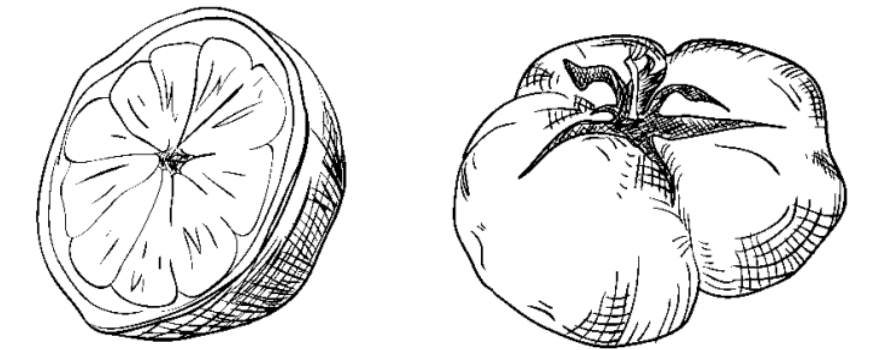


# Consumer Understanding, Extremity, and Opposition to Genetically Modified Foods



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## INTRODUCTION

Despite the scientific consensus that genetically modified foods (GMOs) are safe and beneficial, many people still harbor concerns or oppose their use.

A prevailing view: "Opposition stems from the public's lack of knowledge about genetic engineering, and the solution is education."

However, education has not been effective at moving people closer to the scientific consensus.

We predicted that it is not just ignorance that is the problem, but people's lack of appreciation of their ignorance.

## RESEARCH QUESTIONS

1. Do people who are more extreme in their anti-GMO beliefs have less knowledge of science and genetics?
2. What is the relationship between anti-GMO beliefs and subjective (perceived) knowledge of GMOs?
3. How do objective and subjective knowledge interact in their relationship with extremity of opposition?
4. Why hasn't education been effective at moving people toward the scientific consensus?

## DATA & MEASURES

### Data Collection:

- 1 observational study (replicates not reported here)
- U.S. nationally representative sample of 501 adults based on age, gender, income, and education
- 3 other nationally representative samples (U.S., France, Germany) not reported here

### Measures:

- Concern about GMOs (1-7)
- Opposition to GMOs (1-7)
- Understanding of GMOs ("subjective knowledge," 1-7)
- Science literacy ("objective knowledge," 15 True/False questions summed)
- Demographic variables (for sample quotas)

## RESULTS

- As extremity of opposition to GMOs increases, objective knowledge of science decreases.
- As extremity increases, perceived understanding of GMOs increases.
- The relationship between subjective and objective knowledge shifts from positive to negative with extremity.
- The difference between z-scored subjective and objective knowledge increases with extremity.

Figure 1: Distribution of concern about and opposition to GMOs ( $r = .88$ , averaged to create new variable, "extremity of opposition")

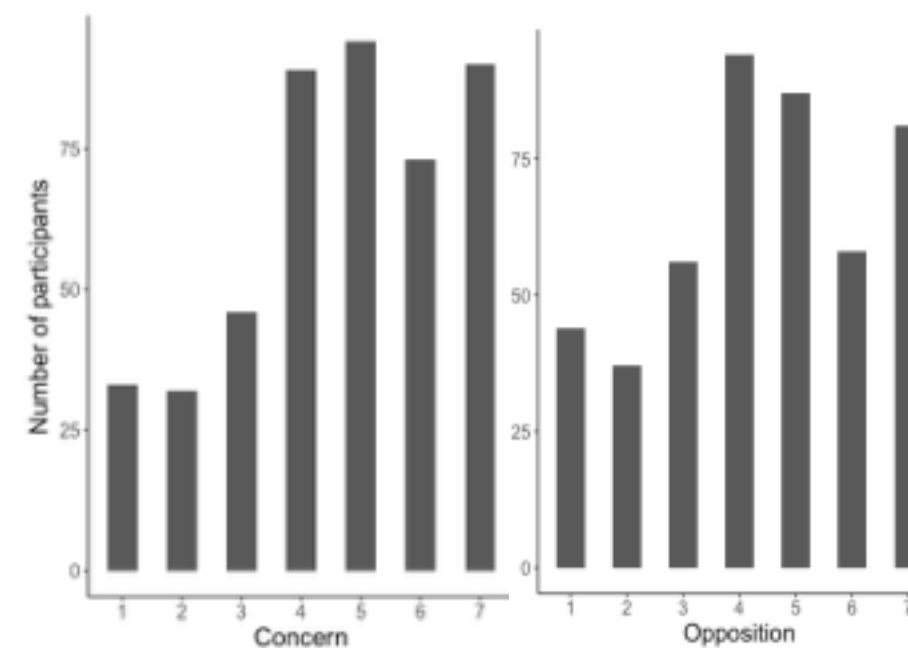


Figure 2: Science literacy and subjective knowledge by extremity of opposition to GMOs

