



The Role of Topic Interest on Socioscientific Decision-Making in Undergraduate Students

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Background

- The critical evaluation of scientific information sources is an imperative skill when confronted with a Socioscientific Issue (SSI), or a scientific issue with social, economic, political, and cultural implications (Zeidler & Nichols, 2009).
- When dealing with an SSI, individuals are likely to adhere toward their level of interest, influencing the information sources utilized when making or justifying an SSI decision (Brandmo & Bråten, 2018).
- Individuals may justify these decisions through drawing upon authoritative sources of information, personal sources of information, or multiple sources of information (Brandmo & Bråten, 2018; Table 1).

Research Question

What are the relationships between undergraduate students' level of topic interest and the justification for knowing across two SSIs: the use of fetal tissue in medical treatment and taxing car owners due to climate change?

Methodology

Procedure

- 200 undergraduate students from UNH science Discovery courses completed Likert-scale measurements of topic interest for both SSIs (Brandmo & Bråten, 2018).
- Students then took a modified version of the Decision-Making Questionnaire (DMQ; Bell, 1999), where students read two SSI case studies and responded to open-ended questions.

Preliminary Analyses: Mixed Methodology

- 144 responses from the DMQ were qualitatively analyzed through thematic coding.
- Exploratory statistical analyses were conducted to observe the relationship between the Justification For Knowing and SSI topic.

Next Steps

- Finish qualitatively analyzing the second round of data collection
- Run factor analyses on both interest measurements to ensure good fit
- Conduct a multinomial logistic regression between level of interest and the justifications for knowing between both SSI topics

Table 1: Codebook

| Justification For Knowing | Definition | Examples |
|---|---|---|
| Justification from Personal Sources | Evaluation of knowledge claims from personal opinions or personal experiences | <p>"It's such a hard topic to discuss because I do believe that women have rights for their own body but I also do think of the fetus and how it is a living soul and it deserves a life for him/herself." – Fetal Tissue Case Study</p> <p>"I think that taxes should be specially designed to affect everyone the same." – Climate Change Case Study</p> |
| Justification from Authoritative Sources | Evaluation of knowledge claims from figures of authority such as: religion, political party, or academic domain | <p>"As a Christian, I believe that life and death is in the hands of our Lord." –Fetal Tissue Case Study</p> <p>"They [my beliefs] haven't, just the information from the class has [influenced my decision]." – Climate Change Case Study</p> |
| Justification from Multiple Sources | Evaluation of knowledge claims from corroborating between two or more sources | <p>"I am pro-choice, no questions asked. I am also pro-medicine and pro-science and believe we should never stop looking for cures or treatments for diseases." – Fetal Tissue Case Study</p> <p>"I believe that, although it might be costly overall, that any effective way to reduce carbon emissions and air pollution as a whole should be actively advocated and supported by people globally. Although I am more interested in the actual science behind emissions, the actions that major countries are taking in reducing emissions are very important and crucial." – Climate Change Case Study</p> |

Works Cited

Bell, R. L. (1999). Understandings of the nature of science and decision making on science and technology-based issues. *Dissertation Abstracts International*, 60 (09), 3310A. (University Microfilms No. AA19944733.)
 Brandmo, C., & Bråten, I. (2018). Investigating relations between beliefs about justification for knowing, interest, and knowledge across two socio-scientific topics. *Learning and Individual Differences*, 62, 89-97.
 Zeidler, D. L., & Nichols, B. H. (2009). Socioscientific issues: Theory and practice. *Journal of Elementary Science Education*, 21(2), 49.

