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# The Influence of Cultural Lay Beliefs:

# Dialecticism and Indecisiveness in European Canadians and Hong Kong Chinese

Liman Man Wai Li

Takahiko Masuda

Matthew J. Russell

University of Alberta

Corresponding authors:
Liman Man Wai Li
Email: manwai1@ualberta.ca
Address: P217 Biological Sciences Building, University of Alberta, Edmonton, Alberta, Canada T6G 2E9
Phone: +1-780-492-5616
Fax: +1-780-492-1768

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**Abstract**

Previous findings in cultural psychology suggest that East Asians are more likely than North Americans to view the world dialectically and that this dialectic view of the world affects their psychological tendencies. Extending these findings, our research examined the relationship between dialecticism and indecisiveness in European Canadians and Hong Kong Chinese. Evidence from three studies demonstrated that: Hong Kong Chinese were more indecisive than European Canadians and that dialecticism mediated this cultural difference (Study 1), dialectically primed individuals were more likely than non-dialectically primed individuals to experience indecisiveness (Study 2), and decisions' importance affected cultural variations: no cultural difference in indecisiveness was found for important decisions, with Hong Kong Chinese reporting a higher level of indecisiveness for less important decisions compared to European Canadians. Furthermore, the cultural variation for less important decisions was mediated by dialecticism (Study 3). The importance of studying decision making processes across cultures is discussed.

*Keywords*: Culture; Dialecticism; Indecisiveness; Decision-Making

# The Influence of Cultural Lay Beliefs:

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## 1. Introduction

In everyday life, we are required to make various decisions of varying importance, from trivial things such as what we eat for dinner to important life decisions such as what career path we should set upon. When engaged in our decision making processes, we may experience difficulty reaching our decisions, experiencing paralyzing *indecisiveness*. We define indecisiveness as the general tendency to experience difficulty making decisions, including the reluctance and avoidance of making decisions (Germeijs & DeBoeck, 2002). Indicators of indecisiveness include taking longer times to make decisions (Frost & Shows, 1993), failing to reach decisions (Rassin & Muris, 2005a), and worrying about decisions (Rassin & Muris, 2005b). What differences exist in how people experience indecisiveness in decision making across cultures, and what elements of culture are at play in these differences? Based on previous research, we identified the cultural concept of dialecticism as a likely source of indecisiveness in East Asian cultures.

### *1.1 Dialecticism*

Dialecticism refers to a constellation of lay cultural beliefs of how the world is organized, and is grounded in historic East-Asian, Confucian traditions (for a review, Spencer-Rodgers, Williams, & Peng, 2010). According to Spencer-Rodgers and colleagues, there are three main lay principles relevant to dialecticism. The first principle is the theory of change. It states that the world is in a constant state of flux, ever changing in an unpredictable, dynamic fashion. The second principle, the theory of contradiction, states that the world is full of contradictions and seemingly contradictory states may be true simultaneously. Finally, holism holds that things and

events in the world are connected and interdependent such that parts (isolated things or events) cannot be understood without a greater understanding of the whole.

Past studies have shown that dialecticism is more prevalent among East Asians (e.g., Chinese, Japanese and Koreans) than North Americans and this difference has explained various cultural differences in cognition, emotion, and behavior (e.g., Hui, Fok, & Bond, 2009; Masuda & Nisbett, 2001; Spencer-Rodgers, Peng, Wang, & Hou, 2004).

*1.2 Dialecticism and decision-making*

Culture and decision making studies have also shown that culturally dialectic people seemingly apply their dialectic beliefs to their decisions and judgements. For instance, some studies have demonstrated that East Asians are more likely than North Americans to show a holistic view of phenomena, believing that phenomena are influenced by multiple causes and that the phenomena lead to multiple consequences (Maddux & Yuki, 2006; Spina, Ji, Guo, Zhang, Li, & Fabriger, 2010). East Asians also tend to predict that future consequences of decisions are broader in scope, making decisions based on the assumption that future trends could change and be very different from current ones (e.g., Ji, Zhang, & Guo, 2008). In addition, dialectic individuals tend to holistically view information when making decisions and are less motivated to discard available, peripheral information (Choi, Dalal, Kim-Prieto, & Park, 2003). These findings give some evidence that dialecticism may also play an important role in the East Asian decision-making process.

