

# Cultural differences in risk: The group facilitation effect

Do-Yeong Kim\* and Junsu Park

School of Business Administration, Ajou University, South Korea

## Abstract

We compared South Koreans with Australians in order to characterize cultural differences in attitudes and choices regarding risk, at both the individual and group levels. Our results showed that Australians, when assessed individually, consistently self-reported higher preference for risk than South Koreans, regardless of gender. The data revealed that South Koreans, regardless of gender composition, were willing to take greater risks when making decisions in group decision-making situations than when they were alone. This is a different pattern from that seen in the Australian sample, in which a risky shift was noted only among males. This difference was attributed to the influence of various cultural orientations (independent vs. interdependent relationship styles). This study also provides a discussion of the implications of these results in terms of cultural differences in attitudes and decisions regarding risk.

Keywords: risk, risky shift, decision-making, group facilitation, collectivism, individualism, culture, cultural differences, group polarization.

## 1 Introduction

It has been frequently observed, and generally accepted, that males are more likely than females to engage in risk-taking behaviors. Males participate more frequently than females in a variety of risky activities, including drinking alcohol and smoking (Korea National Statistical Office [KNSO], 2006). Road traffic mortality rates are higher for males than females (Road Traffic Authority [RTA], 2006). Similar patterns in road traffic accidents have been noted in the Americas, Europe, Asia, and Africa (World Health Organization [WHO], 2002; WHO, 2005). Consistent with these observed phenomena, a meta-analysis of 150 studies of risk-taking has also suggested the existence of reliable gender differences in self-reported behavior, hypothetical choice, and observed behaviors, although the magnitude of Cohen's effect size was relatively small for each category ( $d=.12$ ,  $.15$ , and  $.19$ , respectively — see Byrnes, Miller, & Schafer, 1999) and

there is some variation from category to category (Harris, Jenkins, & Glaser, 2006).

In this study, we have attempted to determine, from a cross-cultural perspective, the manner in which the attitudes and choices regarding risk<sup>1</sup> made by collectivists — specifically, South Koreans — differ from those of individualists — in this case, Australians — at both the individual and group levels. More specifically, we compare the patterns of gender differences in group situations between a collectivist culture (South Korea) and an individualist culture (Australia).

### 1.1 Gender differences in risk-taking in group situation

Thus far, research into individual-level behaviors and attitudes has not always accurately reflected many real-life situations, where risky choices or behaviors can be made in groups via interactions with other male or female group members (e.g., at the level of families, organizations, or nations; Bornstein, Kugler, & Ziegelmeyer, 2004). Furthermore, inferences regarding gender differences in risk-taking at the group level cannot consistently be drawn from individual-level observations, as groups behave differently from individuals across a variety of research situations, including cooperation and

\*This work was supported by a National Research Foundation of Korea Grant funded by the Korean Government (NRF-2007-332-H00040), awarded to the first author, and partially by a grant from the Ajou University Excellence Research Program in 2009, which was awarded to the first author. The authors gratefully acknowledge Jonathan Baron, two anonymous reviewers, and Dongchul Won for their insightful comments on earlier versions of this manuscript. We would also like to thank the members of the Center for Interdisciplinary Research in Business and Psychology and Global Management for their invaluable assistance in the completion of this research. These data were presented at the 117th Annual Conference of the American Psychological Association, Toronto, Canada, in August, 2009. Address: Do-Yeong Kim, School of Business Administration, Ajou University, San 5, Wonchun-Dong, Yeongtong-Gu, Suwon, South Korea, 443-749. Email: kimd@ajou.ac.kr.

<sup>1</sup>We used Leigh's (1999) definition of "risk/risk-taking" as those behaviors involving some potential for danger while also providing an opportunity to acquire some form of reward. These two attributes suggest that an individual's risk/risk-taking evaluations do not necessarily occur along a single bipolar dimension (e.g., gain *or* loss) but may instead be subject to multiple modes of evaluation (e.g., gain *and* loss).

competition (Wildschut, Pinter, Vevea, Insko & Schopler, 2003; Gong, Baron, & Kunreuther, 2009), trustworthiness (Bornstein, Gneezy, & Nagel, 2002), and uncertainty (Sniezek, 1992). Even from this brief review, it is clear that decisions concerning risk, as in many other topics of research, will evidence a different pattern of results when assessed at the group level, as compared to the individual level.

To determine how group contexts affect gender differences in the propensity to take risks, Ronay and Kim (2006) examined a Western sample (i.e., Australians) and suggested that gender differences in choices involving risk may be selectively facilitated in gender-homogeneous group situations. Using choice dilemma items involving hypothetical risk scenarios, Ronay and Kim found no real gender differences between Australian males and females at the individual level; however, when Australian males engaged in group decision-making with other males, they manifested stronger pro-risk choices than females. Put another way, as compared to Australian females, Australian males evidenced group-facilitation in risk taking. Group-facilitation refers to the tendency of group members to increase the extremity of their position after the discussion of a relevant issue (Moscovici & Zavalloni, 1969) in a group situation. The authors explained this gender difference in terms of the social identity theory (Tajfel, 1982). Specifically, on the basis of stereotypical, in-group norms — masculinity in particular — males derive a sense of belonging and esteem from their membership in groups, which is likely to result in greater risk-taking. Conversely, females were motivated to derive a sense of belonging and esteem from group membership by avoiding risk decisions based on their in-group norms (i.e., femininity), which stereotypically devalue risk-taking. The result of this phenomenon is lower levels of risk-taking relative to male-only groups. Accordingly, this finding demonstrates that gender differences in attitudes and behaviors towards risk appear to result from differentially accentuated in-group norms within each gender.

