

Research Statement

My research lies at the intersection of engineering ethics, and moral and cultural psychology, bringing insights and methods from empirical psychology to bear on issues in global engineering ethics. Technology affect billions of lives, but ensuring ethical behaviors in these contexts is difficult, given the emergent nature of technology and the global environments of engineering. My research seeks to both understand and promote ethical behaviors and outcomes within engineering and regarding technology, and to understand the effects of culture and education on judgements regarding morality, science, and technology.

This program grew out of my book, [Global Engineering Ethics](#), which develops an approach to technology ethics that takes the increasingly cross-cultural, international environments of contemporary technology as its point of departure. Rather than “applied” approaches to ethics, the approach I have developed is based on (1) the nature of engineering, (2) role responsibilities, (3) case-study analysis, and (4) findings from empirical moral and cultural psychology. This approach has been applied in cross-cultural, international engineering education, described in [“The Development of a Case-Based Course on Global Engineering Ethics in China”](#) and “Global Engineering Ethics at the University of Michigan-Shanghai Jiao Tong University Joint Institute (China),” forthcoming in *Techné: Research in Philosophy and Technology*. In other publications, I have extended this program, in empirical studies and theoretical work.

Empirically, in [“The Ethical Education and Perspectives of Chinese Engineering Students”](#) and [“Investigating Factors Related to Ethical Expectation and Motivation among Chinese Engineering Students.”](#) I found that (1) Chinese engineering students received less ethics education than engineering students in the US, (2) the form of this education stressed virtue ethics and the development of moral character, (3) Chinese engineering students conceive of ethics in contradistinction to the law, where ethics deals with matters of right and wrong not covered by legality, (4) Chinese engineering students expected to face ethical issues related to fairness, (5) the perceived usefulness of ethics education was predictive of both ethical expectations and motivations, and (6) the extent of ethics education was related to ethical expectations but not motivations. To ensure more ethical behaviors, curricula in global engineering ethics should (1) incorporate discussions of the ways that situational and organizational factors contribute to (un)ethical behaviors, (2) draw attention to cultural distinctions between different kinds of normativity, for instance, prudence versus law versus ethics, (3) stress the usefulness of ethics in technological contexts, and (4) ensure technical instructors discuss ethics.

Theoretically, [“Dockless App-Based Bicycle-Sharing Systems in China”](#) examines the influences of history, culture, and technology on the adoption, positive, and negative consequences of bike-sharing in China. Success has been driven by the widespread use of mobile apps and payment, as well as their dockless nature. However, cycling has not been integrated into Chinese public transportation networks, since some view it as an outdated mode of transportation, reminiscent of China’s backward past. Beyond bike sharing and China, this case highlights the importance of extra-technological factors in the adoption of technology, and challenges that arise when private companies provide public good traditionally regulated by governments. Similarly, [“The Merits of Social Credit Rating in China?”](#) argues that social credit rating in China should be understood in terms of the commonly human problem of large-scale cooperation, using a cultural evolutionary framework to show how seemingly irresolvable cultural differences stem from common human concerns. Criticisms of social credit rating in China often fail to acknowledge the serious, intractable nature of problems resulting from a lack of trust. They take for granted the existence of institutions ensuring largescale, anonymous cooperation characteristic of – but somewhat unique to – WEIRD (Western Educated Industrialized Rich and Democratic) cultures. China currently lacks institutions to ensure such cooperation.

At present, I am preparing one article and two book chapters for publication: an article assessing (1) the natures of and relations between ethical reasoning, moral intuitions, and ethics education among engineering students in China – based on conference presentations from [2020](#) and [2021](#), which I will submit to the *Journal of Engineering Education* – and book chapters on (2) engineering ethics assessment and moral reasoning, ethical judgments, moral awareness, and moral sensitivity, which will appear in the *Handbook of Engineering Ethics Education*, and (3) an empirically informed, culturally responsive approach to global AI ethics, for publication in *The Ethics of Artificial Intelligence*.

This work has been extended in three large-scale, long-term projects: First, [NSF-funded](#) research to assess the natures of and relations between ethical reasoning, moral intuitions, and ethics education among engineering students over five years in the US, Netherlands, and China, to better understand how ethical reasoning and moral dispositions are affected by education and culture. Second, conducting mixed-methods research on AI ethical perspectives in the US, EU, India, and China, as well as developing cross-cultural, quantitative methods to strengthen STS (Science and Technology Studies) research capacities. Third, a project assessing the natures of and relations between the development of professional STEM (Science Technology Engineering and Mathematics) identities and meritocratic beliefs.