

Perception Isn't So Simple: Commentary on Bernard, Gervais, Allen, Campomizzi, and Klein (2012)

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Bernard, Gervais, Allen, Campomizzi, and Klein (2012) report an inversion effect only when participants viewed sexualized male body images and not when they viewed sexualized female body images. On the basis of a belief that face and person recognition is subject to an inversion effect (Rossion, 2008; Yin, 1969) but that object recognition is not, the authors concluded that “at a basic cognitive level, sexualized men were perceived as persons, whereas sexualized women were perceived as objects” (p. 470). The inference is that different visual-recognition processes are applied to images of males and images of females. This conclusion is unwarranted on empirical, methodological, and logical grounds.

Empirically, the claim that object recognition is not affected by inversion is incorrect. There is an extensive literature demonstrating effects of planar rotation—and inversion—on both novel and familiar nonface and non-body stimuli (Jolicoeur & Milliken, 1989; Lawson & Humphreys, 1996; Tarr & Pinker, 1989). That inversion effects can and do occur for everyday objects is not in debate; what is more complex are the conditions under which inversion effects occur or not (Tarr & Pinker, 1990). A wide range of factors have been implicated as exerting some influence on orientation effects (Biederman & Bar, 1999; Hayward & Tarr, 1997, 2000; Tarr, Bülthoff, Zabinski, & Blanz, 1997), and it is incumbent on Bernard et al. to establish whether any of these perceptual or task-related factors—that is, nonsocial components—might underlie the differential effects obtained for male and female images.

Without knowing whether the male and female stimuli differed along perceptual dimensions, one cannot ascertain whether the sex of the stimulus images was the underlying cause of the obtained effects. For example, the males in the stimulus images illustrated in the article may have shared similar hairstyles, and the females may have had more varied hairstyles; similarly, the male body poses may have been more symmetrical relative to the female poses. More generally, the complexity of the

silhouettes, the number of perceptual features, the distinctiveness of specific features, the number of viewpoint-invariant properties, and image symmetry all may have influenced visual-recognition performance for inverted stimulus images.

Methodologically, as a dependent measure, Bernard et al. (2012) reported only the percentage of responses correct for each condition. Without reaction times, it is impossible to determine whether participants were simply spending more time looking at inverted female images—possibly because of social factors—and thereby achieving higher levels of performance for inverted female images relative to inverted male images. Looking for such a speed-accuracy trade-off is critical because its existence would implicate a difference in response biases (for whatever reasons), not a difference in perceptual processing per se (Gauthier, Behrmann, & Tarr, 1999).

A second methodological issue concerns a failure to include nonsexualized, but otherwise equated, stimuli as controls (an issue the authors acknowledge). This control is essential for assessing whether the effects are attributable to the sexual nature of the images. If nonsexualized images produced a pattern similar to those observed for sexualized images, this finding would severely undermine the validity of the sexualized-body-inversion hypothesis. This control's absence means there is no adequate way of interpreting the present results relative to plausible alternatives.

Logically, there is a question as to why inversion effects were not obtained for inverted female images, given that the distractor images were left-right mirror images of the targets. On the basis of the extensive mental-rotation literature, in which discriminating

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between mirror images of otherwise identical stimuli consistently produces robust costs for stimulus rotation (Shepard & Cooper, 1982), one would expect reliable inversion effects regardless of the stimuli. The preferred explanation of Bernard et al. (2012)—that the female images have been “objectified”—sidesteps the fact that visual content does not significantly affect task performance when observers are asked to make a mirror-image discrimination (Folk & Luce, 1987). Indeed, the “analytic processing” that Bernard et al. (2012) associate with object recognition would be *incapable* of supporting mirror-image discriminations that necessarily rely on the spatial relations between parts. Thus, the authors should consider what perceptual processes might have enabled good task performance.

Another logical issue, and one that also suggests an explanation for the authors’ failure to find an inversion effect for female images, revolves around the role of attention. A wide variety of societal factors may lead participants to attend more to female images than to male images. Assuming that performance for upright images was near ceiling for the particular experimental conditions used in the study, greater attention to female images would drive performance for inverted female images closer to ceiling—the exact pattern of results that was reported. Similar to the concerns already noted, the critical issue is that this account implicates a difference in encoding biases, but not a difference in perceptual processing.

In sum, two overarching issues cloud the interpretation of Bernard et al.’s (2012) results. First, nonsocial, perceptual factors may explain the failure to find inversion effects for female images. Second, to the extent that social factors play a role, their influence may be exerted at a nonperceptual level—for example, by biasing looking time or attention. Without better controlled stimuli, further data analyses, and more sophisticated experimental designs, it is premature—particularly given the claimed real-world implications of this work—to suggest that the observed differences between male and female images with respect to inversion are attributable to “basic” visual or cognitive processes recruited in response to the “objectification” of females.

Of note, *Perspectives on Psychological Science* has recently published two articles voicing concerns about the “short report” format (Bertamini & Munafo, 2012; Ledgerwood & Sherman, 2012). In that Bernard et al.’s (2012) paper was published as a short report—which is briefer than the already-brief format popularized by journals such as *Psychological Science*—one wonders if some of the concerns raised here could have been avoided in a longer article format.

Declaration of Conflicting Interests

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