Running Head: Culture, Values & Reasoning

Intuition versus Logic? Injunctive Norms about Reasoning across Cultures and Contexts

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Abstract

Two studies examined cultural differences in social values that encourage intuitive vs. rule-based reasoning, and whether these differences vary according to the interpersonality of the situation. In Study 1, Koreans and Americans ranked the importance of traits including "intuitive" and "logical" in work and family contexts. In Study 2, Euro-Canadians and East-Asian-Canadians read scenarios of intuitive vs. rule-following business decisions. In both studies, East Asians generally favored intuitive reasoning more than North Americans, but both East Asians and North Americans increased preference for intuition in interpersonal contexts.

Keywords: culture; reasoning; holistic reasoning; analytic reasoning; intuition; logic; values; norms; situated culture

…We see [in Chinese intellectuals] an opposition of "logic" versus common sense, which takes the place of inductive and deductive reasoning in China. Common sense is often saner because the analytic reasoning looks at truth by cutting it up into various aspects, thus throwing them out of their natural bearings, while common sense seizes the situation as a living whole…Logic without such common sense is dangerous…

Dr. Yutang Lin (1939, p. 88)

Recent cross cultural research has indicated that there are systematic cultural differences in the habitual ways by which people reason about the world. Research on human cognition has suggested that there are two major cognitive "modes"; one commonly termed as "intuitive" or "associative," and another "analytic" or "rule-based" (Sloman, 1996). Theoretically, everyone is capable of thinking in both of these modes, but individual differences— and cultural ones— have been found to affect which mode is preferentially used (e.g. Epstein, Pacini, Denes-Raj, & Heier, 1996; Nisbett, Peng, Choi, & Norenzayan, 2001). Under identical task conditions, thinking among Westerners (e.g. North Americans) tends to be more analytic, that is, attention is focused on objects and their features and reasoning is decontextualized; conversely, thinking among East Asians (e.g. Chinese, Koreans, Japanese) tends to be more holistic, that is, attention is dispersed to the field and reasoning is contextualized (see Nisbett, 2003 for summary). In the following paper, we examine two aspects of these cognitive differences that have received little attention: we explore the normative status of analytic and intuitive reasoning in East Asian and Western cultures (i.e., whether these cognitive differences are encouraged by different value judgments), and investigate a possible proximal cause of this cultural difference (the interpersonality of the social context).

Injunctive Norms about Intuitive and Rule-based Reasoning

In social norms terminology, the above research on analytic and holistic modes has shown that the *descriptive* norms— what people generally *do*—are different in North American and East Asian cultures (Cialdini & Trost, 1998). Is this cultural variance a habit of reasoning that is motivated by different *injunctive* norms (Cialdini & Trost, 1998), social "ought-norms" about what kinds of reasoning we *should* engage in? Shweder, in discussing the difficulty of living in a morally-multicultural world, describes a potentially dangerous response to cultural difference "in which morally decent and fully rational members of different cultural traditions look at each other and each other's practices and go 'Yuck!'" (Shweder, 2000, p. 216). This "mutual yuck" response, as expressed in Dr. Lin's quote above, could apply to modes of reasoning. Potential cultural differences in social injunctive norms are important to understand not only because they may increase cross-cultural misunderstandings, but also because they are important influences on behavior.

Though there has been controversy in the literature about whether or not social norms explain behavior (Bardi & Schwartz, 2003; Kallgren, Reno, & Cialdini, 2000), a recent greater specification of the types of norms and factors affecting their potency has allowed their influence to become apparent. For example, increasing the salience of injunctive norms has been shown to change the behavior of others, suggesting that injunctive norms (rather than descriptive norms) have cross-situational force in enhancing pro-social action (e.g. Reno, Cialdini, & Kallgren, 1993). Moreover, a demarcation between *social* values and *personal* values has prompted research suggesting that for behaviors that are subject to social approval, social norms are more likely to influence that behavior than personal values (Bardi & Schwartz, 2003).

If preferences for different reasoning exist in the form of social norms, then behaviors that reflect those forms of reasoning should be "sustained by the approval and disapproval or others, by feelings of embarrassment, anxiety, guilt and shame" (Azar, 2004). However, evidence for explicit social pressures to engage in intuitive vs. analytical reasoning is thin. Echoing Dr. Lin above, some scholars have suggested that in East Asian culture, it is irrational to "separate form from content" (Liu, 1974, p. 325) and that "to argue with logical consistency is… discouraged, and… regarded as immature" (Nagashima, 1973). Some research findings also have hinted that East Asians might judge intuitive, holistic thinking to be a sign of wisdom, more than North Americans. For example, Ji, Nisbett, & Su (2001) found that Chinese judged an actor who predicted change (an aspect of holistic thinking) to be much more "wise" than Americans did, suggesting that "people from different cultures may have different views about wisdom" (p. 456).

