The Self-efficacy for Public Engagement with Science Scale

What is self-efficacy?

Self-efficacy is the beliefs people hold about their ability to succeed in certain pursuits (Bandura, 1986). Within the context of science communication, self-efficacy is a primary motivator among scientists who participate in public engagement with science (PES) activities (Dudo & Besley, 2016).

Please indicate the degree to which you agree or disagree with the following statements.

1. I am able to create props/activities/demonstrations that participants find engaging.
2. I have a hard time finding PES topics that people connect with.
3. I find it difficult to leave time for people to share their perspectives during PES activities.
4. I have a hard time finding the right words to convey my message during PES activities.
5. I am good at thinking together with PES attendees about science topics.
6. I am good at knowing when to inform and when to listen during my PES activities.
7. I am able to figure out how to improve PES activities based on the kinds of questions the public asks.
8. I am able to engage in critical discussion about science topics with non-scientists.
9. I am able to moderate discussions with participants, even when they include a wide range of perspectives.
10. I am good at reading the audience during PES activities, and making adjustments as needed.
11. I am good at finding ways to approach difficult topics.
12. I have a hard time answering questions from non-scientists in ways they understand.
13. I am able to moderate discussions that allow participants to engage with me and with each other.

Items were rated on a 6-point scale: Strongly disagree, Moderately disagree, Mildly disagree, Mildly agree, Moderately agree, Strongly agree.

Potential Uses

- Describe baseline levels of self-efficacy for PES among scientists
- Provide a reflection tool for scientists involved in a communication training or intervention
- Measure pre-post change in self-efficacy across time

Scoring

- Items 2, 3, 4, and 12 must be reverse coded
- Check the reliability of the scale with your group of scientists using Cronbach's alpha
- If the scale is reliable, create an average score for each scientist

karen peterman CONSULTING

AAAS

Step 1: Think-aloud Interviews

25 scientists completed think-aloud interviews to describe their understanding and responses to 30 possible survey items.

Interviews lasted 20 and 25 minutes.

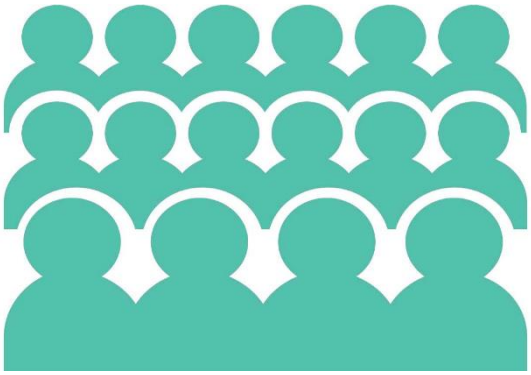
19 items were found to be intuitive for scientists and provided a wide range of responses.

Step 2: Survey Data Collection

N=297 scientists who had conducted PES in the past year.

All PES categories from the AAAS logic model were represented; half were Public Dialogue.

Scientists had up to 20+ years of PES experience; most had done PES for 1-10 years.



Step 3: Analysis

Item response theory and graded response models were used to validate items.

The scale was reduced to 13 items that have classically adequate reliability for a wide range of scientists (self-efficacy scores at +/- 2.5 standard deviations from the mean).

The average score on the scale was 4.64; scientists' scores ranged from 2.46 to 6.

Robertson Evia, J., Peterman, K., Cloyd, E., & Besley, J. (2017). Validating a scale that measures scientists' self-efficacy for public engagement with science. International Journal of Science Education - Part B: Communication and Public Engagement. Retrieved from http://www.tandfonline.com/doi/full/10.1080/21548455.2017.1377852.

For more information contact Karen Peterman, karenpetermanphd@gmail.com