = 1.99$, $p = .0495$, $d = 0.78$. Second, ambivalence toward the chosen alternative predicted higher level of indecision, $t(103) = 2.10$, $p = .04$.[24] Finally, the indirect effect of dialectical prime on indecision, mediated through the effect of ambivalence toward chosen alternative, was significant at the level of $p < .05$, point estimate = .11, 95% biased-corrected confidence interval = .002 to .354, Kappa-squared = .04 (95% biased-corrected confidence interval = .003 to .115) (see Figure 5).

I also tested the possibility that naïve dialecticism might induce a more moderate (less extreme) overall evaluation of the chosen alternative, which could potentially explain the higher level of indecision among dialectically primed participants, relative to controls. This, however, was not supported by the current data; there was no difference in overall evaluation of the chosen alternative between the two prime conditions

[23] Three cases were excluded because they were multivariate outliers, Cook's Ds > 4/n (Bollen & Jackman, 1990). If these three cases were included, the mediation model did not reach conventional level of statistical significance, point estimate = .071, 95% biased-corrected confidence interval = -.020 to .294, Kappa-squared = .024 (95% biased-corrected confidence interval = .001 to .093).

[24] Ambivalence toward chosen alternative was correlated with the three markers of indecision separately (with decision difficulty, $r = .25$, $p < .01$; with decision worry, $r = .22$, $p = .02$; with decision confidence, $r = -.18$, $p = .07$).

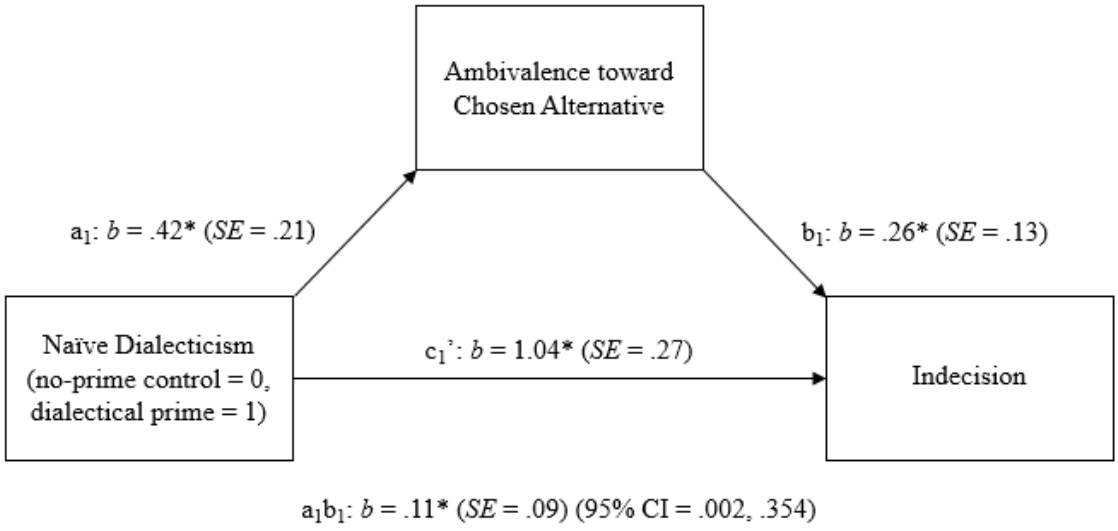

Figure 5. The Mediation Model of the Relationship between Naïve Dialecticism and Indecision in Study 4

Note: *$p < .05$

(dialectical prime: M = 2.27, SD = 2.24; no-prime control: M = 2.09, SD = 2.35), F(1, 107) = 0.18, p = .67, $\eta_p^2 < .01$.

A related possibility was also tested, namely that naïve dialecticism might make the overall evaluations of the alternatives closer to each other (i.e., the alternatives appeared more similarly attractive), which could potentially explain the higher level of indecision among dialectically primed participants, relative to controls. For each participant, evaluative closeness was indexed by the reciprocal of the variance of the overall evaluations of the four alternatives. This variable was then compared between the two conditions. Results indicated that naïve dialecticism did not have an effect on evaluative closeness (dialectical prime: M = 0.18, SD = 0.18; no-prime control: M = 0.20, SD = 0.18), F(1, 107) = 0.10, p = .75, $\eta_p^2 < .01$.

