

RUNNING HEAD: Discontinuity Effect in Japan

**Are Japanese Groups More Competitive than Japanese Individuals? A  
Cross-Cultural Validation of the Interindividual-Intergroup Discontinuity Effect**

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## Abstract

The interindividual-intergroup discontinuity effect is the tendency for relationships between groups to be more competitive than the relationships between individuals. It has been observed robustly in studies conducted in the United States, a society characterized as “individualistic”. In this study, it was explored whether the effect was replicable in a “collectivistic” society such as Japan. From the traditional view in cross-cultural psychology, which emphasizes the collectivistic nature of East Asian peoples, it was expected that the discontinuity effect would be greater in Japan than in the United States. On the other hand, based on recent empirical findings that suggest North Americans are no less group-oriented than East Asians, it was expected that the discontinuity effect would be no greater in Japan than in the United States. One hundred and sixty Japanese university students played a 10-trial repeated prisoner’s dilemma game: twenty-six sessions of interindividual and eighteen sessions of intergroup. Following exactly the procedure of prior experiments in the US, individuals and groups were allowed face-to-face communication with their opponents before making their decisions, and participants in the intergroup condition were further allowed to converse freely with their ingroup members. Results replicated previous findings in the United States; groups made more competitive choices than did individuals. In addition, neither the magnitude of the discontinuity effect nor the frequency of competitive choices made by the groups, were larger in Japan than they were in the majority of prior studies conducted in the United States. These findings suggest cross-cultural robustness of the interindividual-intergroup discontinuity effect. Also, interestingly, they contradict the simple distinction between individualism and collectivism. Implications for studies of culture and group processes are discussed.

KEY WORDS: DISCONTINUITY EFFECT, CULTURE, INTERGROUP,  
COMPETITION

## Introduction

One enduring issue faced by social scientists is whether or not individuals are more prone to behave in a hostile and competitive manner when banded together in a group than when they are not a member of a group (LeBon, 1895/1960; McDougall, 1920). Insko, Schopler, and their colleagues referred to the tendency for groups to behave more competitively than individuals as the interindividual-intergroup discontinuity effect. They found the competitiveness between groups significantly greater than that between individuals (see Insko & Schopler, 1998; Wildschut, Pinter, Vevea, Insko, & Schopler, 2003, for reviews). Over the past two decades, these researchers have demonstrated the robustness of the discontinuity effect in the context of mixed-motive matrix games, such as the Prisoner's Dilemma Game (PDG; Insko et al., 1987; Insko, Schopler, Hoyle, Dardis, & Graetz, 1990; McCallum et al., 1985; see also Winqvist & Larson, 2004), as well as other experimental paradigms (McCallum et al., 1985; Insko et al., 1994; Schopler, Insko, Graetz, Drigotas, & Smith, 1991; see also Meier & Hinsz, 2004; Morgan & Tindale, 2002). Furthermore, scholars have found that people generally believe that intergroup relationships are more competitive than interindividual relationships (Hoyle, Pinkley, & Insko, 1989) and individuals experience competitive intergroup interactions more frequently than competitive interindividual interactions in their daily life (Pemberton, Insko, & Schopler, 1996). Thus, a variety of studies have found that intergroup interaction is characterized by a high degree of competitiveness.

### *Discontinuity effect and culture*

There has been a great deal of research suggesting there are cultural differences between North Americans and East Asians (e.g., Heine, Lehman, Markus & Kitayama,

1999; Markus & Kitayama, 1991; Nisbett, 2003). This research indicates that individuals socialized in North America are prone to individual-centered behavior while individuals socialized in East Asia are prone to group-centered behavior. The individualistic (North American) versus collectivistic (East Asian) dimension of comparison is considered to be one of the most distinctive dimensions of cultural variation (e.g., Hofstede, 1980; Markus & Kitayama, 1991; Triandis, 1995).

Most studies of the discontinuity effect have been conducted in Western societies, most frequently the United States. Researchers have rarely considered the phenomenon from a cross-cultural perspective.<sup>1</sup> Does the discontinuity effect exist in East Asia as it does in the United States? In other words, is the same robust tendency for groups to behave more competitively than individuals in 'individualistic' societies also observed in 'collectivist' societies such as Japan?

