Gestalt Similarity Principle: Can 3- to 6-Month-Old Infants Use Topological or Geometric Property to Group Visual Patterns?

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The present study aims to explore whether young infants can use similarity principle to group visual patterns. Two kinds of form similarity were employed in the study: topological and geometrical properties. Using familiarization/novelty preference procedure, we tested 3- to 6-month-old infants with three kinds of pattern discrimination tasks in three blocks: horizontal and vertical stripes, patterns consist of topologically different elements (a disk and a ring), and patterns consist of geometrically different elements (a disk and a triangle). There were four trials in each block and each trial contained a 20-second familiarization period followed by a 20-second test period. The results showed that, for the stripe condition, 3- to 6-month-old infants significantly preferred the novel orientation, indicating a reliable discriminability between horizontal and vertical stripes. For the topologically different patterns, infants significantly preferred the pattern with a novel global orientation, indicating an ability to group the elements based on topological differences. However, for the geometrically different patterns, infants failed to show any reliable novelty preference, indicating an inability to group the elements based on geometric differences. In conclusion, the present study demonstrated that 3- to 6-month-old infants can discriminate and group visual patterns based on topological difference. This finding is consistent with the developmental and learning view of the Gestalt principles in infancy.