Academic Integrity among Engineering Undergraduates: Seven Years of Research by the E^3 Team

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Exploring Ethical decision making in Engineering

The Problem Statement

- Engineering students report higher rates of cheating than do most other students
  - No one has explained the difference
- Students who cheat in high school are more likely to do so in college
- Students who cheat in college are more likely to:
  - Cheat in post-baccalaureate schooling
  - Engage in unethical work-place behavior
  - Drive in a risky way, steal from employers, shoplift, abuse alcohol, cheat on taxes

Discipline	Bowers (1964)	McCabe (1997)
Business	66%	91%
Engineering	58%	82%
Social Sciences	52%	73%
Natural Sciences	47%	71%

Work Experiences Study: A Qualitative Analysis

- *Goal*: Examine classroom and workplace factors that affect ethical decisions
- *Instrument*: 13 items about self-defined scenarios in both settings
- *Sample*: 130 engineering undergrads at 2 technical private universities (Average full-time employment = 6.8 months)

Major findings

- In both settings, past unethical behavior predicts subsequent unethical behavior
- Context is important for both settings
- Common factors influence decisions across setting
  - Pressures: Insufficient resources, need to succeed, fault of others
  - Hesitations: Conscience, moral obligation, risk of detection

Implications

- The decision-making process for college may extend to the workplace
- Interventions designed for college could also be appropriate for other settings

	Never cheated in HS	Cheated often in HS
Did cheat in college	32%	62%
Did violate workplace policies	38%	64%

	Academic setting	Professional setting
Context #1	Cheated on exam < 15%	Falsified records > 55%
Context #2	Cheated on homework > 45%	Used supplies improperly > 70%

PACES-1: Our Initial Explorations

- *Goal*: Investigate general issues around cheating
- *Instrument*: 139 forced-choice questions
- *Sample*: 643 engineering undergrads from all class levels at 11 institutions

Major findings

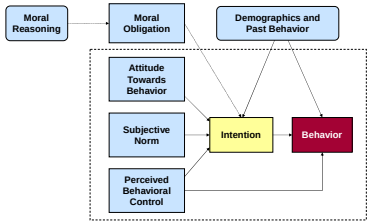
- Some factors that influence decision (e.g., year in college, past high school cheating, being on scholarship) vary by *context*
- Many factors (e.g., moral obligation and stress) are common across context
- Attitude toward a behavior is related to self-reported engagement in it
- Students often rationalize cheating using *instructor-based* neutralizations (It's wrong to cheat even if...)

Implications

- Context is critical in the study of cheating
- Individual efforts to improve teaching and show concern for students may reduce cheating
- Successful deterrents may involve moral obligation and shame → a empirical model may be useful

PACES-2: A Model-Based Approach

- *Goal*: Compare an empirical model for engineering and humanities students
- *Instrument*: PACES-2 Survey and DIT-2
- *Sample*: 527 undergrads at 3 institutions



Major findings

- Engineering undergrads cheat more in college than those in humanities, independent of number of opportunities
  - These differences do not exist in high school
- Psychological factors are common predictors across discipline and context

Implications

- Emphasizing higher-order thinking skills and using more qualitative assessments may promote better ethical behavior
- Exploiting common aspects of ethical decision-making may result in more effective interventions

	Humanities students	Engineering students
Cheated *at least a few times* they took tests during previous term	18%	33%
Cheated *at least a few times* they worked on an assignment	36%	60%

The SEED Study: A New, NSF-Funded Initiative

- *Goal*: Identify and disseminate specific activities that most positively impact ethical development of engineering undergrads
- *Funding*: 4-year, collaborative grant for > $850K

Strategy

- Conduct interviews and focus groups with faculty, students, and administrators at diverse set of institutions to gain perspectives about activities that affect students' ethical development
- Develop a survey to examine the relationship between the identified activities and components of empirical model of ethical development
- Identify specific curricular and extracurricular activities most positively impact ethical development and disseminate that information to engineering colleges, faculty, and administrators