

The uncanny valley phenomenon triggered by a task-irrelevant dimension of objects

Kota Sasaki

Chuo University, Hachioji, Japan

Atsunori Ariga

Chuo University, Hachioji, Japan

Abstract

We feel uncanniness for human-looking robots (uncanny valley). Regarding the mechanism, we hypothesized that the visual system automatically tries but misses to categorize a registered object, and therefore negatively evaluates it. However, it is unclear whether the automatic categorization induced the negative evaluation since all previous studies directed participants to evaluate the object in terms of a previously categorized dimension. The present study examined whether the uncanny valley is automatically triggered by the categorization failure in a task-irrelevant dimension. Participants categorized a morphed figure, the shape of which has been known to trigger the uncanny valley, in terms of color, and evaluated the likeability of it. The uncanny valley occurred based on the task-irrelevant shape dimension of the objects, even though the preceding color categorization was successful. These findings suggest that the visual system evaluates the likeability of the registered objects in response to the automatic categorization and its failure.