RULE-BASED VS. INTUITIVE REASONING:

CULTURE, REASONING STYLE, & VALUES

by

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Abstract

Are cultural differences in use of intuitive vs. analytical reasoning also reflected in social values? The results of the following studies show that East Asians are more likely to approve of an intuitive decision-maker than Westerners, suggesting that East Asian and Western differences in preference for intuitive vs. analytical reasoning are accompanied by different injunctive norms. These norms, however, are also shown to vary as a function of the interpersonality of the situation in both cultures. In this study, Euro- and East-Asian-Canadian undergraduates read scenarios of intuitive vs. rule-following business decisions. East Asian- and Euro-Canadians showed no differences in judging the intuitive decision-maker when the scenario was perceived by both cultures to be highly social. However, East Asians were more approving of an intuitive decision-maker than Euro-Canadians in a second scenario, which was perceived to be more social by East Asians than by Euro-Canadians. Findings suggest that culturally different cognitive tendencies may be reflected in cultural values, and that the root of these cognitive and value differences may lie in the number of situations that are perceived to be social and thus universally best solved by non-analytical means. We explore consequences for the understanding of the co-constitution of mind and culture, the influence of values on cross-cultural understanding, and philosophical debates on epistemic justification.

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Introduction

> Accuracy is abhorrent to the Oriental mind... The European is a close reasoner; his statements of fact are devoid of any ambiguity; he is a natural logician, albeit he may not have studied logic... The Oriental, on the other hand... his reasoning is of the most slipshod description... Endeavor to elicit a plain statement of facts from any ordinary Egyptian. His explanation will generally be lengthy, and wanting in lucidity. He will probably contradict himself half-a-dozen times before he has finished his story...
> -Lord Cromer, 1908, as quoted in *Orientalism* (Saïd, 1979, p. 38)

> Thus 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, because when a man holds an opinion it is easy enough for him, with his academic brain, to evolve arguments "a" "b" and "c" to his own satisfaction, and yet he may... fail to perceive what every [other] man could perceive...
> -Dr. Yutang Lin (1939, p. 88)

The idea that Asians are intuitive and holistic, while Westerners are logical and analytic, has a long and unfortunate history. Put in the words of historical British colonial rulers such as Lord Cromer, it can be made into an insulting and demeaning stereotype. And yet in the words of an overseas Chinese scholar such as Lin Yutang, it is the logical fellow—ignoring the whole picture in favor of his argument— who is ridiculous.

The damaging nature of the stereotypes held by Colonialists of Orientals may be connected to the high value of abstract, analytical reasoning held in Western societies. A person (such as a British colonialist) trained in the idea that analytical reasoning is *the* best way to go about making decisions may find a holistic way of reasoning frustrating and baffling. But might Asians believe that holistic reasoning is better than analytical reasoning, as much as Westerners believe the opposite?

Recent cultural psychology research has suggested that the analytic-Westerner-holistic-Oriental stereotype is not merely smoke without a fire (see Nisbett, 2003 for summary). But the controversially value-laden aspect of these stereotypes has not been studied. In the following paper, we examine both the possible proximal cause of this cultural difference, and the normative status of analytic and intuitive reasoning in East Asian and Western cultures. We hope that discovering that analytic or intuitive reasoning are not held in as high regard in other cultures may give pause to those who believe only in one or the other. We also hope that by finding a more specific cause than general "culture" for this difference, we can show how variability can and does exist in both cultures. These goals may help prevent that particularly damaging combination of beliefs associated with the analytic-holistic stereotype: first, that it is assumed to apply indiscriminately to all members of a group; and second, that it is a characteristic worthy of contempt.

Origins of Cultural Difference: Intuition and Interpersonality

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). Though evidence to support Lord Cromer's vitriol has not been found (e.g. Norenzayan et al. (2002) found no difference between Koreans' and Americans' abilities to solve abstract formal logic problems), in multiple studies, East Asians have shown a tendency

to use intuitive, experience-based reasoning more than Americans, while Americans have used rule-based and formal reasoning more habitually than do East Asians (Norenzayan et al., 2002).

Why do these differences exist? Cultural psychologists have suggested that reasoning mode differences are natural, organic outgrowths of particular forms of social organization (Nisbett et al., 2001). Different social practices are hypothesized to indirectly encourage the use of different cognitive processes, as a group's ecology, economy, and beliefs mutually influence each other and the cognitive tendencies of group members (see Nisbett, 2003, p. 33). These interacting layers of culture are hypothesized to have created a host of subtle cognitive differences between different cultures. In the case of East Asia and the West, these different cognitive styles have been collectively described by Nisbett et al. (2001) as "holistic" in East Asia and "analytical" in the West, including the intuitive vs. rule-based reasoning preferences described above.

Among those interacting layers that create cultural differences, can any particular dimension be identified that can account for the different tendencies in holistic vs. analytical modes of thought? As suggested by the extensive literature on the Individualism-Collectivism (IND-COL) [1] and Independence-Interdependence paradigms, one of the most salient ways East Asian and North American societies differ is in the relationships expected to exist between individuals and their social environment. A culture 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. Cultural differences in holistic-analytic modes of thought are theorized to be rooted in this social difference (Nisbett et al., 2001). For example, a greater need to retain

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[1] Individualism and Collectivism can be defined as follows: "Individualism frames even important group memberships as temporary and voluntary, whereas collectivism is characterized by the belief that fitting into groups is an important, inevitable part of being human." (Oyserman, Kemmelmeier, & Coon, 2002, p. 112)

social contacts or observe social rules (e.g. farmers vs. hunters, Orthodox Jews vs. secular Jews, more social vs. less social Americans) is correlated with a cognitive tendency to attend to context: evidence of a "holistic orientation to the world" (Nisbett et al., 2001, p. 303).