More directly, Tweed and Lehman (2002) have discussed how these culturally different conceptions of reasoning can affect academic learning practices and lead to cultural misunderstandings in pedagogical settings. Western educators tend to disparage Chinese students' learning styles (which do not emphasize critical questioning and analytical evaluation), accusing them of being "passive" and "unwilling to think deeply" (Tweed & Lehman, 2002, p. 93). East Asian educators and intellectuals, in contrast, may view Western educational practices as immature and disrespectful of authority. Given these cross cultural differences, there has been little systematic psychological investigation of the extent to which reasoning modes are laden with cultural values.

Cultural Differences in Reasoning and Interpersonality of Contexts

Cultural values, however, are likely to be sensitive to variation in context. Oyserman et al. have advocated a "focus on characteristics of situations and… how shifts in situations result in

shifts in individual cognition, affect, and motivation" (Oyserman, Kemmelmeier, & Coon, 2002, p. 115). In keeping with this "situated culture approach" (Oyserman et al., 2002, p. 115), a second goal of this research was to examine whether the cultural differences in injunctive norms would vary as a function of the interpersonality of the social context.

Among those factors believed to create and sustain the cultural differences in cognition is the degree to which different cultures encourage interpersonal or impersonal modes of being (Fiske, Kitayama, Markus, & Nisbett, 1998; Nisbett et al., 2001). One of the most salient ways in which East Asian and North American societies differ is in the relationships expected to exist between individuals and their social environment. Cultures in which the social environment is more important and complex may require greater attention to "relationships and subtle changes in social situations" (Masuda & Nisbett, 2001, p. 923), thus training habits of thinking that are more holistic. Conversely, cultures in which the social environment is less interpersonally constrained may develop habits of reasoning that are more analytic.

The causal relationship between interpersonality of social contexts and cognitive mode has been importantly supported by several priming studies. In these studies, Western subjects have been shown to exhibit typically East Asian cognitive advantages after priming of an interdependent self-construal, such as increased attention, memory, and processing speed for contextualized information (Kühnen, Hannover, & Schubert, 2001; Kühnen & Oyserman, 2002). East Asian subjects primed with independent self-construal have also shown typically Western advantages in tasks that require decontextualizing (Cha, Oyserman, & Schwarz, 2005).

The use of intuitive (holistic) reasoning, as well as the situations in which careful attention must be paid to the social environment, are not unknown in Western societies. Intuition has traditionally been identified with sensing the more subtle aspects of interpersonal

communication. This truism, however, is only indirectly supported by research literature. Snodgrass (1985), in her studies on "women's intuition," defined it as the ability to sense the feelings of others in interpersonal communication. Similarly, Epstein et al.'s (1996) "Faith in Intuition" scale is composed entirely of statements about trusting one's feelings about other people, and it was found that those higher in "faith in intuition" had more successful interpersonal styles. Therefore, our second question is, will intuition be universally perceived to be of more value in situations that are typically "East Asian," i.e. more interpersonal?

<div align="center">Overview of Studies</div>

To examine these questions, we carried out two studies. In both studies, we sought to measure how both culture and interpersonality of situations affect value judgments for intuitive vs. analytical modes of reasoning. Importantly, studies of values across cultures are vulnerable to reference group effects (RGE), a methodological artifact that may obscure true cultural differences in values (Heine, Lehman, Peng, & Greenholtz, 2002). Briefly, when participants are asked to rate how much they endorse a certain value on a likert scale, they implicitly use their own cultural group as the reference group, or standard of comparison. Because people in different cultures will implicitly rely on different reference groups, any direct cross cultural comparison of value judgments may be suspect. For example, paradoxically, Japanese participants endorse the value "respecting parents" less than Americans, most likely because of their implicit comparison of their own level of respect for parents with that of most other Japanese, rather than most other Americans (Heine et al., 2002).

We sought to minimize this problem in two ways. In Study 1, we asked participants to rank the importance of a list of ten personality traits, including sociable, intuitive and logical in work (relatively impersonal) and non-work (relatively interpersonal) situations. By asking

participants to rank these traits rather than rate them on a likert scale, the standard of comparison was shifted to the list of traits, which was identical across cultures. In Study 2, we examined social pressures more closely by asking participants to judge a character in a vignette who made intuitive vs. rule-following decisions in relatively impersonal versus interpersonal contexts. This is known to minimize RGE by focusing participants' attention on a concrete behavior, rather than on rating a value in the abstract (Peng, Nisbett, & Wong, 1997).

<div align="center">Study 1</div>

Method

     Participants. Seventy-six American undergraduates (45 men, 31 women, mean age = 22) at the University of Illinois, Urbana-Champaign, and 58 Korean undergraduates (30 men, 28 women, mean age = 21) at Seoul National University participated in this study.