## 1.2 Is the group facilitation effect on gender differences in risk-taking the same across cultures?

Despite the intriguing results, they might not be completely generalizable; in short, the differential effects of group-facilitation on gender observed in an individualist cultural group (i.e., Australians) may not manifest themselves in a collectivist cultural group (e.g., South Koreans). This is because cultural orientations, and by extension group tendencies and behaviors, may differ between individualists and collectivists. For instance, it has been demonstrated in some previous studies that cultural dif-

ferences in interpersonal relationships between individualism and collectivism may affect the extent to which group members make risky decisions under conditions of uncertainty (Hofstede, 1981; Triandis, Bontempo, Villareal, Asai, & Lucca, 1988). One particular emphasis within the individualist value system that may play a crucial role in group decision-making is that unique ideas and expressions are regarded as individuating acts which support the drive towards independence; this ultimately attenuates similarity or cohesion between individual decisions, and discourages the adjustment of the self in order to conform to social considerations (Hofstede, 1981; Markus & Kitayama, 1991; Triandis et al., 1988; Suh, 2002). On the basis of such an independence-oriented interpersonal relationship, individualists who make risky decisions tend to be personally responsible for the potentially negative consequences of their own decisions (Weber & Hsee, 1998). Furthermore, personal attributes such as masculinity or femininity could differentially affect the risk choice structure, such that group situations cause males to make more risky decisions and cause females to make fewer risky decisions.

*Contra* individualist cultures, close relationships between the self and others through similarity, imitation, and shared values are more often expected and more frequently experienced in collectivist cultures (Markus & Kitayama, 1991). In collectivist cultures, the emphasis is placed on attending to others' opinions, fitting in with group decisions, and maintaining cohesion/conformity with group members (Hofstede, 1981; Markus & Kitayama, 1991; Triandis et al., 1988). Furthermore, the belief that group members' decisions are superior to individual decisions is more predominant in collectivist cultures than in individualist cultures (Darwish & Huber, 2003). One aspect of research deriving closely from such concepts is the widely performed line-judgment task (Asch, 1956). A meta-analysis of results across cultures has shown that, relative to individualist cultures, collectivists tend to evidence a greater propensity to conform to perceived unanimous group decisions (Bond & Smith, 1996), thereby suggesting that cultural forces may account for differences in individual decision-making. Such cultural drives toward unanimity and cohesiveness are consistent with the expectation that individuals will align themselves to maintain conformity with prevailing social norms. In some collectivist cultures, including South Korea, this alignment is regarded as a basic and necessary skill (e.g., *nunchi* in South Korea, Choi, 2000); informally, South Koreans with insufficient *nunchi* may be subject to criticism. These cultural characteristics, which underlie interdependence-oriented interpersonal relationships, could result in close social networks on which collectivists may rely when they need support. However, a

diffusion of responsibility may in turn arise as a consequence of such close social relationships (Wallach, Kogan, & Bem, 1964), and might also result in negative consequences for the group when decisions are made at the group level. The closeness between group members may attenuate group members' perceptions of risk, thereby resulting in greater risk-taking by members in group decision-making situations than when alone, which is highly salient to the social expectations of a collectivist culture.

Considering that the gender differences in choices towards risk noted among Australians were facilitated by gender-homogeneous group situations, we attempted to determine whether this observation could be replicated with collectivists — in this case, South Koreans. Specifically, we hypothesized that regardless of gender composition, the decisions made by South Korean males and females would be more risky in group situations than in individual situations. That is, the interdependent relationships typically expected of South Koreans would lead group members to pressures such as conformity and to changes in individual risk perception through the diffusion of responsibility, which would naturally result in more risk-taking opportunities.

### 1.3 The present study

The principal objective of this study was to evaluate cultural differences in attitudes and hypothetical decisions regarding risk at both the individual and group levels. We hypothesized that, unlike in the Australian data (Ronay & Kim, 2006), the group-facilitation effect would be noted in both South Korean males and females.

Furthermore, we added an extra experimental group — a mixed-gender group — to the two homogeneous male and female groups employed in the Australian study, in order to determine whether the group facilitation effect would emerge when males and females were allocated to the same group (i.e., a mixed-gender group). A previous study conducted in a Western country has shown that when a female is in the car, males tend to drive slower and leave a larger distance between themselves and the car in front of them (McKenna, Waylen, & Burkes, 1998). This evidence indirectly suggests that, in an individualist culture, a mixed-gender group may not show any group facilitation effects. By way of contrast, we hypothesize that in South Korea the tendency of groups to make more risky decisions in group decision-making situations should be observed in a mixed-gender group, primarily as the result of salient collectivist social norms such as conformity in group decisions.

## 2 Method

### 2.1 Participants

A total of 284 students (age  $M=22.73$ ,  $SD=2.20$ ) attending a co-ed private university in South Korea participated in this study in exchange for course credit. 31 males and 35 females were randomly assigned to two independent individual control conditions<sup>2</sup> (i.e., male individuals and female individuals); in both groups, the individuals encountered no group manipulation. 64 males and 74 females were randomly assigned to two independent same-gender experimental group conditions (i.e., a group size of three to four;<sup>3</sup> 17 male-only groups and 20 female-only groups). 40 males and 40 females were combined to create a mixed-gender group condition; that is, two males and two females were allocated to a mixed-gender group (i.e., a group size of four; 20 groups of two males and two females in total).

### 2.2 Procedure overview

*Pre-test.* All participants were first instructed to complete a demographic questionnaire. Afterward, they filled out several self-reported risk measures (e.g., semantic differential scales [RG-SDS and RU-SDS] and a Choice Dilemma Questionnaire [CDQ]).