The causal relationship between collective/individualistic social structure 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 Interdependent self-construal, such as increased attention, memory, and processing speed for contextualized information (see Kühnen, Hannover, & Schubert, 2001; Kühnen & Oyserman, 2002; Oyserman, Coon, & Kemmelmeier, 2002 for review). East Asian subjects primed with Independent self-construal have also shown typically Western advantages in tasks that require ignoring context (Cha, Oyserman, & Schwarz, 2005).

In linking cognitive mode directly to (malleable) self-concept, these priming studies draw attention to an important new direction in cultural psychology research. While much past and recent research has focused on differences between cultural groups (thus importantly showing the cultural variability of basic psychological processes), these findings are dangerously easy to turn into cultural stereotypes. The priming studies instead highlight definable proximal causes of cognitive differences, and allow attention to shift to within-culture variability. But in regard to holistic and analytical cognitive modes, might Westerners and East Asians be affected by the same kinds of social pressures (and thus enter the same cognitive mode) in "real life," or only when experimentally primed?

The use of intuitive (holistic) reasoning, as well as situations in which careful attention must be paid to the social environment, are not unknown in Western societies. Intuition has traditionally been partially defined as 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.

Previous studies have shown that different cultures, and self-concepts that reflect those cultural differences, lead to different cognitive modes. But when does "priming" happen in real life? Would different *situations* that reflect cultural differences in IND-COL, but appear normally in both cultures, also encourage different cognitive modes? Oyserman et al. (2002), in their critique of current methods of studying the IND-COL concept, advocated a "focus on characteristics of situations and... how shifts in situations result in shifts in individual cognition, affect, and motivation" (Oyserman, Kemmelmeier et al., 2002, p. 115). In keeping with this "situated culture approach," the first hypothesis motivating the following research is that *situations* that vary in "interpersonality" (i.e., in the attention needing to be paid to the social environment) could cause cross-cultural variability in the use of intuitive vs. analytic reasoning. Even in the West, a holistic frame of mind might be preferred in situations that require more attention to others.

<div align="center">The Right Reasoning?</div>

Whether or not such a within-culture change could occur may depend on its social acceptability. In social norms terminology, the above research on analytic and holistic modes has shown that the *descriptive* norms— what people generally *do*— for reasoning styles are different in North American and East Asian cultures (Cialdini & Trost, 1998). Is this cultural

variance merely a habit of reasoning that is the indirect effect of different social structures? Or is it 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 "mutual yuck" response, "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). As illustrated by the two quotes above, a similar reaction might occur when two people use different modes of reasoning.

Potential cultural differences in social injunctive norms are important 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 can actually 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, indicating that injunctive norms (rather than descriptive norms) had 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; Fischer, 2005).

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 seen as 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).

Direct evidence that North American norms are in favor of analytic thinking is also surprisingly scant. Most directly, Tweed and Lehman (2002) summarized research showing that Western educators tended to disparage Chinese students' learning styles (which did not emphasize immediate questioning and analytical evaluation), accusing them of being "unwilling to think deeply" and "passive" (Tweed & Lehman, 2002, p. 93). Epstein et al.'s (1996) self-report scale of preference for analytic vs. intuitive modes simply used a Need for Cognition scale as a measure of analytic thinking, showing that the definition of the analytic mode as an interest in intellectual activity was uncontroversial in their eyes. Kahneman described people who use the intuitive mode of thought as "not accustomed to thinking hard" and found that they were also prone to "intolerance of delay and… cheating behavior," though he softens the blow by saying that "intuitive thinking can also be powerful and accurate" (Kahneman, 2003, p. 699).

The second purpose of the following study, then, was to examine whether or not different *norms* for particular reasoning styles do exist in East Asian and North American cultures.

Summary of Hypotheses

Cross-cultural understanding can be increased by a greater understanding of within-culture variability and universal processes, but can be adversely affected by different normative judgments of behavior. If intuition is more commonly used in situations needing greater interpersonal insight, might the interpersonality of a situation also affect the normative appropriateness of using an intuitive vs. analytic mode of reasoning, beyond the effect of culture? In the following studies, we simultaneously examine both the proximal situational causes of variation in cognitive modes, and cultural differences in injunctive social values about these modes.

Previous Study: Importance of Intuition vs. Logic

In a previous study, Norenzayan provided suggestive evidence for both hypotheses (Norenzayan, 2005). Korean and American subjects were asked to rank personality traits (including "intuitive," "logical," and "social") in order of importance to success in two contexts: a) at work and b) with family and friends. A comparison of ranks given to intuition vs. logic suggested that the American subjects held general pro-logic norms: in both the work and the family & friends contexts, Americans ranked logic higher than Koreans did. However, the relative interpersonality of the two contexts had cross-cultural effects on the ranks of logic and intuition. As they moved from the "work" to "family & friends" contexts, both cultures *reduced* the relative importance of logic to intuitive, and concurrently *increased* the importance of sociable. And in the family & friends context, in which both cultures judged sociable to be equally important, cultural differences in the *relative* rank of logic to intuitive

disappeared. When the cultural differences did appear, in the Work situation, there were also significant cultural differences in the perceived importance of sociability. This study implied that while Americans held logic to be generally more useful than Koreans did, both cultures adjusted their relative reasoning preferences in response to situational variability in interpersonality. Both one's culture and the interpersonality of the situation may be predictors of which type of reasoning is seen to be more important.

Current Study: Judgments of Intuitive or Rule-Following Others

Ranking the relative importance of logic and intuition for success does reflect their relative epistemic value, but it does not measure the pressure of social norms directly. How are people who do follow their intuition actually *judged* by others? In the following study, we sought to examine how culture and context might affect injunctive values: how one explicitly evaluates a person who follows intuition vs. rules when making a decision. An injunctive social norm is reflected in the judgments of those around us, who can indicate their approval or disapproval of a behavior. In this study, by recording participants' judgments of intuitive and analytical decision makers, we studied injunctive norms through the social pressure to engage in intuitive vs. analytical reasoning.

