Influence of Familiarity and Social Sensitivity on Performance in a Consensus Game

Naohiro Obata, Hokusei Gakuen University, Japan

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Abstract
This study focus on the familiarity and social sensitivity of group members and investigated how they affect group decision making. "If you have distress in the desert?" was used for group decision making scenario in this study and its task is to list 12 items in order of importance for survival. 186 participants were divided into group of 4-6 people. At first, they were told to list the items alone and after that they were told to list them by discussion in the group. Then, they took reading the mind in the eyes test (RMET) to measure their social sensitivity. Finally, they were asked to answer their familiarity. Effect of familiarity (high, middle, and low) and social sensitivity (HIGH, LOW) were analyzed using ANOVA. Results indicated that HIGH social sensitivity group were better the group score than LOW social sensitivity group especially in high familiarity group. In the analysis of the difference between individual and group score, HIGH social sensitivity group were higher the difference between individual and group score than LOW social sensitivity group especially in high familiarity group similarly. These results suggest that highly socially sensitivity people have active exchange information and opinions therefore group decisions are more accurate than individual's decisions. These findings represent that effective group decision making or problem solving require attention to not only the familiarity or relationship of members but also the diversity of member perspectives and the necessary to understand and to collaborate with other people in order to survive and thrive.

Keywords: Group Decision Making, Consensus Game, Familiarity, Social Sensitivity

Introduction

We have a greater opportunity to problem solving or decision making in a group because group decision making has the following merits. First, group members can collect extensive information about the problem therefore group decisions are more accurate than individual's decisions. Group members can share a lot of knowledge and arrive at decision alternatives which a single individual cannot have thought of. Second, group members can commit to implement their decisions through group thinking. It causes that group members can take a positive attitude toward each other and develop their mind of cooperation amongst the group members. Third, group decision making offers diverse viewpoints of various members of the group compare to individual thinking. Finally, group members can be more creative or innovative to make quality decisions because group decision making encourages new and better ideas.

Many studies have examined and indicated the effects of group decision making. Kerr and Tindale (2004) indicated that groups are often chosen to make decisions rather than individuals because of their greater knowledge base and the diversity of their member's perspectives. Peterson, Owens, Tetlock, Fan, and Martorana (1998) suggested that the intragroup interaction of management team members is directly related to decision quality and financial performance. Sager and Gastil (2006) mentioned how group members communicate each other and make decisions. They suggested that the participants of discussion were more satisfied using consensus rule, compare to majority rule, in most research.

Consensus is a form of cooperative, non-coercive decision-making. It is not a process for determining whose ideas are best, but searching together for the best solution for the group. It is not decided by one person, a minority, or a majority, but by everyone and the decisions should reflect the integrated will of the whole group. Even if it had been established that consensus can produce more satisfying decisions, there is little understanding about why or how groups might adapt a consensus. Sager and Gastil (1999) investigated how decide their decision rule depending on the quality and quantity of communication. They showed that the quality and quantity of communication and the percentage of members within each group who reported using the consensus decision rule. This result indicated that it is important for consensus or satisfying group decisions to facilitate or encourage communication each other especially open and honest communication. But they did not mention about the effect of the situation or setting for communication.

Prior research has suggested that the familiarity of group member has the effect on group decision making. When members are familiar with each other, groups are more likely to pool distributed information than when all members are strangers (Gruenfeld, Mannix, Williams & Neale, 1996). Gruenfeld et al.(1996) also demonstrated that familiar group could solve the problem without all information shared while stranger group could solve it only when information has fully shared but the cause of this result was not described in detail.

Then, this study focus on the familiarity and social sensitivity of group members. And the purpose of this study is to investigate how they affect group decision making.

Definition and measurement of social sensitivity

Social sensitivity describes the proficiency at which an individual can identify, perceive, and understand cues and contexts in social interactions along with being socially respectful to others. This is an important social skill and having high levels of social sensitivity can make you more well-liked and successful in social and business relationships. Wooley, Chabris, Pentland, Hashmi, and Malone (2010) suggested that the strongest predictor of collective intelligence seems to be the average social sensitivity of the group members. Curşeu, Pluut, Boroş and Meslec (2015) suggested that socially sensitive group members attend to the interpersonal dynamics in groups and create a positive interpersonal atmosphere that is ultimately conducive to task performance.