One important consequence of living in a collectivist society or, more specifically, a *vertical* collectivist society, is the prevalence of ingroup favoritism and cooperation as well as outgroup distrust (Triandis, 1995), each of which has, in fact, been identified as an important antecedent of the discontinuity effect (Hoyle et al., 1989; Insko et al., 1990; Schopler et al., 1993; Wildschut, Insko, & Gaertner, 2002). For example, Triandis, McCusker, and Hui (1990) found that people in collectivistic cultures demonstrated stronger outgroup discrimination than did people in individualistic cultures. Furthermore, with regard to interindividual relationships, East Asians tend to emphasize interpersonal harmony (Markus & Kitayama, 1991). Thus, if East Asians are truly (vertical) collectivists, groups of East Asians should be more competitive than individual East Asians (i.e., the discontinuity effect), and this effect should be relatively stronger than that observed in North America.

However, recent empirical findings have cast doubt on the long-believed, simple distinction between individualism and collectivism. For instance, Oyserman, Coon, and Kimmelmeier's extensive review study (2002) found that North Americans, who had been considered prototypical individualists, were comparable to East Asians in their group-orientation. Specifically, they discovered that North Americans were (almost) consistently more collectivistic than Japanese, equally collectivistic as Koreans, and even more collectivistic than Chinese, depending on the type of measurement scale used in the study. Moreover, evidence from experiments on cross-cultural differences in group behavior have shown that ingroup bias and outgroup distrust based on arbitrary or impersonal ingroup-outgroup categorizations is actually stronger for North Americans than it is for Asians (e.g. Buchan, Croson, & Johnson, 2003; Heine & Lehman, 1997). Also, Yuki, Maddux, Brewer, and Takemura (2005) illustrated that North Americans' outgroup distrust is more deep-rooted than that of Japanese. In their studies, distrust disappeared for Japanese participants who knew a personal acquaintance belonging to the outgroup, but remained consistent for North Americans regardless of an outgroup acquaintance.

Thus, recent studies cast considerable doubt on the individualistic versus collectivistic distinction between North Americans and East Asians. Moreover, and relevant to the current topic, contrary to the prediction based on the view of individualism-collectivism, the discontinuity effect might actually be *stronger for North Americans than for East Asians*. In other words, given the recent evidence that North Americans are comparably collectivistic in their orientation, *and* that North Americans may reveal relatively more outgroup distrust than East Asians, the tendency for greater competition between groups than between individuals may be stronger in the United

States than it is in Japan.

The current study attempted to replicate the discontinuity effect in a Japanese sample using Insko et al.'s (1990) prototypical experimental paradigm. The goal was not only to explore the nature and extent of the discontinuity effect in Japanese, but also to compare its strength relative to that exhibited by Americans. Specifically, is the discontinuity effect in Japanese stronger, weaker, or equal in magnitude to that observed in American samples? Furthermore, examination of the discontinuity effect may provide additional insight into the relevance of the collectivistic-individualistic dimension as it relates to East Asian and North American cultures.

## Method

### *Participants*

One hundred and sixty (134 men and 26 women) Japanese students at Hokkaido University participated in the experiment. They were drawn from a pool of approximately 1500 undergraduate students who volunteered from various introductory courses on campus to participate in psychological experiments. Registration for the subject pool, which offered monetary incentives for participation in individual studies, was completely voluntary.

### *Design*

The experiment included two independent variables: Relationship (intergroup versus interindividual) and gender. The effect of relationship was assessed by comparing the decisions made between two 3-person groups in a PDG (intergroup condition) with those made between two individuals in the same scenario (interindividual condition). Thus, each session of the intergroup condition required six individuals, whereas each session of the interindividual condition required only two

people. The effect of gender on the discontinuity effect was assessed by comparing sessions comprised exclusively of men with sessions constituting women only.

### *Procedure*

The standard procedure was followed for evaluating the interindividual-intergroup discontinuity effect paradigm – the “PDG condition” in Study 2 by Insko et al. (1990). Two players (or groups) played a 10-trial repeated PDG, competing for monetary rewards. In each trial, players (or groups) were allowed face-to-face communication with their opponents before making their decision.

