



Online Ethics Center  
FOR ENGINEERING AND SCIENCE

# Engineering Professional Responsibility Assessment Tool (EPRA)

## Description

The Engineering Professional Responsibility Assessment measures students' social responsibility attitudes and operationalizes the professional social responsibility development model, which describes the development of personal and professional social responsibility in engineers. The EPRA is intended to be used by educators to assess curricular interventions aimed at changing students' views of social responsibility.

## Abstract

**Home Page:** <https://www.colorado.edu/faculty/bielefeldt/research/social-responsibility-research>

*Describes the project which helped develop this measure, and lists resulting publications.*

**Description:** The EPRA is a validated measure whose development was funded by a National Science Foundation that examines social responsibility attitudes in engineering students. As professional engineering associations and engineering schools change their curriculum to help future engineers gain the skills and outlook necessary for meeting the complex socially contextualized problems they are likely to face in their careers after graduation, the EPRA can help measure the effectiveness of these approaches.

**What it Measures:** The EPRA measures social responsibility attitudes among

engineering students, and data on the differences among engineering students in their social responsibility attitudes (based on gender, rank, discipline, religious attitudes, and institution). It can be used to measure changes to these views over time, and the effectiveness of educational interventions intended to affect these attitudes.

**Format:** The EPRA consists of around fifty different items that respondents are asked to rank on a seven-point Likert scale from “strongly disagree” to strongly agree.” It can be delivered in paper or electronic format. The measure takes around 15-20 minutes to complete.

### **Disciplines it Assesses**

- Engineering

**Audience:** Undergraduate and graduate students in all engineering disciplines.

**Use Notes:** The EPRA is usually delivered at regular intervals over a students’ undergraduate and graduate engineering education to measure changes in their personal and professional social responsibility attitudes. It can also be administered as a pre and post-test to measure the effectiveness of a course or other ethics intervention.

**Access/For More Information:** Please email the authors or visit [Dr. Bielefeldt’s home page](#) for more information.

### **Associated References**

**Bielefeldt, Angela R., and Nathan E. Canney. 2016. "Changes in the Social Responsibility Attitudes of Engineering Students Over Time." *Science and Engineering Ethics* 22 (5): 1535-1551. <https://doi.org/10.1007/s11948-015-9706-5>. doi:10.1007/s11948-015-9706-5.**

*This research explored how engineering student views of their responsibility toward helping individuals and society through their profession, so-called social responsibility, change over time. A survey instrument was administered to students initially primarily in their first year, senior year, or graduate studies majoring in mechanical, civil, or environmental engineering at five institutions in September 2012, April 2013, and March 2014. The majority of the students (57 %) did not change significantly in their social responsibility attitudes, but 23 % decreased and 20 % increased. The students who increased, decreased, or remained the same in*

*their social responsibility attitudes over time did not differ significantly in terms of gender, academic rank, or major. Some differences were found between institutions. Students who decreased in social responsibility initially possessed more positive social responsibility attitudes, were less likely to indicate that college courses impacted their views of social responsibility, and were more likely to have decreased in the frequency that they participated in volunteer activities, compared to students who did not change or increased their social responsibility. Although the large percentage of engineering students who decreased their social responsibility during college was disappointing, it is encouraging that courses and participation in volunteer activities may combat this trend.*

**Canney, Natan and Angela Bielefeldt. (2015). "A Framework for the Development of Social Responsibility in Engineers." *International Journal of Engineering Education* 31: 414-424.**

*This paper presents the Professional Social Responsibility Development Model, which is a framework to help understand the development of personal and professional social responsibility in engineers. Social responsibility is seen as a foundational disposition that informs how engineers relate to many professional skills valued in engineering including ethics and the impacts of engineering on society. This framework is rooted in the Ethic of Care philosophy and uses three realms to describe the development of social responsibility: the development of personal social awareness, the development of professional skills and how they relate to social considerations, and the connection between personal and professional views of obligation or responsibility. Qualitative data from interviews with engineering students are used to exemplify development in each realm. This conceptual framework is intended as a blueprint for developing studies and assessment instruments which examine the development or identification of social responsibility in engineers or other professionals. Results from one such tool are presented to exemplify one way in which this framework could be used.*

**Canney, Nathan E. and Bielefeldt, Angela R. (2016). "Validity and Reliability Evidence of the Engineering Professional Responsibility Assessment Tool." *Journal of Engineering Education* 105: 452-477. doi: [10.1002/jee.20124](https://doi.org/10.1002/jee.20124)**

*This article describes the Engineering Professional Responsibility Assessment (EPRA) instrument and provides evidence of its usability, validity, and reliability. The EPRA measures students' social responsibility attitudes and operationalizes the professional social responsibility development model, which describes the development of personal and professional social responsibility in engineers. The EPRA is intended to be used by educators to assess curricular interventions aimed*

*at changing students' views of social responsibility.*

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## **Discipline(s)**

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Teaching Ethics in STEM