While 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 (thus ignoring following a company rule) or a rule-following decision (while patently ignoring an intuition). We hypothesized that 1) cultural background would significantly predict relative evaluations of intuitive vs. rule-following actors, with an expected pattern of East Asians preferring the intuitive actor over the rule-following actors, and North Americans the opposite; and 2) that

cross-culturally, the rule-following actor would perceived as less social than the Intuition-following actor, and the rule-following actor would be evaluated more highly in comparison to the intuition-following actor in the impersonal situation than in the interpersonal situation.

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 Canadians of European descent (20 men, 27 women) and 33 were of East Asian (29 Chinese, 4 Korean) descent who did not speak English at home (16 men, 17 women). For simplicity, these two cultural groups will be referred to as "Caucasians" and "East Asians" in the following summary.

Materials & 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"). The presentation order of scenario type and choice type was counterbalanced across participants; the combination of scenario type and choice type was also counterbalanced across participants. 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*). Note that because each subject saw both scenario types with a different choice-type ending, direct statistical analysis of choice type X scenario type questions (e.g. if there were interaction or main effects of choice and scenario type on actor evaluation) was not possible. The following results present the effect of choice type within scenario type, and the effect of scenario type within choice type.

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 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.

To summarize, each participant read two scenarios about a work decision and made judgments about the actor and his/her decision.

Results

Manipulation Check: Interpersonality. To check that our two scenarios did differ in the perceived interpersonalness of the decision being made, we conducted a pilot study of a comparable population of 18 Caucasian-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, Caucasian) 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, for each scenario separately,

a Culture by Gender univariate ANOVA revealed that the impersonal decision was perceived to be marginally more "interpersonal" by East Asians than by Caucasians, $F(1,35)=3.38$, p = .075, while there was no cultural difference in perception of the interpersonality of the "impersonal" scenario, $F(1,35)=1.771$, p = .19 (See Figure 1).

Manipulation Check: Intuition-following vs. Rule-following Choice. 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. Consequently, the results for this study 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[2]. Because our theory predicted that more social (interpersonal) situations would encourage the use of intuition, we were interested in how the actor's choice (to follow or not follow intuition) affected judgments of his/her sociability in the different scenarios. Additionally, we wanted a measure of participants' level of general approval of the actor, which would indicate how

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[2] These items, in the order listed in Appendix A, are labeled Agree, Reason Good, Reasonable, Good Manager, Friend, Moral, Wise, Social, Competent, Talkative, and Competent.

appropriate participants felt the use of intuition was in that scenario. We therefore 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 eigen values above 1.02[3]: Social (Friend, Social, Talkative & Wise) and Non-Social Evaluation (eigen values = 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) (see Table 1 for loadings). As can be seen, the items Wise and Moral had the least stable loadings. However, based on the theoretical significance of these items to evaluative judgment, we decided to include them in the Evaluative scale for both scenarios.

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

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[3] We chose this value because in the Interpersonal scenario it was found that Moral created a third factor on which only Moral loaded, and which had an eigenvalue of 1.016.

Impersonal Scenario:

Impersonal Scenario: Evaluative ratings. (See Figure 2) A Culture (East Asian, Caucasian) 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 Asians had more favorable judgments when the actor went with intuition, $t(30) = 2.40$, $p = .02$, while Caucasians 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 3) 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, $F(1,71) = 18.92$, $p <.001$.

Impersonal Scenario: Ratings of Individual items. (See Figure 4) We were particularly interested in cultural differences on three items that directly reflected value judgments regarding making intuitive vs. rule-following decision, asking how good the actor's reason (Reason Good) was, how reasonable (Reasonable) the actor was, and how wise (Wise) the actor was.

1. Wise. A Culture by Gender by Choice univariate ANOVA predicting Wisdom showed a significant interaction between Culture and Choice, reflecting a cultural difference in judgments of the actor's wisdom, $F(1,72) = 5.37$, $p = .02$. East Asians judged the intuition-

following actor as more wise than the rule-following actor, $t(31) = 3.02$, $p = .005$, and Caucasians again did not show any decision-related difference, $t < 1$.

2. Reason Good. A Culture by Gender by Choice ANOVA predicting Reason Good also showed a Culture by Choice interaction, $F(1,72) = 5.83$, $p = .02$, indicating that culture was a significant predictor of judgments of how good the reason ("because of the rule" vs. because of "having a feeling") for the decision was. East Asians showed a trend towards judging the intuitive reason to be better, $t(31) = 1.37$, $p = .18$, while Caucasians showed a trend towards finding the rule-following reason to be better, $t(45) = 1.56$, $p = .13$.

3. Reasonable. Finally, an ANOVA predicting Reasonable showed a near-significant trend towards a Culture by Choice interaction, $F(1,72) = 2.91$, $p = .09$; East Asians showed a trend towards finding the intuitive actor more reasonable, $t(31) = 1.31$, $p = .20$, and Caucasians did not show any difference, $t < 1$.

Interpersonal Scenario:

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.

Interpersonal Scenario: Rating of Individual items. Univariate Culture by Gender by Choice ANOVAs predicting Wise, Reason Good, and Reasonable, showed that across cultures and genders, the intuitive choice earned the actor higher ratings on Wise ($F(1, 72) = 20.02$, $p < .001$) and Reason Good ($F(1, 72) = 7.49$, $p = .008$) but not Reasonable ($F<1$).

The Effect of Scenario: To provide a more direct measure of whether increasing interpersonality was correlated with decreased liking for rule-following, we analyzed the effect of the scenario change (from interpersonal to impersonal) on Evaluation scale ratings of the rule-following and intuition-following actors, with Gender by Culture by Scenario ANOVAs predicting Evaluation.

Effect of Scenario: Rule-following actors. The ANOVA showed a cross-cultural trend that ignoring an intuition was judged more harshly in the interpersonal scenario than in the impersonal scenario, $F(1,75) = 2.363$, $p = .13$. There were no significant gender or culture effects; however, Gender by Scenario ANOVAs performed separately for each Culture showed that Caucasians' judgments were marginally less favorable in the interpersonal scenario, $F(1,43) = 3.60$, $p = .06$, while East Asians' judgments were not seen to change, $F<1$.

