Retesting the somatic feedback induced by caffeine in the Iowa Gambling Task
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Introduction
The Somatic Marker Hypothesis (SMH) suggests that peripheral somatic feedback (bodily loop) is crucial when making decisions. Bechara et al. [1, 2] demonstrated that healthy decision-makers can infer long-term outcome with the help of somatic signals. However, North and O’Carroll [3] and O’Carroll and Papps [4] manipulated somatic signals, indicating that changing the somatic signal did not influence decision-maker performance in the Iowa gambling task (IGT). Furthermore, Killgore et al. [5] demonstrated that caffeine did not improve the risk behavior induced by sleep deprivation in the IGT. However, Killgore et al. [5] did not use a control group that was not deprived of sleep. Therefore, this study experimentally tests the Killgore et al. study with a group without the sleep deprivation, but with the caffeine.

Method
The caffeine group had 25 subjects (12 males and 13 females) and the control group had 25 subjects (12 males and 13 females). Each subject of caffeine group drank a cup of coffee (320 ml, caffeine concentration: 68mg/100 ml). Each subject of control group drank some water or nothing over a 30-min period. The brand of coffee was unknown to subjects. After imbibing their respective liquids, each subject performed the computerized version of the IGT.

Results and Discussion
Experimental results indicate that no significant difference (t-test, df(24)) exists between the two groups in terms of IGT performance (A: p=.84; B: p=.36; C: p=.30) [Figures 1, 2]. Namely, caffeine did not enhance or disturb subject preference for good decks C and D. However, the effect of final-outcome was insignificant for both groups (Control group: F(1,24)=.00, P=.98); the frequency effect was significant (Control group: F(1,24)=5.7, P<.05; Caffeine group: F(1,24)=26.91, P<.01); [Figures 3, 4] as most subjects preferred bad deck B, which is consistent with “prominent deck B phenomenon” suggested by Lin et al. [6].

Conclusion
Experimental results suggest the caffeine did not improve decision-maker behavior in the sleep-deprived group (Killgore et al., 2007) [5]. This experimental result may support the findings by North and O’Carroll (2001) [3] and O’Carroll and Papps [4], indicating (2003) that somatic signal change is not correlated with decision-making in the IGT. Nevertheless, the effect of gain-loss frequency (Chiu et al., 2008) [7] was predominant in this study.

References