*Manipulation.* In the experimental manipulation, participants in the group situation were instructed to engage in face-to-face group discussions to collectively discuss six hypothetical risk scenarios in the CDQs they individually completed in the pre-test phase, and to reach a group consensus on all six of the presented scenarios within 10 minutes (i.e., post-test). In the individual situation (i.e., control group), the participants did not engage in a group discussion and did nothing for 10 minutes, after which they again read and responded individually to the CDQ (i.e., post-test) in their respective booths.

### 2.3 Risk measures

(1) The Risk Global-Semantic Differential Scale (RG-SDS) (as used in Ronay & Kim, 2006; Cronbach's  $\alpha=.90$  in this study) is a self-reported attitudinal measure that evaluates participants' evaluations on a global construct of risk (i.e., RISK) by checking one of seven points on scales that were anchored at the ends by bipolar pairs of adjectives: loss/gain, mistake/success, penalty/benefit, waste/achieve, loss/reward, cost/profit, and failure/win.

<sup>2</sup>For the purpose of the group-level statistical analyses, we grouped three to four participants in the individual (male and female) control condition into a group, who attended the experiment in the same session ( $N=10$  groups for male,  $N=11$  groups for female).

<sup>3</sup>Group size varied from 3 to 4, because in some groups a participant did not show up at the prescheduled experimental session.

Table 1: Cultural differences in risk attitudes and risk choices between Australians and South Koreans in the pre-test.

Measures	Male		Female	
	Australian (N=66)*	South Korean (N=135)	Australian (N=60)	South Korean (N=148)
RG-SDS	4.87 (1.00)	3.90 (1.31)	4.42 (1.21)	3.41 (1.28)
RU-SDS	3.72 (1.05)	3.24 (1.01)	3.33 (1.10)	3.05 (1.02)
CDQ	32.16 (7.72)	37.65 (7.35)	33.53 (6.67)	36.49 (6.94)

*Note.* The values outside the brackets represent means, and the values inside the brackets indicate standard deviations. RG-SDS=Risk Global-Semantic Differential Scale; RU-SDS=Risk Unique-Semantic Differential Scale; CDQ =Choice Dilemma Questionnaire. Higher scores on the RG-SDS and RU-SDS indicate a more positive attitude towards risk. Lower scores on the CDQ indicate a greater acceptance of risk.

\* N size varies depending on a number of missing values for each cultural group.

Higher scores on the RG-SDS are reflective of a more positive attitude towards risk (see Appendix A).

(2) The Risk Unique-Semantic Differential Scale (RU-SDS) (as used in Ronay & Kim, 2006;  $\alpha=.95$  in this study) is an adaptation of the RG-SDS, in which "RISK" is replaced with self-selected risk items. This scale was used in addition to the RG-SDS, because people occasionally engage in risky behaviors (e.g., drinking and smoking) despite the fact that they evaluate the global concept of risk negatively. Accordingly, we instructed the participants to select the 10 risky activities that were most relevant to their lives from among 34 risky behaviors, after which the 10 were again narrowed down, to the six activities most relevant to the participant. The six items were then employed as a category to evaluate in the same form of the semantic differential scale as was used in the RG-SDS. Higher scores on the RU-SDS are reflective of a more positive attitude toward self-relevant risk activities (listed in Appendix B).

(3) An adaptation of Kogan and Wallach's (1964) Choice Dilemma Questionnaire (CDQ;  $\alpha=.60$  in this study) was employed to evaluate the level of risk that participants were willing to take under conditions of uncertainty, both when alone and when placed in a group situation. The CDQ items represented hypothetical risk situations in which the participants were instructed to indicate the lowest probability of success they would regard as acceptable for recommending an action to the central person in each scenario in the CDQ. As a consequence, lower scores on the CDQ indicate a greater acceptance of risk (i.e., risk-taking). We adopted the same six CDQ items as were used by Ronay and Kim (2006) from the original 12-item set (Appendix C). The adoption of reduced questionnaires need not diminish the validity or reliability of the measure (DiBerardinis, Ramage, & Levitt,

1984; Hogg, Turner, & Davidson, 1990; Myers, 1974; Ronay & Kim, 2006).

### 3 Results

#### 3.1 Cultural differences in attitudes and choices regarding risk at the individual level

We first evaluated cultural differences in the attitudes and decisions regarding risk at the individual level. For the Australian and South Korean participants, Table 1 shows the means and standard deviations for RG-SDS, RU-SDS (i.e., attitudes towards risk), and CDQ (i.e., choice regarding risk) in the Pre-test phase.

Overall, cultural differences were consistently observed across the CDQ, RG-SDS, and RU-SDS. First on the CDQ, an independent *t*-test showed that Australians expressed stronger pro-risk choices than South Koreans for both genders,  $t(190)=4.80$ ,  $p=10^{-7}$ ,  $d=.70$  for males;  $t(202)=2.81$ ,  $p=.006$ ,  $d=.40$  for females. Further analyses were conducted looking at where the cultural differences occur in the individual CDQ items, and among the six CDQ items. A reliable difference was observed on CDQ item 1 (business expansion), indicating that Australians took greater risks in business expansion than did the South Koreans,  $t(190)=5.82$ ,  $p=10^{-9}$ ,  $d=.84$  for males;  $t(202)=4.15$ ,  $p=10^{-6}$ ,  $d=.58$  for females. The same pattern also applied to CDQ item 2 (scientist's research),  $t(190)=3.82$ ,  $p=10^{-5}$ ,  $d=.55$  for males;  $t(202)=5.37$ ,  $p=10^{-8}$ ,  $d=.76$  for females. CDQ item 4 (job choice) showed a reliable difference, but only for between Australian and South Korean males,  $t(190)=4.11$ ,  $p=10^{-6}$ ,  $d=.60$ . For CDQ item 6 (marriage), only

females showed a reliable cultural difference,  $t(202)=-2.93, p=.004, d=.41$ .