Effect of Scenario: Intuition-following choice. Evaluation of intuition-following actors was affected by gender and culture but not by the interpersonal / impersonal context. Scenario type did not have an effect on Evaluation of the intuition-following actor. Instead, there were significant main Gender ($F(1, 71) = 11.58$, $p = .001$; women gave higher evaluations than men) and marginal Culture ($F(1,71) = 3.55$, $p = .06$; East Asians gave higher evaluations than Caucasians) effects.

Discussion

Summary of Results

The described experiment provided support for both of our main hypotheses: that different cultures value intuitive vs. analytical reasoning differently, and that in both cultures, these differences may be linked with the interpersonal characteristics of a situation.

In regard to injunctive social norms, this study provides evidence that East Asians and Westerners may hold different values about the worth of intuitive vs. analytical reasoning. Evaluative ratings indicated that in the impersonal situation, culture was a significant predictor of how the actor's intuitive or rule-following choice was evaluated. In both scenarios, East Asian-Canadians gave an overall better evaluation to the intuition-following actor in comparison to the rule-following actor, while Caucasian-Canadians did not. Finally, across scenarios, East Asians gave a higher rating to the intuition-following actor than did Caucasians.

There was also evidence to suggest that cross-culturally, intuition and interpersonality go hand-in-hand, while analytical reasoning is less appropriate in less interpersonal situations. The Social ratings showed that Intuition-following was judged to be more social than rule-following by both cultures, and the Effect of Scenario analyses found that rule-following was judged marginally less favorably in the interpersonal scenario than in the impersonal scenario. 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 of the intuitive and rule-following actors: the interpersonal scenario was perceived to be equally interpersonal by both cultures, and concurrently cultural differences in preference for actors disappeared, with both cultures judging the intuition-following actor more favorably than the rule-following actor. When cultural differences in preference for actors did appear (in the

impersonal scenario), they were accompanied by differences in perceptions of the "socialness" of the situation: the "impersonal" scenario was perceived to be marginally more interpersonal by East Asians than by Caucasians, and only in that scenario were Caucasians less approving of the intuitive decision-maker than East Asians.

The importance of interpersonality for rationality

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. In a culture that encourages more "interdependence," members of an ingroup are typically seen as *part* of the self, while in a culture that encourages "independence," the self is ideally supposed to be separated and different from others. In cultures that differ on this general variable, situations in which you are attentive to others will be more likely to occur in "interdependent" societies. Conversely, situations in which you feel highly separated from others, or feel that others are simply not "part of the picture," will be more likely in individualistic societies.

What happens to a culture's reasoning, then, when more situations *do* involve the consideration of other people? 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 to be more wise, reasonable, and generally positively by both cultures in our sample, *when* he/she is acting in an obviously interpersonal situation. And in the words of our inimitable Dr. Lin, logic is not properly applied to the interpersonal: "Inductive reasoning,

carried over to human relationships (in which the Chinese are primarily interested) often results in a form of stupidity not so rare in American universities" (Lin, 1939, p. 85).

Culture in the mind: a habit or a malleable reaction to a variable?

The question of whether or not intuition and logic actually *are* better at determining how to make decisions in interpersonal situations is a complicated one, worthy of future research. However, this quote does suggest that the proximate cause of a preference for intuition over logic in East Asia may be traced to the greater number of "interesting" socially-important situations one is faced with in that culture, and vice-versa for Westerners.

But how malleable are these cultural preferences? This study suggests two potential explanations for why intuition might be more favored in the East than in the West. One might be that the different types of common situations (e.g. more or less need to pay attention to others) one experiences train one's reasoning *habits*, so that East Asians used to making interpersonal decisions apply intuition-favoring strategies more often across the board, while North Americans use intuition less often in general. Another explanation might be that rather than training an actual reasoning strategy to be more accessible, cultural experience has trained a certain aspect of situations to be more or less salient— namely the potential relationships affected by the situation— and that perception allows a universal process of interpersonality-intuition, impersonality-analysis to kick in. By this argument, the real reason North Americans prefer analysis may be because they don't feel that as many situations are as socially relevant as East Asians do. And as was suggested by our pre-test, East Asians may have been judging the contexts presented in our studies as more relevant to relationships than North Americans did.

These two explanations get at some fundamental debates in the field of cultural psychology theory. Is one's "culture" a unified, unravel-able object, causing certain habits of thought to be trained and crystallized in one's mind? Or are cultures composed of separable variables, such as the relative importance of social relationships, which can be placed on a continuum; can I be made to "think like an East Asian" by varying the salience of a culturally variable property of the situation, or by priming self-concept?   Comments by current theorists suggest that neither of these extremes is the full answer. Hong and colleagues have suggested a "dynamic constructivist" understanding of culture, emphasizing a culture X situation model like the personality model of Mischel & Shoda (Mischel & Shoda, 1995), where mean cultural differences will appear and disappear in different situations (Hong & Mallorie, 2004). Oyserman and colleagues (Oyserman, Kemmelmeier et al., 2002) advocated the use of six different approaches to studying culture, among which are the analysis of how culture affects one's construal of situations, as well as how changes in situations that "differ systematically in terms of their individualistic and collectivistic features" can change cognition (p. 115). Likewise, in opposition to an "entity" view of culture, Kitayama suggests a "system" view, which describes culture as a complex set of interacting and dynamic elements rather than a set of static beliefs that can be "programmed" into the mind (Kitayama, 2002). Kitayama and Morling's "situation sampling" research approach has suggested that culturally typical cognitions are encouraged by culturally typical situations; they suggest that both psychological tendencies and the relative number and interpretations of situations in each culture are jointly influential in creating mean cultural differences (Kitayama, Markus, Matsumoto, & Norasakkunkit, 1997; Morling, Kitayama, & Miyamoto, 2002). He suggests that "future research should focus on linking these aspects of sociocultural context to the psychological

tendencies they foster and maintain" (Kitayama, 2002, p. 95). Oyserman, whose interdependence-independence priming studies were summarized above, says that "Cultures differ, we speculate, in the number and kind of situations that evoke [individualistic and collectivist] construals, not in the consequences of these construals once they are evoked in proximal situations" (Oyserman, Kemmelmeier et al., 2002, p. 116)

Culture as variables inducing universal processes: throwing the baby out with the bathwater?