Social sensitivity was measured with Reading the Mind in the Eyes Test (RMET) (Baron-Cohen, Wheelwright, Hill, Raste and Plumb, 2001). The test consists of 36 images with eye-regions of the face of various individuals, each representing a particular mental state (e.g., arrogant, desire, insisting). Participants had to choose among four options the mental state that was represented in the image. The correct scores were summed up, with 36 being the possible maximum score for the task. Figure 1 displays an example of a stimulus used in Reading the Mind in the Eyes Test.

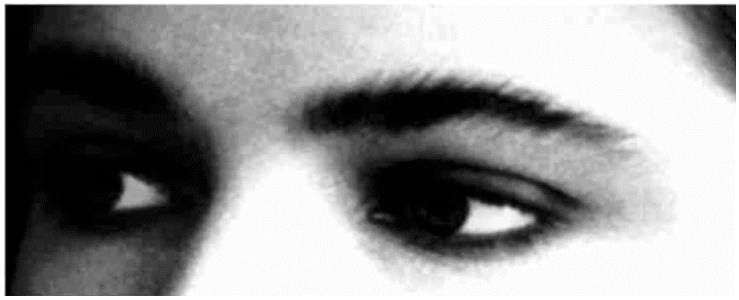

Figure 1. An example of a stimulus used in Reading the Mind in the Eyes Test: The word choice was annoyed, hostile, horrified, and preoccupied (correct).

Introduction to consensus game

Consensus game is group communication and decision making exercise, with many variations. This game is to examine the effectiveness of group discussion by comparing the individual score with group score. One of the most famous consensus game was "NASA moon survival task" developed by Hall (1971). Group members should be instructed to rank 15 items in order of importance for survive. At first, they told to rank them without communicating with group members. After that, they told to reconsider the items and come up with a new set of rankings. In the group part of the exercise, group members should be instructed to employ the method of group consensus, which requires each group member to agree upon the rankings for each of the 15 survival items. After revealing the correct answers and allowing groups to calculate their scores, record the group score and the individual score from each group. Subtract the group score from the individual score; this provides the "synergy" score.

Method

Participants. 186 students (91 women and 95 men) at Hokkai Gakuen University in Sapporo, Hokkaido, Japan participated in this study in exchange for course credit. They were divided into group of 4-6 people and they decided to their groups themselves.

Task. "If you have distress in the desert?" was used for group surviving scenario in this study. The reason for using this scenario is that it is easy for participants to understand settings and situation. In this scenario, Participants were instructed to imagine that the plane you are boarding made an emergency landing in a desert, then the plane was crushed. You are miraculously unhurt and could bring out 12 items from the plane. Participants' task is to listing 12 items in order of importance for survival.12 items were flashlight, salt tablet(1000 tablets), aerial photomap, a liter of water per person, big rain chief, compass, a book about eatable desert animal, light coat per person, 45 caliber pistol, hand mirror, a red-and-white parachute, and vodka(about 2 liter). The score is calculated by the difference between listed importance order and model answer. The score is lower, the better (The highest score is 0).

Procedure. At first, each participant was told to list the 12 items in order of importance for survival without talking or discussion with others. After that, all participants were told to list them by discussion in the group. After revealing the correct answers and allowing groups to calculate their scores, record the group score and the individual score from each group. Then, they took reading the mind in the eyes test (RMET) to measure their social sensitivity. Finally, they were asked the number of familiar and close member, acquaintance member, and stranger member in their group to measure their familiarity.

