Comparing the uncertainty effects of two payment procedures under an extended series of 300 trials in the Soochow Gambling Task

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Introduction
The Iowa gambling task (IGT) has been utilized in over 250 neurological, psychiatric studies and so on. This task was not only a research task, it has been a neuropsychological assessment test for mental disorders [1]. However, many researchers argue against the basic assumption of the IGT and its supporting theory—the Somatic Marker Hypothesis (SMH). One argument was elucidated by Chiu et al. [2, 3], who developed a modified version of the IGT, namely, the Soochow Gambling Task (SGT), and demonstrated that normal decision-makers are guided by gain-loss frequency, not by long-term outcome. However, the SGT has one procedure that differs from that in the original IGT. In the SGT, a subject always receives a gain or loss in each trial (a net payment, or a Net Version), whereas in the IGT, a subject is generally given gain feedback after each card selection and only sometimes with an additional loss in a single trial (a concurrent payment of both gain and loss, or a Concurrent Version). Thus, the SGT may be considered not as uncertain as the original IGT. To mimic the original concurrent payment in the IGT, the present study investigated a comparison between the net payment of SGT (Net Version, nSGT) (Table 1) and a mimetic concurrent payment of SGT (Concurrent Version, cSGT) (Table 2) and tested under an extended series of 300 trials.

Method
To clarify this question, 48 college students were enrolled in this study. In total, 24 subjects (12 females, 12 males) performed the original SGT (net payment, nSGT) and the other 24 subjects (12 females, 12 males) performed the concurrent payment SGT (cSGT). Each subject played 300 SGT trials on a computer. In both versions of the SGT, decks A and B result in a loss of $500 over 10 trials. Conversely, decks C and D result in a gain of $500 over 10 trials.

Results and Discussion
Experimental results indicate that the two versions of the SGT did not differ significantly (F(1,23)=.00, p=1.00). However, over 300 trials of the nSGT, most subjects gradually began to avoid bad decks A and B in favor of decks C and D [Figure 1, 2]. However, in the cSGT, subjects learned very slowly, even near the end of the 300 trials [Figure 3, 4]. The result may imply that the degree of uncertainty can also influence the implicit learning in the SGT. It is worth noting that cSGT and Iowa Gambling Task possessed almost the same degree of uncertainty, but subjects are difficult to hunch the long-term outcome completely even the end of 200 trials.

Conclusion
The choice behavior under nSGT and cSGT are supposed to experience the same degree of uncertainty. However, subjects seem to have more difficulty learning the internal rules of cSGT than of nSGT. Namely, decision makers are difficult to hunch the long-term outcome in cSGT rather than in nSGT under the 300-trials situation.

References

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