The study described in this paper appears to simultaneously tap into both culturally-different construals of situations (as more or less interpersonal) and a universal process invoked by those construals (more interpersonal = more intuition). But how strong is our evidence that this universal process actually going on? And by focusing on the universal process, are we ignoring important culture-specific effects on behavior?

The "universal process" argument rests on the existence of an automatic calculation of how interpersonal a certain situation is—therefore determining the amount of intuition permissible—occurring in the minds of people from both East Asian and Western cultures. It assumes that rather than holistic or analytical habits of reasoning existing *in* the mind, that they are for the most part on-line reactions to perceptions of interpersonality. In other words, while the interpretation of situations may be directly affected by culture, the habit of associating more social situations with more use of intuition is a universal process. In the terms used by Norenzayan & Heine (2005), this would be an "existential universal;" used more often in some cultures than others, but universally accessible when needed.

But it is also possible that it is in fact not universal at all? Research by Sanchez-Burkes and colleagues has suggested that cultural differences seen as a result of IND-COL, such as

analytic-holistic reasoning preferences, may be rooted in Western Protestant norms about work (Sanchez-Burks, 2002; Sanchez-Burks et al., 2003; Sanchez-Burks, Nisbett, & Ybarra, 2000). Specifically, this research has suggested that due to the influence of the Protestant Work Ethic, Americans may consider work situations as normatively impersonal, while East Asians may judge work and nonwork settings to be equally *inter*personal. It should not be surprising, then, that in our research, cultural differences in intuitive and analytical reasoning appeared in situations in which Euro-Canadians drew away from East Asian Canadians in how interpersonal the situation was perceived to be. But this research also suggests that the pressure to perceive certain situations as ones that *ought to be* impersonal, and (more importantly) in which one *ought* to use analytic reasoning, could be a recent Western invention rather than a universal process. It is possible that the injunctive norm to switch to an analytical mode when in an impersonal situation may be a product of the Protestant Ethic embodied in Western ideas about proper workplace environments, and held only by those exposed and assimilated into those beliefs. It would be unfortunate if independence-interdependence priming studies carried out in Western countries led cultural psychologists to think they were studying a "universal" phenomenon, if in fact it were only true in societies influenced by Western work norms.

The evidence for such an assertion is mixed. Though most interdependence-independence priming studies have been carried out in Western countries only, the Cha et al. poster (Cha et al., 2005) did show evidence that Koreans moved into an analytic cognitive mode after being primed with independent self-concept.[4] Also, in the logical-intuitive ranking study described above (Norenzayan, 2005), and in opposition to Sanchez-Burkes' findings,

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[4] One wonders if the independent prime (in this case, circling the pronoun "I" in a paragraph) could have been an exercise in analytic thinking itself. Kühnen et al. (2001) tested and rejected this possibility in Germans by showing that writing about the differences (vs. similarities) between oneself and others induced analytic thinking, while writing about the differences between cats and dogs did not. It would be nice, however, to replicate this in Korea. It seems odd that an analytic exercise does not help analytic thinking.

Koreans showed a similar pattern to Americans when comparing Work situations to Family situations: Work was seen as less social than Family, and intuition's importance correspondingly decreased in relation to logic. But in the new study described here, although East Asians did perceive the interpersonality of the situations to differ, an accompanying change in their evaluation of the intuitive actor did not occur (see *Effect of Scenario: Rule-following actors*).

It is very possible that the interpersonality manipulation in the current study was merely not strong enough to induce changes in our East Asian population; in fact, even the Euro-Canadian participants did not show as much anti-intuitive judgements as one might expect. However, it might also be the case that in real-life situations, an impersonal-analytic *injunctive* norm is not activated in traditional East Asian culture. The evidence for a direct social-intuition link in both cultures could use more support, especially in the realm of higher-level processes such as normative judgments of behavior. It is possible that while intuition may be a preferred method of reasoning in East Asia because there are more social situations, a lack of interpersonality may not therefore point to the use of an analytical cognitive mode. In the case of injunctive norms about analytic thinking, there may be culture-*specific* consequences to the *same* interpersonal construals. And if these injunctive norms affect decision behavior, then to consider culture as merely a collection of variables (such as level of interpersonality) that universally invoke the same cognitive modes will not explain human behavior as well as adding a consideration of the culture-specific aspects will.

The importance of injunctive norms about reasoning

Studying the higher-level aspects of culture, such as injunctive norms, that affect decisions is important for our psychologist goal of understanding human behavior. But it also has important implications for philosophy, and cross-cultural understanding.

There is ongoing debate within the discipline of philosophy about how to decide whether or not our truth-finding methods (e.g. logic) actually qualify as such. 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 simply 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 other cultures have other common core ideas?

> 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. Would any of this be of any help at all in deciding which cognitive
> processes we should use? (Stich, 1998, p. 107)

If such an "exotic culture" existed, Stich challenges, Western philosophy would be in a rather tight spot. We propose that philosophers might be very interested to discover that East Asians find logic mildly ridiculous.

The discovery of different injunctive norms about reasoning is also of great importance to those trying to improve cross-cultural understanding and international relations. As the two quotes at the beginning of this paper imply, 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), arguably an organization whose rules are based in Western values, different understandings of good justification may cause problems. Even now, international lawyers in China are complaining

that Chinese legal investigations do not at all 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). If one source of these shortcomings is different ideas about what is the most rational way to make a decision (e.g. perhaps common sense that does not require detailed defense), then if the WTO wishes to keep its idea of how best to determine truth, it may need to go into a bit more detail about why others should change theirs. 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.