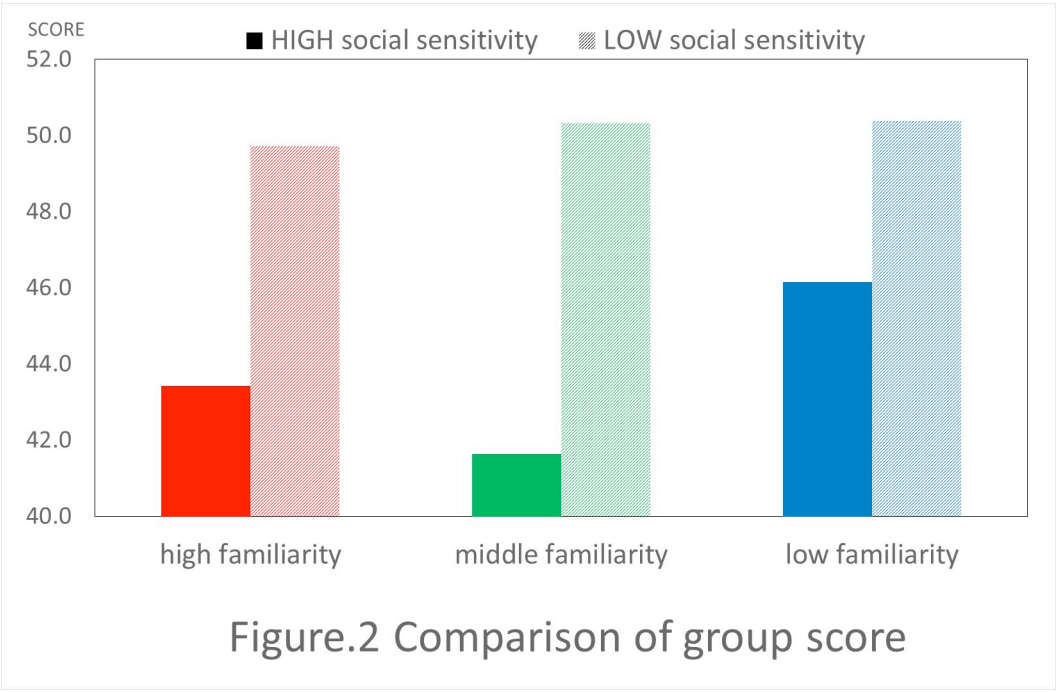

Figure.2 Comparison of group score

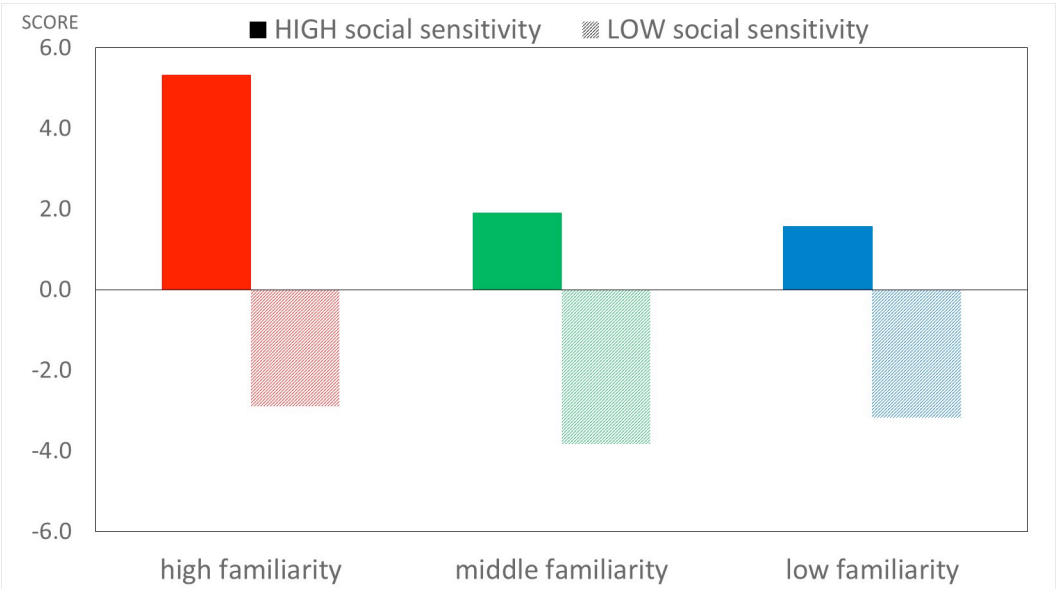

Figure.3 Comparison of the difference between individual and group score

Results

Before analysis, participants were divided into 2 groups by the score of RMET. Of the 186 participants, 114 were in the HIGH social sensitivity group (the mean level of RMET score was 22.4), while 72 were in the LOW social sensitivity group (the mean level of RMET score was 15.6). Then, they were divided into 3 groups (high, middle and low) by the number of familiar member in the group. Of the 186 participants, 65 were in the high familiarity group (the mean number of similar member was 3.2), 24 were in the middle familiarity group (the mean number of similar member was 1.6), and 97 were in the low familiarity group (the mean number of similar member was

