



REPLY TO GOLDFARB ET AL.:

On the heritability and socialization of trust and distrust

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Our article (1) presents evidence for the heritability of trust and the shared socialization of distrust. Goldfarb et al. (2) downloaded our dataset, which we had made publicly available for all researchers. We thank them for their reanalysis, which precisely replicated all point estimates reported in our article (1). Our reply focuses on three issues in response to their comments.

Heritability of Distrust

Our original research investigated the heritability of distrust, and our finding of a point estimate of 0.00 [which Goldfarb et al. (2) replicate twice in their table 1] is in considerable contrast to prior claims stating that all human traits are significantly heritable (3). As we emphasize in our work (1), “[a]lthough it is, of course, hard to establish conclusively the absence of an effect, our results suggest that heritability does not contribute substantially to explaining a particular behavioral trait (i.e., distrust).” While we cannot provide conclusive evidence directly contradicting this heritability claim (3) at a statistical-significance standard (and we would not assert we have disproven it), our results give reason to rethink it. Importantly, our assessment of a negligible effect of the heritability of distrust is not only based on point estimates and confidence intervals (CIs) but systematic model comparisons, with fit statistics suggesting that the CE model appears to be the best-fitting model.

Model Fit

Our data indicate clean AE and CE structures for trust and distrust, respectively. For trust, the monozygotic (MZ) twin correlation ($r_{MZ} = 0.31$) was approximately twice the dizygotic (DZ) twin correlation ($r_{DZ} = 0.15$), which is exactly what the AE model assumes. For

distrust, the correlation was slightly higher for DZ than MZ twins ($r_{DZ} = 0.22$, $r_{MZ} = 0.17$). With more data we might see more complex structures, but the univariate model results indicate that trust and distrust are not well described as having the same genetic structure. As shown in table 3 of our paper (1), compared with the ACE model, the more parsimonious CE distrust model does not lead to a loss in model fit ($\Delta\chi^2 = 0.00$), and a ΔBIC (Bayes Information Criterion) of 5.59 suggests positive evidence against the ACE model (4). Moreover, an RMSEA (Root Mean Square Error of Approximation) 95% CI of 0–0.049 provides additional support for a satisfactory absolute fit of the CE distrust model (5).

Other Analytical Approaches

Our analysis relies on ACE modeling, which has numerous benefits over other approaches and is commonly considered the state-of-the-art in contemporary twin research (6). A long line of research has scrutinized the ACE approach, showing that estimates are largely robust to possible violations of its assumptions (7). Goldfarb et al. (2) offer Tobit regression as an alternative, which to our knowledge is primarily useful for analyzing censored variables (8). Our data, however, are neither censored nor characterized by strong ceiling or floor effects.

In closing, we would like to note that our work represents the third independent replication of significant heritability estimates of trust (9). For this reason, we believe the evidence provided by Goldfarb et al. (2) does not justify the inference that the “heritability of trust [...] remains unknown.” However, we join Goldfarb et al.’s call for additional research on the intricate differences and drivers of trust and distrust.

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