     Materials & Procedure. Participants completed a questionnaire for class credit. Participants were asked to rank ten positively-valenced personality traits (Ambitious, Logical, Punctual, Adventurous, Intelligent, Sociable, Self-confident, Intuitive, Happy, Reliable) from 1 to 10 (1 = most important). Rankings were completed for each of two contexts: "how important each trait is to have successful relations with *friends and family*" and again for "how important each trait is to succeed *at work*." Order of context presentation was counterbalanced across participants. For Korean participants, the questionnaire was back-translated into Korean. Of particular interest were the relative ranking of the traits "logical" and "intuitive" between cultures and the contexts "at work" vs. "with friends and family."

Results

     We first analyzed the simple rank of "Sociable" to measure if participants perceived the different contexts to vary in interpersonality. We then analyzed how the relative rankings of

logical and intuitive traits differed with culture and gender for each question domain (work vs. family and friends). Because the data were in the form of relative rankings, and thus observations were not independent, non-parametric statistical tests were used (McNemar's, Wilcoxin Signed Ranks, Mann-Whitney U and Chi-square tests).

Rank of Sociable. Korean participants ranked Sociable as more important in the Work context than Americans did (Mann-Whitney U, $Z = -4.46$, $p < .001$), and Koreans and Americans thought that sociable was equally important in the Family & Friends context ($p > .20$) (see Figure 1). This replicates findings by Sanchez-Burks et al (2003), who found that Westerners, and particularly North American Protestants, consider work contexts to be less interpersonal than non-work contexts. However, in contrast to Sanchez-Burks and colleagues' findings, we found that the importance of "sociable" decreased in the work context for *both* cultures (Wilcoxin Sign test; Americans, $Z = -6.78$, $p < .001$; Koreans, $Z = -4.17$, $p < .001$). This indicated that our manipulation of the interpersonality of the context was successful for both cultural groups.

Relative ranks of Intuitive and Logical: Change of Context effects. (See Figure 2) A McNemar's test showed that a significant number of participants changed their relative rankings of logic and intuitive based on the context ($\chi = 37.157$, $p < .001$). Specifically, the test showed that participants tended to change from ranking logic higher than intuition in the work context to ranking intuition higher than logic in the family & friends context. This effect occurred in both cultural samples (Americans, $p < .001$; Koreans, $p = .001$), both genders (Females, $p < .001$; Males, $p < .001$), and in each of the four gender-culture groups ($p < .01$ for American Males, American Females, and Korean Females; $p < .10$ for Korean Males). These findings support the hypothesis that the increasing perceived interpersonal nature of a situation would be associated, cross-cuturally, with an increasing relative importance of intuitive over logical reasoning.

Relative ranks of Intuitive and Logical: Work context. (See Figure 2) In the Work context, a Chi-square test showed that significantly more Americans than Koreans ranked Logical higher than Intuitive ($\chi = 11.14$, $p = .001$). More specifically, a significantly large proportion of Americans ranked Logical higher than Intuitive ($\chi = 23.21$; $p < .001$), while Koreans considered logical and intuitive to be equally important ($\chi = 0$).

Relative ranks of Intuitive and Logical: Friends & Family context. (See Figure 2) In contrast to the Work context, a Chi-square test showed that the Americans and Koreans did not differ on their relative rankings of Intuitive vs. Logical in the Family & Friends context ($\chi = 1.99$, $p = .11$). Specifically, within cultures, a significantly large proportion of the participants ranked Intuitive higher than Logical (Americans: $\chi = 10.32$; $p = .001$; Koreans: $\chi = 19.93$; $p < .001$).

Study 2

Study 1 showed that both culture and interpersonality of context may affect what reasoning traits are seen as more vital for success. A decreasing level of the value of Sociable in different contexts was associated with a decreasing preference for Logical over Intuitive in both cultures, but the Koreans were more inclined than Americans to see the work context as social, and in that context, Americans valued Logical more highly relative to Intuitive than did Koreans.

Ranking the relative importance of logic and intuition for success does reflect their relative epistemic value, but it does not measure the influence of social norms directly. How are people who actually do follow their intuition *judged* by others? How does culture affect how favorably they are evaluated? Moreover, might intuitive decision-makers be seen as more attentive to social matters? In Study 2, we sought to explicitly examine how culture and context might affect how one evaluates a person who follows intuition vs. rules when making a decision.

Varying the interpersonal nature of a work decision, we asked participants to read two stories in which the main actor made either an intuitive decision (while patently not following a company rule) or a rule-following decision (while patently ignoring an intuition). We hypothesized that 1) East Asians would prefer the intuitive actor over the rule-following actor, and Westerners the opposite; mirroring Study 1, it was expected that this will be especially the case in the impersonal scenario; and 2) that cross-culturally, the reasoning mode used by the actor would predict the perceived "socialness" of the actor: intuition-following actors should be seen as more social.