To ensure anonymity, participants were given an ID card that would be used to identify them by number only throughout the experiment. They were then individually escorted to the laboratory where, upon arrival, participants were asked to draw slips of paper to determine randomly the room to which they were to be assigned. In the intergroup condition, three participants each were randomly assigned to two rooms. Participants could not look into the room of the other group; face-to-face communications between players took place outside of the rooms.

Participants were initially given instructions on the PDG and then worked on a quiz that was designed to help them understand the task. Following the instructions, participants in all conditions played a practice trial with the experimenter, and then played 10 trials against the other individual (or group), competing for actual monetary rewards.

The PDG involved a series of 10 transactions between two players (defined here as either an individual or a group) competing for monetary rewards. Each transaction involved a choice between a cooperative or a noncooperative (competitive) alternative. Outcomes were determined by the combination of the players' choices.



Figure 1 presents a sample PDG payoff matrix used in the intergroup condition. The outcome of the column player in a typical payoff matrix decreases in rank order across cells from the upper right ( $YX$ ) to upper left ( $XX$ ) to lower right ( $YY$ ) to lower left ( $XY$ ). Also, the average outcome in the lower left ( $XY$ ) and upper right ( $YX$ ) cells must be lower than the outcome in the upper left cell ( $XX$ ); this requirement guarantees that players cannot receive higher outcomes by seesawing between cooperation and competition rather than by cooperating together (Insko et al., 1990).

Eleven equivalent matrices were used over the course of the experiment. In each, the outcome for the column player selecting competition ( $Y$ ) when the opponent selected cooperation ( $X$ ; the upper right cell) was four times greater than the outcome for selecting cooperation when the opponent selected competition (the lower left cell; subsequently referred to as the *reference value of a matrix*). In addition, the outcomes for both players selecting cooperation (the upper left cell) and both selecting competition (the lower right cell) was three and two times greater respectively than the outcome for selecting cooperation when the opponent selected competition. The reference values of the other 10 matrices for the intergroup condition were constructed by subtracting multiples of three from the reference value of the matrix in Figure 1. The other values in each matrix were determined in line with the principle described above. Furthermore, the payout schedule for the interindividual condition was calculated by dividing the corresponding intergroup value by three; this ensured that the reward per-participant was consistent across both conditions. The presentation order of matrices was randomized for each experimental session.

The experimenter instructed participants in each of the several phases of a given trial. On the command “look at your sheet,” participants turned over a matrix

that had been lying face down on a table. The participants were then given 20 seconds to go over the matrix and “think about” their choice. Participants in the intergroup condition were free to engage in intragroup discussion during this period. The next command was “meet at the conversation table.” At this point participants in the interindividual condition came out of their room and met with the other participant at the conversation table. In the intergroup condition each group sent a representative to the conversation table; groups were allowed to select any member for this role, and were allowed to change the member at any time throughout the experiment. Pairs of participants were given 15 seconds to discuss the matrix and possible choice combinations. In addition, participants were instructed that nothing they said during this communication period was binding. The only imposed restriction was that the participants remain at the conversation table for the full 15 seconds. At the end of the 15 seconds the participants were instructed to “make a decision.” At this point participants returned to their room, where they had 20 seconds to record their decision in writing. Participants in the intergroup condition were required to arrive at a consensus, and in no case did the groups fail to do so. The final instruction was “hand in your decision.” At this point the participants turned in their decisions to the experimenter. The experimenter recorded the choices, calculated how much each player earned, and then informed the players of the results. In addition, the experimenter gave them a new matrix that they were instructed to keep face down until told once again to “look at your sheet.”

After the 10th trial, participants were informed that the experiment was completed; originally, they had been told that there would be more than 10 trials. Participants were individually debriefed, thanked, compensated for their participation,

and dismissed.

Throughout the experiment, groups were always referred to as Group A and Group B and never referred to as teams. Also, the terms “competition” and “cooperation” were never used. In addition, participants learned that the experimenter was tape-recording the conversations.