Discussion

In sum, consistent with the correlational results obtained in the previous two studies, I demonstrated in the present study that naïve dialecticism had a causal effect on indecision in a consumer choice task, conceptually replicating a recent study (Study 2, Li, Russell, & Masuda, 2014) which found that participants who were primed with the idea that components of the world are interconnected (vs. distinct and separate from each other) took a longer time to make a choice. Compared with the study of Li and colleagues (2014), the present study used a different manipulation of naïve dialecticism and a different measure of indecision, and extended their study by showing that indecision induced by dialectical thinking generalized across decisions made for the self

and decisions made for another person.[25] Moreover, naïve dialecticism seemed to have some influence on choice deferral tendency, albeit the statistical test fell short of statistical significance. It may be the case that this effect is relatively weak and thus the current sample size was not large enough to detect it. It would be informative to employ a larger sample to re-examine this possibility. Finally, I also tested and found support for the proposed mechanism underlying the effect of naïve dialecticism on indecision. That is, having a dialectical worldview increases the degree of evaluative conflict toward the alternative that is eventually chosen, which in turn leads to a higher level of indecision.

[25] All studies were conducted before the publication of Li et al (2014).

Chapter 6

General Discussion

Experiencing difficulty when making a decision or having regret about a choice made is a fairly common human experience. Despite its common occurrence and its potential negative impact on people's lives, however, basic research on the nature of indecisiveness is still fairly limited (Rassin, 2007). Moreover, research examining how cultural factors influence individuals' judgment and decision making processes and outcomes is still in its infancy, albeit growing healthily (see Savani, Cho, Baik, & Morris, in press, for an overview of recent advancements in this subfield). The current research aims at increasing our understanding of the phenomenon of indecisiveness by documenting and providing explanations for cultural variations in indecisive tendency and simultaneously shedding light on the basic processes underlying indecision.

Summary of Findings

Consistent with my expectations, it was found that Canadian participants of East Asian cultural backgrounds experienced more general indecisiveness than did Canadians of European and South Asian cultural backgrounds (Study 2). This replicates the past work of Wengrovitz and Patalano (2004, as cited in Patalano & Wengrovitz, 2006), which found that when the broader societal context is kept as a constant, people of East Asian cultural backgrounds tend to experience more decision difficulty than do people of European cultural backgrounds, and extends their study by including South Asian Canadians as a second control group. Extending their study, my research also shows

why this might be the case, with the East Asian cultural tradition of dialectical thinking giving rise to general indecisiveness (see also Li et al., 2014 for similar findings).

In addition, I found that East Asian Canadians (vs. European Canadians and South Asian Canadians) were lower in need for cognition and this also statistically explained the cultural differences in chronic indecisiveness observed. Some scholars have noted that East Asian cultures have a history of focusing on practicality in their ways of thinking and in scientific investigations, in contrast to a quest for knowledge for knowledge's sake or pure theoretical advancement (Nakamura, 1964). Although admittedly purely speculative, one possibility is that the lower levels of need for cognition in contemporary East Asians might reflect this tradition of practicality. Need for cognition as it is currently measured entails a pleasure component to thinking, in that those scoring high pursue complex or abstract thought because they find it enjoyable. For East Asians, thinking for its own sake or for pleasure's sake may be seen as unappealing and unenjoyable. Accordingly, East Asians are less likely to endorse Need for Cognition items such as "the notion of thinking abstractly is appealing to me" but more likely to endorse reversed items such as "I only think as hard as I have to".

Another possibility is related to the cultural dimension of individualism vs. collectivism. People from individualistic cultures, such as those from Western Europe and North America, are more likely to hold an independent self-view, emphasizing individual autonomy and uniqueness, whereas people from collectivistic cultures, such as those from Asia and Africa, are more likely to hold an interdependent self-view, emphasizing group harmony and social hierarchy (Markus & Kitayama, 1991; Triandis,

1995). Accordingly, social norms in individualistic (vs. collectivistic) cultures should encourage individual thoughts and unique ideas to a higher degree. As such, people who engage in individualistic cultural contexts might have developed a higher need or desire for cognitive activities, relative to people who engage in collectivistic cultural contexts.