Preliminary Results

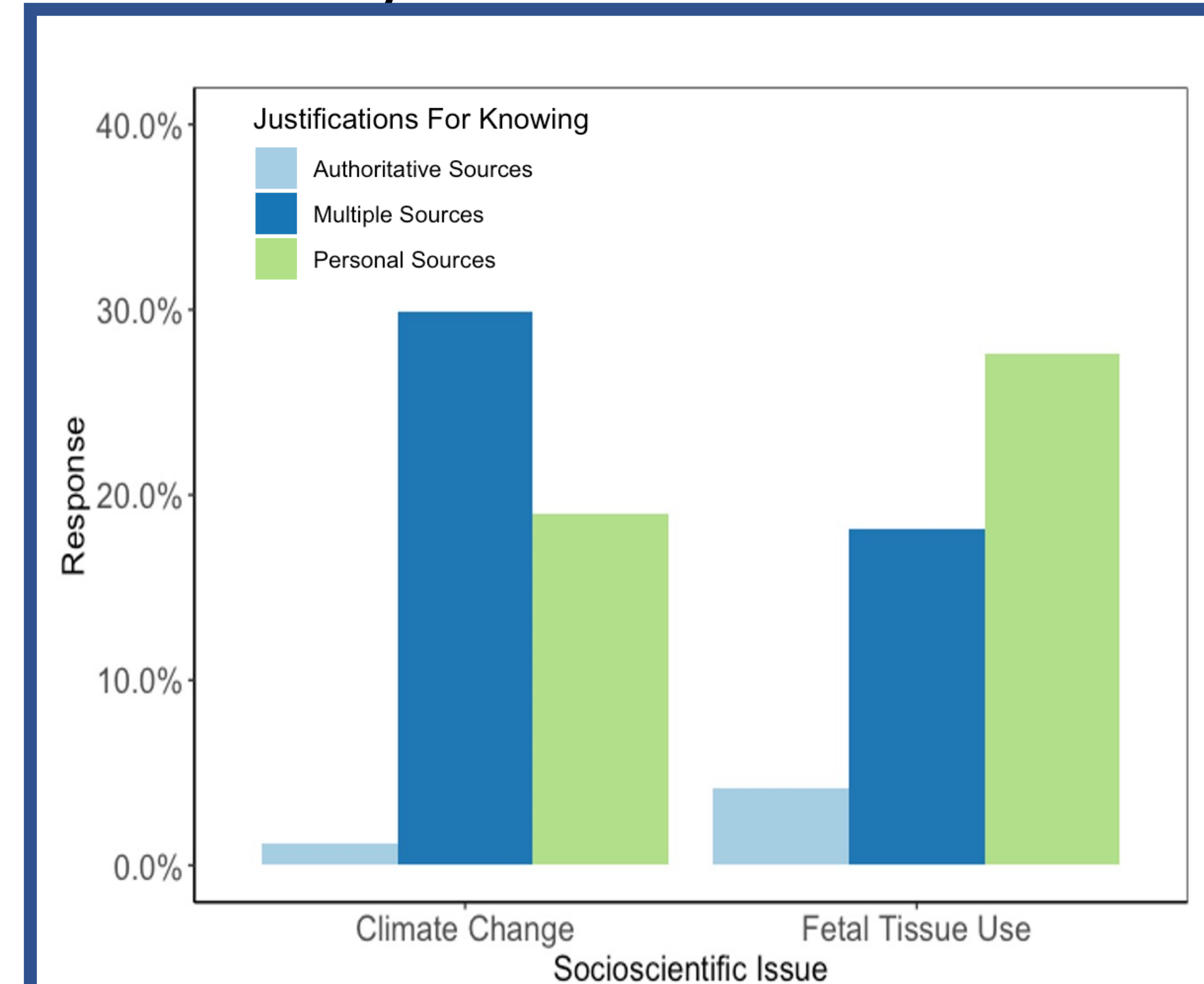


Figure 1. Justifications for knowing across two case-studies. A chi-square test of independence was performed to examine the relationship between the Justifications For Knowing and SSI Topic, $\chi^2, (df=2, N=144) = 16.439, p < .001$. These results support that the distribution of response frequencies were not similar across the two SSI topics.

Preliminary Conclusions

- Students are more likely to rely upon justifications from multiple sources when supporting a decision about climate change compared to relying upon justifications from personal sources when supporting a decision about fetal tissue use.
- This suggests that students may not affiliate fetal tissue use with the domain of science.

Implications for Teaching and Learning

- Results may help develop a formal SSI decision-making model to be used in all required science courses.
- This model may be used to promote objectivity with evaluating information sources about SSI topics.
- By practicing objectivity in information evaluation, students may recognize when they rely on personal biases or misinformation when making an SSI decision.

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