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# I CAN stand this, but WE CAN'T: discontinuity between choices for self vs. group modulated by group competition during the ultimatum game

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저자
(Authors)

Hye-young Kim, Hackjin Kim, Sanghoon Han

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# I CAN stand this, but WE CAN'T: discontinuity between choices for self vs. group modulated by group competition during the ultimatum game*

Hye-young Kim[1,3] Hackjin Kim[2] Sanghoon Han[3,†]

[1]Booth School of Business, Universtiy of Chicago
[2]Department of Psychology, Korea University
[3]Department of Psychology, Yonsei Unversity

We live under the consequences of countless decisions, among which significant number of decisions is made by representatives acting on behalf of us. However, individuals often make disparate decisions depending on which identity they are assigned as an agent or with which opponent they are interplaying. In the current research, behavioral discontinuity depending upon actor identity and social relationship was investigated using the ultimatum game. Participants behaved in a more economically rational way when they acted as a group representative compared with when they made decisions as a private individual. However, the direction of the individual-representative discontinuity was reversed when rivalry came into play. Furthermore, more fairness was requested to accept the offers in the interaction with the rival compared with the neutral countergroup. Especially when interacting with the rival group, participants showed contrasting level of decision bias - measured by rejection rate toward unfair offers - according to the degree of mind attribution to the opponent. Specifically, the greater participants attributed a mind to the rival group, the more they rejected the unfair offers from it. The present research is important in that it provides insight into individuals' decision-making in a group context, which sometimes forgoes the financial gain of the entire group and ultimately leads to the sub-optimization of social welfare.

*Key words : Ultimatum game, individual-group discontinuity, rivalry, decision making*

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† 교신저자: Sanghoon Han, Department of Psychology, Yonsei University, 50 Yonsei-ro, Seodaemun-gu, Seoul, South Korea
연구분야: memory, decision-making
Tel: 02-2123-5436, E-mail: sanghoon.han@yonsei.ac.kr



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## Introduction

We live with a number of titles and affiliations. A person can be an alumnus of a university, a project leader of a company, and a citizen of a nation at the same time. These social affiliations often affect our behaviors, especially in interactions with other social groups. Many decisions in real-life situations, in addition, are made in a group context involving many individuals, and in that case, the people who are affected by the decisions are not only the decision-maker and the counterpart but also other individuals who belong to the groups. More importantly, empirical studies using various economic games (i.e., prisoner's dilemma game, dictator game) have shown ample evidence that people behave differently when making decisions in an interindividual context compared to an intergroup context. Specifically, groups often make more competitive, more aggressive, economically more rational, and less trusting decisions compared to individuals in strategic games (Bornstein, Kugler, & Ziegelmeyer, 2004; Cohen, Gunia, Kim-Jun, & Murnighan, 2009; Insko et al., 1987; Song, 2008; Wildschut, Pinter, Vevea, Insko, & Schopler, 2003).

These findings that groups, or group representatives, are more self-interested and competitive than individuals are labeled the *interindividual-intergroup discontinuity* (Insko et al., 1987). This discontinuity effect was first found and established in the context of Prisoner's Dilemma game, but when expanding this effect to other strategic games, the direction of the effect often seems conflicting: while in some studies people behaved more competitively and trusted the counterpart less, some other studies suggested the opposite showing more generosity and greater compromising when acting in a group context (Bornstein et al., 2004; Gelfand & Realo, 1999; Reinders, Folmet, Klapwijk, de Cremer, & Van Lange, 2012; Song, 2008). These seemingly inconsistent results often come from different characteristics of different games. Unlike in other strategic games, in the Ultimatum game, one cannot both maximize own gain and maximize relative gain simultaneously. In the ultimatum game, the first player receives a sum of money and proposes how to divide the sum between oneself and the other player. Then, the second player chooses whether to accept or reject the offer from the first player. If the second player (a responder) rejects the offer, the two parties get nothing. Therefore, an "economically rational" decision of a responder is to accept every offer regardless of its fairness, to maximize absolute payoffs. However, accepting an unfair offer allows the counterparty to obtain a larger dividend, an act that violates the competitive goal, in other words, a failure to maximize differences between the outcomes of the self and the other. Therefore, these unique properties of the ultimatum game enable us to make two different predictions on how an individual would react depending on which motivation he/she makes a decision with: with self-interest motivation based on rationality, one will be more likely to accept unfair offers, whereas with competitive motivation one will reject against unfair offers. This study aimed to disentangle the two different motivations and explore



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different directions of behavioral discontinuity in individual vs. group context depending on these motivations. More specifically, we investigated individual's different decision making 1) as a private agent and 2) as a group representative in the two different social relationships that enlighten either one of the strategic motivations more saliently: 1) *self-interest* in a neutral and 2) *competition* in a rival relationship.