### Results

Because the experimental task involved interactions between groups or between individuals, the unit of analysis involved more than one participant. In the intergroup condition, the unit of analysis included the inputs of two 3-person groups (total of 6 participants). In the interindividual condition, the unit of analysis included the inputs of 2 participants. In the interindividual condition,  $n = 26$  (19 male-only sessions and 7 female-only sessions) and in the intergroup condition,  $n = 18$  (16 male-only sessions and 2 female-only sessions).<sup>2</sup>

#### *Competition rate*

The discontinuity effect is the tendency for groups to behave more competitively than individuals. First, the average rate of selecting the competitive choice in each condition was compared. The mean competition rate was .26 (SD = .26) in the interindividual condition and .50 (SD = .27) in the intergroup condition. This difference was statistically significant,  $t(42) = 3.01, p < .01$ .<sup>3</sup> A 2 (condition: interindividual vs. intergroup) x 2 (gender) ANOVA revealed that the main effect for the condition was significant,  $F(1, 40) = 10.46, p < .01$ , while the main effect for gender and the two-way interaction effect were not significant,  $F(1, 40) < 1, ns$ ;  $F(1, 40) = 2.65, ns$ , respectively. Thus, the interindividual-intergroup discontinuity effect was replicated in Japan.

*Sequence of trials*

Figure 2 illustrates the transition of mean competition rate for each condition. The competition rate in the intergroup condition was consistently higher than that detected in the interindividual condition across all trials. A 2 (condition) x 2 (gender) x 10 (trial as a within factor) analysis of variance revealed a significant main effect for condition,  $F(1, 40) = 10.46, p < .01$ , replicating the previous analysis; the competition rate was higher in the intergroup condition than it was in the interindividual condition. Second, the main effect of the trial was not significant,  $F(5.99, 239.55) = 2.01, ns$ . There was no significant interaction effect between relationship and trial,  $F(5.99, 239.55) = .98, ns$ . Neither the main effect for gender,  $F(1, 40) = .32, ns$ , interaction effect for gender and relationship,  $F(1, 40) = 2.65, ns$ , interaction for gender and trial,  $F(5.99, 239.55) = 1.52, ns$ , nor the three-way interaction,  $F(5.99, 239.55) = .54, ns$ , was significant.

*Comparison with the US results*

This study attempted to replicate Insko et al. (1990) using a Japanese sample. The purpose of this study was to examine whether or not there is a cross-cultural difference in the magnitude of the discontinuity effect between the United States and Japan. Since most published papers on the discontinuity effect do not report the necessary information, such as standard deviations and effect sizes, it was impossible to compare the results of the current study with those obtained by Insko and his colleagues using statistical analyses. As an alternative, the mean competition rates of the current study were compared to those observed by Insko et al. (1990; see Table 1). First, the competition rate in Insko et al. (1990) was .05 in the interindividual condition and .51 in the intergroup condition; the difference, or the magnitude of discontinuity

effect, was .46. Thus, the difference in the competition rate between the intergroup condition and the interindividual condition was actually larger in Insko et al.'s (1990) study (.46) than it was in the present study (.24). Additionally, the results of present study were compared with those obtained in a number of other experiments conducted by Insko and his colleagues (Insko et al., 1987, 1988, 1994, 1998; McCallum et al., 1985; Schopler et al., 1991). The largest discontinuity effect was .47 in these studies while the smallest discontinuity effect was .19. The average was .35 (see Table 1 for details). Therefore, the magnitude of the discontinuity effect that was obtained in the present study was smaller, and at least no larger, than those found in the United States.

The competition rates in each condition were also compared separately. First, the competition rate in the intergroup condition in the present study, .50, was *no* larger than those obtained in the United States. The maximum US competition rate was .75, the minimum rate was .28, and the average was .51. Second, the Japanese competition rate in the interindividual condition was .26, higher than the average competition rate obtained in previous studies (.15), and comparable to the maximum recorded in previous studies (.29).

### Discussion

The interindividual-intergroup discontinuity effect, the tendency for relations between groups to be more competitive, or less cooperative, than relations between individuals, has been found robustly in studies conducted in the United States. The results of the present study indicate that such an effect also exists in Japan. The findings of the present study support a cross-cultural generalizability of the phenomenon of the discontinuity effect to Japan.