Going beyond previous research in the area of culture and indecisiveness, which typically uses either hypothetical decision scenarios (e.g., Tse, Lee, Vertinsky, & Wehrung, 1988) or measures general indecisiveness as an individual difference variable (e.g., Swami, Sinniah, Subramaniam, Pillai, Kannan, & Chamorro-Premuzic, 2008), the current research examined an actual meaningful decision while statistically controlling for the number of alternatives. I found converging evidence that East Asian Canadian students exhibited a higher level of indecision on a number of measures, including decision difficulty, post-decision regret, and decision latency, compared with European Canadian students (Study 1). This underscores the importance of keeping constant or controlling for culture-contingent external factors while examining how culture-contingent internal factors might influence general indecisiveness. Indeed, I suggest that the reason why some previous studies (e.g., Yates et al., 2010) did not find differences between Chinese and European Americans in general indecisiveness might be due to the confluence of culture-contingent internal and external factors.

In addition, extending a recent demonstration of the causal link between naïve dialecticism and indecision (Li et al., 2014), I showed in the present research the process through which this lay theory of the world translates into a tendency to indecisiveness (Study 4). Consistent with research on how attitudinal ambivalence might induce

psychological distress when one needs to make an attitude-relevant decision, I found that attitudinal ambivalence toward one's final choice before the decision is made leads to indecision, providing a proximal explanation to the causal effect of naïve dialecticism on indecision. This finding also contributes to the attitudinal ambivalence literature by showing how ambivalence might also lead to different manifestations of indecision, including decision difficulty, decision confidence, and worry about making the wrong decision.

Furthermore, extending previous research on cultural differences in indecisiveness, which typically treat indecisiveness as the final outcome variable, I examined one downstream consequence of this cultural difference and found that higher chronic indecisiveness among individuals of East Asian (vs. European) cultural backgrounds gives rise to lower life satisfaction (Study 3). While replicating previous research that East Asians tend to be less satisfied with their lives compared with Westerners (e.g., Lee & Wu, 2008; Schkade & Kahneman, 1998), the present results contribute to the culture and life satisfaction literature by suggesting a novel pathway through which East Asian culture can lead to reduced life satisfaction; that is, through the burden of indecisiveness.

Finally, to the best of my knowledge, the present research is the first to conduct measurement invariance tests before examining cultural differences in chronic indecisiveness. Differential Item Functioning results suggest that the Need for Cognition Scale, the Dialectical Self Scale, and the Indecisiveness Scale are appropriate to use when comparing people of East Asian, South Asian, and European cultural backgrounds,

and the Satisfaction with Life Scale is suitable to use when comparing individuals of East Asian and European cultural backgrounds (see Oishi, 2006, for measurement invariance tests comparing the English version and the Chinese version of the scale). It is important to point out, however, that this conclusion pertains only to the English version of the scales. Thus, when using the translated versions of these instruments, it is still advisable to ensure measurement invariance before comparing mean scores between cultural groups.

Theoretical Implications

Although the focus of this dissertation is cultural influences, the present findings also help elucidating why some individuals are more indecisive than others, regardless of cultural background. The construct of naïve dialecticism was initially developed in the context of cultural research (Peng & Nisbett, 1999; Nisbett, 2003). Nevertheless, this form of thinking also varies within cultures. Indeed, the tendency toward dialectical thinking, when measured as an individual difference variable, has substantial variability within Chinese, Korean, Asian American, European American, and European Canadian samples (Choi, Koo, & Choi, 2007; Hamamura, Heine, & Paulhus, 2008; Spencer-Rodgers et al., 2004). This is also true of the cultures examined in the current studies. Moreover, individual differences in dialectical thinking have been found to have the same predictive relationships within cultures as those found between cultures, with respect to self-esteem and life satisfaction for example (Spencer-Rodgers et al., 2004). In the present research, I also found similar within-culture correlations obtained between dialectical thinking and chronic indecisiveness (Studies 2 and 3), and between chronic

indecisiveness and life satisfaction (Study 3) across cultural groups. Furthermore, the causal effect of dialectical thinking on evaluative ambivalence and the associated indecisive tendencies was observed among participants of European cultural backgrounds (Study 4).