Also, our decisions in social interaction situations depend on both perceived intentions and actual outcomes for judging other's action (Ames, Flynn, & Weber, 2004; Falk, Fehr, & Fischbacher, 2003). Numerous studies have shown that our emotional distress in response to frustrating social interactions - i.e., social exclusion in the Cyberball game, unfair offers in the ultimatum game - is palliated when we believe those actions are inflicted without intentionality (Eisenberger, Lieberman, & Williams, 2003; Sanfey, Rilling, Aronson, Nystrom, & Cohen, 2003). For instance, unfair offers made by computers are accepted more frequently than those made by human partners (Sanfey et al., 2003). People often attribute minds to others and often to non-object entities, such as groups, and make an inference about their intentional states underlying their "purposeful" actions. Even though we all are aware that a group has neither a conscience nor thoughts as itself, such attribution is ubiquitous: e.g., "The National Football League has plans for something that has never been done before" (New York Times, December 19, 2013). Given that the perceived intentionality is one of the decisional factors that impact emotional responses toward an action and consequently our counter-decision, we predicted that the degree of mind perception of a partner could be a moderator that guides our economic decisions.

In Experiment 1, we contrasted the effect of the social relationship that an individual holds with his/her counterpart group and predicted that the direction of the individual-representative discontinuity would be different depending on the social relationships. In Experiment 2, we hypothesized that the extent of the decision bias would be moderated by the group mind attribution and directly examined the economic decision-making patterns according to the social relationships.

## Experiment 1a and 1b

### Participants

A total of forty-seven undergraduate students at Yonsei University participated in the study either for course credit or for monetary compensation. In Experiment 1a, nineteen subjects (8 males) participated for monetary compensation (KRW 5,000 for approximately 30 minutes), whereas in Experiment 1b, twenty-eight subjects (10 males) participated in the study for course credit. Before commencement of the



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study, all subjects provided informed written consent in a manner approved by the Institutional Review Board of Yonsei University.

## Experimental Design & Procedures

Experiment 1 employed a repeated measures design with two conditions according to actor identity (individual vs. representative). Experiment 1a and 1b employed the same study design and procedure except the social relationship with interacting counterpart (Experiment 1a: neutral relationship; Experiment 1b: competitive relationship). We first conducted Experiment 1a to show the basic effect of interindividual-intergroup discontinuity when the social relationship between the two interacting parties is neutral, and then, proceeded to Experiment 1b to examine the moderating role of social relationship. For both of the studies, standard ultimatum game was used as an economic decision-making task. All of the participants played the role of responder.

For the neutral social relationship in Experiment 1a, we instructed participants that the proposals had been made by another group of people who had participated in the experiment on a previous day. In Experiment 1b, based on the real world intergroup rivalry between Yonsei University and Korea Universit y[1)], Korea University was used as the counterparty in the competitive condition group. Regarding the actor identity, subjects were instructed to make decisions as a representative of "a group of students participating in the experiment on the same day" in the neutral group (Experiment 1a), but as "a group of Yonsei University students participating in the experiment" in the competitive group (Experiment 1b).

In the individual condition, subjects were told that one of their decisions would be randomly chosen and added to their fixed participation compensation. Five different kinds of human figures were presented in a random order on the screen to remind participants that they were involved in inter-individual decision-making with different counterparts. In the case of decisions as a group representative, each participant was told that he/she was chosen to take the role of a representative and that the results of the selected trial would be realized equivalently for every group member including himself/herself. For each trial, a set of condition cues, total amount of money, offered amount of money, and decision instructions was displayed in vertical order on the screen and remained for 4000 msec. In the representative condition, participants in the competitive condition group saw symbol images of Korea University on the screen, whereas neutral stimuli (e.g., a color palette) were presented in the neutral condition group. Each

[1)] Yonsei University and Korea University are the two major leading private universities in Korea, and they have been rivals for over 70 years since the first annual intercollegiate sports competition in 1945.