Method

     Participants. Eighty Canadian undergraduates from a first year undergraduate psychology course at the University of British Columbia participated in this study. Forty-seven participants were self-identified European Canadians (20 men, 27 women) and 33 were relatively unacculturated East Asian Canadians (29 Chinese, 4 Korean) who did not speak English at home (16 men, 17 women). For simplicity, these two cultural groups will be referred to as "Euro Canadians" and "East Asian Canadians."

     Materials and Procedure. Each participant read two scenarios, one interpersonal and one impersonal (two "scenario types"), and one ending with an intuitive choice and the other ending with a rule-following choice (two "choice types"). Following each scenario were 13 items asking the participant to judge the actor and the actor's choice (see Appendix A for list of items). Participants were asked to rate their agreement with the items on a 5-point scale (1 = *not at all,* 5 = *very much*). The presentation order and pairing of scenario type and choice type were counterbalanced across participants. Note that because each subject saw both scenario types with a different choice-type ending, the following results present the between-subjects effect of choice

type within each scenario type separately. Though this design allowed for more collected data, it prevents us from statistically analyzing the non-independent "change of context" effects on the relative preference for the intuitive or rule-following actor (as we did in Study 1).

The interpersonal scenario involved a choice between two potential employees; the impersonal scenario involved a choice between two employee-improvement strategies (see Appendix A for full description of the scenarios). In each scenario, the actor always "had a feeling" that one choice would be better than the other, but a company rule said that the opposite choice should be made. The scenario ended with the actor making a decision (the "choice") that either agreed with his/her intuition or with the rule. To avoid any effects of protagonist gender, both scenarios used only initials to identify the actor and other people in the scenario. Pretesting showed that there were no cultural differences in perceptions of specific elements of the story, i.e. no cultural differences in how reasonable the rules seemed to be or how compelling the reasons to follow the rules were. The questionnaires were presented in English to all participants, as all of them were enrolled at an English-language university.

Results

Interpersonality of Scenarios. To check that our two scenarios did differ in the perceived interpersonality of the decision being made, we conducted a pilot study of a separate group of 18 self-identified Euro Canadians (8 Male, 10 Female) and 21 East Asian Canadians who did not speak English at home (6 Male, 15 Female). We presented the scenarios without the decision outcome, asking "How much do you expect [the actor] would think about his/her future personal relationship(s) with the new employee(s) when making this decision?" for each scenario. A Culture (East Asian Canadian, Euro Canadian) by Gender (male, female) repeated-measures ANOVA showed that as expected, the interpersonal decision was rated as involving social

relationship considerations significantly more than the impersonal decision, regardless of gender or culture, $F(1,35) = 8.43$, $p < .01$. However, a Culture by Gender univariate ANOVA for each scenario separately revealed that the "impersonal" decision was perceived to involve social relationship considerations marginally more by East Asian Canadians than by Euro Canadians, $F(1,35)=3.38$, $p = .075$, while there was no cultural difference in perception of the social considerations of the "interpersonal" scenario, $F(1,35)=1.771$, $p = .19$.

Manipulation Check: Rule-following = Logical, Intuition-following = Intuitive?. In the main study, two questions were designed as manipulation checks of the reasoning mode ("How intuitive do you think X is?" and "How logical do you think X is?"). As expected, a Culture by Gender by Choice ANOVA for each scenario showed that regardless of culture or gender, participants rated the intuition-following actor as more intuitive than the rule-following actor in both scenarios, $F(1,72) = 11.77$, $p = .001$ (Impersonal scenario) and $F(1,72) = 23.45$, $p < .001$ (Interpersonal scenario). However, our expectation that the rule-following actor would be rated as more logical was only halfway met. In the interpersonal scenario, the rule-following actor was seen as more logical regardless of gender or culture, $F(1,72) = 4.85$, $p = .03$, but in the impersonal scenario, there was no such effect, $F< 1$, despite a trend in that direction among Euro Canadians only, $F(1,43) = 2.81$, $p = .10$. As a result, the results for Study 2 might be conservatively interpreted as a conflict between ignoring or following intuition rather than a conflict between logic and intuition.

Scale Construction. Eleven items measured different judgments of the actor. We divided the 11 items into 3 Social items (Friend, Social, and Talkative) and 8 Evaluative items (Agree, Reason Good, Reasonable, Good Manager, Moral, Wise, Competent, Intelligent). The Evaluative scale had a Cronbach's alpha of .87 for the Impersonal scenario and .86 for the Interpersonal

scenario. The Social scale had a Cronbach's alpha of .74 for both the Impersonal and Interpersonal scenarios.