Taken as a whole, the antecedent, the mechanism, and the consequence of indecisiveness found in the current research seem to apply across cultures, despite overall mean differences between cultural groups. As such, a major contribution to the indecisiveness literature, in addition to documenting and explaining cultural variations, is the identification of a novel mechanism underlying indecision; that is, having an internally inconsistent attitude toward the object that is eventually chosen is associated with the experience of indecision. To some extent, this antecedent of indecision shares some similarities with the notion and empirical findings that increased similarities in attractiveness among choice options increases indecision, or more specifically, the tendency to defer choice (Dhar, 1997). The mechanism documented in the present research, however, involves similarities between positive and negative evaluations within a single object, rather than similarities between objects. To empirically separate the two mechanisms, I also tested the possibility that dialectical thinking might have an effect on the closeness of overall evaluations of the choice alternatives, a reasonable index of similarities in attractiveness among the choice options. The present results, however, suggest that this is not the case; dialectical thinking has an influence exclusively on ambivalent evaluative tendency toward the chosen object, which leads to

indecision, but not overall attractiveness (i.e., overall evaluations) for the chosen object or the degree of similarities in attractiveness among the choice options.

It is worth mentioning that although gender is not the main focus of the present research, consistent with most past studies the current results did not provide any evidence to suggest gender differences in chronic indecisiveness (e.g., Patalano & Wengrovitz, 2006, Swami et al., 2008; Yates et al., 2010). Nevertheless, there is one study conducted in the Netherlands that found that female participants scored higher on the Intensiveness Scale relative to male participants (Rassin & Muris, 2005). Taking these findings together, gender differences in indecisiveness observed in Rassin and Muris (2005) might be unique to their sample or the Dutch cultural context.

At a broader level, the current finding that individuals of East Asian cultural backgrounds seem to find decision making more demanding and stressful because of a more dialectical worldview (and presumably a more ambivalent evaluative tendency) appears at odds with the existing evidence that they are less distressed by evaluative ambivalence, as indicated by their higher tendency to hold, and less inclination to resolve, ambivalent attitudes, compared with individuals of European cultural backgrounds (Ng et al., 2010, 2012). I believe that these seemingly discrepant results reflect the distinction between judgment and decision (Hogarth, 1981). For example, van Harreveld and colleagues (2009) distinguished between ambivalence and decision making, and viewed ambivalence as a pre-decisional phenomenon that is conceptually distinct from the decision itself. Accordingly, the degree of comfort (or discomfort) associated with simply holding an ambivalent attitude needs not be related to the degree

of distress experienced when making a decision about an object toward which one is holding an ambivalent attitude. I, therefore, interpret the current results as providing support to the dissociation between evaluative judgment and decision making.

It is important to note that although the present results seem to suggest that East Asians, or dialectical thinkers, might be less likely to be overconfident in their judgments due to their heightened tendency to recognize and tolerate inconsistent information, compared with Westerners, or non-dialectical thinkers, the literature on overconfidence paints a different picture. It has been demonstrated that most East Asian groups are *more* overconfident in judging the probability that something is true (e.g., "I am 70% sure that the Suez Canal is longer than the Panama Canal") than their Western counterparts (see Yates, 2010 for a review). As such, dialectical thinking seems to have an influence on attitudes (Spencer-Rodgers et al., 2004; Ng & Hynie, 2014) and behavioral indecision (e.g., having difficulty deciding what to eat for dinner; Li et al., 2014) but not judgments of the probability of a statement being true.

