

# Scientists bridge disparate approaches to belief dynamics

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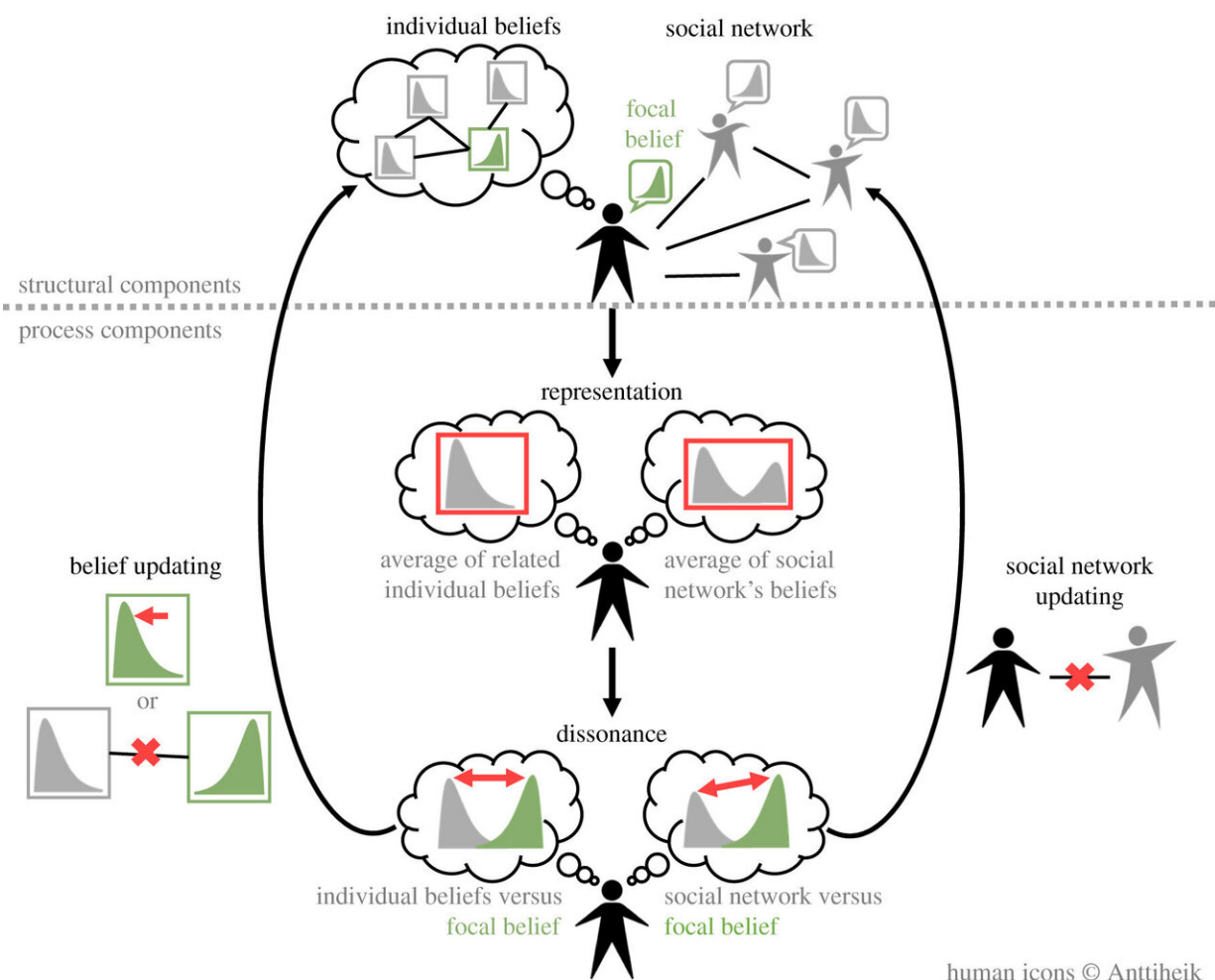


Figure 1. Main structural and process components of belief dynamics. Each individual has a network of individual beliefs, here represented as probability distributions over possible belief states (described in §§2.1.1 and 3.1.1). Each individual is also embedded in a social network (§§2.1.2 and 3.1.2). When considering a belief about a particular issue (or ‘focal belief’), individuals form

cognitive representations of what their own related individual beliefs are and what relevant others in their social network believe (§§2.2.1 and 3.2.1), using different integration strategies (here we use averaging strategy as an example). When the focal belief diverges from other individual and social beliefs, individuals may experience dissonance (§§2.2.2 and 3.2.2). To resolve it, they might update their beliefs (either belief distributions or connections between their beliefs), or they might update their social network connections (§§2.2.3 and 3.2.3). This in turn modifies the structure of individual beliefs and social networks, starting another round of belief dynamics. Credit: *Journal of The Royal Society Interface* (2021). DOI: 10.1098/rsif.2020.0857

Why do individuals change some beliefs quickly, but fiercely resist changing other beliefs? On issues like climate change, vaccinations, and genetically modified foods, we're heavily influenced not only by the people around us, but also by the information we receive, our environments, and our individual cognition.

How we form and change our beliefs is a scientific question with profound social implications. It has attracted psychologists, sociologists, physicists, and network scientists—each discipline bringing its own techniques and models. What's lacking, according to SFI Professor Mirta Galesic, is a [common framework](#) to unite them.

In a new paper published in the *Journal of the Royal Society Interface*, Galesic and her SFI co-authors outline "a unifying quantitative framework that enables theoretical and empirical comparisons of different belief dynamic models." The framework bridges several divides between current approaches to belief dynamics—most notably, between abstract models that focus on large groups and more finely-grained, individual models of cognitive processes.

In future publications, the researchers will test the predictive power of

the new framework on real-world survey data around contemporary issues.

"Integrating social and cognitive aspects of [belief](#) dynamics: towards a unifying [framework](#)" is published in the *Journal of the Royal Society Interface*.

**More information:** Mirta Galesic et al. Integrating social and cognitive aspects of belief dynamics: towards a unifying framework, *Journal of The Royal Society Interface* (2021). [DOI: 10.1098/rsif.2020.0857](#)

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