*1.3 Dialecticism and Indecisiveness*

While some cross-cultural research has been done in indecisiveness (e.g., Mann et al., 1998; Tse, Lee, Vertinsky, & Wehrung, 1988; Yates et al., 1998; 2010), no research has directly touched on the role of dialecticism in indecisiveness. However, other research indirectly

supports our assumption that dialecticism may be related to indecisiveness, finding that dialecticism is related to ambivalence. For example, Hamamura (2004) found that dialecticism mediates attitude ambivalence in a wide range of social issues for European and Asian Canadians. Similarly, Hamamura, Heine, and Paulhus (2008) found that dialecticism also mediates ambivalent response-styles in personality self-ratings for European and Asian Canadians. These findings suggest that dialecticism is related to more ambivalent experiences. We believed that this dialectically related sense of ambivalence would transfer over to the decision making process, making it more difficult for dialectic people to make decisions, making them more indecisive.

*1.4 Importance of Decisions*

People also use different strategies to solve decisions, depending on the importance of the decision (e.g., Ladouceur et al., 1995). Prior research has found that people's general indecisive tendencies are more predictive of less important decisions (e.g., dinner decisions) as compared to more important decisions (e.g., career decisions) (Germeijs & DeBoeck, 2002; Milgram & Tenne, 2000). In such, we thought that the importance of decisions would also moderate the relationship between dialecticism and indecisiveness. We assumed that, this relationship would be strongest for less important decisions—where indecisive tendencies are most predictive, becoming much weaker for more important decisions—because important decisions may have lasting consequences that require a greater amount of indecisiveness, regardless of cultural beliefs.

Does dialecticism influence the experience of indecisiveness across cultures? Would exposure to dialectic beliefs increase indecisiveness? Does the importance of decisions affect the relationship between dialecticism and indecisiveness? We predicted that: (1) East Asians would generally be more indecisive in their decisions than North Americans (Study 1), (2) dialecticism

would mediate this culture difference in indecisiveness (Study 1); (3) those dialectically primed would be more indecisive than those non-dialectically primed (Study 2); and (4) decision importance would be a key factor in indecisiveness, with dialecticism playing a role in indecisiveness for less important decisions, but not important decisions (Study 3).

## 2. Study 1

We first aimed to identify a positive association between dialecticism and indecisiveness across cross-cultural contexts. To this end, Hong Kong Chinese and European Canadians were recruited based on prior findings in cultural psychology showing that East Asians are more dialectical than North Americans (Spencer-Rodgers et al., 2010).

### *2.1 Participants*

We recruited 40 European Canadian undergraduates (18 males; $Age_{mean}$=20.59; with English as as first language) from the University of Alberta and 40 Chinese undergraduates (20 males; $Age_{mean}$=20.51; with Cantonese as a first language) from the Chinese University of Hong Kong. For participation, Canadian students earned course credit and Chinese students received an honorarium.

### *2.2. Procedure and Materials*

Upon arrival, participants completed two scales. First, participants completed the 32-item Dialectical Self Scale (DSS; Spencer-Rodgers et al., 2010; European Canadians: $\alpha = .89$; Hong Kong Chinese: $\alpha = .71$), rating self-beliefs on a Likert-scale ranging from 1 (*Strongly disagree*) to 7 (*Strongly agree*). Sample items for this scale are, "There are always two sides to everything, depending on how you look at it" and "When I hear two sides of an argument, I often agree with both". After which, participants completed a 15-item indecisiveness scale (Frost & Shows, 1993;

European Canadians: α = .80; Hong Kong Chinese: α = .84), measuring general indecisiveness in decision making (1: *Strongly disagree*; 7: *Strongly agree*). Sample items for this scale are, "It seems that deciding on the most trivial thing takes me a long time", and "I always know exactly what I want" (reverse scored).

### *2.3 Results*

#### *2.3.1 Mean scores*

Hong Kong Chinese reported significantly higher scores on the DSS ($M$ = 4.09, $SD$ = .42) than European Canadians ($M$ = 3.57, $SD$ = .79), $F(1, 78) = 13.45$, $p < .001$, $\eta_p^2 = .147$, replicating prior findings (Spencer-Rodgers et al., 2010). For indecisiveness, Hong Kong Chinese reported significantly higher scores ($M$ = 4.07, $SD$ = .80) than European Canadians ($M$ = 3.67, $SD$ = .82), $F(1, 78) = 5.02$, $p = .028$, $\eta_p^2 = .06$, supporting our assumption that East Asians are more indecisive than North Americans.

#### *2.3.2 Mediational effect of DSS on the cultural difference in Indecisiveness*

Adopting the mediation analysis procedure suggested by Preacher and Hayes (2008), 5,000 Bootstrap samples and a bias corrected Confidence Interval was used to test the mediational effect of the DSS on the cultural difference in indecisiveness. For this procedure, mediation effects are considered significant when confidence intervals do not contain zero. As shown in Figure 1, the cultural difference in indecisiveness was fully mediated by DSS scores (Confidence Interval: .16, .60), with people high on dialecticism reporting a higher degree of indecisiveness.

