

CULTURAL EVOLUTION

Cultural evolutionary public policy

Interventions to reverse harmful traditions, such as female genital cutting, have had mixed success, sometimes backfiring. Policymakers' intentions collide with cultural traditions and the ethics of tolerance collide with universal human rights. New research introduces a cultural evolutionary modelling framework to explain previous results and guide future campaigns for endogenous change.

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Public policies for changing behaviour at scale are stymied by sticky forces that maintain those behaviours: norms, traditions, values, identities, and other aspects of culture. Some of the most challenging examples include child marriage, domestic violence, preference for sons, and female genital cutting. In each of these cases, the effect of culture is clear, but how to change these behaviours is not. Moreover, there are ethical considerations: policymakers face a trade-off between tolerance for cultural diversity and the promotion and protection of universal human rights.

In this issue of *Nature Human Behaviour*, Efferson, Vogt, and Fehr¹ introduce empirically informed models of targeted social influence to reverse harmful traditions. The models are built within the cultural evolutionary framework that has emerged as a unifying framework for the social sciences². Specifically, Efferson and colleagues ask how policymakers can develop an intervention strategy that takes advantage of conformist transmission—the tendency to change our behaviours to those of the majority or plurality within our groups. The goal is to determine the size of the intervention and whom to

target to maximize the probability that the changed attitudes and practices will spread beyond the targeted group: what economists call a 'spillover'. Rather than intending the intervention to directly create most of the behavioural change, the goal is to tip the population into a new equilibrium. The motivating example is female genital cutting (FGC). Every year, 3 million girls are at risk of being cut, and estimates suggest that the population of cut women and girls worldwide is over 200 million³. The authors have previous success designing interventions to change attitudes towards FGC in Sudan; the

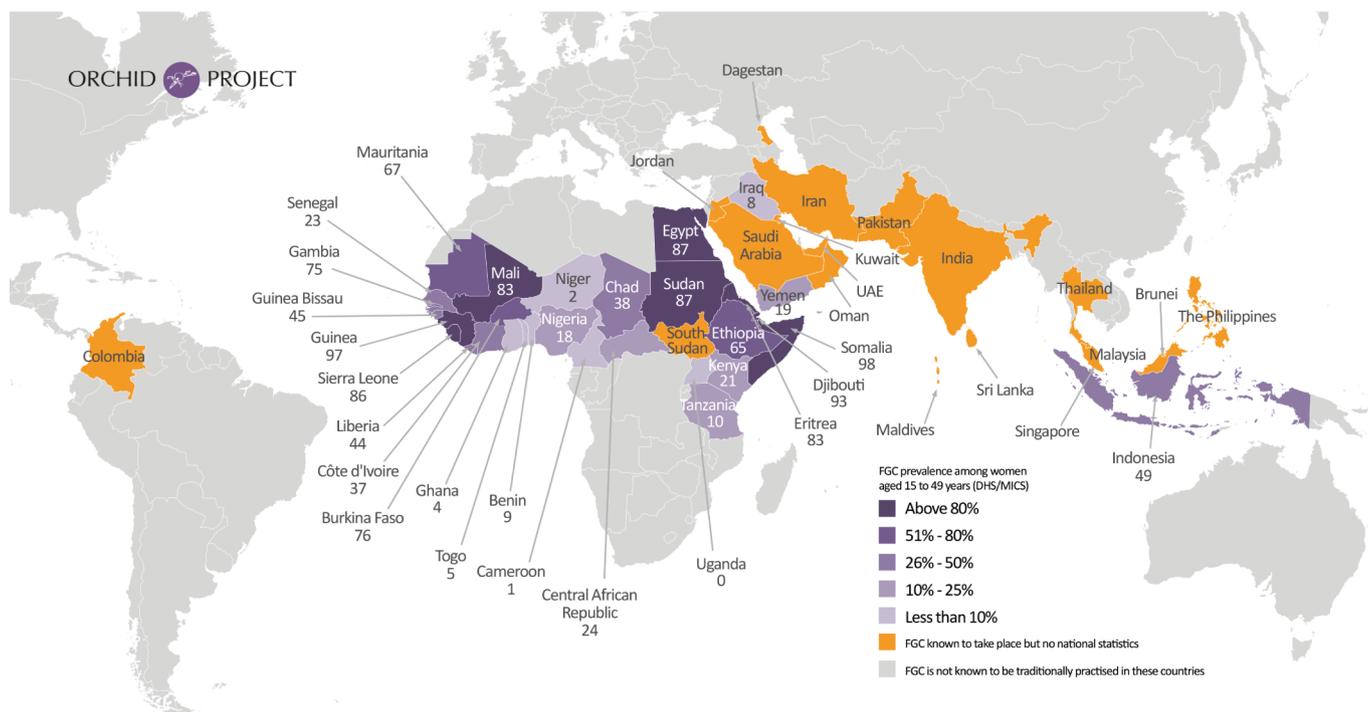


Fig. 1 | Prevalence of FGC among women aged 15 to 49 across the globe. Every year, 3 million girls are at risk of being cut, and estimates suggest that the population of women and girls who are cut worldwide is over 200 million. Numbers associated with country names indicate the percentage of women aged 15–49 who have been cut. The countries coloured in yellow are those in which FGC is known to take place, but where the percentage of cut women is unknown. Reproduced with permission from Orchid Project (<https://www.orchidproject.org/>).

percentage of cut Sundanese women and girls is around 90%⁴.

