

Abstract

Native Americans are underrepresented in engineering. They comprise almost 2% of the population but only 0.4% of engineers (NACME, 2012). Parent, peer, and community support may help explain their participation in engineering.

Introduction

For Native American young people, racism, the pressure to do well academically while maintaining tribal identity (Komives et al., 2011), inadequate financial support, and a lack of academic preparation are barriers to their academic and career success (Jackson, Smith & Hill, 2003).

Research has suggested that supports can help overcome the affects of these barriers. For example, for at-risk adolescents, instrumental assistance, career-related modeling, verbal encouragement, and emotional support from parents have been associated with building their students' confidence to engage in career planning and exploration, continue in school when challenged, and make decisions that could lead to a rewarding career (Turner et al., 2003, 2013, 2019).

Is there a difference between the support received by Caucasian American engineering students (who are the dominant ethnic group in engineering) and the support received by Native American engineering students?

Method

Participants were a national sample of 50 Native American and 50 Caucasian American undergraduate engineering students ($N = 100$); 38% were male, 62% were female. They were enrolled in 20 different types of engineering. The majority ($n = 48$) were enrolled in mechanical, electrical, and software engineering. Students completed a survey using Qualtrics Panels.

Supporting Factors in Native American Engineering Students' Pursuit of Engineering Careers

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Table 1. Mean Score Differences between Native American and Caucasian American Engineering College Students

<u>Variables</u>	<u>Native American</u>		<u>Caucasian American</u>		<u>F(1,98)</u>	<u>Sig.</u>	<u>Cohen's δ</u>	<u>Cohen's δ Interpretation</u>
	<u>Mean</u>	<u>SD</u>	<u>Mean</u>	<u>SD</u>				
<u>Parents' Support</u>								
For an engineering career	.67	.38	.87	.27	8.91	.004**	.61	Medium
By teaching things that can be used at a job	3.64	1.34	4.10	.87	4.11	.045*	.41	Medium
By encouraging their student to make good grades in math	3.88	1.35	4.62	.60	12.53	.001**	.70	Large
By expecting their student to finish school	4.06	1.28	4.50	.81	4.19	.043*	.41	Medium
By being proud when their student did well in school	3.86	1.41	4.26	.82	6.87	.010*	.35	Medium
<u>Other Supports</u>								
School administrators	3.90	1.93	4.78	2.48	3.93	.050*	.40	Medium
Girlfriend/boyfriends/partner	4.10	1.84	5.26	2.41	7.32	.008**	.54	Medium
Others in their communities	3.48	.76	4.40	1.94	9.76	.002**	.62	Medium

Results

Scores ranged from 1 (no support) to 5 (very supportive) for all. Analysis of variance (ANOVA) showed that across all support categories, Caucasian American students received significantly greater support than Native American students. Effects across categories were medium to large. There was a particularly large ethnic difference in parents' encouragement to make good grades in math.

Conclusion

Caucasian American and Native American students have the same level of interest in pursuing an engineering career; however, Caucasian American students report greater support from parents, school personnel, peers, and others in their communities for studying engineering. The difference in parental encouragement to make good grades in math is particularly great. In no case do Native American students report greater support for studying engineering or pursuing an engineering career than do Caucasian American students. Our results indicate that the underrepresentation of Native Americans in engineering could be at least partially attributed to differences in parental, peer, and community support. In light of these results, improving support should be considered in order to increase educational equity and encourage young Native Americans to pursue engineering careers.