

## LETTERS TO THE EDITOR

### CONSTANCY SCALING REVISITED

Gregory's (1963) application of "constancy scaling" is an appealing account of a number of geometrical illusions. As in three dimensions, constancy scaling operates to increase the perceived size of apparently more distant parts of a figure and to decrease the perceived size of apparently nearer parts. In figures such as the Müller-Lyer figure, the constancy scaling mechanism is directly influenced by the perspective features of the figures. Unfortunately, it is difficult to test the theory until we know the apparent depth given by each of the features. Gregory (1972) suggested measuring the depth given by various perspective features and "correlating seen depth in this situation with the illusion [540]." However, a positive correlation between perceived depth and perceived size does not necessarily support the theory, since correlation does not imply causation. In fact, negative correlations between perceived depth and perceived size have been considered irrelevant with respect to the general constancy scaling account of illusions. Witness Kaufman and Rock's (1962) dismissal of the perceived nearness of the horizontal moon as an accurate index of the depth measure employed by the constancy scaling mechanism.

This leaves us with almost an untestable theory unless we require that the depth cues operate consistently within a given illusory situation. It follows that if the Müller-Lyer illusion is a function of the depth given by perspective features, both the perceived length and width of the central axis should be distorted in the same direction. Waite and Massaro (1970) tested this implication by asking for simultaneous length and width

judgments of the central axis of modified Müller-Lyer figures. In the modified figures, the central axes were made slightly wider than they normally are to make width judgments possible. If the theory is internally consistent, the distance cues must operate similarly in both length and width judgments. The results disconfirm the theory since the illusion for length was opposite that for width. For example, although the central axis of the Müller-Lyer figure with outward directed wings was seen as longer than it was, the width of the axis was actually seen as narrower. Accordingly, the size constancy mechanism cannot account for the illusion of the modified Müller-Lyer figures. To the extent the depth cues did not differ in these figures from those in the standard Müller-Lyer figure, we can reject the size constancy explanation of the Müller-Lyer illusion.

### REFERENCES

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