論文の内容の要旨

論文題目 Semantic Sensory Correspondence between Color and Shape (色と形状との意味的対応に関する研究)

氏 名 陳娜

Kandinsky proposed a correspondence theory between color and shape, wherein circles, squares, and triangles are associated with blue, red, and yellow, respectively. These color-shape associations have been studied by artists and researchers for over a century. However, why specific color-shape associations exist, and the effect of color-shape associations with other perceptual/cognitive dimensions are as yet unknown. This thesis explored the general associations between colors and shapes using both direct and indirect experimental methods, among normal hearing and deaf people, to examine the nature of color-shape associations and the interactions with hearing sound effect.

The first study used an explicit matching task, in which participants were asked to choose which color best matched a variety of shapes. Results showed that Japanese people systematically associated shapes with colors (e.g., circle-red, triangle-yellow, square-blue), and these color-shape associations were consistent with those of Italian participants. Moreover, most of those color-shape associations could be interpreted by the presence of semantic information common to colors and shapes (e.g., warm/cold).

The second study used an indirect behavioral method, namely implicit association tests (IATs), to examine color-shape associations. Results demonstrated that color-shape associations were encoded by participants, and were strong enough to influence perceptual information processing and behavioral task performance. This provides the first evidence that color-shape associations can be measured by an indirect behavioral experimental method.

The third study investigated whether the sound or hearing experience plays a role in color-shape associations by comparing color-shape associations in deaf people with hearing people. Results showed that deaf and hearing people exhibited similar patterns of color-shape associations (i.e., circle-red, triangle-yellow, square-blue) in the explicit questionnaire task. However, deaf people showed less pronounced congruency effect of color-shape associations than hearing people in the indirect behavioral tasks. Those results suggested that auditory experiences influence color-shape associations. Based on these results, semantic sensory correspondence was proposed as a means to interpret color-shape associations in both deaf and those with normal hearing.

Finally, whether semantic information also influences relationships in other domains, such as cross-preferences for colors and shapes was investigated. Results showed people who preferred some

simple/complex shapes also tended to prefer some light/dark colors, and these cross-preferences might be explained by some semantic information (e.g., simple/complex, light/dark).

Taken together, these results suggested that Japanese color-shape associations could be verified by both direct and indirect behavioral experimental methods. Semantic sensory correspondence between colors and shapes could explain color-shape associations, the influence of hearing sound effect on color-shape associations, and cross-preference for color and shape.