In sum, Study 1 demonstrated that (1) Hong Kong Chinese reported a higher level of indecisiveness than European Canadians, and (2) the cultural variation in level of indecisiveness

was explained through a positive relationship with dialecticism—with more indecisive individuals also tending to be more dialectical.

## 3. Study 2

Study 1 provided the first concrete evidence that dialecticism and indecisiveness are highly related. However, survey methods do not allow us to appropriately examine causality—whether dialecticism directly facilitates/attenuates participants' experience of indecisiveness during decision making.

In order to determine causality, we manipulated dialecticism through dialectic and non-dialectic priming conditions and examined whether this lead to subsequent changes in indecisiveness. Furthermore, to concretely measure levels of decisiveness, we used a behavioral task where participants were asked to select the best option from a list of choices. We focused on response time for this study, as time required to make decisions helps to understand important dimensions of indecisiveness, showing decision delays as well as avoidance of decisions (Rassin, 2007). We hypothesized that participants that were dialectically primed would spend a longer time on the task compared to those who were non-dialectically primed.

### *3.1 Participants*

To control for other possible confounding variables, we focused on a single cultural group: Forty European Canadians (15 males; $Age_{mean}$ = 20.03; with English as a first language) from the University of Alberta, who participated for course credit.

### *3.2 Procedures and Materials*

#### *3.2.1 Manipulation of Dialecticism*

Participants were randomly assigned to either a dialectic priming or a non-dialectic priming condition. First, participants were asked to read a passage as a priming manipulation,

that describes a person's self-realization through a meditation experience, based on Maddux's et al. (2007) research (see Appendix A). Specifically, the dialectic priming describes a person realizing that components of the world are interconnected whereas the non-dialectic priming describes a person realizing that the components of the world are distinct and separate from each other. After reading the passage, participants were asked to summarize the passage in a few sentences. As a manipulation check, participants were asked to complete the Dialectical Self Scale (DSS; Spencer-Rodgers et al., 2010; $\alpha = .82$) at the end of the experiment.

*3.2.2 Decision-Making Task*

Next, participants engaged in three selection tasks where they were asked to make decisions as a laboratory manager purchasing lab machines (Eye-tracking, EEG, and fMRI) (see Appendix B). There were six attributes for each machine and five machines for each machine selection task. Choice alternatives and attribute dimensions were presented as row and column headings, respectively, on a grid. Participants were told to click cells to reveal hidden information on the machines they were selecting from. We used the total time participants spent on the three selections tasks (Response Time) as the primary dependent variable.

*3.3 Results*

*3.3.1 Manipulation check*

Participants in the dialectic priming condition reported higher DSS scores ($M = 4.03$, $SD = .58$) than those in the non-dialectic priming condition ($M = 3.61$, $SD = .54$), $F(1, 38) = 5.73$, $p = .022$, $\eta_p^2 = .131$, suggesting that our manipulation was successful. [1]

*3.3.2 Response time*

As expected, participants in the dialectic priming condition spent a significantly longer time making decisions ($M = 81.71$ seconds, $SD = 53.08$ seconds) than those in the non-dialectical

priming condition ($M$ = 49.66 seconds, $SD$ = 17.56 seconds), $F(1, 38) = 6.84$, $p = .013$, $\eta_p^2 = .153$.[2]

In sum, Study 2 successfully manipulated European Canadian participants' level of dialecticism, giving evidence of a causal mechanism at work: dialectically primed individuals tend to take longer in their decision making processes compared to those non-dialectically primed.

## 4. Study 3

Study 1 and Study 2 provided evidence that people high in dialecticism, and people assigned to dialectic manipulations, were more likely than those low in dialecticism, and those who were primed with non-dialectic manipulations, to experience indecisiveness in decision making. In addition, Study 1 showed evidence that dialecticism mediated cultural differences in indecisiveness between Hong Kong Chinese and European Canadians. Study 3 examined how importance of decisions affect indecisiveness, looking at the relationship between dialecticism and indecisiveness when people made important decisions and less important decisions. We expected that important decisions force people to adopt similar strategies, disrupting cultural differences in indecisiveness; whereas situations associated with less important decisions allow people the freedom to access culturally specific patterns of decision making, leading to a more salient cultural pattern of indecisiveness.

