Human behavior under economic inequality shapes inequality

Akihiro Nishi[a,b,1] **and Nicholas A. Christakis**[a,b,c,d,1]

[a]*Yale Institute for Network Science, Yale University, New Haven, CT 06520;* [b]*Department of Sociology, Yale University, New Haven, CT 06520;* [c]*Department of Ecology and Evolutionary Biology, Yale University, New Haven, CT 06520; and* [d]*Department of Medicine, Yale University, New Haven, CT 06520*

In his 1926 short story, "The Rich Boy," F. Scott Fitzgerald observes: "Let me tell you about the very rich. They are different from you and me. They possess and enjoy early, and it does something to them, makes them soft where we are hard, and cynical where we are trustful, in a way that, unless you were born rich, it is very difficult to understand. They think, deep in their hearts, that they are better than we are…" (1). The rich often behave differently than the poor, in particular with respect to others. But why? One explanation is that the behavior of the rich relates not to accidents of birth, but to their social environment. Using both survey data and experiments with online subjects from the United States, Côté et al. show that high economic inequality is itself a force that makes the rich less generous (2).

Economic inequality has many effects on outcomes as diverse as health and mortality (3), and trust and cooperation (4–9). But inequality does not affect us all equally. In their experiments, Côté et al. (2) experimentally manipulated the level of the inequality about which study participants were informed (regardless of the actual level of inequality in their places of residence). By asking subjects to play a "dictator game" (a test of altruism in which one subject proposes how to divide a common resource with another subject), the authors find a negative effect of high inequality on generosity in richer participants, but not in poorer participants. In other words, when economic inequality is low, the rich are more generous than when it is high.

Does Human Behavior Under Inequality Worsen Inequality?

This work not only sheds important light on how inequality might differentially affect the rich and the poor, but it also gives us a view regarding how this might contribute to inequality in the first place, in a dynamic way. High-income study participants living in a highest inequality state [Gini coefficient = 0.53 (the District of Columbia)] kept about 70% of their endowment and sent the remaining 30% to their colleague in the dictator game. Such a behavioral pattern might sustain or even facilitate the level of the original inequality: the rich get richer. On the other hand, high-income study participants living in a lowest inequality state [Gini coefficient = 0.42 (the State of Wyoming)] kept about 45% of their endowment, and sent the remaining 55% to their partner. This behavioral pattern reduces the level of the original inequality.

Using both survey data and experiments with online subjects from the United States, Côté et al. show that high economic inequality is itself a force that makes the rich less generous.

(It's worth noting that, with an average income of $82,314, the survey respondents were substantially richer than the average American household.) In short, when an additional resource is offered in the experiments, richer individuals keep more than half of it under the high-inequality condition, whereas richer individuals give away more than half of it under the low-inequality condition.

These results comport with another recent study, involving a different series of experiments using subjects playing a public goods game in dynamic social networks (9). In those experiments, high inequality led richer study participants to behave "exploitatively," taking advantage of the poor in cooperation games. On the other hand, low inequality led richer participants to be fairer than poorer participants—a tendency that helps the level of inequality stay low. These findings remind us that people themselves are the agents in the real world who have been producing the observed level of inequality. People's behaviors play an important role in increasing and decreasing inequality and, as shown by Côté et al. (2), the existence of inequality may lead people to behave differently.

One side benefit of these results (2, 9) is that they may help explain the puzzling variation in prior work regarding whether the rich play cooperation games in different ways than the poor: it may actually depend on the environment in which the rich person (and hence, research subject) is situated.

A further, unremarked-upon finding of Côté et al. (2) is that players were less generous when the stakes were high (a $500 raffle ticket) than low ($10), which is itself a key finding about the dictator game. This paper adds to the prior literature that suggests that the size of the stake affects how people play (9, 10). Alas, we do not know if the rich or poor responded differentially to a change in stakes from the analyses presented.

How Can We Make Rich People More Generous and Cooperative?

