

The value in trust: An exploration of personal values in relation to trust in science

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Introduction

In recent years, the population of individuals who do not trust science-based information has grown (Hendricks et al., 2016). This lack of trust is concerning as research has found trust to be the foundation for public understanding of science (Arimoto & Sato, 2012; Hendricks et al., 2016; Sztompka, 2007). When individuals lack trust in science-based information their ability to make informed decisions is hindered (Weingart & Guenther, 2016). Factors that could explain a person's trust in science include an individual's culture, political beliefs, and cognitive processing abilities (Kraft et al., 2015; Pechar et al., 2018). Some argue science trust is associated with specific issues and not science as a whole (Pechar et al., 2018). Others claim mistrust in science is the result of scientific misconduct, inconsistent communication, conflicting results, discourse between scientists and/or the public, and the separation between real and fake science (Boele-Woelki et al., 2018; Hendricks et al., 2016). Personal values have been used to explore public trust in fields such as business and political sciences (Pechar et al., 2018; Pirson et al., 2017). However, research has not investigated the role of personal values in science trust.

Conceptual Framework

Personal values can influence the ways in which individuals are motivated to behave (Schwartz, 1992). When specific personal values are held to a high importance, they can influence individual motivation and action (Schwartz, 1992). Personal values have been shown to influence trust formation in contexts outside of science (Pechar et al., 2018; Pirson et al., 2017). Schwartz (1992) created a series of scales to measure personal values and ultimately narrowed his scale to include ten basic value categories: power, achievement, hedonism, stimulation, self-direction, universalism, benevolence, tradition, conformity, and security. In this study, the Schwartz (1992) Theory of Basic Values was used to determine any potential relationship between individual values and trust in science. The first research objective was to determine what values Oregon residents identified as most important, and the second research objective was to determine if their personal values were related to their trust in science.

Methodology

Data analyzed in this study were collected as part of a larger study that sought to explore Oregon residents' perceptions of and experiences during the 2020 Oregon wildfire season. Data were collected from November 3, 2021 to December 11, 2021 through a Qualtrics questionnaire. The population for this study was Oregon residents 18-years or older who were living in Oregon during the 2020 wildfire season. Participants were recruited by Qualtrics Research Services following a quota of 35% rural residents and 65% suburban/urban residents and a gender distribution of approximately 50% males and 50% females (Oregon Office of Rural Health, 2021). The study yielded 434 complete responses. To determine participants' trust in science, a nine-item, Likert-type scale was adapted from Nadelson et al. (2014). Participants rated statements regarding their trust in science using a five-point scale (*strongly disagree* = 1 to *strongly agree* = 5). The 10-item Short Schwartz (1992) Value Survey was used to measure the importance of participants' personal values. Participants rated each value on an eight-point scale (*opposed to my principles* = 0, to *of supreme importance* = 8). Data were exported from Qualtrics to SPSS for analysis. Inferential and descriptive statistics were used to address the research questions.

Findings

To evaluate research objective one, means were calculated for each personal value. As a group, participants rated “benevolence” as the most important personal value ($M= 7.13$, $SD = 1.91$), followed by “self-direction” ($M= 6.56$, $SD = 1.97$) and “universalism” ($M= 6.36$, $SD = 2.25$). A Pearson correlation revealed significant relationships between participant trust in science and all personal values except “hedonism,” “tradition,” and “conformity.” Significant personal values all showed positive relationships with science trust suggesting as importance placed on these personal values increased, so did trust in science. A significant, moderate association was found between science trust and “universalism” ($r = .37$) (Davis, 1971). Significant, low associations were found between “power” ($r = .11$), “achievement” ($r = .14$), “stimulation” ($r = .15$), “self-direction” ($r = .13$), “benevolence” ($r = .20$) “security” ($r = .15$).

Conclusions & Implications

This research attempts to start the conversation about the relationship between trust in science and personal values. While the study was limited in scope, important conclusions can be drawn. Participants rated “benevolence” as the most important personal value thereby indicating the importance of concepts such as helpfulness, honesty, forgiveness, loyalty, and responsibility (Schwartz, 1992). “Benevolence” is often associated with an individual’s need for affiliation and their concern for others’ wellbeing (Schwartz, 2012). Also rated highly were the values of “self-direction,” suggesting the importance of freedom and independence, and “universalism,” which suggested importance of environmental protection, and unity with and beauty of nature. Participants in this study were surveyed following an historic environmental disaster which may have influenced their connections with these values given the threats to the natural environment and likely concern regarding how to navigate the wildfire effects. Given this finding, personal values should be studied in relationship to other important variables in the context of other events impacting agriculture and natural resources.

Results showed significant positive relationships between science trust and all personal values except hedonism, tradition, and conformity. This finding is interesting considering Schwartz (2012) categorized both “conformity,” and “tradition” as values associated with conservation. However, while “hedonism” was grouped in another category of values, “openness to change” (Schwartz, 2012). This finding suggests individuals may interpret personal values differently or apply values in different ways, despite being presented with definitions of each. Therefore, future research should investigate the values further to evaluate participant understandings and the personally redefine values or at least create opportunities for participants to apply the values from a more universally understood or applied perspective.

In this study, “universalism” was the only value to have a moderate association with participant trust in science. All other values with significant relationships showed low associations with science trust. Although “benevolence” was rated most important value to participants, its relationship with science trust also had a low association. There may be a disconnect between individual views on their own values and the actual implications of these values. Future research should investigate further the relationship between science trust and specific personal values to determine potential connections with trust and different value groups as they have in other fields (Pechar et al., 2018; Pirson et al., 2017). An understanding of values in relation to key constructs in agriculture communication will help communicators create messages that resonate with audiences.

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