The present investigation also highlights the importance of not grouping East Asian and South Asian cultures together in psychological research even though they share certain general cultural characteristics (e.g., power distance, Hofstede, 2001). Instead, more research should be devoted to meaningfully differentiating different Asian cultures when examining the relationship between culture and psychology (see also Lalonde, Cilia, Lou, & Giguère, 2013).

Practical Implications

If individuals of East Asian cultural backgrounds (or dialectical thinkers) have a relatively high tendency to experience decision difficulty and post-decision regret, and worry about making the wrong choice, they may refrain from making decisions if possible. Indeed, Study 4 data did suggest this possibility, even though the effect was not statistically significant with the current sample. In marketing contexts, it means that East Asian (vs. Western) consumers may be more likely to defer their choice, walking away from the store, or "decide not to decide" (i.e., making the decision to not make a purchase because making a purchase commitment is too demanding). This certainly is not good news to marketers. One potential remedy though, especially to the anticipated regret aspect of indecision, is to offer some sort of reassurance to the customers that their choice can be changed after the purchase. Hence, having and making salient a money-back guarantee or free exchange services may be especially important in East Asian markets.

Limitations and Future Directions

Age differences. The generalizability of the present research is compromised by its use of student samples of a very limited variability in age. Attempts to replicate the present studies should be made using non-student samples of a larger age range. Relatedly, it would be informative to investigate how age and culture might jointly influence indecisiveness. There is some evidence that, in Western cultures, as people grow older, they tend to be less indecisive, probably because of the increased practice of making choices and decisions and/or an enhanced certainty about one's preferences (Rassin, Muris, Franken, Smit, & Wong, 2005). From a cultural perspective, however,

prolonged immersion in a specific cultural meaning system may magnify the expression of cultural values or worldviews on cognition (Park, Nisbett, & Hedden, 1999). As such, indecisive tendency induced by naïve dialecticism may increase with age in East Asian cultures. In any case, the effect of age on indecisiveness in East Asian cultural contexts seems worthy of a systematic investigation.

The effect of Common Method Variance. The correlational findings obtained in Studies 2 and 3 may suffer from the concern of common method variance (CMV; Podsakoff, MacKenzie, Lee, & Podsakoff, 2003). That is, researchers may obtain inflated correlational results when the two constructs are measured using the same measurement method, such as self-report questionnaire using a Likert-type scale. Thus, one may argue that our focal finding that naïve dialecticism predicts indecisiveness may be a result of CMV. Nevertheless, it is important to underscore that the positive association between these two focal variables was obtained when another variable (i.e., need for cognition), which share the same measurement method, was controlled for (Study 2). Hence, most of the effect of CMV should have also been partialled out as well. In addition, the experimental effect demonstrated in Study 4 should also strengthen the main conclusion that dialectical thinking causes indecision.

The link between indecisiveness and life satisfaction. The present results provide support for the relationship between indecisiveness and reduced life satisfaction. Yet, how exactly indecisiveness can exert a negative impact on overall life satisfaction deserves further investigation. As described in the Introduction, one potential mechanism underlying this link is that the regrets of major life decisions make an

individual less satisfied with his or her life. This, nevertheless, may only be part of the story. The very act of choosing can be cognitively depleting, even when the choice itself is relatively inconsequential, resulting in impaired self-regulation (e.g., spending less time to study) (Vohs, Baumeister, Schmeichel, Twenge, Nelson, & Tice, 2008). This detrimental effect of choosing should be exacerbated for people who are chronically indecisive. Accordingly, having difficulty making decisions on a constant basis, even for very small ones, may lead to reduced psychological well-being over time.

Potential versus felt ambivalence. Although I have shown that indecision induced by dialectical thinking can be explained by attitudinal ambivalence toward the chosen alternative, the current experiment (Study 4) tapped into only one of the two types of ambivalence. The literature distinguishes between potential and felt ambivalence, with the former conceptualized as the existence of conflicting evaluations (or coexistence of positive and negative attitude components) of an object and the latter conceptualized as the ambivalent feeling that is subjectively experienced (Jamieson, 1993; Newby-Clark, McGregor, & Zanna, 2002). Although these two types of ambivalence tend to be moderately correlated (Thompson et al., 1995), they are considered distinct constructs. The measure that we used was a measure of potential ambivalence. It would be theoretically interesting to compare the relative contribution of the two types of ambivalence to different manifestations of indecision, so as to gain a more nuanced understanding of this link.

