Correlates of Native American Engineering Students' Career Interests and Efficacy: A Test of SCCT

There is an urgent need for young people to prepare for and pursue engineering careers. Engineering occupations comprise 20% of the science, technology, engineering, and math (STEM) jobs in the U.S. (Bureau of Labor Statistics, 2017). The average wage for STEM occupations is nearly double that of non-STEM occupations, with engineers commanding some of the highest salaries in STEM (Bureau of Labor Statistics, 2017). Moreover, engineering occupations are expected to be some of the fastest growing occupations in the U.S. over the next 10 years (Occupational Outlook Handbook, 2018); yet, there are current and projected shortages of workers in the engineering workforce so that many engineering jobs will go unfilled (Bureau of Labor Statistics, 2015)

Native Americans are highly underrepresented in engineering (NSF, 2017). They comprise approximately 2% of the U.S. population (U.S. Census Bureau, 2013), but only 0.3% of engineers (Sandia National Laboratories, 2016). Thus, they are not positioned to attain a high-demand, high-growth, highly rewarding engineering job, nor to provide engineering expertise to meet the needs of their own communities or society at large.

The purpose of this study was to examine factors that encourage or discourage Native American college students' entry into engineering. Using Social Cognitive Career Theory (SCCT; Lent, Brown, & Hackett, 1994; 2000), we examined the correlates of these students' interests and efficacy in engineering to accomplish this goal.

Participants were $N = 30$ Native American engineering college students from the Midwest; 65% men, 30% women, and 4% other. The mean age was 25.87 (SD = 6.98). Data

were collected over the period of one year on college campuses and at professional development conferences via an online survey hosted by Qualtrics.

Three scales were used in the study: Mapping Vocational Challenges – Engineering (Lapan & Turner, 2000, 2016), the Perceptions of Barriers Scale (POB; McWhirter, 1998), and the Structured Career Development Inventory (Lapan & Turner, 2004). An a priori Power Analysis ($f^2 = .50$; $\alpha = .05$, $1 - \beta = .90$) indicated our sample size was adequate. For all scales, full-scale Cronbach's α reliabilities ranged from .82 to .86.

Results of correlation analyses indicated that engineering efficacy was negatively related to lack of academic preparation ($r = -.50$, $p = .016$), and perceived lack of ability ($r = -.53$, $p = .009$), and positively related to academic achievement ($r = .43$, $p = .043$), career exploration ($r = .47$, $p = .022$), and approaching engineering studies proactively ($r = .53$, $p = .009$).

Engineering interests were negatively related to perceived lack of ability ($r = -.55$, $p = .007$), and positively to proactivity ($r = .42$, $p = .044$), and academic achievement ($r = .45$, $p = .033$). Engineering interests were also related to support from parents, teachers, and friends to study engineering and pursue an engineering career. There was no significant relationship between engineering interests and engineering efficacy among these students. The relevance of these results will be discussed in light of SCCT, and recommendations for practice will be included.

Reference:

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