

Reply to van Hoorn: Converging lines of evidence

We agree with the comments by van Hoorn (1) on our critique (2): testing causal hypotheses about human behavior is a challenge (1, 3). Making progress requires specifying alternative hypotheses and then testing these hypotheses using diverse and converging lines of evidence. We have defended the hypothesis that social norms, which culturally coevolved with the institutions of large-scale societies including markets, influence economic decision-making. This hypothesis emerged from a larger set that we developed both at the outset of our project and as we went along. Our interdisciplinary team's initial list of hypotheses included the idea that experimental games might spark an innate reciprocity module that would yield little variation across populations. We also considered the hypothesis that group-level differences might result from individual differences in wealth or income. Nevertheless, what emerged in the data in our first project was (i) substantial variation among 15 populations, (ii) a strong correlation with market integration, and (iii) little relation to individual-level economic or demographic variables. Not satisfied with our first effort, we sampled 10 new populations, replicated these findings with improved protocols (developed based on critiques of the Phase I), and then extended them to two additional experimental games. Along the way, we have explored alternative hypotheses using measures of genetic relatedness, social network position, anonymity manipulations, and framing tools. To our knowledge, no other existing hypotheses can better account for the observed patterns of variation.

Several independent lines of evidence converge to support our hypothesis. First, contrary to other accounts, our approach requires that people can readily acquire social behavior or motivations toward anonymous others through cultural learning. This finding is well-established experimentally for children. Experimental work shows that observing a model behaving altruistically in a novel situation leads children to behave more altruistically in the same context. This effect endures weeks later, remains when the child is alone, and is spontaneously enforced by subjects on novices (reviewed in ref. 4). Consistent with this finding, evidence indicates that the prosociality measured in economic games develops slowly over the first three decades of life, not hitting the adult plateau until the mid-20s (4).

Our approach also predicts that norms should be context-specific, and thus, how context matters will often vary among communities with the local norms. Several studies find that context (or framing) not only matters but matters in different ways in different places (3). Our analyses and use of framing techniques confirm this finding in diverse societies (5). Moreover, work using priming tools has already begun to confirm and explore the link between markets (priming markets) and prosocial economic choices (6).

Finally, studies of migration underline the importance of nongenetic inheritance by showing that the average behavior or

beliefs in the home country (place of emigration) predict the behavior or beliefs of the migrants' children and grandchildren. Economically important effects have emerged for generalized trust, fertility, loafing, labor participation, and son preferences. Such evidence challenges hypotheses limited to cost-benefit calculations, evoked modules, or environmentally cued ontogenetic processes. Alternatively, perhaps culture matters.

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