The same pattern reflecting a reliable cultural difference was also noted for the RG-SDS:  $t(190)=-5.16, p=10^{-8}, d=.75$  for males;  $t(202)=-5.18, p=10^{-8}, d=.73$  for females, as well as for the RU-SDS:  $t(197)=-3.08, p=.002, d=.83$  for males, and an almost significant result,  $t(206)=-1.79, p=.08, d=.25$  for females.

Overall, the data appear to indicate that the Australians generally had a greater tolerance for risk than the South Koreans at the individual level, and this difference held for both genders.

### 3.2 Group facilitation (polarization)

A previous analysis conducted by Ronay and Kim (2006) was based on the individual as the unit of analysis. However, this method of analysis did not consider interdependence among participants in the same group, and a more appropriate analysis should use the group as the unit of analysis. Accordingly, all subsequent analyses in this paper used the group as the unit of analysis.

The means and standard deviations for the Australian and South Korean participants with regard to the CDQ are provided in Table 2.<sup>4</sup> South Korean participants completed the same tasks and measures, in the same order as in the study of Ronay and Kim. As noted previously and reported in the study of Ronay and Kim (2006), Australian males made riskier choices than females when in groups, thereby showing that group situations facilitate gender differences in hypothetical decision-making situations involving risk (i.e., the CDQ).

The CDQ *group* difference scores (Pre-test CDQ *group* mean scores minus Post-test CDQ *group* mean scores in each situation) were adopted as the dependent variable to examine the group facilitation effect on the CDQ; thus, *higher, positive scores* in the difference are indicative of *greater acceptance of risk* (i.e., risk-taking) in the Post-test. In addition, we used an index, termed a sum score of pre-test CDQ *group* mean and post-test CDQ *group* mean for each group. The sum score allow us to assess polarization (group facilitation) from group discussion. Polarization would lower scores in a group that was risk seeking and/or raise scores in a group that was risk averse (because a lower sum indicates greater risk seeking). The difference score would thus be correlated negatively with the sum score, if polarization occurs. (Note that, without polarization, the difference score would tend to correlate positively with the Pre-test CDQ score and negatively with the Post-test CDQ score, insofar as these scores were not perfectly correlated. Thus, we could not use either the

<sup>4</sup>The Australian data were derived from Ronay and Kim (2006). Data are reproduced with permission.

Pre-test or Post-test score to test for polarization. But the sum score would not correlate with the difference score in the absence of polarization.)

In the main analysis, we asked whether the CDQ group difference score (based on group means) could be predicted from the sum score. We included Culture (South Korea vs. Australia) and Gender (male-only vs. female-only) as predictors in an analysis of variance, as well as the sum score. As noted previously, the group was the unit of analysis for both Australians and South Koreans. The results revealed significant effect for the sum score,  $F(1,52)=4.85, p=.03, d=.61$ , indicating that group polarization occurred from group discussion. However, we found no main effect for Gender,  $F(1,52)=.73, p=.40, d=.24$ . Marginally supporting our expectations, an almost significant main effect for Culture was detected,  $F(1,52)=3.28, p=.076, d=.50$ , thereby suggesting that group discussion raised the CDQ scores of the South Koreans to a greater degree than it raised the Australians' scores.

*Gender differences in South Koreans.* A 2 (Situation: group vs. individual) x 2 (Gender: male vs. female) analysis of variance using the sum score as a within subject variable was initially conducted for South Koreans in order to evaluate the effects of group facilitation on both genders. The unit of analysis was groups for both the group and individual situation conditions, and the CDQ *group* difference scores based on the Pre-test group mean were used as the dependent variable. The results revealed significant effect for sum score,  $F(1,52)=6.44, p=.01, d=.70$ , thereby indicating that group polarization occurred from group discussion. However, we found no main effect for Gender,  $F(1,52)=.70, p=.41, d=.23$  and no interaction between Situation and Gender,  $F(1, 52)=.01, p=.93, d=.03$ . As we had hypothesized however, a significant main effect was detected for Situation (i.e., Individual vs. Group),  $F(1, 52)=15, p=10^{-5}, d=1.07$ . That is, as was noted with the Australians, the South Korean male-only groups shifted their choices toward greater risk when making group-level decisions (i.e., group situation) than when they were alone (i.e., individual situation),<sup>5</sup>  $t(52)=2.59, p=.013, d=.72$ . Furthermore, as anticipated, but different from the Australian females described by Ronay and Kim (2006), the South Korean female-only

<sup>5</sup>We also assessed the same question with the individual as the unit of analysis, as in Ronay & Kim (2006). A 2 (Situation: group vs. individual) x 2 (Gender: male vs. female) analysis of variance was conducted on the CDQ *individual* difference scores. We found no main effect for Gender,  $F(1,188)=.29, p=.59, d=.08$  and no interaction between Gender and Situation,  $F(1,188)=.09, p=.76, d=.04$ . However, we found a significant main effect for Situation,  $F(1,188)=10.14, p=.002, d=.46$ . Both the South Korean male-only and female-only groups shifted their choices toward greater risk than in the corresponding male and female individual conditions,  $t(188)=1.98, p=.049, d=.29$  for male;  $t(188)=2.54, p=.01, d=.37$  for female.

