

Expansion of Motivation Models for Engineering Doctoral Student Populations

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Overview

- Students who do not have a self-set reasons for entering graduate school are likely to leave.
- Students who have future career goals and plans but lack systematic support may graduate but are likely to feel unprepared for their future career at graduation.
- When students have systematic support that aligns with their plans for their future career goal are more likely to feel prepared for their future career at graduation.

Introduction

Many STEM doctoral students are unprepared for their future careers at graduation.¹

40-60%

Of engineering doctoral students will not finish their degree.

[1] NASEM. (2018). Graduate STEM Education for the 21st Century. In *Graduate STEM Education for the 21st Century*. National Academies Press. <https://doi.org/10.17226/25038>

Methods

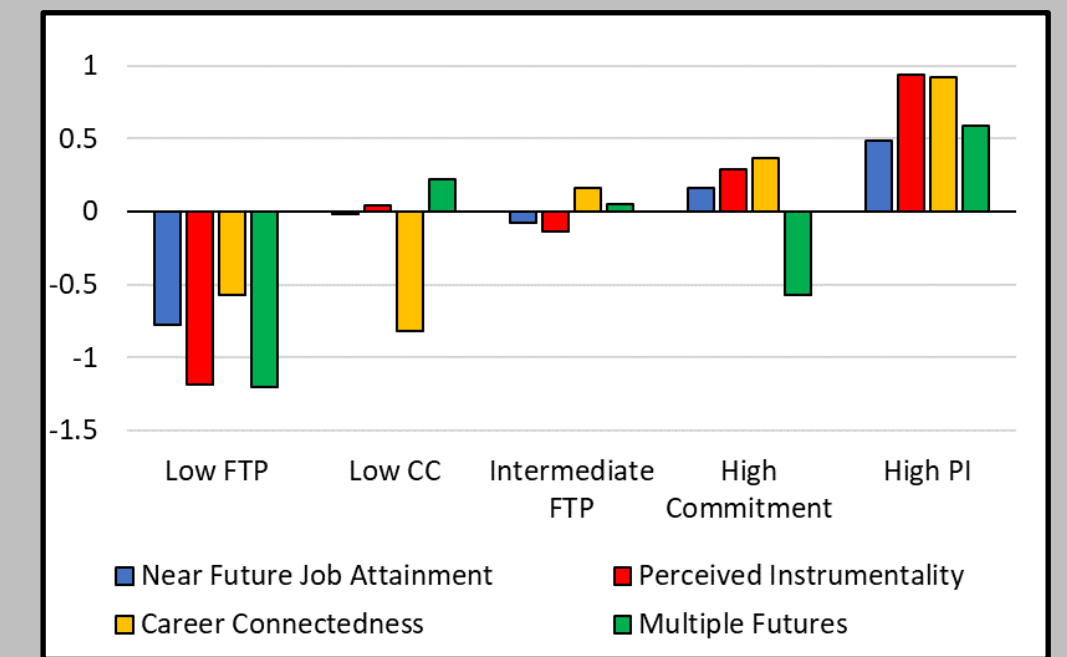


Figure 1. Motivation profiles found within engineering graduate education²

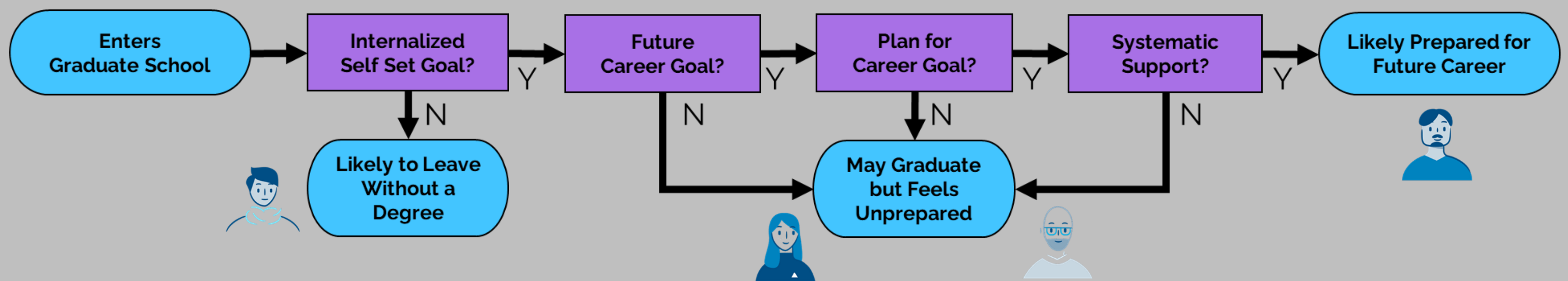
We interviewed 15 students encompassing the above profile to answer the following question:

Research Question: *In what ways do engineering doctoral students describe their future goals?*

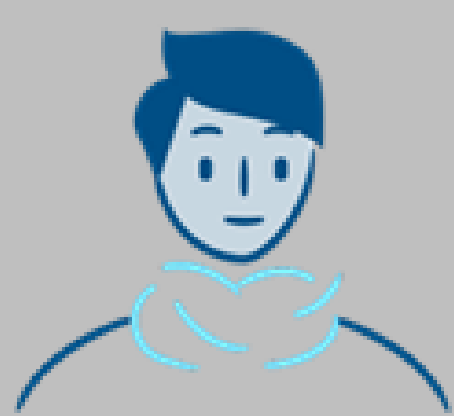
[2] Perkins, H., Tsugawa-Nieves, M., Bahnson, M., Satterfield, D., Parker, M., Kirn, A., & Cass, C. (2019). Motivation Profiles of Engineering Doctoral Students and Implications for Persistence. *Frontiers in Education Conference (FIE)*, 1-7.

Results and Conclusion

Students who have intrinsic motivation, future career goals, plans to reach their future career goal, and systematic support are more likely to perceive themselves as prepared for their future careers at graduation.

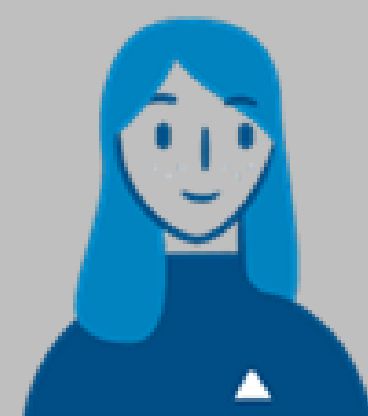


Supporting Data



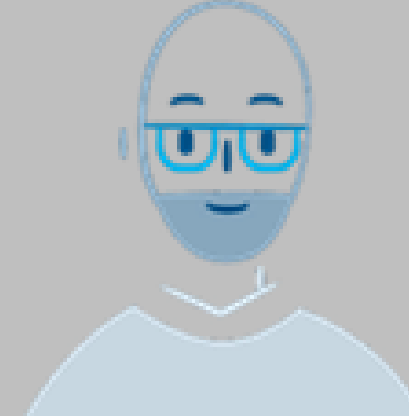
Steve

Steve went to graduate school because he did not know what else to do. Going at the recommendation of faculty and family he struggled when progress slowed in the middle of his program. Because he did not have a self-set reason for being in graduate school, he strongly considered leaving graduate education and becoming part of the 40-60% of students who do not get a degree.



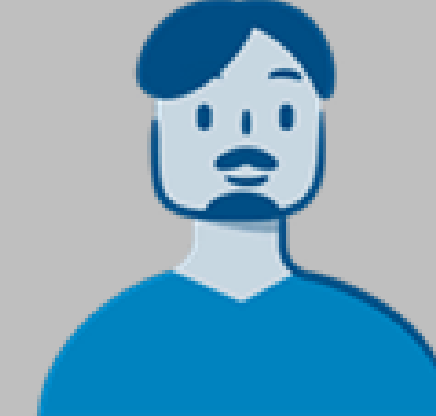
Alex

Alex went to graduate school because she loved working with students and wanted to be a professor. She realized while in graduate school that her research was unlikely to have an impact in her lifetime and decided academia was not for her. Despite being motivated to get her degree she lost sight of her goals and is unlikely to feel prepared for her future career upon graduation.



Arthur

Arthur went to graduate school because he wanted to be a professor and conduct cutting-edge research. While Arthur was able to attain a job as an assistant professor for the following semester, he mentioned that as part of his program he never had any teaching opportunities. Because he views teaching as a significant part of being a professor, he did not feel prepared for his future career.



Carl

Carl went to graduate school because he wanted to move into a different career. While he entered a nuclear engineering program, he ultimately wanted to have a career focused on energy policy. His advisor, being unfamiliar with this career path, said he lacked knowledge and experience to mentor Carl, but that he would help him find people. This support led Carl to feel prepared for his future career.