### *4.1 Participants*

We recruited Thirty-nine European Canadians (26 males; $Age_{mean}$ = 19.00; with English as a first language) from the University of Alberta, Canada and 39 Chinese (19 males; $Age_{mean}$ = 20.98; with Cantonese as a first language) from the Chinese University of Hong Kong. Canadian students earned course credit and Chinese students received an honorarium for participation.

*4.2 Design and Materials*

First, participants completed the Dialectical Self Scale (DSS; Spencer-Rodgers et al., 2010; Canadians: $\alpha = .84$; Hong Kong Chinese: $\alpha = .68$). Then, they reported their indecisiveness under two types of decisions: 1) when they were making a decision about what they were going to have for their dinner tomorrow (less important decision) and 2) when they were making a decision about their future career (important decision), with dinner decisions always being reported first.[3] Ten items from the Indecisiveness Scale (Frost & Shows, 1993; Canadians: $\alpha = .86$; Hong Kong Chinese: $\alpha = .81$) were selected for measuring indecisive tendencies for each decision.[4] Examples of selected items are: "I try to put off making this decision" and "Once I make this decision, I feel fairly confident that it is a good one" (reverse scored). Participants also reported how important each decision was to them in their life (ranging from 1 (*not at all important)* to 7 *(very important)*), as a manipulation check.

*4.3 Results*

*4.3.1 Manipulation check*

Both European Canadians and Hong Kong Chinese perceived that career decisions were more important ($M = 6.79$, $SD = .47$) than dinner decisions ($M = 2.49$, $SD = 1.46$), $F(1, 77) = 561.13$, $p < .001$, $\eta_p^2 = .879$. There were no significant differences in the perceived importance of the two decisions between the two cultural groups, $F$s $< 2.16$, $p > .14$.

*4.3.2 Dialecticism*

Consistent with previous studies, DSS scores showed that Hong Kong Chinese were more dialectic ($M = 4.12$, $SD = .41$) than European Canadians ($M = 3.50$, $SD = .62$), $F(1, 76) = 26.3$, $p < .001$, $\eta_p^2 = .257$.

*4.3.3 Indecisiveness for Dinner and Career Decisions*

A 2 (culture: European Canadians vs. Hong Kong Chinese) X 2 (level of importance decisions: important vs. less important; within-subject factor**)** mixed ANOVA indicated that there was a significant main effect of decision type, $F(1, 75) = 59.18$, $p < .001$, $\eta_p^2 = .441$. Participants were more indecisive when they made important decisions ($M = 4.62$, $SD = .98$) than less important decisions ($M = 3.57$, $SD = 1.03$). The main effect of culture was also significant, $F(1, 75) = 13.07$, $p = .001$, $\eta_p^2 = .148$, indicating that Hong Kong Chinese were more indecisive in general ($M = 4.39$, $SD = .65$), compared to European Canadians ($M = 3.83$, $SD = .84$). More importantly, we found a significant interaction of culture and importance of decision, $F(1, 75) = 8.13$, $p = .006$, $\eta_p^2 = .098$, indicating a significant difference in indecisiveness for less important decisions, $F(1, 75) = 22.97$, $p < .001$, $\eta_p^2 = .234$, with Hong Kong Chinese reporting a higher indecisiveness ($M = 4.06$, $SD = .85$) than European Canadians ($M = 3.07$, $SD = .97$). On the other hand, indecisiveness was not significantly different between Hong Kong Chinese and European Canadians for important decisions, $F < 1$, $p = .405$.

*4.3.4. Mediation effect of DSS in Indecisiveness*

First, we tested the mediational role of dialecticism for participants' indecisiveness across cultures for important decisions by following the procedures suggested by Preacher and Hayes (2008). The model was not significant (95% Confidence Interval: -.14, .46), showing that dialecticism does not predict indecisiveness for important, career decisions.

Next, we tested the mediational role of dialecticism for indecisiveness for less important decisions across cultures. This model was significant (95% Confidence Interval: .22, .79), with the cultural difference in indecisiveness partially explaining the difference in dialecticism between the two cultures (see Figure 2).

Summarizing, mean-level cultural variations in indecisiveness only emerged for less important, dinner decisions, with positive relationships between dialecticism and indecisiveness holding for these decisions. The results are consistent with previous indecisiveness research, showing that individual variation in indecisiveness is mostly seen when making less important decisions (Milgram & Tenne, 2000). They also corroborate previous cross-cultural findings, demonstrating that cultural influences are accentuated in common daily life experiences (e.g., Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997).