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participant played 120 trials (60 trials for each of the two actor identity conditions). The proposer's offer rate was constructed to have a range from 12.5% to 50% of the total amount from KRW 8,000 (approximately USD 8) to KRW 12,000 (approximately USD 12) in increments of KRW 1,000 (approximately USD 1). The order of the actor identity condition was counterbalanced across subjects. All raw data were standardized to statistically compare the data from different participant groups.

## Results & Discussion

First, in the neutral group (Experiment 1a), the average proposal rate that participants accepted was significantly lower when their representing identity was a group representative compared with decisions made as an individual ($F(1, 18) = 5.13$, $p = .04$). The number of acceptance showed consistent pattern. Participants accepted the ultimatum offer more frequently when they were a representative of a group than when they were an individual decision maker ($F(1, 18) = 3.63$, $p = .06$). However, this pattern was reversed when the social relationship with the counterpart was competitive. In the competitive group (Experiment 1b), participants required a greater share to accept the offer when their identity was a group representative ($F(1, 27) = 5.25$, $p = .03$) (Table 1). Also, participants rejected the offer more frequently when their social identity was a group representative than when being an independent individual ($F(1, 27) = 3.80$, $p = .06$).

〈Table 1〉 Results from Experiment 1: Means and Standard Deviations for the Number of Acceptances and the Proposed Rate of the Accepted Offers.

| | | Number of Acceptances | | Accepted Offer Rate (%) | |
|---|---|---|---|---|---|
| | | Mean | SD | Mean | SD |
| Neutral (1a) | Individual | 28.84 | 16.45 | 43.65 | 4.89 |
| | Representative | 32.00 | 17.19 | 42.63 | 4.77 |
| Competitive (1b) | Individual | 36.64 | 19.75 | 40.27 | 4.14 |
| | Representative | 34.79 | 18.88 | 42.15 | 4.11 |

These results support and further expand the interindividual-intergroup discontinuity effect (Insko et al., 1987), not only in the aspect of extending the discontinuity effect to the behaviors of individuals as a representative but also showing the direction of the effect could be inverted according to the social



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relationship between the agencies. Participants in the neutral relationship showed a more economically "rational" decision-making pattern when representing their group - they easily accepted the proposed offer. However, the other group of participants, interacting with the rival counterpart, demanded higher stake for acceptable offers when making decisions as a representative, consequently failing to maximize their possible profit. Yet these findings do not allow us to directly compare the behavioral discrepancy depending on the social relationships, nor do they reveal the underlying psychological mechanisms driving the effect. We therefore conducted Experiment 2.

## Experiment 2

### Participants

Twenty-eight subjects participated in the study for course credit (9 males). Four participants who had responded to accept all of the offers irrespective of the offered rate were excluded from further analyses.

### Experimental Design & Procedures

The ultimatum game task, stimuli, and procedures were identical to the description provided in Experiment 1, except for the following. In order to directly investigate the effect of social relationships of rivalry, we used a within-subject design consisting of two conditions: competitive vs. neutral social relationship. In Experiment 2, all participants made their decisions as a group representative: a representative of "classmates taking the same psychology class" 1) against "a group of people who participated in the same experiment on the previous day" in the neutral condition or, 2) against "Korea University students" in the competitive condition. In addition, after the ultimatum game task, participants completed a questionnaire assessing the extent of mind attribution to a group. Participants evaluated 12 groups including three target groups - classmates (target), a group of people participating in the same psychology experiment (target), Korea University students (target), Facebook users, vegetarians, employees of the Hyundai motor company, people who enjoy playing tennis, members of the Saenuridang (the ruling party in Korea), residents of the Gyeongsang province, participants in a clinical trial, Korean residents in America, and employees in the IT industry. The questionnaire was adopted from Waytz & Young (2012). Among the questions, the one asking "the extent to which each group has a mind of its own (described



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as the capacity to make plans, have intentions, and think for itself)" was the main question of our interest. Subjects rated each question using a 7-point scale (1 = not at all, 7 = very much). Each participant's responses for the 12 different groups were standardized in order to draw a relative evaluation value for each group within a subject.

For a manipulation check about the rivalry relationship between Korea University and Yonsei University, participants additionally reported how they usually feel about Korea University and how they felt about each counterpart during the game. They answered the following five questions using a 7-point scale (1 = not at all, 7 = very much): 1) How competitive do you usually feel about the relationship between Korea University and Yonsei University? 2) How hostile do you usually feel about the attitude of Yonsei University to Korea University? 3) How different do you usually feel about Korea University compared to Yonsei University (e.g., university culture, student characteristics, etc.)? 4) How competitive did you feel about the group of people who participated in the game yesterday? 5) How competitive did you feel about the group of Korea University students who participated in the game?