Table 2: The pre and post-test CDQ group scores of individual and group situations: Australians and South Koreans

Situation		Australians		South Koreans	
		Pre-test	Post-test	Pre-test	Post-test
Individual	Male	33.04 (4.25)	33.50 (3.35)	35.92 (4.77)	36.53 (5.65)
	Female	33.30 (2.67)	33.12 (1.60)	34.46 (4.54)	35.88 (4.31)
Group	Male-only	31.66 (2.45)	29.46 (3.05)	38.22 (4.16)	35.47 (5.58)
	Female-only	33.49 (4.68)	32.90 (4.38)	36.45 (3.42)	34.40 (4.66)
	Mixed	---	---	37.99 (2.87)	37.03 (6.37)

*Note.* The table provides statistics using each group (e.g., a group of 3 to 4 members) as the unit of analysis for both individual and group situation conditions of Australians and South Koreans. The values outside the brackets are expressed as the means, and the values inside the brackets indicate the standard deviations of groups under each situational condition. CDQ=Choice Dilemma Questionnaire. Lower scores reflect greater tolerance in terms of risk-taking.

groups also shifted their choices toward greater risk after the group discussion than the corresponding female groups in the individual situation,  $t(52)=2.91$ ,  $p=.005$ ,  $d=.81$ . Unlike the Australians, who evidenced gender differences in group decision-making, no significant differences were detected between the South Korean male-only and female-only groups in the CDQ group difference scores,  $t(52)=.62$ ,  $p=.54$ ,  $d=.17$ , and no differences were detected between male and female groups in individual situation (i.e., control condition) either:  $t(52)=.59$ ,  $p=.56$ ,  $d=.16$ .

### 3.3 The group facilitation effect in mixed-gender groups

With the intention of reflecting a variety of realistic situations in which both males and females interact in a group task, we extended the group situations into gender heterogeneity conditions. Table 2 provides the means and standard deviations of the CDQ group difference scores of the mixed-gender groups. In order to determine whether the mixed-gender experimental groups would assume riskier positions when in a group situation, analyses of variance using the sum scores as a within subject variable were conducted to compare the group means of the mixed-gender groups in experimental group situation with those of the mixed-gender groups in the control (individual) situation created by combining the males and females who attended the same experimental session, but did not take part in any group discussions. The same CDQ group difference scores employed in the analyses above were adopted as the dependent variable.

We initially attempted to determine whether or not

the homogeneity of variance assumption between the 4 groups, the experimental groups (i.e., male-only, female-only, and mixed-gender) and control (individual) mixed-gender groups, was valid, because some of the experimental and control mixed-gender groups had different member sizes, i.e., group size varied from 3 to 4 in the male-only, female-only experimental groups, and mixed-gender (individual) control group, but not in the experimental mixed-gender group (i.e., a group size of 4).

The test result showed that the variance in the dependent variable was equal between the experimental mixed-gender group and mixed-gender (individual) control group:  $F(1,39)=.56$ ,  $p=.46$ . We again observed group polarization i.e., significant effect for the sum score,  $F(1,38)=12.60$ ,  $p=.001$ ,  $d=1.15$ . As anticipated, the experimental mixed-gender group ( $M=.96$ ,  $SD=5.40$ ,  $N=20$ ) took riskier positions than the corresponding mixed-gender (individual) control group ( $M=-.87$ ,  $SD=2.51$ ,  $N=21$ ), and this difference was significant,  $t(38)=2.31$ ,  $p=.026$ ,  $d=.75$ .

Further analyses were conducted to determine whether the three experimental groups (male-only, female-only, and the mixed-gender groups) differed in terms of the group facilitation effect. The same CDQ group difference scores were used as the dependent variable along with the sum score as a within subject variable. We again tested the homogeneity of variance because group member size varied. The test showed that the variance in the dependent variable was equal among the three groups:  $F(2,53)=.68$ ,  $p=.51$ . The results reported no significant differences among the three groups:  $F(2,52)=.54$ ,  $p=.59$ ,  $d=.20$ . As usual, significant effect was found for the sum score,  $F(1,52)=21.11$ ,  $p=10^{-6}$ ,  $d=1.27$ .

## 4 Discussion

### 4.1 A summary of findings

By comparing a group of South Koreans with a group of Australians, this study attempted to characterize cross-cultural differences in attitudes and decisions toward risk at both the individual and group levels. In particular, the principal objective of this study was to demonstrate the manner in which group situations perform a differential function in decisions regarding risk across cultures. At the individual level, Australians reported higher levels of attitudinal measures favoring risk than South Koreans. This cultural difference was also observed consistently in hypothetical risk decisions. In group situations, South Korean males, females, and even mixed-gender groups expressed choices that were more pro-risk than the corresponding choices made in the individual situations for hypothetical decisions involving risk.

### 4.2 Cultural differences in attitudes and choices towards risk at the individual level

The results of this study revealed that South Koreans and Australians differ systemically and profoundly in terms of attitudes and decisions involving risk. The Australians exhibited stronger pro-risk choices than South Koreans on the CDQ. An additional difference was also noted in the RG-SDS and RU-SDS.

Douglas & Wildavsky (1982) suggested that an individualistic social system (such as in the United States and Australia) values uncertainty since it provides challenges and opportunities, and hence results in more risk-taking; on the other hand, a hierarchical bureaucratic social orientation (such as those existing in South Korea and China) tends to prefer customary operating procedures and thus tends to be more risk-averse. In fact, Americans were found to recommend that *others* select a riskier option over a conservative alternative more often than Chinese (Hong, 1978). This result is consistent with the findings of our studies involving Australians and South Koreans.

Another explanation arises from the expectation that Australians and South Koreans have different socio-cultural experiences. For instance, social regulations for selected risky activities are more flexible in Australia than in South Korea: Australians over the age of 16 are allowed to obtain a driver's license, and those over the age of 18 are allowed to drink alcohol and smoke tobacco (Roads and Traffic Authority [RTA], 2008), whereas South Koreans are allowed to do so only if over the age of 20 (Korea Ministry of Government Legislation [KMGL], 2008). Thus, such varied socio-cultural ex-

periences might affect attitudes and hypothetical choices regarding risk, thus indicating that CDQ, RG-SDS, and RU-SDS reflect differences in the typical cultural experiences of the two cultural groups.