Interestingly, however, the effect in Japan was found to be no larger than those

observed in studies conducted in the United States. Moreover, the effect in Japan was relatively smaller than the majority of comparable US studies. Examining the intergroup condition separately, Japanese competitiveness was no greater than it was in the US studies. These findings may compel one to reconsider the validity of the traditional hypothesis in cross-cultural psychology that the Japanese are collectivistic or, specifically, that they are *vertical*-collectivists, and thus are more competitive when dealing with outgroups when compared to individualistic Americans (e.g. Singelis, Triandis, Bhawuk, & Gelfand, 1995; Triandis, 1995). Interestingly, the findings of this study are consistent with recent empirical evidence and theory indicating that Americans, while individualistic, are also highly group-oriented (Oyserman et al., 2002; Yuki, 2003; Yuki et al., 2005).

Another interesting finding was that Japanese individuals demonstrated relatively high competitiveness compared to American participants in previous studies. This might be counter-intuitive, given the interdependent nature of East Asians, who tend to prioritize interpersonal harmony (Markus & Kitayama, 1991). However, in the current investigation, the other player was unfamiliar, a stranger to participants prior to the experiment. Evidence has shown that trust toward a total stranger is actually lower for Japanese than it is for Americans (Kiyonari & Yamagishi, 1999; Yamagishi & Yamagishi, 1994). Yamagishi and Yamagishi (1994) explain these findings by noting the different social structures in the United States and in Japan, which vary in the extent to which they require people to attain generalized trust, or trust toward people in general. Specifically, Yamagishi and Yamagishi (1994) assert that generalized trust is *not* necessary in a close-knit collectivistic society, like Japan, because the primary task for survival is to maintain harmonious and mutually cooperative relationships with people

whom one knows very well. In contrast, generalized trust is necessary and adaptive for people in the United States, who live in an open-market society, where strangers are always one's potential partners. Thus, it is likely that relatively higher competitive choices among Japanese participants in the present study were due to their distrust toward their partner, rather than their greediness.

There are some limitations to the present study. First, although the current study was a replication of Insko et al. (1990) in Japan, statistical comparisons of Japanese and American results were impossible due to the lack of information necessary to perform such analyses. Thus, in future studies, it would be desirable to conduct a cross-cultural experiment using the same procedures in *both* cultures in order to confirm the findings of the current study. Second, although the aim of this study was to replicate the discontinuity effect in an East Asian sample, the data were obtained only from Japanese university students. Additional replication studies should be conducted in other populations in East Asia to determine the generalizability of the findings.

Finally, it is not clear whether the same results will apply to groups and individuals in which the relationships are different from the present study. For instance, what if the game was played between friends, acquaintances, or groups of people from different regions rather than between total strangers? Also, what if there was an opportunity to socialize with other members in the same group before they played the game? Would the results already observed in the US and in Japan remain consistent? Answers to these questions will deepen our understanding of the cross-cultural robustness and variability of the discontinuity effect.

In conclusion, when the Insko et al.'s (1990) experimental paradigm was used, the interindividual-intergroup discontinuity effect was replicated in a Japanese sample;

interactions between Japanese groups were more competitive than interactions between individuals. Contrary to the long-believed hypothesis of cross-cultural psychology, however, the discontinuity effect in Japan was not greater than that observed in the United States. It is hoped that this counter-intuitive finding may stimulate further enquiry into human group behavior from a cross-cultural perspective, and provide important clues to understanding the fundamental sociality of human beings.



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Table 1. Competition rates in the present and previous studies

	Interindividual	Intergroup	Discontinuity effect
<b>present study</b>	<b>.26</b>	<b>.50</b>	<b>.24</b>
Insko et al. (1990)	.05	.51	.46
Insko et al. (1987)	.07	.53	.46
Insko et al. (1988)	.15	.50	.35
Insko et al. (1994)	.04	.49	.45
Insko et al. (1998), Exp. 1	.09	.28	.19
Insko et al. (1998), Exp. 2	.10	.55	.45
McCallum et al. (1985), Exp. 1, Male	.29	.66	.37
McCallum et al. (1985), Exp. 1, Female	.28	.75	.47
McCallum et al. (1985), Exp. 2, Male	.26	.64	.38
McCallum et al. (1985), Exp. 2, Female	.24	.44	.20
Schopler et al. (1991), Exp. 1	.09	.44	.35
Schopler et al. (1991), Exp. 2	.08	.28	.20

