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Bilateral Field Advantage and Practice: Implications for Stimulus Complexity

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Previous studies used multiple blocks of trials and manual response times (RT) to assess processing of visual stimuli with right-handed participants. Processing of complex tasks required more coordination of the hemispheres producing a larger bilateral field advantage (BFA) score. A patternmatching task (PMT) was reported by several studies to be more complex and resulted in larger BFA than a letter-matching task (LMT). BFA decreases with task repetition suggesting that as the task becomes less taxing the hemispheres require less splitting of duties. However, no study has investigated a possible practice effect for RT or accuracy across the blocks of trials. Left- and right-handed male (21) and female (15) participants performed 8 blocks (48 trials each) of a LMT and a PMT. There was a significant difference in BFA between the two tasks with higher BFA for the LMT. Practice effects for RT and accuracy were found for both tasks. Participants responded significantly faster and more accurately in latter blocks for both unilateral and bilateral presentations. The pattern of these practice effects differs between the LMT and PMT. A ceiling effect occurs by Block 3 for both RT and accuracy for the PMT, but significant improvement in RT and accuracy continues to Block 7 for the LMT. These results suggest that the LMT is the more complex task. The completion of additional blocks may be necessary for the LMT to become more automatized and thus comparable to the PMT. Including left-handed participants may influence the differences between this and previous studies.

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