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Scientific norms can neutralize the politicization of facts

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In light of the continued politicization of facts on critical societal issues, developing ways to effectively communicate with the public about scientific topics is becoming increasingly important[1, 2]. We commend recent behavioral science research for tackling a question that is of paramount interest to this debate: do individuals with more education and science literacy display more polarized beliefs on highly contested issues, such as climate change? Several recent correlational studies[3,5] have suggested this, concluding that more education and science literacy may actually increase rather than decrease polarization on issues linked to political and religious identities.

Although an important concern, such conclusions cannot be inferred from correlational data. Accordingly, we attempted to a) replicate these findings and b) investigate an underexplored yet critical question: does communicating scientific findings lead to belief polarization, especially among higher educated audiences? Specifically, we conducted a large nationally representative online survey experiment (N = 6,301) with Qualtrics to examine one of the most politically polarized issues in the United States: climate change[4]. Our analysis of the experiment's baseline data replicated prior studies' results[3,5] indicating evidence of motivated cognition: higher education is positively associated with beliefs about the scientific consensus, whereas political conservatism is negatively correlated. Importantly, there is a significant negative interaction so that a more conservative ideology coupled with higher education results in less acceptance of climate science (Table S2).

In our experiment, however, we subsequently exposed half of the sample to a descriptive norm: "97% of climate scientists have concluded that human-caused global warming is happening". Descriptive norms typically highlight information about the central tendency of a belief or behaviour. Perceived norms can be changed by increasing the mean location (or by lowering the variance). Both group consensus and expert authority are two classic levers of influence[6]. We measured judgments of the consensus at the beginning of the survey (prior) and at the end after treatment exposure (posterior), with various "distractors" in between to mask the purpose of the experiment. This allowed us to causally evaluate the polarization prediction, particularly among higher educated audiences. We find no evidence of polarization: both liberals and conservatives updated their beliefs in line with the scientific norm (Figure 1), with the effect occurring more strongly among conservatives, as evidenced in a positive and significant interaction (Table S2) between experimental condition (scientific consensus), education (higher), and ideology (conservatism). In fact, exposing people to the scientific consensus cancelled out the negative interaction between education and conservatism, and reduced belief polarization by 50% (Cohen's d = 0.88, Fig. 1).

Thus, these findings suggest that communicating facts does not necessarily cause issue polarization. Indeed, although educated individuals may engage in more motivated reasoning, this effect can largely be countered with normative information about the state of scientific agreement. Furthermore, instead of trying to change deep-rooted beliefs about contested issues, it may be easier to correct people's perception of the norm[6,7], as societal norms help set standards against which people evaluate the appropriateness of their beliefs and behaviours. Importantly, as a group, scientists are viewed as non-partisan[8]. In other words, correcting people's perception of the scientific norm can help depolarize ideological worldviews and neutralize the "motivated reasoning" effect. In short, we caution against the conclusion that communicating facts about contested issues is necessarily "polarizing"[3,5].

Data Availability

The data that support the findings of this study are available from the authors. All requests and correspondence should be addressed to S.L. van der Linden.

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AUTHOR CONTRIBUTIONS

S.V.L. and A.A.L. designed the study and collected the data. S.V.L. performed the statistical analyses with input from A.A.L and wrote a first draft of the manuscript. E.W.M., A.A.L, and S.V.L. all contributed to the writing and approved the final version of the manuscript.

COMPETING INTERESTS

No competing interests are declared by the authors.

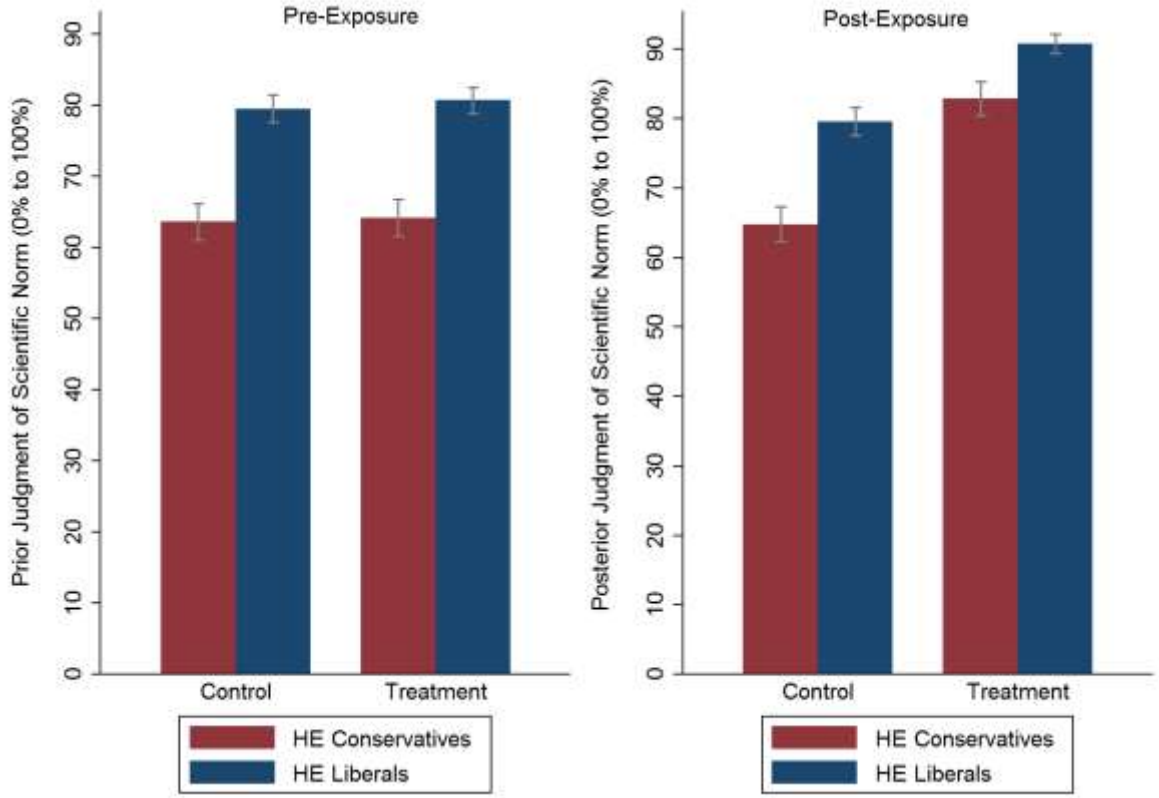

Figure 1. Highlighting scientific norms depolarizes judgments about climate change.

Note: Error bars represent 95% confidence intervals. HE = higher educated (at least a college degree). Conservative and liberal contrasts used combined categories ("very" and "somewhat"). The sample (N = 6,301) used national quotas with respect to gender, age, education, ethnicity, region, and political ideology. The experimental (n = 3,150) and control groups (n = 3,151) were also each balanced on the same characteristics. Total sample sizes for conservatives (n = 2,258) and liberals (n = 1,573), lower educated (n = 4,405) and higher educated (n = 1,896), lower educated conservatives (n = 1,608) and liberals (n = 934), and higher educated conservatives (n = 650) and liberals (n = 639). Please see Supplementary Information for more details.