One final account may be related to some degree to self-enhancement, a type of motivation that helps individuals maintain self-esteem, a construct regarded highly by individualists such as North Americans and Australians. For instance, a number of previous cross-cultural studies suggest that inflated views of the self tend to be stronger in individualist cultures than in collectivist cultures. Americans scored higher on self-evaluations than Chinese respondents (Bond & Cheung, 1983; White & Chan, 1983). Self-serving attribution bias — a tendency to attribute success to intrinsic factors (e.g., one's ability or personality) and failures to extrinsic factors (e.g., luck or situation) — was not detected among Japanese subjects (Kitayama, Takagi, & Matsumoto, 1995). Furthermore, personal modesty appears to be more common in collectivist cultures than in individualist cultures (Bond & Cheung, 1983). All things considered, the self-enhancing behaviors of individualists (i.e., Australians) may help them remain more self-assured and self-determined than their collectivist counterparts (i.e., South Koreans) in their responses concerning desired traits (Svenson, 1981). As a consequence, Australians are generally expected to express their opinions more favorably and confidently than South Koreans when making risky decisions. This finding is consistent with our results.

### 4.3 The group-facilitation of cultural differences in risk choices

Overall, across Australian and South Korean contexts, we determined that the group situation itself exerts a differential effect on the process of risk-related decision-making between the two cultural groups. Firstly, our results revealed that South Koreans tended to make riskier decisions when in groups than when alone, regardless of gender composition; this pattern of results differentiates the South Korean sample from the Australians, in whom a group-facilitation effect was detected only among males, thus reflecting a marked gender difference. The results imply that the group situation itself may be a more pervasive and salient facilitator of group members' risky decisions for South Koreans than for Australians.

According to this result, we can surmise, considering actual phenomena observed in each culture, that different processes underlie group facilitation among South Koreans and Australians. In an individualist culture (i.e., Australia), gender differences in risky decisions may be socially facilitated by the interaction between the gender characteristics and group situations that serve to either

bolster or weaken risk choices (Ronay & Kim, 2006). On the other hand, group situations in a collectivist culture (i.e., South Korea) compel group members to make riskier decisions than they would have made as individuals. The fact that this occurred among South Koreans, regardless of gender composition, led us to attribute this result to a collectivistic norm of interdependent relationships that may induce a diffusion of responsibility in group-level decision-making.

## 5 Implications

Although a laboratory experiment, by its nature, is of limited ecological validity, our findings provide some intriguing implications. From a practical perspective, cultural difference in risk at the individual level may potentially help decision-makers involved in multicultural joint ventures or multinational companies (e.g., Australia vs. Korea) to predict more accurately the willingness of their counterparts in or employees from other countries to take risks in order to achieve joint gains or to avoid conflicts among them (Hsee & Weber, 1999; Warner, 1995).

Theoretically, this study also can help us to understand the manner in which group situations play a differential role in making group decisions across cultures. In an individualist cultural group (in this case, Australians), group situations serve to highlight gender differences in the group decision-making under conditions of uncertainty, but in a collectivist cultural group (i.e., South Korea), group situations function as a strong facilitator that enhances the tendency of group members to take greater risks, and could overwhelm the effects of gender characteristics in collectivist cultures (through group pressure and group homogeneity) in the group decision-making process.

We also note that the tendency of South Koreans to pursue extreme risks due to a marked level of conformity with group members can occasionally result in unwanted side-effects in organizations. For instance, if a group leader strongly imposes her/his favored assumptions on other group members, unanimous support may be achieved on decisions made among group members (Janis, 1982). Our findings show that this could be the case with South Koreans, and they may be susceptible to such processes. Previous research consistent with this idea reveals evidence of defective decision-making in the case of the 1997 South Korean financial crisis: The Bank of Korea, in an attempt to warn of the impending financial crisis, released a number of relevant cues: namely, foreign currency outflow, a sharp increase in the exchange rate, and a shortage of capital supply. Although the Bank repeatedly warned the Korean government about the need to develop and implement emergency countermeasures,

the Kim administration ignored the banks' warnings. The South Korean government maintained the normal functioning of its conventional operating system without any alternatives, owing to their overconfidence in the fundamentals of the South Korean economy; dissenting members initially holding different views were subject to overwhelming group pressure (Kim, 2000).

Unfortunately, our findings demonstrate that grouping male and female employees together (i.e., mixed-gender groups) may not necessarily be a good strategy to diminish the negative aspects (e.g., groupthink) of the group-facilitation effect on decision-making in collectivist cultures like South Korea. In order to prevent such potentially irrational and flawed decisions (i.e., decisions based on groupthink), group leaders should allow group members to speak their opinions, such as pointing out potential problems without any frustrations about any decision made by the group (Janis, 1982).

## 6 Suggestions for future research

The group-facilitation effects reliably observed among both South Korean males and females imply that collectivist cultural characteristics (e.g., group pressure, group cohesion and conformity) outweigh individualist cultural characteristics (e.g., expression of personal attributes and self-determination) in South Koreans' group decisions involving risk. Nonetheless, we concede that the same pattern may not always persist in a collectivist culture (i.e., South Koreans). For some domains relevant to risk, including outright group rejections and victimization of peers, gender markers (i.e., masculinity and femininity) and collectivist cultural traits (i.e., group pressure and group conformity) may interact such that the gender characteristics can be differentially strengthened in group situations; i.e., males tend to take a more risky position, but females tend to adopt a more cautious position when involved in a group. Consistent with this view, other research findings showed that, when in groups, South Korean middle and high school male students engaged more frequently than female students in peer group-victimization and ostracism of their peers (Korean Education Development Institute [KEDI], 1998).