The effect of other cultural factors. Future research should investigate whether other culture factors would also contribute to indecisiveness. For example, seemingly

personal decisions, such as choosing a career or deciding whether or not to marry, may actually be a group decision for people with a collectivistic (vs. individualistic) cultural orientation. For this reason, decision making may be perceived as more difficult for collectivists (vs. individualists) because they feel that they need to consider the opinions of others to a greater extent. Although I did not find any difference in indecisiveness between participants of collectivistic (i.e., South Asian; Hofstede, 2001) cultural backgrounds and participants of individualistic (i.e., European; Hofstede, 2001) cultural backgrounds in the Study 2, it is still worthwhile to test this hypothesis in some specific decision domains that may be more amenable to this kind of social normative influences.

Social desirability of decisiveness/indecisiveness. Finally, although the word "indecisive" tends to have negative connotations in Western cultural settings and the literature seems to paint a fairly negative picture of indecisiveness, it remains an open question whether the same indecisive behaviors are viewed equally negatively across cultures. It may be the case that, in some non-Western cultures, relatively long decision latency is viewed not as negatively as that viewed in Western cultures. In fact, it is possible that a seemingly decisive person may actually be viewed as an immature person who always make hasty, impulsive decisions in some cultures. It will be very interesting to examine the social desirability of decisiveness/indecisiveness in large scale cross-cultural research.

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Appendix A: Dialectical Self Scale (Spencer-Rodgers, Srivastava, & Peng, 2001)

Listed below are a number of statements about your thoughts, feelings, and behaviours. Select the number that best matches your agreement or disagreement with each statement. Use the following scale, which ranges from 1 (strongly disagree) to 7 (strongly agree). There are no right or wrong answers.

1----------2----------3----------4----------5----------6----------7
Strongly disagree Neither agree nor disagree Strongly agree

1. I am the same around my family as I am around my friends. _____
2. When I hear two sides of an argument, I often agree with both. _____
3. I believe my habits are hard to change. _____
4. I believe my personality will stay the same all of my life. _____
5. I often change the way I am, depending on who I am with. _____
6. I often find that things will contradict each other. _____
7. If I've made up my mind about something, I stick to it. _____
8. I have a definite set of beliefs, which guide my behaviour at all times. _____
9. I have a strong sense of who I am and don't change my views when others disagree with me. _____
10. The way I behave usually has more to do with immediate circumstances than with my personal preferences. _____
11. My outward behaviours reflect my true thoughts and feelings. _____
12. I sometimes believe two things that contradict each other. _____

13. I often find that my beliefs and attitudes will change under different contexts. _____

14. I find that my values and beliefs will change depending on who I am with. _____

15. My world is full of contradictions that cannot be resolved. _____

16. I am constantly changing and am different from one time to the next. _____

17. I usually behave according to my principles. _____

18. I prefer to compromise than to hold on to a set of beliefs. _____

19. I can never know for certain that any one thing is true. _____

20. If there are two opposing sides to an argument, they cannot both be right. _____

21. My core beliefs don't change much over time. _____

22. Believing two things that contradict each other is illogical. _____

23. I sometimes find that I am a different person by the evening than I was in the morning. _____

24. I find that if I look hard enough, I can figure out which side of a controversial issue is right. _____

25. For most important issues, there is one right answer. _____

26. I find that my world is relatively stable and consistent. _____

27. When two sides disagree, the truth is always somewhere in the middle. _____

28. When I am solving a problem, I focus on finding the truth. _____

29. If I think I am right, I am willing to fight to the end. _____

30. I have a hard time making up my mind about controversial issues. _____

31. When two of my friends disagree, I usually have a hard time deciding which of them is right. _____

32. There are always two sides to everything, depending on how you look at it. _____

Appendix B: Need for Cognition Scale (Cacioppo & Petty, 1982)