## 5. General Discussion

Summarizing, we found support that the cultural belief of dialecticism is an important factor that contributes to individuals' differences in indecisiveness. Our findings demonstrated that 1) East Asians were more indecisive than North Americans, 2) with dialecticism mediating cultural differences in indecisiveness (Study 1); 3) dialectically manipulated individuals reporting a higher level of indecisiveness than those non-dialectically manipulated (Study 2); and 4) decisions' importance affecting cultural variations: no cultural difference in indecisiveness was found for important decisions, with Hong Kong Chinese reporting a higher level of indecisiveness for less important decisions compared to European Canadians. Furthermore, the cultural variation was only mediated by dialecticism for less important decisions (Study 3).

The results of these studies are important as they deepen our understanding of cultural differences in the decision making process. While some cross-cultural research has started to investigate the decision making process (e.g., Strohschneider & Guss, 1999; Wustenberg, Greiff, Molnar, & Funke, 2014) most research has primarily focused on the final outcomes of decision making (e.g., Briley, Morris, & Sionson, 2000; Choi et al., 2003; Ji et al., 2008); however, culture likely affects more than just outcomes, but is also deeply involved in how we go about

making decisions. The current research helps to broaden the scope of research in culture and decision making, showing nuances involved in the decision making process. Future research should elucidate how indecisiveness more directly influences the decision making process, and what type of factors influence this process.

On the other hand, we should also note that while the current study does clearly show differences in how the decision making process occurs for decisions of differing importance, we still cannot be certain how this relationship would play out in various, specific decisions and contexts. As situated, social beings, our decisions are likely influenced by a host of various contextual constraints—the relevance of the decision to our lives, if the decision is made for the group or for ourselves, whether we are under some time constraints, etc. Future decision making research should further investigate what contextual constraints affect our decisions and how the salience of these constraints differs among cultures.

On a side note, our research also successfully replicates previous findings in which Japanese, another East Asian group, reported a significantly higher level of indecisiveness than North Americans (e.g., Mann et al., 1998; Yates et al., 1998; 2010). However, several studies have also found conflicting evidence, showing that mainland Chinese exhibited similar levels of indecisiveness to that seen in North Americans (Yates et al., 1998; 2010). We suspect that the difference in indecisiveness seen between mainland Chinese and other East Asian groups (e.g., Hong Kong Chinese and Japanese) may be due to socioeconomic factors—which also affect peoples' decision making styles (Hartung, 2002). Selecting two cultures with similar socioeconomic backgrounds (Hong Kong Chinese and European Canadians) allows us to investigate the influence of culture on decision making while avoiding confounding variables induced by socioeconomic development (please see, Ng & Hynie, 2012). Thus we successfully

found a difference in indecisiveness between East Asians and North Americans. Future studies should more directly investigate how socioeconomic factors affect cultural variations in the decision making process.

In conclusion, we found clear evidence that the cultural concept of dialecticism plays an important role in our indecisiveness. The current research helps to broaden the scope of research in culture and decision making by making clear nuances involved in the decision making process, showing how culture may affect how we experience indecisiveness in decisions (affecting how we perceive decision difficulties and the amount of time spent on decisions). These findings add to a growing body of research showing cultural differences in decision making and demonstrate the importance of also looking at processes affecting our decisions. Various cross-cultural differences in the decision making process are undoubtedly present and should be targeted as we set about describing what differs in decision making processes across cultures. These findings are important to cross-cultural psychology as they support a shift of emphasis in empirical research from an outcome oriented approach to a more nuanced and descriptive, process oriented approach. Culture is infinitely complex and process oriented research is an essential tool in our quest to better understand cultures' complexities.

## Footnotes

1. In addition to the seen significant main effect for the manipulation, we also found an interaction of gender and manipulation, $F(1, 36) = 5.34$, $p = .027$, $\eta_p^2 = .129$. Female participants ($M = 3.73$, $SD = .44$) were more dialectic than male participants ($M = 3.31$, $SD = .70$) in the non-dialectic priming condition, $F(1, 19) = 2.81$, $p = .110$, $\eta_p^2 = .129$, whereas male participants ($M = 4.25$, $SD = .59$) were more dialectic than female participants ($M = 3.84$, $SD = .53$) in the dialectic priming condition, $F(1, 17) = 2.53$, $p = .130$, $\eta_p^2 = .130$. However, the simple main effects of gender in each condition were not significant.

2. Excluding two outliers (three *SD* above the mean for reaction time), our analysis was still significant, $F(1, 36) = 4.605$, $p = .039$, $\eta_p^2 = .113$. Participants still showed a pattern of spending a longer time in the dialectic priming condition ($M = 67.08$ seconds, $SD = 31.73$ seconds) than those in non-dialectic priming condition ($M = 49.66$ seconds, $SD = 17.56$ seconds). These results remained the same after controlling the total amount of information participants viewed.