0.6), Using analysis of variance (ANOVA), I examined the effects of social sensitivity (HIGH or LOW) and familiarity (high, middle and low) on the performance of consensus game. In the analysis of group score, the ANOVA with the factors of social sensitivity and familiarity revealed main effect for social sensitivity [$F(1, 180) = 24.53$, $p < .001$], but no main effect for familiarity [$F(2, 180) = 1.50$, *n.s.*],and no interaction of social sensitivity and familiarity [$F(2, 180) = 0.98$, *n.s.*]. Pairwise comparisons using a Bonferroni correction indicated that HIGH social sensitivity group were lower (it means better score) the group score than LOW social sensitivity group in high familiarity group ($p < .001$). The same trend is observed in middle familiarity group ($p < .01$) and low familiarity group ($p < .01$). These results are shown in Figure 2.

In the analysis of the difference between individual and group score, the ANOVA with the factors of social sensitivity and familiarity revealed main effect for social sensitivity [$F(1, 180) = 13.54$, $p < .001$], but no main effect for familiarity [$F(2, 180) = 0.95$, *n.s.*],and no interaction of social sensitivity and familiarity [$F(2, 180) = 0.63$, *n.s.*]. Pairwise comparisons using a Bonferroni correction indicated that HIGH social sensitivity group were higher the difference between individual and group score than LOW social sensitivity group in high familiarity group ($p < .001$). The same trend is observed in low familiarity group ($p < .05$), but not observed in middle familiarity group (*n.s.*). These results are shown in Figure 3.

Discussion

The main purpose of this study was to examine whether the familiarity and social sensitivity of group members affect group decision making. The finding revealed that HIGH social sensitivity of group members have a good influence on group decision making especially group members were familiar with each other. Another finding was that social sensitivity of group members improved the score compared to individual score. These findings suggest that highly socially sensitivity people have active exchange information and opinions therefore group decisions are more accurate than individual's decisions.

The results of this study offer further corroboration of the findings in previous works. Hinsz (2015) explained that the effectiveness of group decision making compared to individual were information pooling, error correction, meta-knowledge, reliability and information sharing. Meslec, Aggarwal, and Curşeu (2016) indicated that the factor of social sensitivity were positively and significantly correlated with the collective intelligence factor.

While this study shows the effect of social sensitivity on group decision making, the results of this study partially shows the effect of familiarity on group decision making. A possible contributor to this result might have been the measurement of familiarity in participants groups. Gruenfeld et al.(1996) constructed 3-person groups which were composed of three individuals familiar to each other, two familiar individuals and a stranger, or three strangers. Thus, more strictly defined and controlled the familiarity of group member might be provide evidence for a relationship between familiarity and group decision making. However the result of this study suggests that group decision making is partially influenced by familiarity especially among highly socially sensitivity groups.

Further researchers should examine whether personality of group members affect group decision making. Barrick, Stewart, Neubert and Mount (1998) suggested that group performance and viability depends on the personality, especially conscientiousness, agreeableness, extraversion, and emotional stability of group members.

Another questions worthy of future research is to improve to the quality of group decision making. Previous empirical results show that collective performance in cognitive judgment and cognitive decision making tasks rarely exceeds the performance of the best individual in the group (Meslec & Curşeu, 2013). Further research would expand the possibility of group decision making and the necessity of social sensitivity and group synergy.

Conclusion

In summary, this study has demonstrated that social sensitivity of group members affect group decision making especially when members are familiar with each other. In other words, if only the group members are familiar with each other, group decision making will not always go well. This study suggests that it is important for group decision making to possess unique knowledge or differing point of view. Thus, effective group decision making or problem solving require attention to not only the familiarity or relationship of members but also the diversity of member perspectives. This study represents that social sensitivity is the important ability to understand and to collaborate with other people in order to survive and thrive.

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Contact email: obata@hokusei.ac.jp