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Separate Perceptual Processes Underlie Morinaga's Paradox of Displacement

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SEPARATE PERCEPTUAL PROCESSES UNDERLIE MORINAGA'S PARADOX OF DISPLACEMENT

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In Morinaga's paradox of displacement, judgments of length do not correspond to judgments of position. In Figure 1, the middle line of the Müller-Lyer-type figures appears shorter than those on the top and bottom, but its right endpoint appears displaced to the right. This experiment compared the effects of wing length change on judgments of length and position in Morinaga figures. It has been recently argued that both length and position judgments are due to the same perceptual mechanism. This implies that changes in wing length should have similar effects on these judgments. In the present experiment, the length of left and right wings and central test lines of the upper and lower patterns were varied in a 4 X 4 X 2 factorial design. Twenty-one subjects varied the length of the middle line to either match the length of the other two horizontal lines or align the endpoint positions.

The length results appear in Figure 2 and are consistent with results from similar Müller-Lyer studies. As wing length increased, the judged test line length first increased, then decreased. This inverted U-shaped graph has been reported previously in studies using similar Müller-Lyer figures.

In the second part of the study, subjects aligned the position of the right endpoints (see Figure 3). In this study, the judged position of the right endpoint of the test line did not show the same inverted U-shaped function as was found for the length study. In addition, changes in left wing length had a strong effect on length, but not position judgments. These indicated that the process underlying the length and position judgments differ.

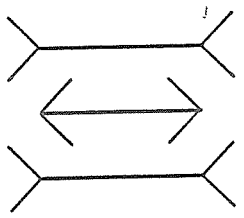

Figure 1

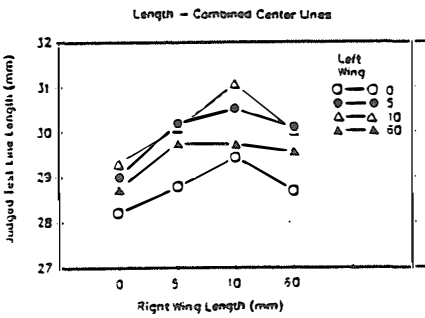

Figure 2

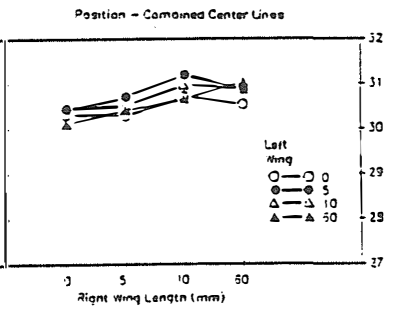

Figure 3