An exploratory factor analysis using principal-component analysis largely supported this division. In the Interpersonal scenario, a scree test of all 11-items revealed two factors with eigenvalues above 1: Social (Friend, Social, Talkative & Wise) and Non-Social Evaluation (eigenvalues = 1.58 and 5.14 respectively, accounting for 61.1% of common variance). In the Impersonal scenario, a two factor solution was also suggested: Social (Friend, Social, Talkative, & Moral) and Non-Social Evaluation (eigenvalues = 1.34 and 5.21 respectively, accounting for 59.6% of common variance).

Variables Analyzed. Taking each scenario (impersonal vs. interpersonal) separately, we analyzed how Evaluative scale ratings and Social scale ratings were affected by differences in Culture, Gender, and Choice (following intuition vs. following the rules).

Impersonal Scenario: Evaluative ratings. (See Figure 3) A Culture (East Asian Canadian, Euro Canadian) by Gender (male, female) by Choice (intuition vs. rule-following) univariate ANOVA indicated that Culture interacted significantly with Choice to predict evaluation of the actor, $F(1,70) = 4.24$, $p = .04$. Namely, East Asian Canadians had more favorable judgments when the actor went with intuition, $t(30) = 2.40$, $p = .02$, while Euro-Canadians did not change their general judgments depending on decision taken, $t < 1$. The ANOVA also showed a marginally significant Gender by Choice interaction, $F(1,70) = 3.40$, $p = .07$. Women had more favorable judgments when the actor went with intuition, $t(41)=2.80$, $p < .01$, while men showed no difference depending on the choice made, $t < 1$.

Impersonal Scenario: Social ratings. (See Figure 4) A Culture by Gender by Choice univariate ANOVA predicting social ratings showed that regardless of gender or culture,

participants rated the actor as more social when he/she went with intuition, $F(1,71) = 18.92$, p <.001.

Interpersonal Scenario: Evaluative ratings. (See Figure 5) In the Interpersonal scenario, a Culture by Gender by Choice ANOVA predicting general Evaluation showed a main effect of the actor being rated more favorably if the intuitive choice was made rather than the rule-following choice, $F (1,72) = 12.00$, p = .001, regardless of the gender or culture of the participant.

Interpersonal Scenario: Social ratings. (See Figure 6) As in the impersonal scenario, participants rated the intuition-following actor as more social, $F(1,72) = 57.93$, p <.001, regardless of gender or culture.

General Discussion

These studies provide evidence that East Asians and Westerners may hold different values or injunctive norms about the worth of intuitive vs. analytical reasoning, and that these norms may be linked to different evaluations of the interpersonal importance of situations. In Study 1, in the (relatively impersonal) Work context, a significantly larger proportion of Americans than Koreans preferred logic over intuition, and Americans also thought that being social was less important than did Koreans; in the (interpersonal) Family & Friends context, there were no cultural differences in relative preferences. Moreover, as the interpersonality of the context increased, both Koreans and Americans decreased their relative preference for logic over intuition. Similarly in Study 2, evaluative judgments indicated that in the impersonal situation, East Asian Canadians favored the intuitive decision maker more than did the Euro Canadians, and in the interpersonal situation both cultural groups favored the intuitive decision maker to the same extent. Finally, in both impersonal and interpersonal scenarios, the intuitive following actor was seen as more sociable by both cultural groups.

The importance of injunctive norms regarding reasoning

These findings have important implications for considerations of the epistemic virtues of reasoning, as well as for cross-cultural understanding. There is ongoing debate within epistemological philosophy about how to decide what is the best truth-finding method (e.g. logic). One of the most common proposals to solve this problem is a theory that philosopher Stephen Stich terms "analytic epistemology," which recommends that we should literally follow common sense: i.e. define proper justification as "a common core idea of justifiedness embedded in everyday thought and language" (Stich, 1998, p. 106). But what, wonders Stich, happens if another culture had a different "common sense" about justification?

> Imagine that we have located some exotic culture that does in fact exploit cognitive
> processes very different from our own, and that the notions of epistemic evaluation [i.e.
> judging the basis of truth] embedded in their language also differ from ours. Suppose
> further that the cognitive processes prevailing in that culture accord quite well with *their*
> evaluative notions, while the cognitive processes prevailing in our culture accord quite
> well with ours. (Stich, 1998, p. 107)

If such an "exotic culture" existed, Stich challenges, Western philosophy might need to re-consider the basis of its justification rules. Philosophers, psychologists, and educators might be interested to discover that East Asians do not favor logic as much as Westerners do, and favor intuitive reasoning processes to a greater extent than Westerners do.