FGC has features that make it both a challenge and opportunity for a cultural evolutionary approach to behavioural change. FGC is widespread (Fig. 1). The number of cut girls and women is equivalent to the population of Nigeria or Brazil; convincing yet cost-effective campaigns are impractical. Then there is the coordination problem: families who support cutting cut their daughters often also want their sons to marry cut wives⁵. FGC also displays large heterogeneity: populations and individuals vary in attitudes, in how clustered these attitudes are in the social network, and the degree to which attitudes contribute to group identity. And of course, individuals vary in their susceptibility to social influence.

Efferson and colleagues aim to provide policymakers with tools to create interventions that are efficient, endogenous, and legitimate. An intervention can be efficient by targeting only a subset of the population, and endogenous, because the goal is to trigger spillovers where most change happens beyond the campaign. This efficiency and endogeneity create legitimacy. Smaller, targeted campaigns are less like cultural assault from outsiders through persuasion or choice architecture and more like empowering a subset of individuals whose values spread through conformity.

The authors begin with a baseline model in which all individuals are the same and then gradually add differences between individuals that are empirically known to be important. Consistent with most cultural evolutionary theory, the models act as mental prosthetics for rigorously working through the implications of assumptions and logic—in this case, helping to understand past failures and successes. The baseline model sets up the coordination dilemma families face. Regardless of personal beliefs, not cutting in a cutting equilibrium limits marriage opportunities; cut girls are perceived as morally upright, sexually faithful, good potential wives and mothers. There exists some frequency of cutting versus not cutting in which families are indifferent between the two options. This is the tipping point either side of which the population converges to either cutting or not cutting through conformist-biased transmission; these are self-reinforcing equilibria. The goal of the policymaker is to push a population beyond this point, after which the intervention can stop, with conformist transmission creating the remaining social change.

In subsequent models, Efferson and colleagues allow variation in preferences for cutting compared to not cutting. Families coordinate with other members of their community, but may prefer that the community switch to not cutting or vice versa. The first lesson from the models is that targeting those who are most amenable to change is easiest for policymakers, but least effective for triggering successful spillovers. Campaigns targeting amenable families rely on the most resistant families endogenously changing their preferences and behaviour, which is less likely. By this logic, targeting a random sample of families is better than an amenable sample, and under a wide range of conditions, targeting a resistant sample of families is most effective.

Changing the attitudes of resistant families is challenging by definition, but the alternative of endogenous change is even less likely. Thus, if an intervention targeting resistant families is unlikely to be successful, so too is a spillover. Efferson and colleagues model two additional factors that make spillovers difficult or impossible: homophily and links between cutting and group identity.

Spillovers rely on changing the preferences and behaviour of some individuals and allowing conformity to change the behaviour of those around them. If preferences and behaviour are clustered in a network, the changes are unlikely to spread. And if cutting is linked to group identity, any external influence can in fact increase the behaviour as a reaction to outside interference. The authors use the example of a Kenyan council of local male leaders, widely viewed as colonial puppets, banning FGC. This ban led to widespread defiance and increases in cutting. In this case, any campaign would first need to weaken the link between cutting and identity.

This series of models helps explain past successes and failures, including the authors' own experiences. The framework itself is a useful contribution and can be modified to deal with other forms of heterogeneity or, perhaps, to model the implications of other social learning biases in the cultural evolutionary ontology, such as the success bias or prestige bias⁶. However, the biggest challenge is to go beyond explaining past results to designing future campaigns. If the theory doesn't work in the real world, it doesn't work at all. The suggested approach relies on policymakers having reliable data, unbiased by social desirability, on the distribution of preferences in the target

population, the degree of homophily, and the link between practices and group identity. The model rigorously lays out the implications of this information for future campaigns, but acquiring this information is not trivial. Nonetheless, the approach and the lessons go beyond the example of FGC.

Cultural evolution is a well-developed, empirically supported theoretical framework for grappling with culture and cultural change. A mantra in the science of behavioural change is that 'context matters'. Efferson and colleagues offer both an approach and specific suggestions for how to measure that context and how it should matter. Cultural evolution allows us to move toward more general theories of human behaviour, a revolution akin to the periodic table in chemistry or natural selection in biology. The implications ought to reverberate throughout the human sciences, including the more applied sciences.

Applied cultural evolution is in its infancy. Empirical work is rare and applied theoretical work is rarer still. This paper represents the cutting edge, building on previous empirical work, predicting new directions, and offering an example of how to proceed. At the core of many divisive issues, from multiculturalism and migration to corruption and climate change, are cultural differences. These cultural differences remain a challenge for coordinating on problems we face as a planet. Many policy decisions on these topics are driven by ideology rather than reliable science, in part because the science doesn't exist or isn't yet reliable. This paper is a step in the right direction. □

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Competing interests

The author declares no competing interests.