

Interrelationship between Native American students' interest in engineering and personality

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Background

Native Americans (NA), as an underrepresented group, comprise 2% of U.S. population, but only 0.8% of the engineering population (NACME, 2012). In this study, we explored factors that influence NA students' study of engineering. We did this so that more NA students can be encouraged to pursue this career path. This is essential for the nation's prosperity (Babco, 2005). In this study, relationships between interests in engineering and the personality variables of flexibility, assertiveness, adaptability, awareness of opportunity, and initiative are explored. Research has shown that **career interests** are essential in determining career choice decisions (Nyamwange, 2016). **Adaptability** is the nature of changing or creating modifications in oneself that align with the environment. **Flexibility** allows one to evaluate what is happening and adjusting to roles and responsibilities. **Initiative** allows people to work independently and be self-directed. **Assertive** people balance the needs of themselves and others. **Awareness of opportunity** the cognitive capacity that allows individuals to discover how and where their engineering talents and skills are best used. The cultivation of these personality factors assist NA students in pursuing an engineering career (e.g., Turner, Conkel, Reich, Trotter & Siewart, 2006).

Methods

Participants were 50 NA engineering students (20 males and 30 females), ages = 17 to 37. The majority attended a 4-year college. The statistical methodology used was Pearson correlation, with $p < .05$ required for significance.

Results

As shown in Table 1, results indicated that there were significant, positive correlations among each of the study variables. Correlation coefficients ranged from moderate ($> .30$) to large ($> .50$).

Conclusion

Results: The results of this study demonstrate that engineering interests and these five personality variables are associated positively among NA engineering students.

Future research: should include how these personality factors mediate the links between Native American engineering students' career interests and career decisions, and how these personality factors influence the career choices of Native American engineering students.

Table 1. Native American Engineering Students Correlation Matrix: Engineering Interests and Personality Approaches

Variables	Mean	SD	1	2	3	4	5	6
1. Engineering Interests	2.05	.49	1.00***	.33*	.38**	.36*	.40**	.48***
2. Flexibility	4.09	.79		1.00***	.87***	.83***	.89***	.77***
3. Assertiveness	4.17	.80			1.00***	.91***	.91***	.68***
4. Adaptability	4.23	.82				1.00***	.89***	.63***
5. Awareness of Opportunity	4.10	.77					1.00***	.71***
6. Initiative	3.99	.80						1.00***

N = 50. Engineering coded 3 = High, 2 = Medium, 1 = Low; Personality Variables coded 5 = Strongly Agree, 4 = Agree, 3 = Neither Agree nor Disagree, 2 = Disagree, 1 = Strongly Disagree.

Discussion

The correlations between engineering interests and the personality variables of interest could be explained, at least partially, by the similarities between the personality traits and the requirements of engineering. For example,

- Students who are more **adaptive** enjoy changing or creating modifications in themselves that align with the environment. Likewise, engineers focus on examining how materials can be manipulated in order to align with environmental needs.
- **Flexibility** allows one to evaluate what is happening and adjust to roles and responsibilities. Likewise, engineering requires thinking and problem solving that is characterized by flexibility and the ability to adjust.
- Finally, **opportunity** (the cognitive capacity to discover and act upon that discovery), and **assertiveness** (the confidence to express oneself in ways that can balance the needs of self and the needs of others) translate easily into skills that can support engineering pursuits and the