

The Levels of Processing influence the Mere Exposure Effect on Incidental Concept Formation

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We investigated the effect of perceptual and semantic processing on concept and preference formation. Matsuda & Kusumi (2002, 2003) found three effects using a mere exposure (e.g., Zajonc, 1968) and concept formation paradigm (e.g., Barsalou et al., 1999). The first effect, concept formation by repeated exposure, is based on the event; the concept builds the prototype. The second, prototypical stimuli integrated dimension of each individual, are preferred if the value of that dimension is weighted. Finally, although formed concepts decrease cohesiveness as a function of interval, the prototype is retained.

In the present study, the learning condition was changed from intentional (Matsuda & Kusumi, 2002, 2003) to incidental learning. Category classification performance using incidental learning was found superior to performance based on intentional learning in Parkinson's disease patients (Reber & Squire, 1999). Because the typicality effect on learning by semantic processing is higher than that achieved with perceptual processing (Fujita & Shimizu, 1990), we also examined levels of processing (perceptual vs. semantic) as an independent variable.

Method

Design. A 3 (typicality of stimuli: high, medium and low) \times 4 (exposure frequency: 0, 1, 3 and 5 times) \times 2 (levels of processing: perceptual vs. semantic) \times 2 (interval: 5 min vs. 2 weeks) design was used, with interval and levels of processing manipulated between participants, and typicality of stimuli and exposure frequency manipulated within participants.

Participants. Ninety-six Japanese university students participated in the experiment.

Material. Unfamiliar fish pictures based on Barsalou et al. (1999) were used. The pictures were classified into types A and B. All stimuli consisted of 10 dimensions (D1-D10), and all stimuli shared D7-D10 dimensionality. Shared dimensions operated typically as independent variables. High-typical stimuli shared D3-D10, medium-typical stimuli shared D5-D10, and low-typical stimuli shared D7-D10. No-shared dimensions had a unique value. Within-distracters were unrepresented prototypical stimuli that were integrated with the value of the same-exposure frequency condition. Between-distracters were non-presented stimuli integrated with A and B types.

Procedure. Participants studied unfamiliar fish pictures that consisted of 10 dimensions (0, 1, 3, 5 times incidentally), and classified the fish into two categories (A or B), based on perceptual (shape: round vs. slender) or semantic processing (nature: gentle vs. fierce). Each stimulus was successively displayed for 7 sec; response times were 2 sec, feedback times were 1 sec, and ISIs were 1 sec. After an interval (5 min or 2 weeks), the participants judged the typicality, familiarity, liking, prettiness, and nostalgia of each picture, using a nine-point scale, as well as indicating recognition of new and old items.

Results and Discussion

A. Typicality and Familiarity Judgment In the 5-min interval condition of the present stimuli, the main effects of stimuli typicality and exposure frequency were significant, but the main effects of levels of processing and interaction were not. In the 2-week condition, the effect of exposure frequency was not significant. The results suggested that interval effected a judgment criteria shift from episode to knowledge base. Based on analysis of the within-category distracters, the judged value was higher in the semantic processing condition than in the perceptual processing condition. The data suggest that semantic processing integrates each stimulus and, thus, promotes prototype formation. (Figure 1A).

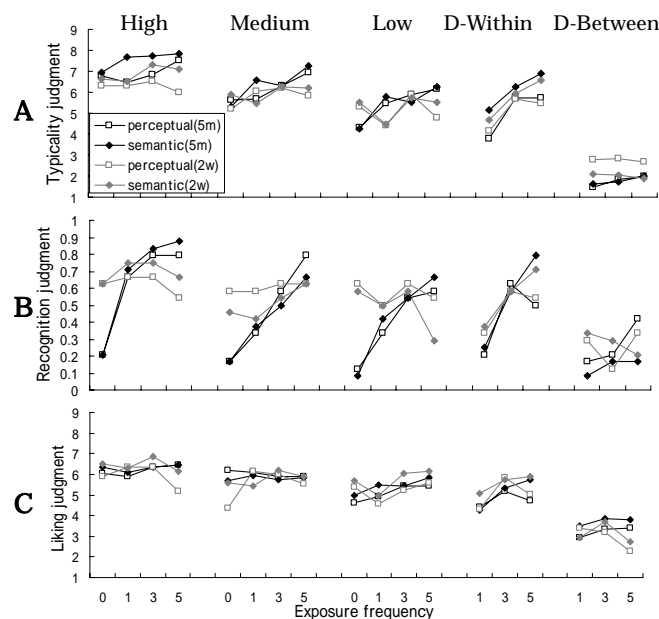


Figure 1 Typicality, Recognition, and Liking judgment scores

B. Nostalgia and Recognition Judgment The effect of exposure frequency on presented stimuli was significant in the 5-min condition but not in the 2-week condition. There was no effect of intention or levels of processing. Analyzing the data from the within-distracter condition revealed that recognition was higher in the semantic processing condition, which integrates high-frequency dimensions, than in the perceptual processing condition (Figure 1B).

C. Liking and Prettiness Judgment High-typical stimuli were preferred, and there was a significant effect of exposure frequency for the low-typical stimuli, as well as for intentional learning (Matsuda & Kusumi, 2002, 2003). There was no effect of levels of processing. The judged value of within-category distracters in the semantic processing condition was high, as compared to that in the perceptual processing condition (Figure 1C).

In conclusion, the effects of intention and levels of processing on judgments were weak. Furthermore, semantic processing in the study phase (compared with perceptual processing) enhanced typicality and affective judgments for the non-presented prototypical stimuli (within-category distracters).

References

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