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Towards a Global Predictive Model of Trust in Science

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Towards a Global Predictive Model of Trust in Science

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Abstract

Trust in science plays a crucial role in modern societies, shaping individual behaviors related to climate and health. However, research on the factors driving trust in science has been hindered by two key limitations: reliance on verbally specified and thus vague theories that lack numerical precision and an overemphasis on data from the Global North (e.g., WEIRD).

To address these gaps, we aim to develop a quantitative and generalizable predictive model of trust in science using the novel TISP dataset ("Trust in Science and Science-Related Populism"; Mede et al., 2025). This global research project (n = 71,922 in 68 countries) surveyed public perceptions of science. We will use machine learning (e.g., elastic net regression) to create an interpretable predictive model of trust in science using previously published models as reference (Hehman & Neel, 2024). We expect that this model, which we call Trust in Science Model 1.0, will be capable of robustly predicting trust in science across different cultural contexts. We further anticipate that this model will identify core drivers of trust in science worldwide. Nevertheless, the developed model is naturally limited by the predictors available in the TISP dataset. Thus, our main goal is that this model can serve as a valuable benchmark for future theoretical advancements (e.g., using other predictors), allowing researchers to numerically test their alternative models against our Trust in Science Model 1.0.

To illustrate how such model comparisons can advance our understanding, we will take the first step by collecting new data with additional, theory-driven predictors to test potential increments in predicting capacity into a new model (Trust in Science Model 1.1). This comparison will demonstrate the value of predictive modeling in refining theories of trust in science and encourage further research to build upon our findings.

Keywords

trust-in-science; meta-science; machine-learning; artificial-intelligence; prediction-model

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