Limitations

Some important limitations of this one study should be noted. The study would have been strengthened by the use of more scenarios, a stronger logical-intuitive conflict, and a design that allowed for more kinds of statistical analysis.

First, though we tried to determine through pre-testing that the only important way the two scenarios differed was in the importance of personal relations, the two scenarios happened to differ in several other ways (e.g. one was in a bank, the other in a law firm; one would affect only one person, the other would affect many people; etc.). Without having shown that the effect of interpersonality generalizes over several scenarios with other kinds of similarities and differences, it is difficult to rule out other possible causal factors.

Secondly, it would have been better if the scenarios had involved a more clear logical decision to contrast with the intuitive decision. "Rule-following" is not necessarily logical, and

this was reflected in participants' ratings of the rule-following actor as not always being more logical than the intuition-following actor. In the future, more clear conflicts between logic and intuition would make a stronger test of cultural differences in preference for logical vs. intuitive methods of making decisions.

Thirdly, to better make our argument that it was the *change* in the interpersonality of the scenarios that led to cultural differences in one and not the other, it would have been best to have collected the data in a way that allowed us to directly show its mediating effect. For example, if we had asked the same subjects for the scenario's ratings of interpersonality and their ratings of the actors, a mediation analysis could have been performed to see if subjects who rated the scenarios as highly interpersonal also rated the rule-following actor less favorably. Also, if the study had been fully between-subjects, we could have tested (with a Culture by Choice by Scenario ANOVA) how the scenarios affected evaluation of the actors. Though we attempted to perform such an analysis by throwing away half of the data (i.e. the second scenario each participant read) from this experiment, the small and uneven number of subjects in each cell (from 6 to 14) made the analysis uncertain.

Though the scenario methodology has the advantage of reducing known response biases in cross-cultural values research (Peng, Nisbett, & Wong, 1997), and though it mirrored the findings found in previous studies (e.g. Norenzayan, 2005), it would be nice 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.

Future directions & Conclusion

The study we have described in this paper is suggestive, but replication would be valuable. More research is needed to establish both the existence of different injunctive norms about the use of intuitive and analytical reasoning strategies, and the link between impersonality and analytical reasoning. More specific studies about the best methods of finding "truth" might shed more light on the question of interest for philosophers, as would studies of the injunctive norm pressures on East Asian judges and decision-makers for the question of interest to international lawyers. Situation-sampling of intuitive and analytic decisions in different cultures might show cultural differences and similarities, e.g. if most intuitive decisions are interpersonal, or if Chinese intuitive decisions are seen as irrational by North Americans. Priming of interdependent vs. independent self-concepts in multiple cultural groups could show if those self-concepts universally lead to differences in injunctive norms about reasoning, or if changes in those norms are a specifically Western phenomenon. These studies should be designed to allow us to capture both the universal and the culturally specific psychological characteristics of humankind.

This study partially supports a more situational, variable-like conception of how culture affects the mind. However, we also hold that the different properties on which cultures vary may not be able to be defined in the simplistic way presented above. Instead, the cognitive processes we use 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, therefore, a more subtle and context-affected view of cultural variance is needed. However, studying the particular patterns of how cognitive processes interact with each other in different cultures is also important, and should not be

ignored as a possible source of behavioral explanation. A combination of studies that seek to vary "culture" on a continuum and at the same time measure how the relationships between different cognitive strategies are changed by this continuous variable— strategies like constellations of stars whose relationship to each other shifts and changes as they are pulled by a situational magnet— will give us a much more subtle and valid view of how mental processes and cultural variables interact in the human mind.

References

Azar, O. (2004). What sustains social norms and how they evolve? The case of tipping, *Journal of Economic Behavior Organization* (Vol. 54, pp. 49).

Bardi, A., & Schwartz, S. (2003). Values and behavior: Strength and structure of relations. *Personality and Social Psychology Bulletin, 29*(10), 1207-1220.

Cha, O., Oyserman, D., & Schwarz, N. (2005). *Turning Asians into Westerners: Priming an independent self-construal in Korea II.* Paper presented at the annual meeting of the Society for Personality and Social Psychology, New Orleans, LA.

Cialdini, R. B., & Trost, M. R. (1998). Social influence: Social norms, conformity and compliance. In D. T. Gilbert & S. T. Fiske (Eds.), *Handbook of Social Psychology* (4 ed., Vol. 2, pp. 151-192). New York, NY, US: McGraw-Hill.

Epstein, S., Pacini, R., Denes-Raj, V., & Heier, H. (1996). Individual differences in Intuitive-Experiential and Analytical-Rational thinking styles. *Journal of Personality and Social Psychology, 71*(2), 390-405.

Fischer, R. (2005). *My values or my culture's values? The importance of referent choice for cross-cultural comparisons*, Manuscript submitted for publication.

Hong, Y.-Y., & Mallorie, L. A. M. (2004). A dynamic constructivist approach to culture: Lessons learned from personality psychology. *Journal of Research in Personality, 38*(1), 59-67.

Kahneman, D. (2003). A perspective on judgment and choice: Mapping bounded rationality. *American Psychologist, 58*(9), 697-720.

Kallgren, C. A., Reno, R. R., & Cialdini, R. B. (2000). A focus theory of normative conduct: When norms do and do not affect behavior. *Personality and Social Psychology Bulletin, 26*(8), 1002-1012.

Kitayama, S. (2002). Culture and basic psychological processes--toward a system view of culture: Comment on Oyserman et al. (2002). *Psychological Bulletin, 128*(1), 89-96.

Kitayama, S., Markus, H. R., Matsumoto, H., & Norasakkunkit, 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*(6), 1245-1267.

Kühnen, U., Hannover, B., & Schubert, B. (2001). The semantic-procedural interface model of the self: The role of self-knowledge for context-dependent versus context-independent modes of thinking. *Journal of Personality and Social Psychology, 80*(3), 397-409.

Kühnen, U., & Oyserman, D. (2002). Thinking about the self influences thinking in general: Cognitive consequences of salient self-concept. *Journal of Experimental Social Psychology, 38*(5), 492-499.