The above example demonstrates that cultural differences or similarities in attitudes toward and behaviors involving risk may depend on the domain of risk in question. However, owing to the current paucity of available data concerning risky attitudes and behaviors from a cross-cultural perspective, more empirical findings and investigations are currently being conducted in earnest. In this regard, the findings of this study bolster our existing knowledge by highlighting the significance of the group situation in understanding not only gender differ-



ences but also cultural differences between individualists and collectivists in making decisions involving risk.

## References

- Asch, S. E. (1956). Studies of independence and conformity: A minority of one against a unanimous majority. *Psychological Monographs*, 70, 70.
- Bond, M. H., & Cheung, T. S. (1983). College students' spontaneous self-concept: The effect of culture among respondents in Hong Kong, Japan, and the United States. *Journal of Cross-Cultural Psychology*, 14, 153–171.
- Bond, R., & Smith, P. B. (1996). Culture and conformity: A meta-analysis of studies using Asch's (1952b, 1956) line judgment task. *Psychological Bulletin*, 119, 111–137.
- Bornstein, G., Kugler, T., & Ziegelmeyer, A. (2004). Individual and group behavior in the Centipede game: Are groups more "rational" players? *Journal of Experimental Social Psychology*, 40, 599–605.
- Bornstein, G., Gneezy, U., & Nagel, R. (2002). The effect of intergroup competition on group coordination: an experimental study. *Games and Economic Behavior*, 41, 1–25.
- Byrnes, J. P., Miler, D.C., & Schafer, W. D. (1999). Gender differences in risk taking: A meta-analysis. *Psychological Bulletin*, 125, 367–383.
- Choi, S. G. (2000). *Hankookin shimleehak* [Korean's psychology]. Seoul, Korea: Jung-Ahng University Press.
- Darwish, A. E. & Huber, G. L. (2003). Individualism vs collectivism in different cultures: a cross-cultural study. *Intercultural Education*, 14, 47–56.
- DiBerardinis, J., Ramage, K., & Levitt, S. (1984). Risky shift and gender of the advocate: Information theory versus normative theory. *Group and Organization Studies*, 9, 189–200.
- Douglas, M., & Wildavsky, A. (1982). *Risk and Culture: An essay on the selection of technological and environmental dangers*. University of California Press.
- Gong, M., Baron, J., & Kunreuther, H. (2009). Group cooperation under uncertainty. *Journal of Risk and Uncertainty*, 39, 251–270.
- Harris, C. R., Jenkins, M., & Glaser, D. (2006). Gender differences in risk assessment: Why do women take fewer risks than men? *Judgment and Decision Making*, 1, 48–63.
- Hofstede, G. (1980, 1981). *Culture's consequence: International differences in work-related values*. Beverly Hills, CA: Sage.
- Hong, L. K. (1978). Risky shift and cautious shift: some direct evidence on the culture-value theory. *Social Psychology*, 41, 342–346.
- Hogg, M. A., Turner, J. C., & Davidson, B. (1990). Polarized norms and social frames of reference: A test of the self-categorization theory of group polarization. *Basic and Applied Social Psychology*, 11, 77–100.
- Hsee, C., & Weber, E. U. (1999). Cross-national differences in risk preference and lay predictions. *Journal of Behavioral Decision Making*, 12, 165–179.
- Janis, I. L. (1982). *Group think: Psychological studies of policy decisions and fiascoes* (2<sup>nd</sup> ed.). Boston, MA: Houghton-Mifflin.
- Kim, H. H. (2000). A study on the process of decision making of top officials in the government leading to IMF crisis. *Korean Association for Public Administration*, 34, 41–58.
- Kitayama, S., Takagi, H., & Matsumoto, H. (1995). Causal attribution of success and failure: Cultural psychology of Japanese selves. *Japanese Psychological Review*, 38, 247–280.
- Kogan, N., & Wallach, M. A. (1964). *Risk taking, a study in cognition and personality*. New York, NY: Holt, Rinehart, and Winston.
- Korean Educational Development Institute. (1998, December). *A study on group-victimization in middle and high schools* (Issue Brief No. RR98–19). Seoul: Korean Educational Development Institute.
- Korea Ministry of Government Legislation. (2008). *The Road Traffic Act*. Retrieved December 31, 2008, from <http://www.law.go.kr/LSW/Main.html>
- Korea Ministry of Government Legislation. (2008). *The Youth Protection Act*. Retrieved June 1, 2009, from <http://www.law.go.kr/LSW/Main.html>
- Korea National Statistical Office. (2006). *Korean statistical information service*. Daejeon: Korean National Statistical Office.
- Leigh, B. C. (1999). Peril, chance, and adventure: Concepts of risk, alcohol use and risky behavior in young adults. *Addiction*, 94, 371–383.
- Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review*, 98, 224–253.
- McKenna, A. P., Waylen, A. E., & Burkes, M. E. (1998). *Male and female drivers: How different are they?* Reading: The University of Reading, Foundation for Road Safety Research.
- Moscovici, S., & Zavalloni, M. (1969) The group as a polarizer of attitudes. *Journal of Personality and Social Psychology*, 12, 125–135.
- Myers, D. G. (1974). Interpersonal comparison processes in choice dilemma responding. *The Journal of Psychology*, 86, 287–292.

Roads and Traffic Authority. (2008). *All articles in Licence*. Retrieved June 1, 2009, from <http://www.rta.nsw.gov.au/geared/licence/index.html>

Road Traffic Authority. (2006). *Traffic accident statistics*. Seoul: Road Traffic Authority.