For each of the statements below, please indicate to what extent the statement is characteristic of you. If the statement is extremely uncharacteristic of you (not at all like you) please write a "1" to the left of the question; if the statement is extremely characteristic of you (very much like you) please write a "5" next to the question. Of course, a statement may be neither extremely uncharacteristic nor extremely characteristic of you; if so, please use the number in the middle of the scale that describes the best fit. Please keep the following scale in mind as you rate each of the statements below:

1----------2----------3----------4----------5
extremely uncharacteristic | somewhat uncharacteristic | uncertain | somewhat characteristic | extremely characteristic

1. I would prefer complex to simple problems. _____

2. I like to have the responsibility of handling a situation that requires a lot of thinking. _____

3. Thinking is not my idea of fun. _____

4. I would rather do something that requires little thought than something that is sure to challenge my thinking abilities. _____

5. I try to anticipate and avoid situations where there is a likely chance I will have to think in depth about something. _____

6. I find satisfaction in deliberating hard and for long hours. _____

7. I only think as hard as I have to. _____

8. I prefer to think about small, daily projects to long-term ones. _____

9. I like tasks that require little thought once I've learned them. _____

10. The idea of relying on thought to make my way to the top appeals to me. _____

11. I really enjoy a task that involves coming up with new solutions to problems. _____

12. Learning new ways to think doesn't excite me very much. _____

13. I prefer my life to be filled with puzzles that I must solve. _____

14. The notion of thinking abstractly is appealing to me. _____

15. I would prefer a task that is intellectual, difficult, and important to one that is somewhat important but does not require much thought. _____

16. I feel relief rather than satisfaction after completing a task that required a lot of mental effort. _____

17. It's enough for me that something gets the job done; I don't care how or why it works. _____

18. I usually end up deliberating about issues even when they do not affect me personally. _____

Appendix C: Indecisiveness Scale (Frost & Shows, 1993)

Please indicate the degree to which you agree with the following statements using a 7-point scale (1 = strongly disagree; 7 = strongly agree).

1. I have trouble completing assignments because I cannot prioritize what is most important. _____
2. I have a hard time planning my free time. _____
3. I try to put off making decisions. _____
4. I become anxious when making a decision. _____
5. After I have chosen or decided something, I often believe I've made the wrong choice or decision. _____
6. I find it easy to make decisions. _____
7. I often worry about making the wrong choice. _____
8. Once I make a decision, I feel fairly confident that it is a good one. _____
9. I always know exactly what I want. _____
10. When ordering from a menu, I usually find it difficult to decide what to get. _____
11. I do not get assignments done on time because I cannot decide what to do first. _____
12. I like to be in a position to make decisions. _____
13. Once I make a decision, I stop worrying about it. _____
14. It seems that deciding on the most trivial things takes me a long time. _____
15. I usually make decisions quickly. _____

Appendix D: Satisfaction with Life Scale (Diener, Emmons, Larsen, & Griffin, 1985)

Below are five statements with which you may agree or disagree. Using the 1-7 scale below, indicate your agreement with each item by placing the appropriate number on the line preceding that item. Please be open and honest in your responding. The 7-point scale is as follows:

1 = strongly disagree
2 = disagree
3 = slightly disagree
4 = neither agree nor disagree
5 = slightly agree
6 = agree
7 = strongly agree

1. In most ways my life is close to my ideal. _____

2. The conditions of my life are excellent. _____

3. I am satisfied with my life. _____

4. So far I have gotten the important things I want in life. _____

5. If I could live my life over, I would change almost nothing. _____

Appendix E: Dialectical Prime Used in Study 4 (Adapted from Spencer-Rodgers et al., 2004)

Life can be full of contradiction and uncertainty. We would like you to reflect, in writing, on a time in your life when it was full of contradiction and uncertainty. We would like you to recall experiences in which you were very aware of both the pros and cons of the situations and there were no right answers. The situations or experiences had positive outcomes and consequences for you and/or the people you care about as well as equally negative outcomes or consequences for you and/or the people you care about. Think about these contradictory experiences . . . describe how you thought through all of the facts and possible perspectives, including the opposing ones.