3. This is a limitation of the current design. Order effects should be considered in future studies.

4. The Indecisiveness scale also includes some items that contain specific context, e.g., "When ordering from a menu, I usually find it difficult to decide what to get". We excluded items that provided contexts as they might interfere with participants' ratings of dinner and career decisions.

References

Briley, D. A., Morris, M. W., & Simonson, I (2000). "Reasons as carriers of culture: Dynamic vs. dispositional models of cultural influence on decision. *Journal of Consumer Research, 27*, 157-178.

Choi, I., Dalal, R., Kim-Prieto, C., & Park, H. (2003). Culture and judgment of causal relevant. *Journal of Personality and Social Psychology, 84*, 46-59.

Frost, R., & Shows, D. (1993). The nature of measurement of compulsive indecisiveness. *Behaviour Research and Therapy, 31*, 683-692.

Germeijs, V., & De Boeck, P. (2002). A measurement scale for indecisiveness and its relationship to career indecision and other types of indecision. *European Journal of Psychological Assessment, 18*, 113- 122.

Hamamura, T. (2004). *Cultural difference in dialectical response style: How much yes is in your yes?* Unpublished master's thesis, University of British Columbia, Vancouver, Canada.

Hamamura, T., Heine, S. J., & Paulhus, D. L. (2008). Cultural differences in response styles: The role of dialectical thinking. *Personality and Individual Differences, 44*, 932- 942.

Hartung, P. J. (2002). Cultural context in career theory and practice: Role saliences and values. *The Career Development Quarterly, 51,* 12-25.

Hui, C. M., Fok, H. K., & Bond, M. H. (2009). Who feels more ambivalence? Linking dialectical thinking to mixed emotions. *Personality and Individual Differences, 46*, 493-498

Ji, L.-J., Zhang, Z., & Guo, T. (2008). To buy or sell: Cultural differences in stock market decisions based on price trends. *Journal of Behavioral Decision Making, 21*, 399-413.

Kitayama, S., Markus, H. R., Matsumoto, H., & Norassakkunkit, V. (1997). Individual and collective processes in the construction of the self: Self-enhancement in the United States and self-criticism in Japan. *Journal of Personality and Social Psychology, 72,* 1245-1267.

Ladouceur, R., Rheaume, J., Freeston, M. H., Aublet, F., Jean, K., Lachance, S., Langlois, F., & dePokomandy-Morin, K. (1995). Experimental manipulations of responsibility: An analogue test for models of obsessive-compulsive disorder. *Behaviour Research and Therapy, 33*, 937-946.

Maddux, W. W., & Yuki, M. (2006). The "ripple effect": Cultural differences in perceptions of the consequences of events. *Personality and Social Psychology Bulletin, 32*, 669-683.

Maddux, W., Lau, I., Chiu, C.-y., Hong, Y.-y., Yuki, M. (2007). Beneath the surface of the "ripple effect": Understanding the underlying nature of cultural differences in perceptions of event consequences. Unpublished paper, *INSEAD*.

Mann, L., Radford, M., Burnett, P., Ford, S., Bond, M., Leung, K., et al. (1998). Cross-cultural differences in self-reported decision-making style and confidence. *International Journal of Psychology, 33*, 325-335.

Masuda, T., & Nisbett, R. E. (2001). Attending holistically versus analytically: Comparing the context sensitivity of Japanese and Americans. *Journal of Personality and Social Psychology, 81*, 922-934.

Milgram N. N., & Tenne R. (2000). Personality correlates of decisional and task avoidant procrastination. *European Journal of Personality, 14,* 141–156.

Ng, A. H., & Hynie, M. (2012). *Cultural differences in indecisiveness: The roles of dialectical thinking and need for cognition*. Poster presented at the Southern Ontario Behavioural Decision Research, Waterloo, Canada, May.

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40,* 879-891.

Rassin, E. (2007). A psychological theory of indecisiveness. *Netherlands Journal of Psychology, 63,* 2-13.

Rassin, E., & Muris, P. (2005a). Indecisiveness and the interpretation of ambiguous situations. *Personality and Individual differences, 39,* 1285-1291.

Rassin, E. & Muris, P. (2005b). To be or not to be…indecisive: Gender differences, correlations with obsessive-compulsive complaints, and behavioural manifestation. *Personality and Individual Differences, 38,* 1175-1181.

