Impact of Different Curricular Approaches to Ethics on Positive Ethical Behavior

Rob M. Bielby, Donald D. Carpenter, Cynthia J. Finelli, Trevor S. Harding, Janel A. Sutkus, Brian A. Burt, and Matthew A. Holsapple

E³ Exploring Ethical decision making in Engineering

1. Purpose

One desired outcome of ethics education is the display of positive ethical behaviors. However, research to date has not explored the degree to which the ethics curriculum impacts students' behavior. This study looks to explore that relationship, specifically testing the degree to which the quality and quantity of engineering ethics curricular experiences relate to students' levels of participation in positive ethical behaviors.

Research Questions

- *Do different curricular approaches to ethics education have differential impacts on undergraduate students' positive ethical behavior?*

- *How does the impact of these approaches differ for students across academic class-years?*

- *Regardless of approach, what impact does the **depth of cognitive processing** of the experiences have on students' positive ethical behavior?*

2. Data

- Survey of 18 U.S. engineering programs differing by:
  - Size, Geography, Carnegie Classification
- Sample: 3,914 undergraduate engineering students

Independent Variables of Interest

Curricular Experiences

- 27 specific experiences classified into 3 contexts (introductory, advanced, or capstone course) and 9 modes of presentation (e.g. presentation, class discussion, video, etc.)

- Used in models individually and also as a sum of total experiences to which a student was exposed

Cognitive Depth

- 6-point scale related to Bloom's taxonomy of intellectual objectives, ranging from 1="Remember facts presented through the activity" to 6="Justify the decision you would make if faced with the same ethical dilemma"

3. Dependent Variable of Interest

Positive Ethical Behavior

- Summed 5 items measuring students' level of participation in service related activity
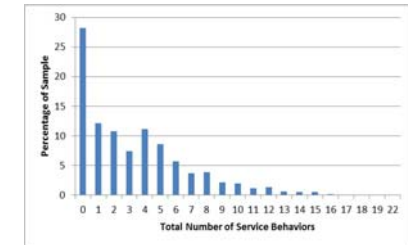
Model

Zero-Inflated Poisson Model

- First models the probability of ever participating in service

- Second models the total level of participation if student participates at least once.

4. Findings

Independent Variable	Participation	Level of Participation
Total number of experiences	+ ***	+***
20 of 27 curricular experiences types	+*	+*
1 of 27 curricular experiences types	+*	
4 of 27 curricular experiences types		+*
Depth of cognitive processing	+ ***	+***

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

- The total number of curricular experience types a student was exposed to is positively related to positive ethical behavior for all class levels.

- Almost all of the 27 engineering ethics curricular experience types were found to have some positive and statistically significant relationship with students levels of positive ethical behavior.

- Approaches requiring a higher level of cognitive processing were found to be related to higher levels of positive ethical behavior, but statistical significance only held for junior class students.

5. Implications

- **Quantity** of ethics curricular experience types appears to be an important aspect in promoting participation in positive ethical behaviors

- Almost every individual experience had a positive relationship to either initial participation or total amount of positive ethical behavior

- While **mode of presentation** plays some role, **depth of cognitive processing** required, no matter the mode or context, has a positive and significant relationship with positive ethical behavior

- *These findings suggest that students are relating ethics in the classroom and ethical behavior inside and outside of the classroom, resulting in the above positive relationships.*