

Influence of familiarity and cognitive flexibility on performance in a consensus game.

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Consensus game is...

One of the communication game. Its purpose is to solve some problems by group discussion.

Ex) "If you have distress in the desert?",
"Event on a deserted island."

Rule of "If you have distress in the desert?"

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.

◆ Task:
Listing 12 items in order of importance for survival.

◆ 12 items:
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, vodka(about 2 liter)

◆ Score:
The score is calculated by the difference between listed importance order and model answer.
The score is lower, the better(highest score is 0).

Objective

we focused on familiarity or cognitive flexibility of the group member, and we investigated how they affected performance the consensus game.

Participants

187 undergraduates at Hokkai Gakuen University (groups of 4-6 people)

Procedure

1. List 12 items alone.
2. List them by discussion in the group.
3. Answer cognitive flexibility inventory (CFI).
4. Answer their familiarity among of the group.

cognitive flexibility inventory (CFI)

was consist of 2 subscales, **Alternatives** and **Control**.

Alternatives was designed to measure the ability to perceive multiple alternative explanations for life occurrences and human behavior, and to generate multiple alternative solutions to difficult situations.

Control was designed to measure the tendency to perceive difficult situations as controllable.

Results 1

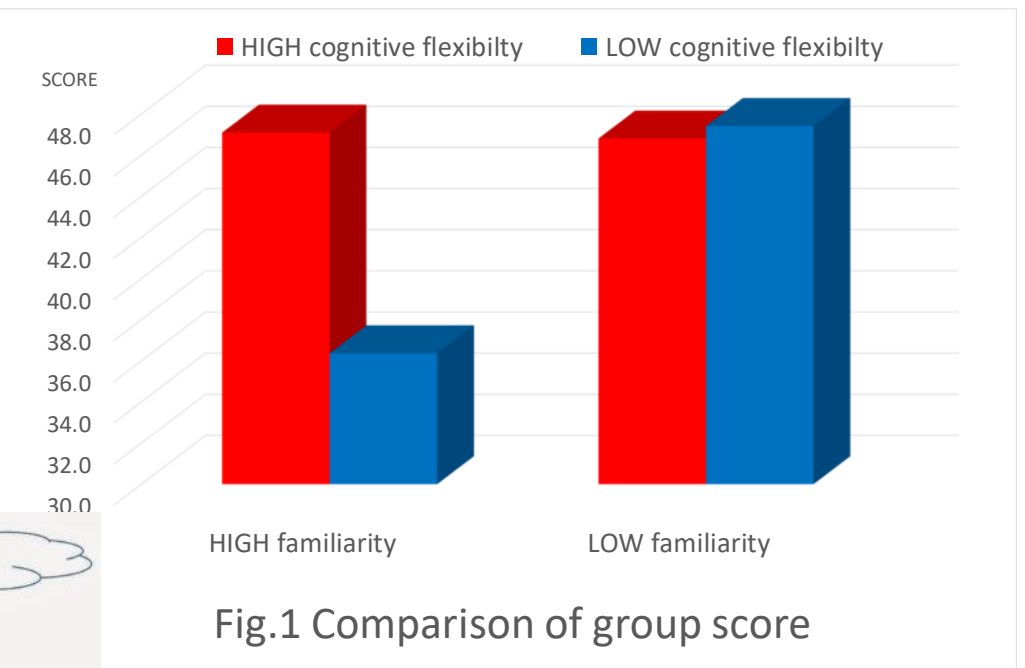
Effect of **Alternatives**(High and Low) and **Control**(High and Low) on the personal score of the consensus game were analyzed using ANOVA.

→ There were no differences.

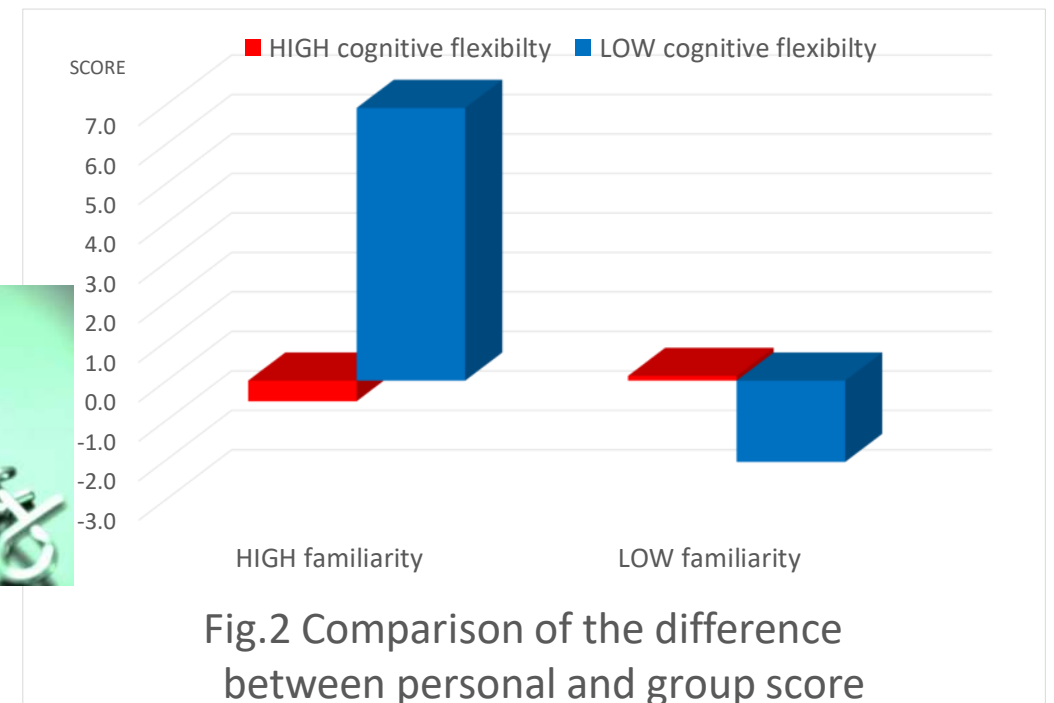
Results 2

Effect of cognitive flexibility(High and Low) and familiarity(High and Low) were analyzed using ANOVA.

1. group score.
 - There were difference in cognitive flexibility
 $F[1,183] = 8.81, p < .01 \rightarrow HIGH > LOW$
 - difference in familiarity
 $F[1,183] = 9.98, p < .01 \rightarrow HIGH < LOW$
 - interaction
 $F[1,183] = 11.06, p < .01$
- *LOW cognitive flexibility and HIGH familiarity groups were lower(better) score than the other groups.*



2. difference between personal and group score
 - There were no difference in cognitive flexibility
 $F[1,183] = 2.00, n.s.$
 - difference in familiarity
 $F[1,183] = 5.02, p < .05 \rightarrow HIGH > LOW$
 - interaction
 $F[1,183] = 6.69, p < .05$
→ *LOW cognitive flexibility and HIGH familiarity groups were superior than the other groups.*



Conclusions

- cognitive flexibility had an opposite effect on group decision making.
→ it can be failure to reach consensus among group members because HIGH cognitive flexibility people have too many opinions.

It is necessary for group decision making to **create a good environment** enough to exchange ideas and information freely.