## Results & Discussion

Consistent with our a priori hypothesis, participants felt that the relationship with Korea University students was significantly more competitive compared with the group of people who participated in the experiment on the previous day ($M_{KU}$ = 4.21, $SD_{KU}$ = 1.69, $M_{yesterday}$ = 3.43, $SD_{yesterday}$ = 1.87, $F(1, 23) = 10.16$, $p = .004$). Results of the other three questions regarding participants' usual feelings toward Korea University also indicated that they consider the relationship between Yonsei University and Korea University highly competitive, the universities are moderately hostile each other, and the two universities are highly different from each other ($M_{comp}$ = 4.71, $SD_{comp}$ = 1.54, $M_{host}$ = 3.39, $SD_{host}$ = 1.69, $M_{diff}$ = 5.36, $SD_{diff}$ = 0.83).

Results of the repeated measures ANOVAs demonstrated significant discrepancies according to the social

〈Table 2〉 Results from Experiment 2: Means and Standard Deviations for the Number of Acceptances and the Proposed Rate of the Accepted Offers.

| | Number of Acceptances | Accepted Offer Rate (%) |
|---|---|---|
| | Mean (SD) | Mean (SD) |
| Neutral | 31.67 (9.55) | 41.74 (3.50) |
| Competitive | 28.33 (13.30) | 42.47 (4.22) |



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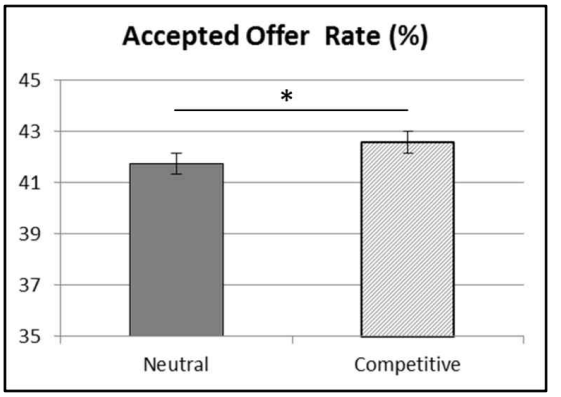
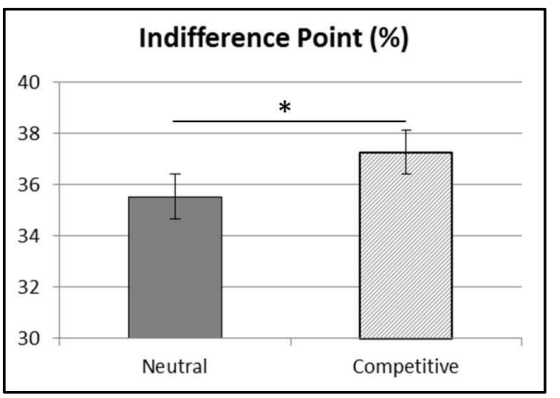



(Fig. 1) Offer rate of the accepted trials (%)

relationships on the number of acceptances and the proposed offer rate of the accepted trials ($F(1, 23) = 5.07$, $p < .05$, $F(1, 23) = 9.75$, $p < .005$) (Table 2 & Fig 1).

When interacting with the competitive counterpart, participants rejected offers more frequently, and demanded higher percentages of shares to accept. In addition, to examine the influence of the rivalry relationship on the probability of accepting offers, we conducted logistic regression analyses using two variables - proposers' offer rate and participants' acceptance rate - for each social relationship condition. The subject-specific decision probabilities for each offer rate were computed using optimal cubic functions best fitting participants' decisions as a function of the offered rate (Kim, Choi, & Jang, 2012). It revealed that the indifferent decision point of the competitive condition was significantly higher than that of the neutral condition ($F(1, 23) = 5.89$, $p < .05$) (Fig 2).