Lin, Y. (1939). *My country and my people.* New York: The John Day Co.

Liu, S. H. (1974). The use of analogy and symbolism in traditional Chinese philosophy. *Journal of Chinese Philosophy, 1*, 313-338.

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*(5), 922-934.

Mischel, W., & Shoda, Y. (1995). A cognitive-affective system theory of personality: Reconceptualizing situations, dispositions, dynamics, and invariance in personality structure. *Psychological Review, 102*(2), 246-268.

Morling, B., Kitayama, S., & Miyamoto, Y. (2002). Cultural practices emphasize influence in the United States and adjustment in Japan. *Personality and Social Psychology Bulletin, 28*(3), 311-323.

Nagashima, N. (1973). Reversed world: or is it? In R. H. R. Finnegan (Ed.), *Modes of Thought: Essays on Thinking in Western and Non-Western Societies* (pp. 92-111). London: Faber & Faber.

Nisbett, R. E. (2003). *The Geography of Thought*. New York: The Free Press.

Nisbett, R. E., Peng, K., Choi, I., & Norenzayan, A. (2001). Culture and systems of thought: Holistic versus analytic cognition. *Psychological Review, 108*(2), 291-310.

Norenzayan, A. (2005). [Ranking study: Importance of intuitive vs. logical, at work and at home]. Unpublished raw data.

Norenzayan, A., & Heine, S. J. (2005). *Psychological Universals: What are they and how can we know?*, Manuscript submitted for publication.

Norenzayan, A., Smith, E. E., Kim, B. J., & Nisbett, R. E. (2002). Cultural preferences for formal versus intuitive reasoning. *Cognitive Science, 26*(5), 653-684.

Norton, P., & Almstedt, K. (2003). China joins the trade wars. *The China Business Review, January-February 2003,* 22-42.

Oyserman, D., Coon, H. M., & Kemmelmeier, M. (2002). Rethinking individualism and collectivism: Evaluation of theoretical assumptions and meta-analyses. *Psychological Bulletin, 128*(1), 3-72.

Oyserman, D., Kemmelmeier, M., & Coon, H. M. (2002). Cultural psychology, a new look: Reply to Bond (2002), Fiske (2002), Kitayama (2002), and Miller (2002). *Psychological Bulletin, 128*(1), 110-117.

Peng, K., Nisbett, R. E., & Wong, N. Y. C. (1997). Validity problems comparing values across cultures and possible solutions. *Psychological Methods, 2*(4), 329-344.

Reno, R. R., Cialdini, R. B., & Kallgren, C. A. (1993). The transsituational influence of social norms. *Journal of Personality and Social Psychology, 64*(1), 104-112.

Saïd, E. W. (1979). *Orientalism*. New York: Vintage Books.

Sanchez-Burks, J. (2002). Protestant relational ideology and (in)attention to relational cues in work settings. *Journal of Personality and Social Psychology, 83*(4), 919-929.

Sanchez-Burks, J., Lee, F., Choi, I., Nisbett, R. E., Zhao, S., & Koo, J. (2003). Conversing across cultures: East-West communication styles in work and nonwork contexts. *Journal of Personality and Social Psychology, 85*(2), 363-372.

Sanchez-Burks, J., Nisbett, R. E., & Ybarra, O. (2000). Cultural styles, relationship schemas, and prejudice against out-groups. *Journal of Personality and Social Psychology, 79*(2), 174-189.

Shweder, R. A. (2000). The psychology of practice and the practice of the three psychologies. *Asian Journal of Social Psychology, 3*(3), 207-222.

Sloman, S. A. (1996). The empirical case for two systems of reasoning. *Psychological Bulletin, 119*(1), 3-22.

Stich, S. (1998). Reflective Equilibrium, Analytic Epistemology and the problem of cognitive diversity. In M. R. DePaul & W. Ramsey (Eds.), *Rethinking Intuition: the psychology of intuition and its role in philosophical inquiry*. Lanham, MD: Rowman & Littlefield.

Tweed, R. G., & Lehman, D. R. (2002). Learning considered within a cultural context: Confucian and Socratic approaches. *American Psychologist, 57*(2), 89-99.

Appendix: 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?

Table 1: *Factor-loadings of the Social and Evaluative (Non-Social) Items, by scenario*

Item	Interpersonal Scenario		Impersonal Scenario	
	Evaluative	Social	Evaluative	Social
How much do you agree with R's decision?	**.63**	.46	**.65**	.42
How good do you think R's reason was for that decision?	**.79**	.31	**.80**	.00
How reasonable do you think R. is?	**.86**	-.14	**.80**	.22
How good of a manager do you think R. is?	**.76**	.36	**.73**	.38
How competent do you think R. is?	**.77**	.16	**.68**	.14
How intelligent do you think R. is?	**.63**	.36	**.63**	.34
How moral do you think R. is?	**.42**	.12	.32	**.40**
How wise do you think R. is?	.34	**.58**	**.78**	.28
S How much do you think you'd like R. as a friend?	.43	**.71**	.25	**.80**
S How social do you think R. is?	.15	**.87**	.17	**.85**
S How talkative do you think R. is?	.00	**.82**	.13	**.73**
Eigenvalue	5.14	1.58	5.21	1.34

Figure Captions

Figure 1. Pilot study: Cultural perceptions of Interpersonality of each scenario (-2, very impersonal; +2, very interpersonal).

Figure 2. Impersonal Scenario, Evaluative scale: Ratings of Intuition vs. Rule-Following Actors (Study 2). Culture predicted Evaluative ratings depending on the actor's choice (p = .04).

Figure 3. 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 4. Impersonal Scenario, items Wise, Reason Good, & Reasonable: Ratings of Intuition vs. Rule-Following Actors (Study 2). Culture predicted ratings of actor's wisdom (p = .02), how good the actor's reason was (p = .02) for the choice, and how reasonable the actor was (p = .09).