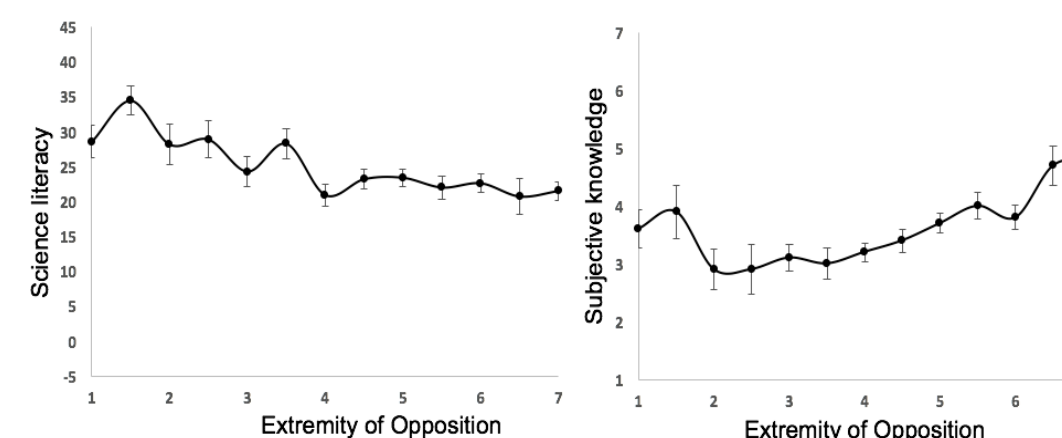
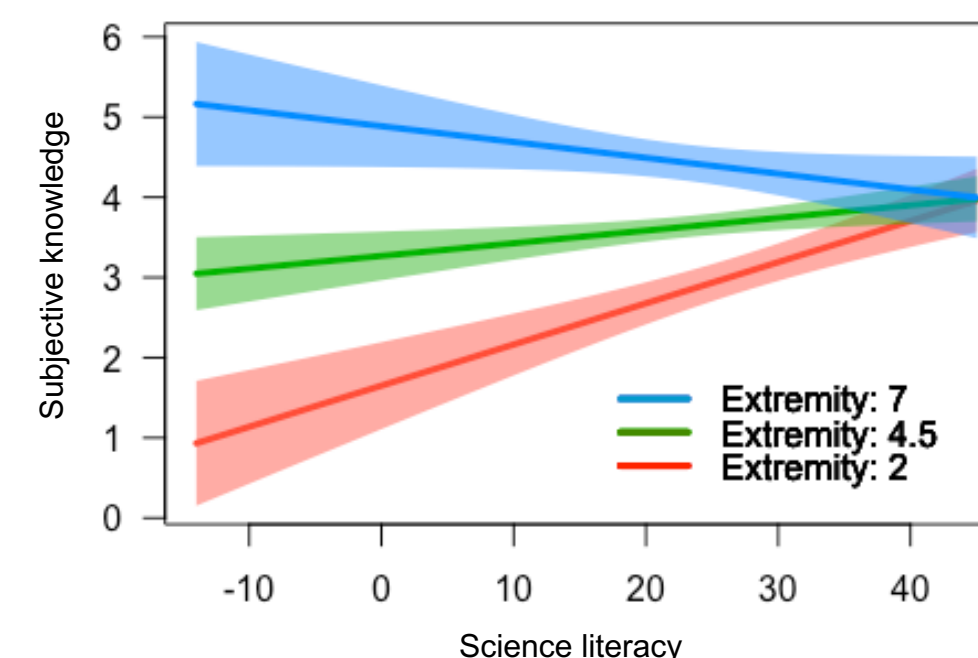


Figure 3: Interaction - science literacy on subjective knowledge by extremity of opposition ( $p < .0001$ )



## CONCLUSIONS

- Extremists know the least, but think they know the most.
- Ignorance of the facts is only part of the problem. The other big part is people's lack of appreciation of their ignorance.
- If extremists already think they understand the domain, they are unlikely to be moved by educational interventions.
- Science communicators might have more success by focusing on instilling intellectual humility as a pre-requisite to educating the public about GMOs.

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