選好的意思決定における視覚注意の役割

○Ji Xu¹・Noha Mohsen Zommara¹ (非会員)・Kajornvut Ounjai¹ (非会員)・Johan Lauwereyns¹ (非会員)

(¹システム生命科学府 九州大学)

キーワード：選好的意思決定、視覚的注意、手がかり

The Role of Visual Attention in Evaluative Decision-making

Ji Xu¹・Noha Mohsen Zommara¹・Kajornvut Ounjai¹ and Johan Lauwereyns¹

(¹Graduate School of Systems Life Sciences, Kyushu Univ.)

Key Words: Evaluative decision-making, Visual attention, cueing

Abstract

Recently evaluative decision-making, a type of choice based on personal preference, has been a topic of interest in decision-making science. Although several previous studies have reported a correlation between the length of looking time and evaluative decision-making, the role of visual attention in this process has not been explored. On the other hand, the allocation of attention may imply an enhanced or decreased valuation to attended items; this, in turn, may bias the decision. In the present study, we aim to investigate the effect of visual attention on preference formation by examining the decision-making under different cueing conditions. We use a strictly controlled spatial-cueing paradigm, in which either a spatial cue (a white dot) or an emotional cue (neutral face, happy face or disgusted face) will be presented. The participants are asked to indicate their preference from a pair of geometric figures by pressing the left or right button. We hypothesize that the cue can create a bias for or against the cued choice option as a function of the varied valence of the cue; moreover, the emotional cue may further strengthen the promoting or disturbing effect on evaluative decision-making.

Method

Participants. A total of 20 graduate students from Kyushu University participated in this study. All participants were naïve to the purpose of the experiment and had normal or corrected to normal vision. Written informed consent was obtained before the experiment.

Apparatus. The experiment was programmed by using Psychpy software and displays on a 24 inch monitor with resolution of 1920 × 1080. An eye-tribe was used to record eye gaze data. Participants were seated at a viewing distance of approximately 67 cm, and required to respond by pressing button.

Procedures. A self-reported pre-questionnaire concerning physical conditions was obtained from the participants.

Detailed instructions and a training session preceded the actual experiment to ensure full understanding of the experiment procedure.

Two sub experiments (self-paced and PC-paced experiment, both consist of four blocks) constitute the experiment. The order of sub experiment is counterbalanced. Each trial begins with 500 ms of fixation, and participants were asked to lock their gaze on the fixation cross. Subsequently, a cue (a dot or an emotional face) would be presented on the left or right side of fixation for 500 ms, with a delay of 500 ms, the target of two geometric images will be displayed. The participants were required to make

a preferred choice, under 1.5 s time limitation in the case of PC-paced experiment, and no limitation in self-paced experiment.

Result

Choice rate A student t-test was conducted and a significance was found between the choice on cued and uncued images in PC-paced experiment. Namely, the probability of all choices on uncued images were higher than cued images ($p < .01$), while no difference was found in self-paced experiment. Besides, there is subtle difference in both cued and uncued conditions when compared between experiments ($p < .05$).

Cue types As Fig. 2a presents, different cues had different effect on choice rate in PC-paced experiment: all types had a significance between the choice on cued and uncued images, except for happy face cue. Moreover, compared to dot or neutral face ($p < .05$), disgusted face cue had more significance ($p < .01$). Nevertheless, no effect due to cue type was found in self-paced experiment.

Discussion

The current study examined the role of visual attention in preference choices, by manipulating the orienting of attention and different cues. According to previous findings of Shimojo et al. (2003) and the principle of the Posner cueing paradigm, especially the effect of “inhibition of return” (IOR), it was expected that images presented at the opposite side of the cue (uncued images) in 500 ms time interval condition would be more likely to be preferred. The present finding from PC-paced experiment clearly showed the expected trend. It indicated a possibility of bias from visual attention to preference decision-making when RT is limited. Another interesting finding from current experiment is the different effect due to cue types. Taking into account the IOR effect, it appears that this mechanism of emotional processing interacted the IOR in evaluative decision-making: namely, a positive (happy face) cue counteracted against the effect of IOR, while the negative (disgusted face) cue exacerbated the effect with IOR. Thus, a stronger effect was observed in trials of disgusted facial cue. In summary, we suggest that visual attention plays an active role to influence the evaluative decision-making especially with the presence of time pressure.