The discovery of different injunctive norms about reasoning is also of great importance to those trying to improve cross-cultural understanding and international relations. Beyond Shweder's "mutual yuck" response, the existence of culturally different concepts of rationality can easily lead to frustration and mutual contempt. As countries try to join together in

international institutions such as the World Trade Organization (WTO), different understandings of good justification may cause problems. American lawyers in China have recently complained that Chinese administrative investigations do not meet WTO standards of transparent analysis: decisions, they say, are "generally unsubstantiated. The sources for the data on which they are ostensibly based are not identified. In many cases, no data is even cited… In cases that do cite actual data, findings are often inconsistent with that data" (Norton & Almstedt, 2003, p.27). One source of these shortcomings may be the different ideas about what is the most rational way to make a decision (e.g. perhaps common sense that does not require detailed defense), and consequently different social pressures placed on decision-makers. Knowledge of injunctive norm differences can help in understanding why some countries may fit in more quickly than others, and help increase a relativistic understanding of that phenomenon, as well as more effective interventions.

Interpersonality and Injunctive Norms for Reasoning

These studies also point out some important cross cultural similarities. There was evidence to suggest that cross-culturally, intuition and interpersonality go hand-in-hand, while rule-driven reasoning (such as logic) is seen as less appropriate in interpersonal situations. In Study 2, the Social ratings showed that Intuition-following was judged to be more social than rule-following by both cultures. Moreover, when no differences were found in how the cultures interpreted the interpersonality of the scenarios, there were also no cultural differences found in the relative evaluation intuition and logic (Study 1), or of the intuitive and rule-following actors (Study 2). When cultural differences in preference for logic over intuition did appear, they were accompanied by differences in perceptions of the "socialness" of the situations.

As discussed in the introduction, one way in which East Asian and Western societies have been most often compared is their characteristic ways of defining the individual in relation to others. A standard way of describing this difference has been in terms of the typical levels of "interdependent" and "independent" self-ways that are encouraged by collectivistic vs. individualistic cultures. What happens to a culture's reasoning when more situations involve the consideration of other people? Cross-culturally, intuition appears to be popularly accepted as a better, or at least more natural, method of interacting with others than is logic. An intuition-following actor, for example, is judged more positively by both cultures in our sample, *when* he/she is acting in an obviously interpersonal situation. This raises the question as to whether cultural differences in cognition are best construed as habits of thought internalized by individuals and cross situationally stable, or as the outcome of differential availability of interpersonal situations across cultures. Most likely, both processes jointly contribute to observed cultural differences, a question we leave for future research.

Limitations and Future Directions

Some limitations of our studies should be noted. First, although our ranking and scenario methodologies were chosen in order to reduce known response biases in cultural value research, they also have their own weaknesses. For example, it is possible that the cultural differences in logical, intuitive, and social were the side-effects of differences in the remaining 7 control trait items rated in Study 1 . However the results speak against this possibility,, as they were consistent with theoretical predictions, were replicated in Study 2, and were analyzed with non-parametric statistics. Secondly, the replication of Study 1's results in Study 2 would have been strengthened by the use of more scenarios, and a stronger logical-intuitive conflict. As a future direction of research, we would like to see these results replicated in studies with a larger

selection of scenarios, especially ones generated by participants from different cultures. We would also like to see study designs in which the mediating effects of both perceived interpersonality and culture on values for reasoning could be statistically parsed, allowing a more direct analysis of their potentially independent effects.

These studies are suggestive of what we believe is an important future path of cultural psychology: tracing the cognitive consequences of cultures back to specific elements of those cultures, and examining whether these elements may have similar effects on the cognition of people from any culture. In the context of these studies, we measured injunctive social norms, and showed how they can vary *within* cultures along the same vectors that also define salient differences *between* cultures. Human cognitive processes are embedded in a network of culturally-specific relationships between universal processes, perceptions of reality, cultural norms, and behavior. To better understand universal human behavior and thought, studies that seek to simultaneously examine both universal and culturally-specific aspects of cognitive strategies can give us a more subtle and valid view of the human mind.

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Appendix A: Scenarios & Items, Study 2

Interpersonal Scenario, Intuitive decision:

Fleet Bank has a company rule that when making hiring decisions, the decision must be based on the objective criteria of the candidate's amount of work experience, the strength of their recommendation letters, and how well they performed on some interview testing tasks. After the final round of interviews, J. has chosen A. and B. as the best candidates for the job. Both A. and B. did equally well in the interview tasks; they both have been working as account managers before; and they both came strongly recommended by past employers. However, B. has a stronger resume—B. has worked for several years longer than A. Nevertheless, during the interview, J. had a feeling that A. would be a better person for the job. *Therefore, despite the rule, J. offered A. the job.*

   Rule-Following Decision: last sentence was replaced with:

However, because of the rule, J. offered B. the job.