Inducing behavioral changes in rich people might offer an alternative approach to reducing inequality, especially when policy-based resource redistribution (e.g., progressive taxation) is not feasible or acceptable. Recent studies propose several approaches to instigating such behavioral changes. First, making the wealth of neighbors invisible (so that people no longer know who else is rich or poor) may lead people to stop engaging in social comparisons, so that rich–poor economic cooperation is promoted and exploitative behavior is suppressed (9). Second, less anonymous connections between rich and poor individuals may motivate the rich to share with the poor (11, 12). For example, another recent paper in PNAS showed that, in a dictator game, millionaires in the real world donated more (around 70%) to others when they were informed that the opponents were poor, and donated less (around 50%) when they were informed that the opponents

Author contributions: A.N. and N.A.C. wrote the paper.

The authors declare no conflict of interest.

See companion article on page 15838.

[1]To whom correspondence may be addressed. Email: akihiro.nishi@yale.edu or nicholas.christakis@yale.edu.

were millionaires as they were (12). This idea relates to the fact that people are more likely to help another person when they witness the other person having a problem (i.e., when there is an identified victim) (13). Still, even as we increasingly understand these phenomena, more work is needed not only to understand some of the psychological mechanisms underlying these effects, but also to understand ways to apply these findings in real-life settings.

Figuring this out is especially important because those at the top don't just make decisions affecting themselves, or even solely the people with whom they interact socially. They also make decisions affecting our whole society. For example, one set of experiments showed that elites in the United States were less fair-minded and more efficiency-focused than a diverse sample of Americans (14). Elites might internalize their private experiences and apply them publicly. However, high-wealth individuals are not always mean. They might only be mean when the circumstances are especially unequal.

1 Fitzgerald FS (1926) The rich boy. *The Short Stories of F. Scott Fitzgerald: A New Collection*, ed Broccoli MJ (Scribner, New York), pp 317–349.
2 Côté S, House J, Willer R (2015) High economic inequality leads higher-income individuals to be less generous. *Proc Natl Acad Sci USA* 112:15838–15843.
3 Kondo N, et al. (2009) Income inequality, mortality, and self rated health: meta-analysis of multilevel studies. *BMJ* 339:b4471.
4 Alesina A, La Ferrara E (2002) Who trusts others? *J Public Econ* 85(2):207–234.
5 Anderson LR, Mellor JM, Milyo J (2006) Induced heterogeneity in trust experiments. *Exp Econ* 9(3):223–235.
6 Tavoni A, Dannenberg A, Kallis G, Löschel A (2011) Inequality, communication, and the avoidance of disastrous climate change in a public goods game. *Proc Natl Acad Sci USA* 108(29):11825–11829.
7 Heap SPH, Tan JHW, Zizzo DJ (2013) Trust, inequality and the market. *Theory Decis* 74(3):311–333.
8 Riyanto YE, Zhang JL (2014) An egalitarian system breeds generosity: The impact of redistribution procedures on pro-social behavior. *Econ Inq* 52(3):1027–1039.
9 Nishi A, Shirado H, Rand DG, Christakis NA (2015) Inequality and visibility of wealth in experimental social networks. *Nature* 526(7573):426–429.
10 Abou Chakra M, Traulsen A (2014) Under high stakes and uncertainty the rich should lend the poor a helping hand. *J Theor Biol* 341:123–130.
11 Chiang Y-S (2015) Good samaritans in networks: An experiment on how networks influence egalitarian sharing and the evolution of inequality. *PLoS One* 10(6):e0128777.
12 Smeets P, Bauer R, Gneezy U (2015) Giving behavior of millionaires. *Proc Natl Acad Sci USA* 112(34):10641–10644.
13 Daniels N (2012) Reasonable disagreement about identified vs. statistical victims. *Hastings Cent Rep* 42(1):35–45.
14 Fisman R, Jakiela P, Kariv S, Markovits D (2015) The distributional preferences of an elite. *Science* 349(6254):aab0096.