Spencer-Rodgers, J., Srivastava, S., Boucher, H. C., English, T., Paletz, S. B., Wang, L., et al. (2010). *The Dialectical Self Scale*. Unpublished manuscript, University of California, Santa Barbara.

Spencer-Rodgers, J., Peng, K., Wang, L., & Hou, Y. (2004). Dialectical self-esteem and East-West differences in psychological well-being. *Personality and Social Psychology Bulletin, 30,* 1416-1432.

Spencer-Rodgers, J., Williams, M., & Peng, K. (2010). Cultural influences in expectations of change and tolerance for contradiction: A decade of empirical research. *Personality and Social Psychology Review, 14,* 296-312.

Spina, R. R., Ji, L.-J., Guo, T., Zhang. Z., Li, Y., & Fabriger, Z. (2010). Cultural differences in the representativeness heuristic: Expecting a correspondence in magnitude between cause and effect *Personality Social Psychology Bulletin, 36,* 583-597.

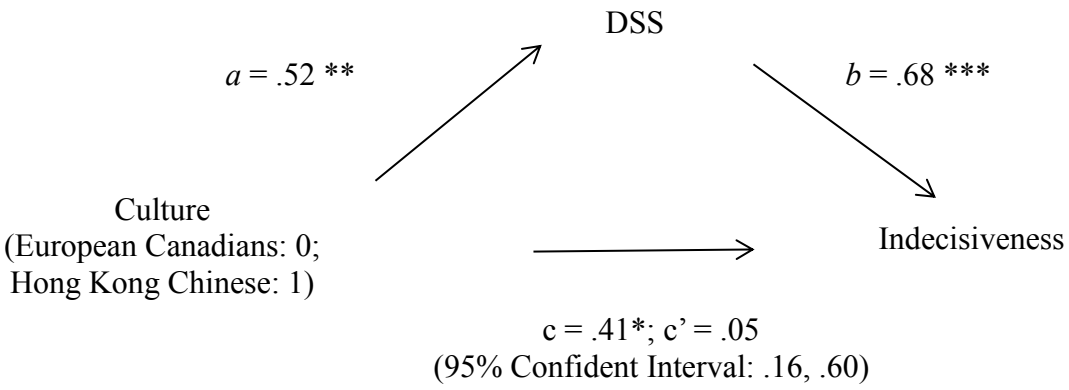
Strohschneider, S., & Guss, D. (1999). The Fate of the Moros: A cross-cultural exploration of strategies in complex and dynamic decision making, *International Journal of Psychology, 34,* 235-252.

Tse, D. K., Lee, K.-H., Vertinsky, I., & Wehrung, D. A. (1988). Does culture matter? A cross-cultural study of executives' choice, decisiveness, and risk adjustment in international marketing. *Journal of Marketing, 52,* 81-95.

Wustenberg, S., Greiff, S., Molnar, G., & Funke, J. (2014). Cross-national gender differences in complex problem solving and their determinants. *Learning and Individual Differences, 29,* 18-29.

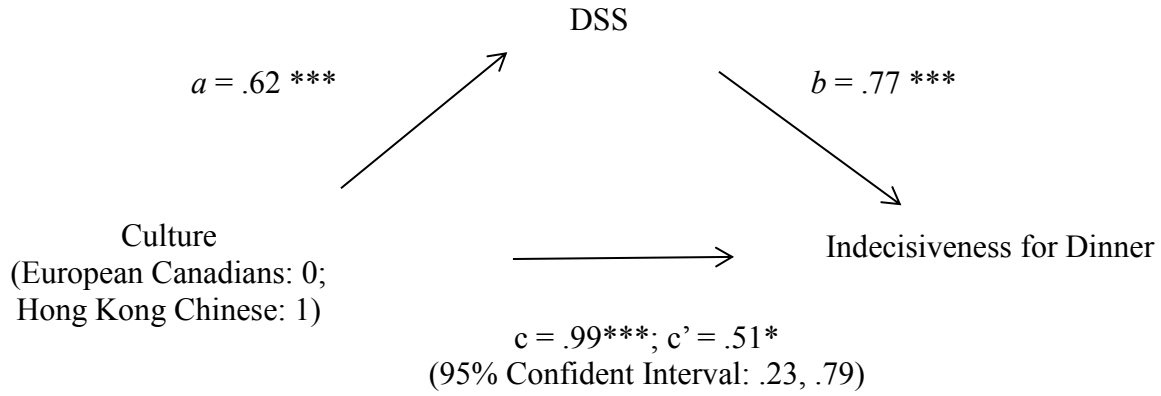
Yates, J. F., Ji, L.-J., Oka, T., Lee, J.-W., Shinotsuka, H., & Sieck, W. R. (2010). Indecisiveness and culture: Incidence, values, and thoroughness. *Journal of Cross-Cultural Psychology, 41,* 428-444.

