Research Poster

What Do They Trust?
An Exploration of Trust in Science and Views of Climate Change

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Introduction

Climate change has been defined as a change in global or regional climate patterns attributed to increased levels of atmospheric carbon dioxide (The Oxford Dictionary, 2020), and it has been cited as the most significant adaptive challenge that threatens human wellbeing and global sustainability (Andenoro et al., 2016, p. 58). Climate change has threatened to negatively impact agriculture, and today the industry is more vulnerable than ever (Telg et al., 2018). Agriculturists are dependent on the public's understanding and opinion of climate change in policy and decision making. Currently, there is much discussion from the general public revolving around trust in science and its scientists (Nadelson et al., 2014).

Conceptual Framework

Trust is an essential component in the relationship between scientists and the public (Rumble et al., 2020). Trust encapsulates personal belief and/or knowledge in the dependability and honesty of ideas, institutions, and people (Simpson et al., 1989). To meet society's current and future challenges, it is important to evaluate the public's trust in science and their acceptance of scientific topics (Rumble et al., 2020). Telg et al. (2018) indicated a dominant theme of climate change acceptance was trust, and lack of trust with scientists and media may influence future acceptance. One way to mitigate the negative impacts of climate change is for educators and communicators to increase trust in science (Telg et al., 2018). Trust in science may be increased through the exposure of science-based education, communication, and engagement (Nadelson et al., 2014). If agricultural educators and communicators work toward educating the public and encouraging engagement in science, they may be able to generate a deeper public trust in science. If the public develops a stronger trust in science, it may allow them to be more open to participate in and advocate for climate change and sustainability efforts (Moser, 2010). The purpose of this study is to determine how the public's trust in science impacts their climate change views in the state.

Methods

An online survey instrument was used to determine [State] residents' opinions on science trust and their views on climate change. Qualtrics is a third-party company that was consulted to gather a non-probability sample of [State] residents 18-years or older and align with the census data for community type and age. The participants in the sample were presented with questions to measure their trust in science and views on climate change. Previous researchers have used non-probability sampling techniques to make population estimates (Baker et al., 2013), and it has previously been used to explore and examine public opinion to emerging issues (Lamm & Lamm, 2019). This sampling procedure is appropriate due to increased access to the internet, low sampling costs, and ease of reaching members of the population of interest (Lamm & Lamm, 2019). A total of 553 responses were collected from October to November of 2021, 486 of which were usable. Science trust was measured using an adaptation of the Nedelson et al. (2014) trust in science scale ($\alpha = .86$) with nine, 5-point Likert-type items. To measure climate change views, respondents were asked "Which of the following best describes your views about climate change?" (Abdel-Monem et al., 2014). Data were analyzed using a one-way ANOVA following Field's (2018) statistical procedures.

Results

To address the purpose of this study, we tested whether [State] residents' perceived trust in science varied by climate change views. We found a statistically significant main effect of trust in science on climate change, determined by a One-Way Analysis of Variance (ANOVA), $F(4,385) = 23.52$, $p = <.001$, $\eta_p^2 = .164$, with a moderate effect size (Cohen, 1998). Bonferroni post hoc tests revealed that trust in science was the highest for those who believed it was happening due to human activity ($M = 3.79$, $SD = .65$), and it was found to be significantly different than those who believed it was happening equally due to human activity and natural changes ($M = 3.44$, $SD = .63$), it is only happening due to only natural changes ($M = 3.28$, $SD = .88$), there was not enough evidence to determine its cause ($M = 3.27$, $SD = .66$), and climate change is not occurring ($M = 2.61$, $SD = .81$)

Table 1

Means and Standard Deviations of the Participants' Trust in Science by Climate Change Views (N = 486)

	N	M	SD
CC is happening mostly because of human activity	144	3.79	.65
CC is happening equally because of human activity and natural changes	163	3.44	.63
CC is happening mostly because of natural changes	99	3.28	.88
CC is happening, but there is not enough evidence to determine its cause	40	3.27	.66
CC is not happening	40	2.61	.81

Conclusions and Implications

Although academics in agricultural communications have started to explore the topics of climate change (Andenoro et al., 2013), there has been little research to describe the trust in science and how it relates to the publics views. These measures allowed us to understand how the respondents' level of perceived trust in science impacted their views on climate change. We found that if an individual views science as trustworthy, the more likely they are to perceive that climate change is happening and due to human activity. This supports prior research suggesting an increase in trust in science impacts acceptance of scientific information (Telg et al., 2018).

Recommendations

Agricultural communicators and educators should develop strategies to enhance the public's trust in science. Practitioners should implement educational programs and communication messaging focused on increasing trust in science. If the public, farmers, and ranchers develop a stronger trust in science, it will allow them to be more open to participate in and advocate for climate change and sustainability efforts.

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