Impersonal Scenario, Intuitive decision:

In a meeting today at Jones & Jones Law Firm, two different ways to increase the quality of newly hired associates were being discussed. R. must decide which method to use next year. One way is to give training classes to the new associates. The second way is to use a certain test when hiring that will show who is most likely to succeed in the company. Testing takes less time than training, and both ways have been shown to be equally effective. It is also company policy to be efficient whenever possible, which favors testing. However, when

considering the two options, R. had a feeling that training is the better option. *Therefore,*

despite the rule, R. decides to choose training.

Rule-Following Decision: last sentence was replaced with:

Nevertheless, because of the rule, R. decides to choose testing.

13 items:

How much do you agree with R's decision?

How good do you think R's reason was for that decision?

How reasonable do you think R. is?

How good of a manager do you think R. is?

How much do you think you'd like R. as a friend?

How moral do you think R. is?

How logical do you think R. is?

How wise do you think R. is?

How social do you think R. is?

How competent do you think R. is?

How talkative do you think R. is?

How intuitive do you think R. is?

How intelligent do you think R. is?

Figure Captions

Figure 1. Rank of "sociable" by context and culture (Study 1). * = difference between bars significant to p < .001

Figure 2. Percent of participants ranking "logical" over "intuitive," by context and culture (Study 1). * = difference between bars significant to p < .001

Figure 3. Impersonal Scenario, Evaluative scale: Ratings of Intuition vs. Rule-Following Actors (Study 2). Culture predicted Evaluative ratings depending on the actor's choice.

Figure 4. Impersonal Scenario, Social scale: Ratings of Intuition vs. Rule-Following Actors (Study 2). Intuition-following actors were rated as more social than rule-following actors.
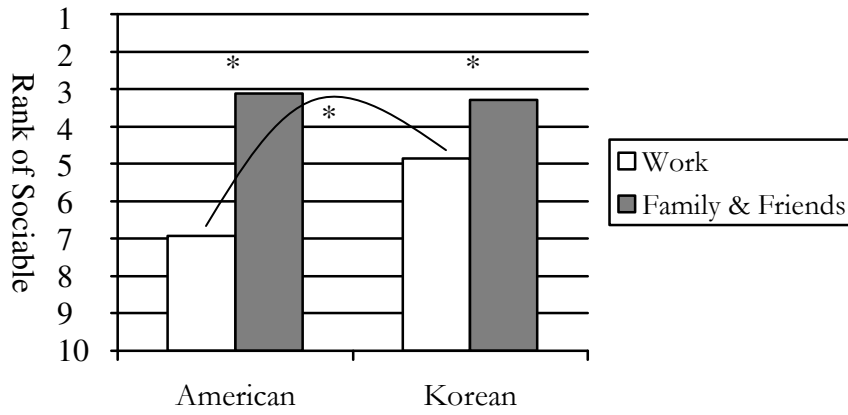
Figure 5. Interpersonal Scenario, Evaluative scale: Ratings of Intuition vs. Rule-Following Actors (Study 2). Intuition-following actors were rated more highly than rule-following actors.

Figure 6. Interpersonal Scenario, Social scale: Ratings of Intuition vs. Rule-Following Actors (Study 2). Intuition-following actors were rated as more social than rule-following actors.
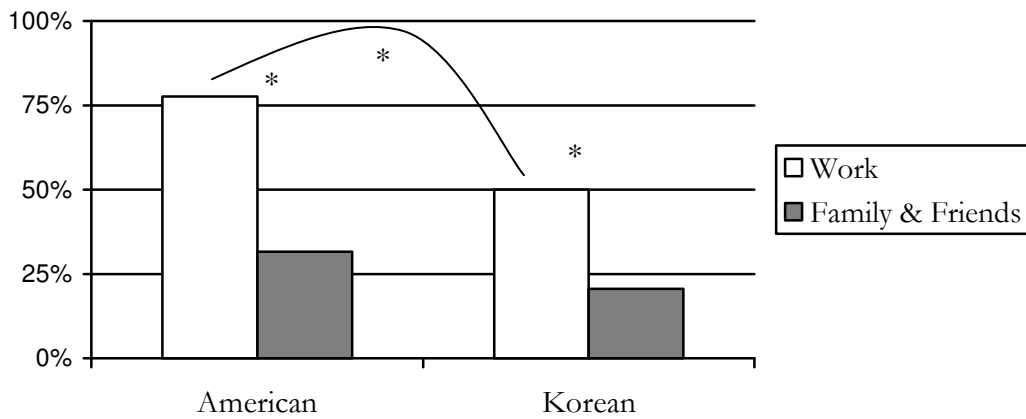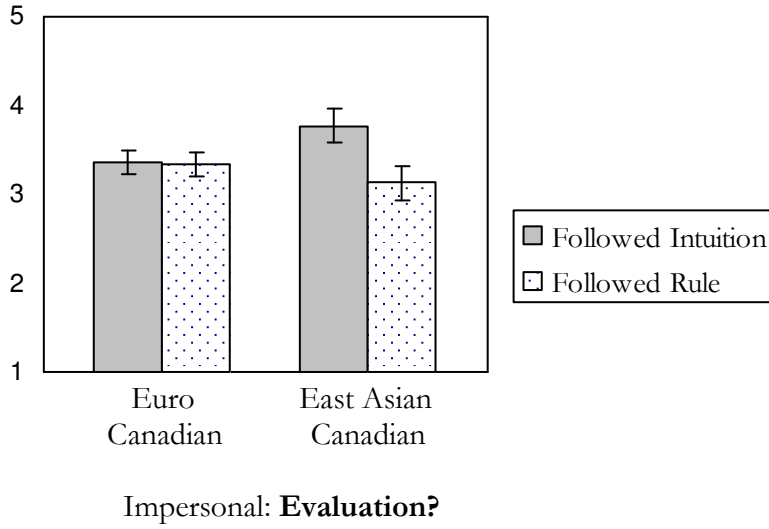
Figure 1:

Figure 2:

Figure 3:

Impersonal: **Evaluation?**
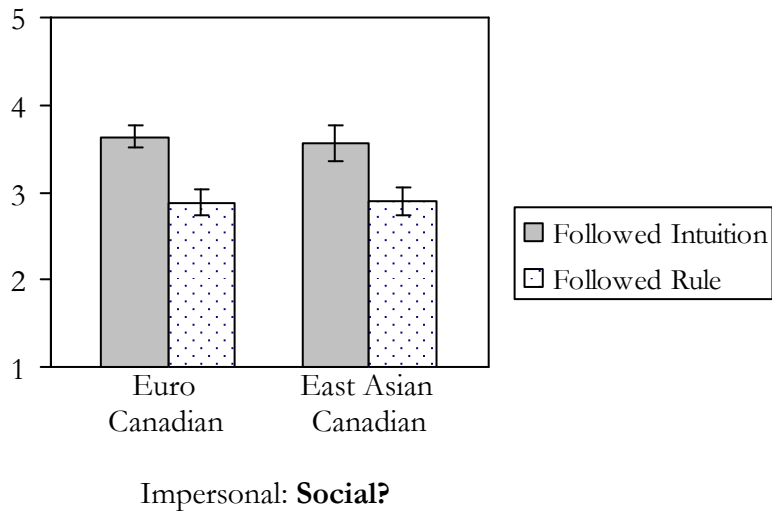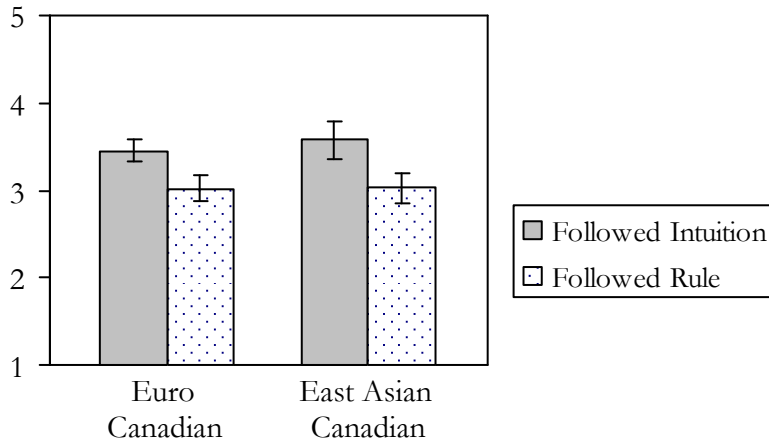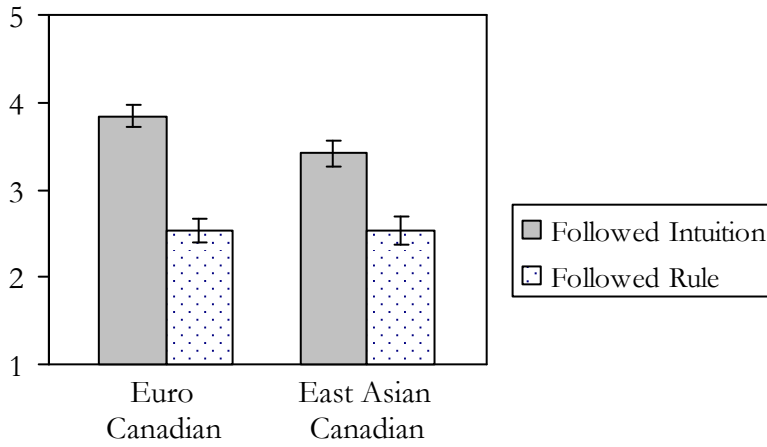
Figure 4:

Impersonal: **Social?**

Figure 5:

Interpersonal: **Evaluation?**

Figure 6:

Interpersonal: **Social?**