Attitudes Toward Research After Participation in an Undergraduate Research Internship

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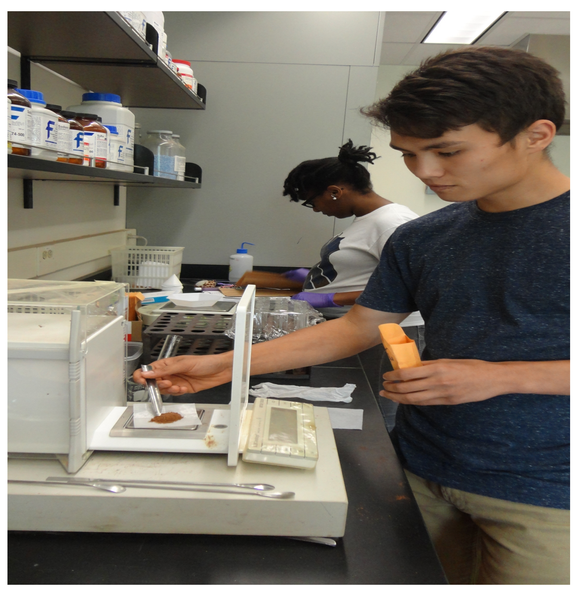
Background: The many benefits of undergraduate student participation in research experiences have been greatly studied and documented in the last decade. Skills gained by the student, enrollment in higher education and changes in attitudes towards research have been identified as beneficial outcomes associated with student participation in research experiences. However**, few assessments evaluate how attitudes change after participating in undergraduate research.**

PINEMAP (Pine Integrated Network: Education, Mitigation, Adaptation Project) is a large research project across the Southeast involving several universities and dozens of scientists that provides undergraduates with 12-week long, research-intensive summer research opportunities in forest resources. The main objective of PINEMAP is to increase forest carbon sequestration, increase the efficiency of nitrogen and other fertilizer sources, and increase forest resiliency under variable climates.

Methods: Over the course of three years, 2012-2014, 21 students were surveyed before they started their research experience and again after completion. The survey consisted of 17 Likert-type items from a modified version of the Attitudes Toward Research scale (1 meaning "Strongly Disagree" and 5 meaning "Strongly Agree") and seven items on research methods that compose four proposed factors: research usefulness, negative attributes of research, positive attributes of research, and research methods.

	Pre-experience		Post-experience			
	Mdn	SD	Mdn	SD	z	r
Research Usefulness	3.79	0.58	4.39	0.43	< 0.001	0.654
Negative Attributes	3.44	0.33	3.68	0.42	0.008	0.309
Positive Attributes	4.52	0.26	4.59	0.29	0.271	0.130
Research Methods	3.55	0.39	4.24	0.27	<0.001	0.818

Results: Wilcoxon signed-rank tests were used to examine the differences between pre- and post-experience scores (Table 1). Results indicated **significant increases** in attitudes for research usefulness and research methods ($p \leq 0.001$), as well as negative attributes of research ($p = 0.008$) after the experience. However, there was no significant difference for positives attributes of research ($p = 0.271$).



Discussion: Differences in the students' attitudes suggest that this undergraduate research experience has an influence over the participants' views and attitudes towards research. However, the non-significant data could be a result of a small sample group, students' overestimation of their interest and attitude toward research before the experience, and many others reasons. It would be beneficial to look at qualitative evidence to better understand the lack in attitude change in positive attributes and the increase in other factors.

References: Kardash, Carolanne M. "Evaluation of Undergraduate Research Experience: Perceptions of Undergraduate Interns and Their Faculty Mentors." *Journal of Educational Psychology* 92.1 (2000): 191-201. *American Psychological Association, Inc.*

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