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.
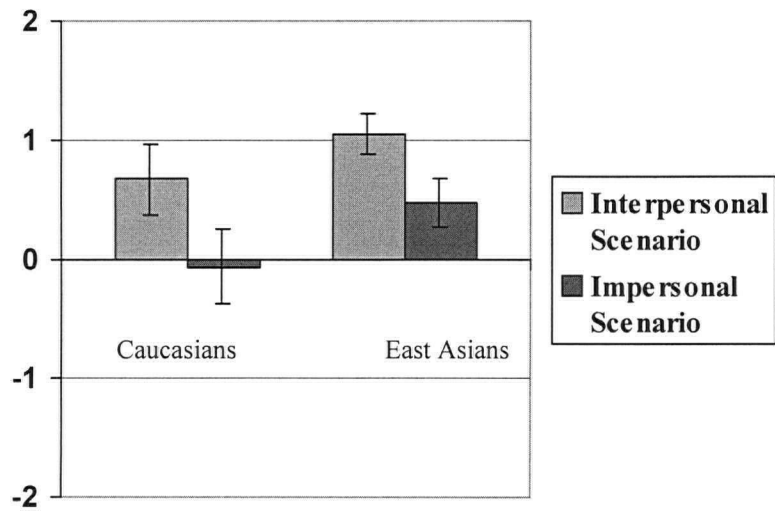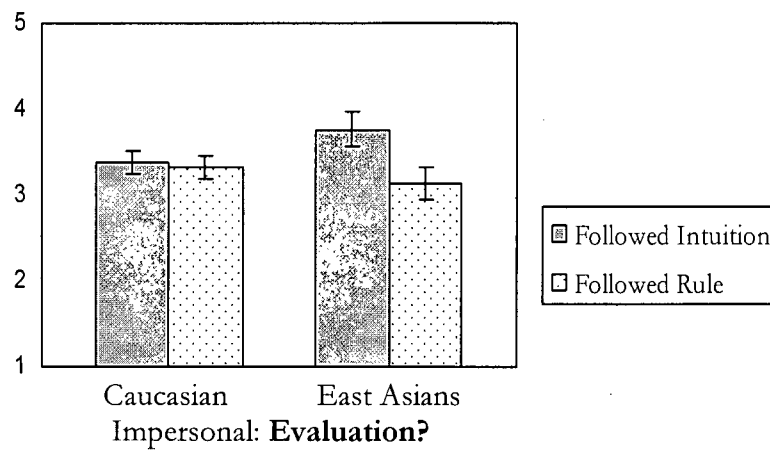
Figures:

Figure 1

:

Figure 2

:

Caucasian   East Asians
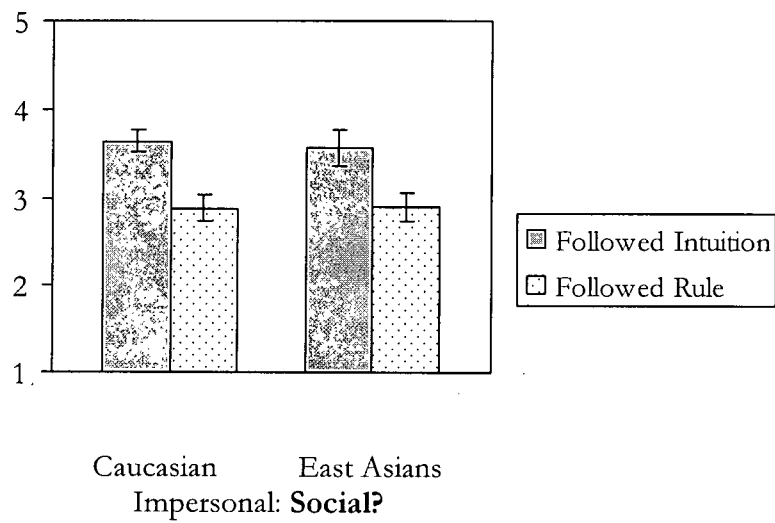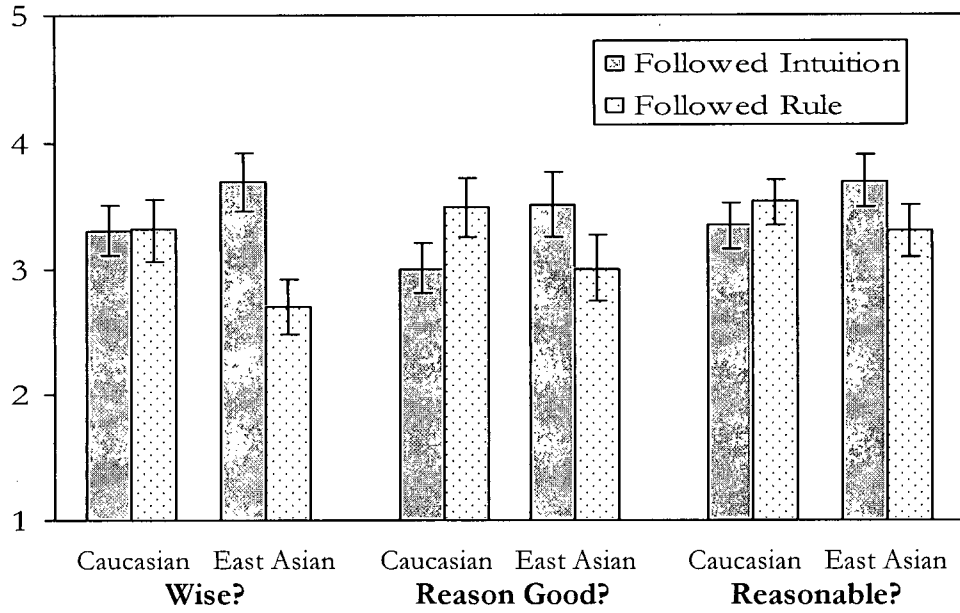Impersonal: **Evaluation?**

Figure 3

:

Caucasian   East Asians
Impersonal: **Social?**

Figure 4:

Figure 5:

Figure 6:

Interpersonal: **Social?**