

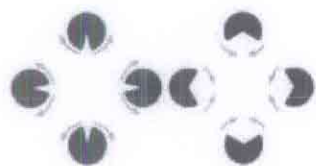
ROBUST, MOVING ILLUSORY CONTOURS INDUCED BY 'MUNCHING' PACMAN KANIZSA DISPLAY

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Background: Illusory contour displays, such as the Kanizsa square, have helped to reveal non-local mechanisms that contribute to edge and line perception. Proposed explanations include edge interpolation & top-down figure/surface percepts. Here, we present a strong illusory contour display with the flexibility to address these mechanisms. This display also offers a control stimulus that eliminates the illusory contour without altering the local inducers. Methods: Kanizsa-type displays were configured with 4 "pacman" inducers. The angle of each pacman opening was continuously swept between large and small angles, creating the percept of "munching" pacmen and of a "breathing" diamond figure. The relative phase of angle sweep was varied across the pacmen. Subjects adjusted the radii of static pacmen to match the illusion strength induced by the munching pacmen. Results: In-phase "munching" resulted in very robust illusory contours. Subjects matched these to static illusory contours with 30-60% greater luminance contour support. Neighboring pacmen munching in opposite phase did not produce a contour. Thus, illusory contours could be created or eliminated without altering the local stimuli - only the relative temporal phase was varied. Robust illusory contours persisted in the absence of a figural percept when only two pairs of adjacent pacmen were in phase and when the local L-junction was disrupted by circle arcs on the edge of the pacmen discs. Conclusions: The Munching Pacmen Illusion may be of substantial interest to neurophysiologists who wish to study the contributions from multiple mechanisms to contour perception.

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