Ronay, R., & Kim, D-Y. (2006). Gender differences in explicit and implicit risk attitudes: A socially facilitated phenomenon. *British Journal of Social Psychology*, 45, 397–419.

Snizek, J. A. (1992). Groups under uncertainty: an examination of confidence in group decision making. *Organizational Behavior and Human Decision Processes*, 52, 124–155.

Suh, E. M. (2002). Culture, identity consistency, and subjective well-being. *Journal of Personality and Social Psychology*, 83, 1378–1391.

Svenson, O. (1981). Are we all less risky and more skillful than our fellow drivers? *Acta Psychologica*, 47, 143–148.

Tajfel, H. (1982). *Social identity and intergroup relations*. Cambridge: Cambridge University Press.

Triandis, H. C., Bontempo, R., Villareal, M. J., Asai, M., & Lucca, N. (1988). Individualism and collectivism: cross-cultural perspectives on self-ingroup Relationships. *Journal of Personality and Social Psychology*, 54, 323–338.

Wallach, M.A., Kogan, N. & Bem D. J. (1964). Diffusion of responsibility and level of risk taking in groups. *Journal of Abnormal Social Psychology*, 68, 263–274.

Warner, J. (1995, October 30). The world is not always your oyster: Why cross-border mergers so often come to grief. *Business Week*, 132–134.

Weber, E. U., & Hsee, C. (1998). Cross-cultural differences in risk perception, but cross-cultural similarities in attitudes towards perceived risk. *Institute for Operations Research and the Management Sciences*, 44, 1205–1217.

White, W. G., & Chan, E. (1983). A comparison of self-concept scores of Chinese and White graduate students. *Journal of Non-White Concerns in Personnel and Guidance*, 11, 138–141.

WHO. (2002). *Gender and road traffic injuries*. Geneva: World Health Organization, Department of Gender and Women’s Health.

WHO. (2005). *World report on road traffic injury prevention*. Geneva: World Health Organization.

Wildschut, T., Pinter, B., Vevea, J. L., Insko C. A., & Schopler, J. (2003). Beyond the group mind: A quantitative review of the interindividual-intergroup discontinuity effect. *Psychological Bulletin*, 129, 698–722.

### Appendix A: Risk Global Semantic Differential Scale (RG-SDS) items

For the next several questions, indicate your perception of the construct “RISK” by selecting the response that best describes the way that you feel. The scale ranges from –3 (indicating the extreme represented by the word on the left of the scale) to 3 (indicating the extreme represented by the word on the right of the scale). Indicate your response by checking the number that corresponds to your evaluations about RISK.

Loss				Gain			
-3	-2	-1	0	1	2	3	
Mistake				Success			
-3	-2	-1	0	1	2	3	
Penalty				Benefit			
-3	-2	-1	0	1	2	3	
Waste				Achieve			
-3	-2	-1	0	1	2	3	
Loss				Reward			
-3	-2	-1	0	1	2	3	
Cost				Profit			
-3	-2	-1	0	1	2	3	

### Appendix B: Risk Unique-Semantic Differential Scale (RU-SDS) items

Smoking tobacco	White water kayaking
Speed driving	Premarital pregnancy
Mountain climbing	Water skiing
Tattoo	Driving without a seatbelt
Heavy drinking	Unsafe sex
Skydiving	Snow skiing
Fist fighting	Hang gliding
Stock investment	Horse riding
Snowboarding	Mountain biking
Illegal drug	Drink driving
Para gliding	Boxing
Wind surfing	Marijuana use
Extreme sports	Living together before getting married
Bungee jumping	Cramming for exam
Cheating on a test	Cheating on a partner
Shoplifting	Gambling
Motorbike riding	Other (please specify)

## Appendix C: Choice Dilemma Questionnaire (CDQ) sample items

Item 1. Person E. is the managing director of a light metals corporation in Australia (Korea). The corporation is quite prosperous, and has strongly considered the possibility of business expansion by building an additional plant in a new location. The choice is between building another plant in Australia (Korea), where there would be a moderate return on the initial investment, or building a plant in a foreign country. Current exchange rates mean that overseas set-up costs and production would be very competitive, giving the company an edge. However, there is some uncertainty regarding the stability of the Australian dollar (Korean won). If the current exchange rate were to be weakened in the near future, costs could escalate considerably, leaving the company with significant losses.

Item 2. Person L, a married 30-year old research physicist, has been given a five-year appointment by a major university laboratory. Contemplating the next five years, Person L realises that they might work on a difficult, long-term problem, which, if a solution could be found, would resolve basic scientific issues in the field and bring high scientific honours. If no solution were found, however, Person L would have little to show for his five years in the laboratory, and this would make it hard for him to get a good job afterwards. On the other hand, they could, as most professional associates are doing, work on a series of short-term problems where solutions would be easier to find, but where the problems are of lesser scientific importance.

Item 4. Person A, an electrical engineer who is married and has one child, has been working for a large electronic corporation since graduating from college 5 years ago. They are assured of a lifetime job with a modest, though adequate salary and a liberal pension benefit upon retirement. On the other hand, it is very unlikely that the salary will increase dramatically before retirement. While attending a convention, Person A is offered a job with a small, newly-founded company which has a highly uncertain future. The new job will pay more to start, and would offer the possibility of a share in the ownership if the company survives the competition of the large firm.

Item 6. Couple M are contemplating marriage. They have known each other for a little more than a year. Recently, however, a number of arguments have occurred between them, suggesting some sharp differences of opinion in the way each views certain matters. Indeed, they decide to seek professional advice from a marriage counsellor as to whether it would be wise for them to marry. On the basis of these meetings with the marriage counsellor, they realise that a happy marriage, while possible, would not be assured.