Furthermore, group mind attribution to the counterparty predicted the decision-making patterns only in the competitive condition. Specifically, the more mind was attributed to the competitive counterpart group




(Fig. 2) Indifference point of acceptance and rejection (%)



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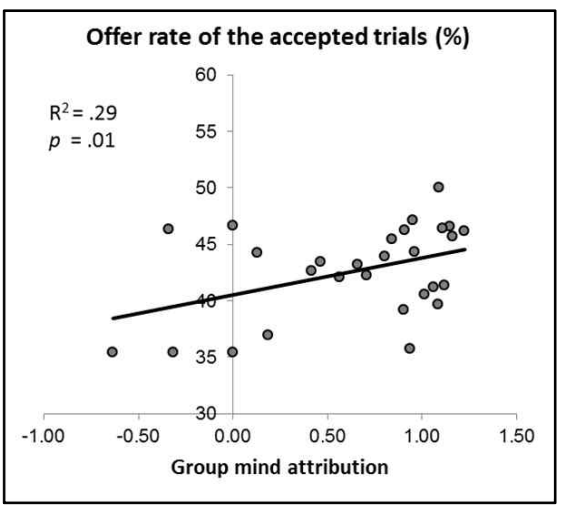
(Korea University), the less the proposals were accepted. Simple linear regression analyses revealed the significant effect of mind attribution on acceptance decision, which is represented by the accepted offer rate ($R^2$ = .29, $p$ = .01) (Fig 3). On the other hand, either the degree of mind attribution to the neutral counterpart or the degree of mind attribution to participant's representing group could not explain their decisions at all whether to accept the offers from the counterpart. These findings suggest that the higher the extent to which subjects regard the rival group as having a mind, the more competitively they respond to the unfair offers. In addition, the influence of mind attribution on acceptance decisions exists only when the unfair offers come from the counterpart in a competitive relationship.




(Fig. 3) Higher offer rate was required as a function of the degree of mind attribution to the competitive group

## Conclusions

The present research examined behavioral discontinuity in individuals who make a decision whether to accept an offer from neutral and competing counterparts in the ultimatum game. In the first experiment, participants behaved in a more economically rational way when they acted as a group representative compared with acting as a private individual. However, the direction of the individual-representative discontinuity was reversed when rivalry came into play. In the competitive relationship, an offer was more likely to be rejected even at the expense of the group's financial gain when making decisions as a group representative. Furthermore, a higher level of fairness was requested to accept the offers in the interaction



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with the rival group than with the neutral countergroup, and the rejection rate was moderated by the extent of the mind attribution to the rival group. Here, we observed both decision patterns being followed - a self-gain maximization goal and a relative-gain maximization goal - and disentangled which goal is pursued in which social circumstances. As a representative, participants interacting with a rival group were more competitive, rejecting unfair offers at the expense of their monetary gains. On the other hand, when interacting with a neutral counterpart, subjects acted more rationally in a narrow economic sense to maximize their group's absolute gain.

A plethora of past studies have found that people are often more affected by the relative outcome than by the absolute outcome (Cikara, Botvinick, & Fiske, 2011; Dvash, Gilam, Ben-Ze'ev, Hendler, & Shamay-Tsoory, 2010). Social relationship with the counterpart plays an important role in determining how people respond to another individual's outcome. Especially in a competitive relationship, a rival's loss can be a source of pleasure whereas the rival's gain can be painful (Cikara et al., 2011; Leach, Spears, Branscombe, & Doosje, 2003; Takahashi, Kato, Matsuura, Mobbs, Suhara, & Okubo, 2009). Thus, interaction with the counterpart group in the competitive relationship can make relative gain more salient than absolute gain, and thereby lead participants to reject unfair offers more frequently as observed in the current study. Furthermore, given the previous findings that salient group membership enkindled different motivations from those of private individuals (Charness, Rigotti, & Rustichini, 2007; Reinders, Folmet, Klapwijk, de Cremer, & Van Lange, 2012), actor identity as a group representative in our study probably magnified the disparity depending on the social relationship, prompting the bidirectional effect of individual-representative discontinuity.

Another important point to note in this study was that a decision pattern toward the competitive counterpart was modulated by the degree of group mind attribution to the group.

People have a basic social motivation and ability to understand and explain others' behaviors by making inferences about the intentions, minds, or mental states of others. Psychological research has demonstrated that people also attribute minds to groups of people (Hamilton & Sherman, 1996; Lickel et al., 2000, Waytz & Young, 2011). Ascribing a mind to another entity, therefore interpreting a random event as an intentional activity, amplifies the psychological experience of that same event. Intentional electric shocks hurt more than accidentally delivered shocks (Gray & Wegner, 2008). Along the same lines, judgments about wrongness and blame are heavily dependent on the intentionality of the agent, rather than on the actual consequences of the behavior (Cushman, 2008). In addition, given the research findings of negative correlation between "group" mind attribution and "group member" mind attribution (the more mind attributed to a group, the less mind attributed to its group members), it can be inferred that people would perceive a group member's decision as a product of a group mind if they attributed more mind to



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the group (Gray, Gray, & Wegner, 2007; Waytz & Young, 2011). Therefore, in the current study, participants who considered the rival group more "minded" would have experienced stronger emotional responses to the counter-group representative's proposals and consequently shown more competitive reactions toward the group, forgoing monetary benefits to punish unfair offers.

