REPLY TO GÖRNER ET AL.:
Encoding gaze as implied motion

Arvid Guterstam[a,1] and Michael S. A. Graziano[a]

We thank Görner et al. (1) for a welcome comment on our study (2). We report brain activity that suggested people implicitly code the gaze of an agent as a stream of motion emanating from the agent. Görner et al. (1) offer an alternative explanation: The motion-related brain activity may represent an expectation that the agent will perform an action, such as reaching out or walking toward the target of gaze.

When viewing static images of a running animal, subjects generate an implied motion signal (3, 4). It is possible that our subjects covertly processed the stimulus (a face and a tree) as a person performing an action. Our results do not rule out this explanation. However, in our view, it is less likely than the explanation we offer.

Our first concern with the implied action interpretation is that, simply put, the stimulus shows only a person's head. It does not show a running, walking, or reaching person, or any other moving body part or object, making the implied action interpretation tenuous.

Second, our MRI study should be considered in the context of two additional articles in which we presented a series of behavioral experiments and controls (5, 6). Our findings suggested a special relationship between the implied attention of the depicted head and the subject's covert perception of motion flowing from the depicted head. By manipulating whether the head was described as attending to one object or another, we could vary the results accordingly. The implied motion seemed to relate to the attention of the depicted head, not to a specific action performed by the depicted head.

All of these experiments, however, suffer from being correlative. They show a correlation between attentively staring eyes and some type of covert motion signal—a behavioral signal or an MRI signal. That correlation is the crux of the concern here. Correlation, as we all know, does not imply causation. The experiments, by their nature, are open to other interpretations about causality. Hence Görner et al. (1) are able to suggest an alternative: Maybe the motion signal is caused by an imagined action that happens to be correlated with attentively staring eyes.

The only direct way to answer the question is with a causal, rather than a correlational, study. Imagine we present a display including faces, objects, and subtle, subthreshold streams of background motion, sometimes flowing from the faces to the objects. If those motion streams manipulate subjects' social cognitive decisions, significantly altering their perception of which face is attending to which object, then we will have direct evidence that a motion signal plays a causal role in social cognition. The experiments would put to a direct test the hypothesis that people use a covert, implied beam of motion from an agent to an object as part of the mechanism for encoding the agent's attention. This and many other experiments are in progress.

Görner et al. (1) suggest that more studies should be done—we can all agree with that suggestion!

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[a]Department of Psychology, Princeton University, Princeton, NJ 08544

Author contributions: A.G. and M.S.A.G. designed research and wrote the paper.
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[1]To whom correspondence may be addressed. Email: arvidg@princeton.edu.