Figure Captions

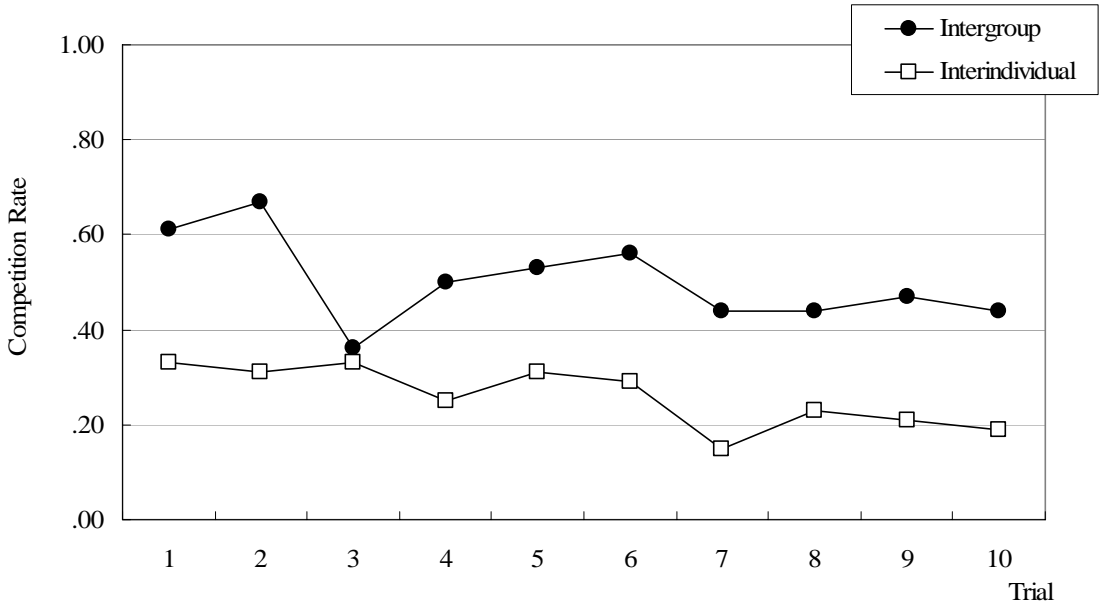
Figure 1. A PDG matrix for the intergroup condition.

Figure 2. Competition rate for each trial.

	X	Y
X	369 369	492 123
Y	123 492	246 246

\* The values represent Japanese yen (100 Japanese yen is equivalent to approximately 0.8 USD).





## Endnotes

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<sup>1</sup> By way of exception, Derlega, Cukur, Kuang, and Forsyth (2002) and Wildschut, Lodewijkx, and Insko (2001) examined cross-cultural differences in the discontinuity effect. However, Wildschut et al. (2001) compared the United States with Holland, which is also considered to be a highly individualistic society. Not surprisingly, the researchers did not find any cultural differences. Additionally, while Derlega et al. (2002) compared Americans with individuals in collectivist cultures (Japan, Turkey, and others), they compared intergroup relations with inter-*acquaintance* relationships. Most studies of the discontinuity effect, however, compare intergroup interactions with inter-*stranger* interactions.

<sup>2</sup> In the first four experimental sessions (all of these sessions were for the intergroup condition), a matrix set that was somewhat different from the matrices used in the other sessions was used. Each value of the first set of matrices was smaller than the value of the second set, although the proportions among the values in the four cells were exactly the same. However, there was no differential effect of the version of matrix on the competition rate,  $t(16) = .38, ns$ .

<sup>3</sup> In discontinuity studies, sometimes participants believed mistakenly that taking turns in receiving the high outcome will maximize total outcomes for both players (e.g. McCallum et al., 1985). When participants agree to alternate, and, in fact, do alternate, scholars can interpret 'cooperation' between both players rather than a mixture of competitiveness and cooperativeness. This "agreed upon alternation" was observed in the current experiment only one time in the interindividual condition. However, even if this behavior is treated as cooperative ones, the result remained the same. The mean of competition rate was .26 (SD = .26) in the interindividual condition and .50 (SD = .27) in the intergroup condition. This difference between conditions was statistically significant,  $t(42) = 3.02, p < .01$ .