

## ANTHROPOLOGY

## Which accusations stick?

The social function of witchcraft accusations remains opaque. An empirical study of Chinese villagers shows that the label 'zhu' influences who interacts across a social network, but appears not to tag defectors in service of promoting cooperation. An open question thus remains: from witchcraft to gossip, which accusations stick?

Jillian J. Jordan

Across a diversity of cultural and historical contexts, humans have held beliefs about witchcraft<sup>1</sup>. These beliefs have been and still are heterogeneous, and in many ways remain poorly understood. However, they clearly tap into the deep human drive to assess the character and reputation of others. Who can be trusted and who should we avoid? And who is socially acceptable to interact with?

But in what way do witchcraft beliefs relate to an individual's character and reputation? A key open question is what information witchcraft labels actually convey about the accused. Some anthropologists have proposed that witchcraft accusations provide reliable information about an individual's cooperativeness<sup>2</sup>. Under this theory, selfish defectors are labelled as witches, and the fear of stigmatization helps to maintain cooperation in the community. In contrast, others have argued that witchcraft accusations merely reflect spiteful attempts to harm one's competitors<sup>3</sup>. To date, however, there has been very little empirical or quantitative evidence to bear on this debate.

Writing in *Nature Human Behaviour*, Mace and colleagues provide a fascinating empirical treatment of this important question<sup>4</sup>. They studied five villages in a rural population in southwestern China, where some individuals are stigmatized with the witchcraft label 'zhu'. This label is associated with the threat of food poisoning, and is typically directed at women, especially those with more wealth who are heads of a household. The label gets applied to entire households, and significantly impacts their ability to recruit help with farming and to form social relationships more generally.

To assess the information it conveys and its influence on social life, Mace and colleagues rigorously analysed how the *zhu* label relates to cooperativeness and social network structure. Informants reported to the authors that 13.7% of households carried the *zhu* label. Notably, the authors found no evidence that individuals in these households were less cooperative



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than non-*zhu* individuals. The *zhu* label did not predict altruism in an economic donation game, where individuals received an endowment of money and had the opportunity to share with an anonymous member of their village. Thus, the authors found no support for the theory that the *zhu* label signals meaningful information about an individual's prosociality.

Nonetheless, the label had profound implications for how social networks were structured. The authors mapped social networks in three ways: asking individuals who they would like the experimenters to give money to, measuring helping relationships in the context of farm work and tracking kinship data. Supporting the hypothesis that *zhu* individuals were ostracized from mainstream social networks, there was substantial clustering of *zhu* households in small networks or dyads. In other words, *zhu* individuals were unlikely

to be connected to non-*zhu* individuals — through economic gifts, farming help and especially reproductive relationships (sexual partners or children). However, the authors found that *zhu* individuals were able to mitigate the costs of this stigmatization by forming relationships with each other.

Mace and colleagues demonstrate that the *zhu* label thus has substantial implications for how social life is structured, but does not seem to convey meaningful information about an individual's quality as a cooperative partner. They therefore argue that their results do not support the hypothesis that witchcraft beliefs serve to promote prosociality. Rather, they favour the interpretation that *zhu* accusations may reflect revenge, jealousy or spite towards one's competitors and their descendants.

This study provides a compelling empirical investigation of how a witchcraft label functions. It also raises important

theoretical questions about witchcraft accusations, and reputation systems<sup>5</sup> more generally. When reputation labels do not convey reliable information about an individual's traits, as Mace and colleagues suggest is true of the *zhu* label, what determines who gets labelled and when the label sticks? And what prevents accusations from growing more widespread (for example, what prevents the accused from making successful counter-accusations, and what limits pre-emptive attacks)? The authors report that the origins of particular *zhu* accusations were unclear, including to the accused. Thus, the dynamics regulating accusations remain an important topic for future inquiry.

Relatedly, from the perspective of non-*zhu* individuals, why treat the *zhu* label as meaningful? What prevents these individuals from learning that the *zhu* label does not provide reliable character information, and that *zhu* individuals are not dangerous or uncooperative? Mace and colleagues raise this puzzle, and the question of why witchcraft beliefs in some communities persist in the face of 'modernization'<sup>3</sup>. They acknowledge that some villagers in their study seemed not to believe that *zhu* individuals are actually threatening. Yet they propose that these individuals might nonetheless avoid

socializing with *zhu* individuals for fear of second-order punishment or ostracism<sup>6</sup>, or might condemn *zhu* individuals to signal their non-*zhu* status<sup>7,8</sup>. However, these mechanisms suggest that it's likely that a meaningful fraction of non-*zhu* individuals continue believing that the *zhu* label is informative, which raises the question of what would keep this belief afloat.

Mace and colleagues' work also raises questions about the maintenance of 'honest' reputation systems more generally (that is, those that reliably convey meaningful information). Humans ubiquitously rely on gossip to judge members of their community<sup>9</sup>, and often this results in accurate judgements. But what prevents the spread of spiteful gossip from invalidating this reputation system?<sup>10</sup> People do sometimes let malicious motives influence their gossip about competitors — for example, by reporting information selectively or in uncharitable ways, or even starting false rumours. Thus, an important question for theoretical work is what factors limit or adjust for these phenomena, such that reputation systems continue to provide meaningful information.

Witchcraft accusations are a widespread and consequential cultural and historical phenomenon, and may also have analogues in 'modern' social contexts, such as online

bullying. The important advance by Mace and colleagues helps to illuminate the nature and consequences of these accusations, and grapples with central questions about how people form social connections, and when reputation systems can and cannot be trusted. Their work is sure to inspire continued investigation into these important issues. □

Jillian J. Jordan

Department of Psychology, Yale University,  
New Haven, CT, USA.

e-mail: [jillian.jordan@yale.edu](mailto:jillian.jordan@yale.edu)

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#### References

- Swanson, G. E. *The Birth of the Gods: The Origin of Primitive Beliefs* Vol. 93 (Univ. Michigan Press, Ann Arbor, MI, 1964).
- Evans-Pritchard, E. E. *Witchcraft, Oracles and Magic Among the Azande* Vol. 12 (Oxford Univ. Press, London, 1937).
- Gershman, B. J. *Dev. Econ.* **120**, 182–208 (2016).
- Mace, R. et al. *Nat. Hum. Behav.* <https://doi.org/10.1038/s41562-017-0271-6> (2018).
- Nowak, M. A. & Sigmund, K. *Nature* **437**, 1291–1298 (2005).
- Boyd, R. & Richerson, P. J. *Ethol. Sociobiol.* **13**, 171–195 (1992).
- Barclay, P. *Evol. Hum. Behav.* **27**, 325–344 (2006).
- Jordan, J. J., Hoffman, M., Bloom, P. & Rand, D. G. *Nature* **530**, 473–476 (2016).
- Dunbar, R. *Rev. Gen. Psychol.* **8**, 100–110 (2004).
- Sommerfeld, R. D., Krambeck, H.-J., Semmann, D. & Milinski, M. *Proc. Natl Acad. Sci. USA* **104**, 17435–17440 (2007).