Presentation Abstract

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Presentation Title: Variations of the Kanizsa illusion induce compression and extension effects during perception and action of eye and hand

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Abstract: While spatial information for perception and action may be processed differently in the brain, some visual illusion studies have demonstrated how actions were not always “immune” to visual illusions. In the Kanizsa compression (KC) illusion, a horizontal line that is occluded by a surface is often perceived to be shorter than it really is. We used seven conditions for studying the standard KC stimulus presentation to examine the effects illusions have on saccades, hand movements, and perceptions. The first stimulus was a horizontal gray line alone (control stimulus). The second had the middle part of the line occluded by a black box; another replaced the black box by a white virtual box (with four Packman figures defining its corners and a corresponding blanking of the line). Two other stimuli had the box/virtual box “behind” the gray line, and
two more had these at the end of the gray line. All four of the boxes/virtual boxes at the centre of the line, were categorized as inducers of compression effects, and boxes/virtual boxes box-at-the-end conditions as inducers of extension effects. In experiment 1, saccades (recorded by an eye-tracker) were made from one end of the gray line to the other as soon as fixation ended. Of the four compression effect conditions, significantly more compression of line length was observed only for the condition of the line occluding the black box. In experiment 2, where the subject indicated line length by a mouse movement, of these same four “central box” conditions, only the virtual box “occluding” the line condition showed significantly more compression effect. In the two box-at-the-end conditions, the virtual box showed a significant extension effect, but was less than the black box condition. In experiment 3, which employed a two-condition forced choice between one of the six with-box conditions and the line-only condition, significantly more judgments were made that the both occluding box/virtual boxes were perceived as shorter than the line alone, while each of the box-at-end conditions had significantly less judgments of compression effects. These results demonstrate that saccades, hand movements and perceptual judgments are influenced by visual illusions with a statistical comparison across experiments suggesting perceptions were most influenced, followed by hand then eye movements.

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SACCADE

ILLUSION

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