Yates, J. F., Lee, J.-W., Shinotsuka, H., Patalano, A. L., & Sieck, W. R. (1998). Cross-cultural variations in probability judgment accuracy: Beyond general knowledge overconfidence? *Organizational Behavior and Human Decision Processes, 74,* 89-117.




Note. * $p < .05$; ** $p < .01$; *** $p < .001$; coefficients are unstandardized.

Figure 1. The relationship between culture, DSS, and indecisiveness—dialecticism fully mediates seen cultural differences in indecisiveness between European Canadians and Hong Kong Chinese in Study 1.




Note. * $p < .05$; ** $p < .01$, ***; $p < .001$; coefficients are unstandardized.

Figure 2. The relationship between culture, DSS, and indecisiveness for less important, dinner decisions—dialecticism partially mediates seen cultural differences in indecisiveness between European Canadians and Hong Kong Chinese in Study 3.

# Appendix A

## Readings for the dialectic and non-dialectic priming conditions in Study 2

**Dialectical condition:**

Zandra had been practicing meditation for past ten years. Her quest to understand world at a deeper level could not have been more mentally tormenting. Her earnest desire was to understand what is the world? Where are we? And how this world functions? Her meditation resulted in deep trances where she could feel the flow. She learnt how to immerse herself with the waves around her and was about to discover a strange but vivid truth. One day early in the morning when Zandra was in her meditation, she had an epiphany. As a feeling, it was a sudden realization or comprehension of the essence or meaning of something. She felt that the world is all connected and everything is related with every other thing. We, as human beings are part of a cosmos and deep down everything can affect anything. Her realization was that the universe is essentially a system of interdependent, connected forces that are inherently bound together, all of which are part of the same essence and influence everything else. She realized that all entities are inseparable from each other, that birth and death are simply part of a longer journey, and that everything is one with everything else, linked together by a single, unifying presence. Zandra met herself that day.

**Non-dialectical Condition:**

Zandra had been practicing meditation for past ten years. Her quest to understand world at a deeper level could not have been more mentally tormenting. Her earnest desire was to understand what is the world? Where are we? And how this world functions? Her meditation resulted in deep trances where she could feel the flow. She learnt how to immerse herself with the waves around her and was about to discover a strange but vivid truth. One day early in the morning when Zandra was in her meditation, she had an epiphany. As a feeling, it was a sudden realization or comprehension of the essence or meaning of something. She felt that we, as human beings are distinct from each other, we possess a unique presence and deep down every element in the cosmos is distinct and unrelated with each other. She came to the realization that the universe is essentially a system of independent, separate forces that are all unique, self-contained, and which do not exert any meaningful impact on other elements or events. She realized that all entities have their own distinct and unique properties, that birth and death are finite and permanent, and that everything is kept separate from everything else by a larger spiritual presence.

# Appendix B

Participants were asked to view as much (or as little) information necessary and to take as much (or as little) time necessary to view information before making decisions on what machine to purchase. They were told to click the "?" to view hidden information. Below is an example of the Eye-tracker selection task at the beginning of the task when all attribute information was hidden.

| Eye tracker | Gaze accuracy | Gaze precision | Processing latency | Data sample output | Sampling rate | Freedom of head movement |
|---|---|---|---|---|---|---|
| Eye tracker A | ? | ? | ? | ? | ? | ? |
| Eye tracker B | ? | ? | ? | ? | ? | ? |
| Eye tracker C | ? | ? | ? | ? | ? | ? |
| Eye tracker D | ? | ? | ? | ? | ? | ? |
| Eye tracker E | ? | ? | ? | ? | ? | ? |

An example of how information was presented when all information was revealed.

| Eye tracker | Gaze accuracy | Gaze precision | Processing latency | Data sample output | Sampling rate | Freedom of head movement |
|---|---|---|---|---|---|---|
| Eye tracker A | Poor | Poor | Poor | Good | Moderate | Moderate |
| Eye tracker B | Good | Very poor | Moderate | Moderate | Very good | Good |
| Eye tracker C | Good | Very poor | Moderate | Good | Good | Good |
| Eye tracker D | Very poor | Poor | Moderate | Moderate | Very good | Poor |
| Eye tracker E | Moderate | Good | Poor | Very poor | Poor | Moderate |