Notes and Comment

A note on enhancing the Poggendorff illusion

SUZANNE GREIST-BOUSQUET

Kean College of New Jersey, Union, New Jersey

and

H. RICHARD SCHIFFMAN

Rutgers, The State University
New Brunswick, New Jersey

Wenderoth and O'Connor (1987) recently reported that the presence of parallels and transversals in a variation of the Poggendorff figure enhanced misalignment effects. Their results on misalignment are perfectly analogous to results on interior underestimation presented by Greist-Bousquet and Schiffman (1981a): interior underestimation in the Poggendorff figure was enhanced by the presence of parallels, and transversal displacement (as measured by interior distortion) was increased by the presence of transversals. Findings on interior underestimation lend support to a proposed relationship between the Poggendorff and Müller-Lyer illusions, yet Wenderoth and O'Connor erroneously conclude that their comparable findings negate this notion.

Consistent with other investigators (Pressey, 1971; Quina-Holland, 1977; Zanuttini, 1976), Greist-Bousquet and Schiffman (1981a, 1985, 1986) suggested that Poggendorff misalignment may be due to an underestimation of the distance between the parallels. Following much earlier work (Judd, 1899), we proposed that the underestimation is due to the influence of an amputated form of the wings-in Müller-Lyer figure contained within the Poggendorff parallels (Figure 1B). Although an analogous wings-out figure is also present (Figure 1C), previous research on the Müller-Lyer illusion (e.g., Greist-Bousquet & Schiffman, 1981b; Warren & Bashford, 1977) indicates that this amputated variation produces little overestimation.

In addition to a Müller-Lyer effect caused by the parallels, another Müller-Lyer effect that may contribute to Poggendorff misalignment is a displacement of the transversals away from each other. This transversal-displacement effect is caused by an elongation of the parts of the parallels that form obtuse angles with the transversals, due to a minimal Müller-Lyer wings-out effect. Much previous research (Day & Dickinson, 1976; Greist-Bousquet & Schiffman, 1981a; Hotopf & Ollerearnshaw, 1972; Judd, 1899) has shown that the transversal displacement is a subsidiary effect in the Poggendorff illusion.

Address correspondence to Suzanne Greist-Bousquet, Department of Psychology, Kean College of New Jersey, Union, NJ 07083.

Figure 1. The classic Poggendorff figure (A) contains an amputated version of the wings-in Müller-Lyer illusion (B) and an amputated wings-out Müller-Lyer illusion (C). (The complete Müller-Lyer figure is shown above.)

Despite their statement to the contrary, Wenderoth and O'Connor's (1987) findings verify the operation of *both* Müller-Lyer effects within the Poggendorff illusion. Misalignment (and interior underestimation) increases with the addition of parallels in the Poggendorff figure, just as underestimation increases with the addition of wings in the wings-in Müller-Lyer figure (e.g., Greist-Bousquet & Schiffman, 1981b; Warren & Bashford, 1977). Misalignment is enhanced (but interior underestimation is decreased) with the addition of transversals due to the transversal-displacement effect. Thus, in direct conflict with their conclusion, Wenderoth and O'Connor provide additional support for the role of Müller-Lyer effects within the Poggendorff illusion. Furthermore, they extend the application of this explanation of the Poggendorff illusion to another variation of the illusion.

REFERENCES

- DAY, R. H., & DICKINSON, R. G. (1976). The components of the Poggendorff illusion. *British Journal of Psychology*, *67*, 537-552.
- GREIST-BOUSQUET, S., & SCHIFFMAN, H. R. (1981a). The Poggendorff illusion: An illusion of linear extent? *Perception*, *10*, 155-164.
- GREIST-BOUSQUET, S., & SCHIFFMAN, H. R. (1981b). The role of structural components in the Müller-Lyer illusion. *Perception & Psychophysics*, *30*, 505-511.
- GREIST-BOUSQUET, S., & SCHIFFMAN, H. R. (1985). Poggendorff and Müller-Lyer illusions: Common effects. *Perception*, *14*, 424-447.
- GREIST-BOUSQUET, S., & SCHIFFMAN, H. R. (1986). The basis of the Poggendorff effect: An additional clue for Day and Kasparczyk. *Perception & Psychophysics*, *39*, 447-448.
- HOTOPF, W. H. N., & OLLEREARNSHAW, C. (1972). The regression to right angles tendency and the Poggendorff illusion: II. *British Journal of Psychology*, *63*, 369-379.
- JUDD, C. H. (1899). A study of geometrical illusions. *Psychological Review*, *6*, 241-261.
- PRESSEY, A. W. (1971). An extension of assimilation theory to illu-

- sions of size, area, and direction. *Perception & Psychophysics*, **9**, 172-176.
- QUINA-HOLLAND, K. (1977). Spatial distortions within the Poggendorff figure and its variants: A parametric analysis. *Perception & Psychophysics*, **21**, 118-124.
- WARREN, R. M., & BASHFORD, J. A. (1977). Müller-Lyer illusions: Their origin in processes facilitating object recognition. *Perception*, **6**, 615-626.
- WENDEROTH, P., & O'CONNOR, T. (1987). Matching gaps between mis-aligned pointers demonstrates that lines, both transverse and parallel, enhance Poggendorff illusions. *Perception & Psychophysics*, **41**, 165-172.
- ZANUTTINI, L. (1976). A new explanation for the Poggendorff illusion. *Perception & Psychophysics*, **20**, 29-32.

(Manuscript received March 13, 1987;
accepted for publication March 14, 1987.)