Commentary title

Paranoia reveals the complexity in assigning individuals to groups on the basis of inferred intentions

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Abstract

We suggest that variation, error and bias will be essential to include in a complete computational theory of groups – particularly given that formation of group representations must often rely on inferences of intentions. We draw on the case study of paranoia to illustrate that intentions that do not correspond to group-constitutive roles may often be perceived as such.

Commentary

The target article offers a computational theory of groups, suggesting that group membership can be inferred based on the assignment of agents to specific roles within triadic conflict. We appreciate the value in the author's clear conceptualisation of group membership as a relational property. Nevertheless, we wish to raise the overlooked issue of variation, error and bias when assigning others to roles and, thus, inferring group membership. The target article acknowledges that assignments to roles is inherently probabilistic; we outline how this may often stem from biases in

attributing intentions to others, and that this might complicate the ways that individuals understand the social structure of the world they inhabit.

In the absence of directly perceived action, formation of group representations often relies on attributing intentions to others. The target article states that what makes intentions relevant to group representations is whether they can predict group constituent roles ["what makes a particular intention or motivation "genuinely" about groups is that it will lead agents to occupy the group-constitutive roles across all four interaction types, both now and in the future" (p48)].

However, we argue that this view obscures the reality of how group representations are often formed on the basis of inferring intentions. We suggest that whether intentions are group-based according to the target article's definition (that they lead agents to occupy group-constitutive roles) is often ambiguous. Moreover, intentions that are not group-based can be interpreted as such.

A clear example of biases in inferring others' intentions can be seen in paranoia. Paranoia exists on a spectrum of severity in the general population and need not be indicative of any clinical disorder (Bebbington et al., 2013). Our work demonstrates that paranoia is positively associated with a tendency to attribute malevolent intent to others even when true intentions are ambiguous (Raihani and Bell, 2017, Saalfeld et al., 2018). In particular, we find that paranoia involves a lowered threshold for detecting harmful intentions from both cohesive and non-cohesive groups (Greenburgh et al., 2019). In other words, we find evidence of a bias to perceive malevolent group-based intentions even when signals for group-constitutive roles are weak.

This perception of malevolent intentions directly pertains to biased group representations in paranoia: paranoia is commonly characterised by the heightened belief that others are coordinating as a *group intending* to harm the individual (Raihani and Bell, 2019). For example, an item in the Revised Green et al Paranoid Thoughts Scale that highly discriminates shifts in paranoia in the general population is '*I was convinced there was a conspiracy against me*', and endorsement of this item is a strong indicator of heightened paranoia (Freeman et al., 2021). Therefore, from the perspective of triadic interactions described in the target article, paranoia typically involves skewed group representations: paranoid individuals often detect conspiracies reminiscent of "alliance"-type conflicts (Figure 2 in the target article) even when the individuals involved in these conspiracies may not be part of a coherent group with coordinated aims in reality.

Another common example of variation in group representation is provided by conspiracy thinking – which is a distinct but correlated construct to paranoia (Imhoff and Lamberty, 2018). Conspiracy thinking refers to the belief that significant public events are caused by secret plots by two or more powerful, and often malevolent, actors (Douglas et al., 2019). Conspiracy thinking is widespread but variable in the general population (Freeman and Bentall, 2017; Freeman et al., 2020), providing another example of how, when group-constitutive information is ambiguous, some individuals can form group representations.

At the extremity of the paranoia continuum, in persecutory delusions, group perception can arise in the absence of any group-constitutive information at all. The target article suggests that the cognitive system attends to intentions as sources of group-based information when intentions predict whether agents will occupy group-constitutive roles in all interaction types, both at present and in the future. However, this is not the case where persecutory delusions are concerned – persecutory

delusions are often characterised by the perception of a conspiracy organised to target the individual, even though no group with such intentions necessarily exists in the material world (Cameron, 1959), and therefore these beliefs have no predictive value for future group-constitutive roles. For example, Green et al (2006) report that 81.7% of a sample of individuals with current persecutory delusions believed their persecutors were organized into a conspiracy against them.

Given these known biases in inferring malevolent intentions, any computational model of groups must be able to allow for variation in how group representations are formed. Answers to the question posed by the target article, "What is a group?", will vary significantly between humans.

Conflict of interest statement

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