Emotional Stroop Task with Facial Expressions and Emotional Words

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Introduction

The previous version of the emotional Stroop task has been criticized by Algom, Chaujut, and Lev (2004) for not being analogous to the color-word Stroop task. They claimed that the two dimensions of the emotional Stroop stimulus, emotional or neutral word and color, could not compose congruent or incongruent pairs. Thus the emotional Stroop stimulus could not qualify to be a true Stroop stimulus.

Based on the arguments made by Algom et al. (2004), the new version of the emotional Stroop task with stimulus dimensions (facial expression and emotional word) that can yield either congruent or incongruent pairs, has been introduced. So far, with the new task, a Stroop effect has been demonstrated in the facial expression naming task (Etkin, Egner, Peraza, Kandel, & Hirsch, 2006) as well as in the emotional word classification task (Haas, Omura, & Constable, 2006). These results suggest that the new emotional Stroop task fails to show Stroop asymmetry which is a hallmark of the color-word Stroop task. Is the new emotional Stroop effect non-analogous to the color-word Stroop effect after all?

We examined whether Stroop asymmetry would appear in the new emotional Stroop if we controlled for the task type (naming task) and the relative saliency between the two stimulus dimensions (facial expression and word).

Method

Participants

15 volunteers (10 male and 5 female) were recruited from the University of Tokyo. Mean age was 21.9 years.

Stimuli

The total of 40 stimuli was created by placing a Japanese word indicating either "happiness" or "anger" on the center of a face expressing either happiness or anger (Figure 1). The valence of words and faces were matched for half the stimuli (Congruent Type) and mismatched for the other half (Incongruent Type). Pictures of faces (5 male and 5 female) were selected from FIND facial information database (Watanabe, Suzuki, Yoshida, Tsuzuki, Bamba, Chandrasiri, Tokita, Wada, Morishima, & Yamada, 2007).

Procedure

Participants performed the facial expression naming task and the emotional word naming task. They were instructed to respond whether the task relevant dimension (face or word) indicated happiness or anger by pressing a key.

Results and Discussion

Mean reaction times on the correct trials are shown in Figure 2. An analysis of variance (ANOVA) with stimulus (congruent, incongruent) and task (face, word) as within-subject variables revealed a significant interaction between stimulus and task ($F(1,14) = 6.80$, $p < .05$). Post-hoc analyses revealed that the Stroop effect was present in the facial expression-naming task ($F(1,14) = 9.60$, $p<.01$), but it was absent in the word-naming task ($F(1,14) = .51$, $p = .48$). Thus, Stroop asymmetry appeared in the new emotional Stroop task, suggesting that the color-word Stroop and the new emotional Stroop share an analogous processing.

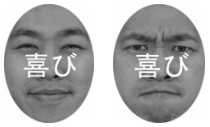

Figure 1: Stimulus samples.

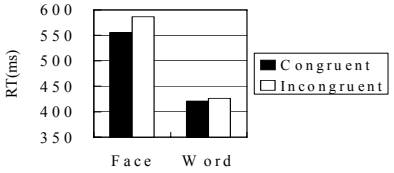

Figure 2: Mean RTs

References

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