In this research, we identified the behavioral discontinuity of individuals according to their social identity and social relationship toward the counterpart, and also found the influence of mind attribution on the degree of the decision bias in the ultimatum game. Although the present study did not examine causal relationships explaining the variability of the individual-representative discontinuity effect, it provides hints toward an understanding of the self-hurting (due to excessive competitiveness) decision-making which incurs enormous social costs as well as personal costs. One important way to extend the results would be to examine whether the mind attribution is a causal link beyond a moderator. Higher level of perceived intentionality of counterpart's actions, due to greater mind attribution, might have been intensified magnitude of emotional arousal, which would moderate the rejection rate of unfair offers. However, no direct examination of individuals' emotional arousal was performed in the current study. Further experiments involving direct measurements for emotional arousal, such as electrodermal activity (EDA), skin conductance level, or blood oxygen level dependent (BOLD) signal in certain brain regions (e.g., anterior insula - a brain area widely identified as reflecting negative affect and disgust), would be helpful to demonstrate the association between the causality of mind attribution and following economic decisions. Another essential area of future works is to utilize various economic games with various underlying motives. This study explored the decision biases of participants who take the responder's role in the ultimatum game, which is one of the simplest settings without fear or uncertainty included. We believe future studies examining the systematic biases in other interactive strategic games, as well as the decision patterns of proposers in the ultimatum game, would be necessary to provide more established psychological principles underlying our economic choices.

To summarize, the effect of social identity and social relationship with interacting opponent was tested using the ultimatum game in this study. Individuals approached social interactions between other individuals very differently depending on which social role they are representing and how competitive their perceptions regarding the relation with the counterpart are. Especially when interacting with the rival group, participants showed contrasting level of decision bias - measured by rejection rate toward unfair offers - according to the degree of mind attribution to the opponent. This research sheds light on psychological factors leading the behavioral discontinuity of individuals as a group representative. The current study has its importance in that it enables us to be precautious about relying on representatives, and further, to facilitate wiser decision-making of leaders of our society.



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〈요 약〉

# 최후통첩 게임에서의 개인의사결정 vs. 그룹의사결정: 그룹 간 경쟁의 의한 조절효과

김 혜 영[1,3] 김 학 진[2] 한 상 훈[3]

[1]Booth School of Business, University of Chicago

[2]고려대학교 심리학과

[3]연세대학교 심리학과

본 연구는 최후통첩 게임 패러다임을 활용하여 의사결정자의 역할 주체 (개인 vs. 대표자)와 상대그룹과의 사회적 관계 (중립적 vs. 경쟁적)에 따른 행동적 불연속성을 검증하였다. 참가자들은 모두 최후통첩 게임에서 제안자가 아닌 응답자의 역할을 하였으며, 그룹의 대표자로 의사결정할 때 더 많은 제안을 수락함으로써 개인으로서 의사결정할 때보다 더 경제적으로 합리적인 행동패턴을 보였다. 하지만 이러한 개인-대표자 행동 불연속성은 중립적 관계에서만 유지되었다. 상대방 그룹이 참가자 그룹과 경쟁적인 관계에 있는 조건에서는 역할 주체가 그룹의 대표자일 때 오히려 더 많은 제안을 거부함으로써 경제적으로 더 비합리적인 행동패턴을 보였다. 특히, 경쟁적 관계와의 최후통첩 게임에서는 상대방 그룹에 대한 마음 귀인의 정도에 따라 다른 수준의 의사결정 편향을 관찰할 수 있었다. 구체적으로, 경쟁적 관계에 있는 그룹에 대해서 더 많은 마음을 귀인하는 참가자일수록 더 높은 수준의 거부 비율을 보임을 알 수 있었다. 본 연구는 그룹 맥락에서의 개인 의사결정 패턴 - 때로는 전체 그룹의 금전적 이익을 포기하고 궁극적으로는 사회적 잉여의 준최적화를 초래할 수 있는 - 에 대한 이해를 제공한다는 데 그 중요성이 있다.

주제어 : 최후통첩 게임, 의사결정, 개인-그룹 불연속성



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