Why More Women are Pursuing Forensic Science Graduate Degrees Instead of Other Science, Technology, Engineering, and Math (STEM) Degrees: A Qualitative Study

Catherine G. Rushton, MSFS*[1] and Nega Debela, PhD[2]

[1]Marshall University, Forensic Science Program, 1401 Forensic Science Dr., Huntington, WV 25701

[2]Marshall University, Graduate School of Education and Professional Development, 100 Angus E. Peyton Dr., So. Charleston, WV 25303

ABSTRACT

Although women are qualified and capable of being successful in science, technology, engineering, and mathematics (STEM) majors, only a fifth to a third of the STEM fields are composed of women. In contrast, nationally forensic science undergraduate and graduate programs (also a STEM major) average a higher percentage of female students. The purpose of this research was to determine why women are choosing forensic science as a career path over other STEM majors. A survey was sent to current female forensic science students and recent graduates. Based on their answers, many knew they wanted to enter forensic science before they started college, and were influenced by popular forensic television shows and fiction books.

A follow-up research project tried to determine at what point during a woman's education she is mostly likely to be discouraged from pursuing a STEM degree and the common sources of that discouragement. A survey was sent to female university faculty teaching in STEM fields. Their responses were compared to the forensic science survey results.

INTRODUCTION

The advancement of women in academia has been compared to the advancement of female physicians. Both careers are high workload and high stress, yet medicine seems to be doing a better job at recruiting and retaining women [1]. However, in 2005, 28% of all medical faculty members were women while the first year medical student population was 45% female [2].

Jones found that the female faculty in STEM departments were less satisfied with their jobs and were given less opportunity for advancement [3]. The recruitment and retention rate of women in STEM academic positions does not match the number of women pursuing STEM degrees. Possible sources of discouragement must be identified in order to correct it. This research project seeks to address this issue.

The female to male ratio of students in forensic science programs, both undergraduate and graduate, does not reflect the same trend as STEM majors. Nationally, forensic science programs average 78% female students [4] with some universities reporting even higher percentages.

The purpose of this research is to determine why women are choosing forensic science as a career path over other STEM majors and identify the sources of discouragement.

METHODS & MATERIALS

FORENSIC SCIENCE SURVEY

A confidential survey was designed to determine what undergraduate STEM degree the Marshall University forensic science graduate students and alumni were switching from in order to pursue their Master's degree in forensic science. The survey also incorporated questions to identify any events in their personal life that led them to their choice.

STEM FACULTY SURVEY

A confidential survey was designed to determine at what point during a woman's education is she mostly likely to be discouraged from pursuing a STEM undergraduate or graduate degree, and the sources of discouragement. Participants were recruited from the female faculty members in the College of Science, School of Medicine, and Forensic Science Program at Marshall University.

RESULTS

FORENSIC SCIENCE SURVEY

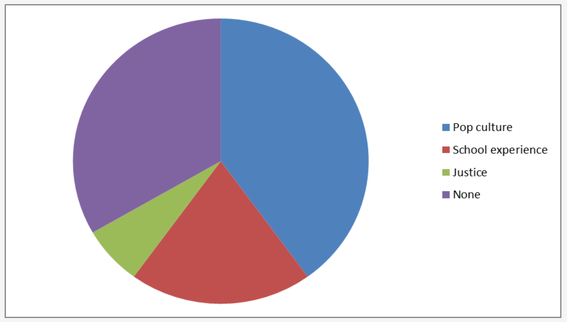

Figure 1. Life event that led to forensic science degree choice

"I wanted to make sure that children like me and other victims of sexual assault had people fighting for justice on their behalf."

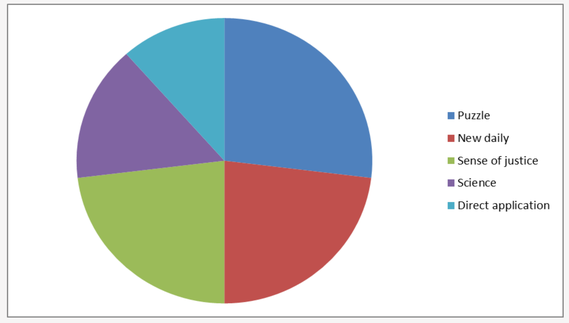

Figure 2. Appeal of forensic science career

"The one thing I never wanted to do was to spend 10 years at a lab bench doing research for something that may or may not work, which is hard to avoid as a science major."

STEM FACULTY SURVEY

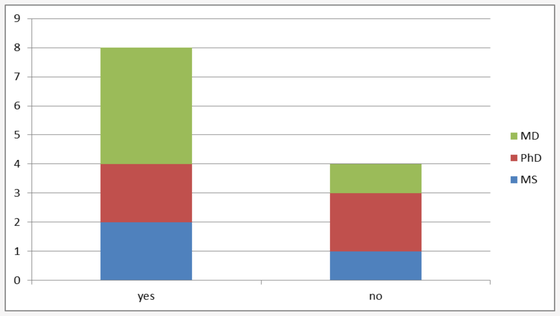

Figure 3. Female faculty who were discouraged

"I was actually told quite the opposite that I should go for a science degree. I was taught by a lot of female science teachers."

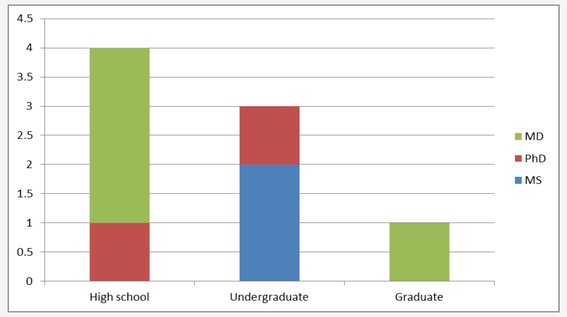

Figure 4. Point in education at which discouragement occurred

"My great aunt was a college graduate who taught high school English. When informed of my science pursuits, she said 'Surely she means domestic science.'"

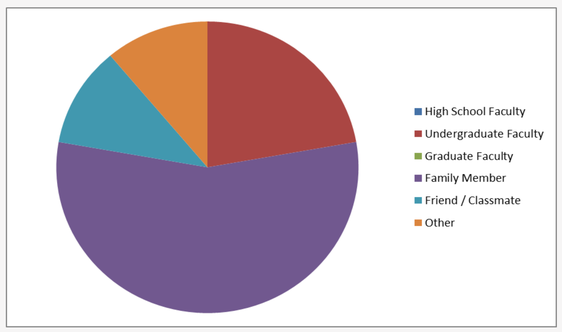

Figure 5. Source of discouragement

"Unfortunately, my parents also discouraged me while encouraging my 3 brothers to excel in these fields. I was told all my life I excelled in "English" and could perhaps someday be a 'teacher'."

Although women receive STEM degrees to a greater percentage than they have in years past, they still are not in as many positions or as high of positions in academia, including medicine, as men [1, 2, 5, 6]. Surprisingly, forensic science is experiencing the opposite issue: more women are entering the field of forensic science than men [4].

Adamo found that competition at different points in a woman's career can affect whether she stays in that career. Competition to get into medical school is fierce but there is little competition after that. Competition for most academic scientists occurs from post-doctorate until tenure [1]. Forensic science is similar to medicine. Getting into a FEPAC accredited master's degree forensic science program is the point with the greatest competition.

CONCLUSIONS

The CSI Effect has had a significant impact upon the number of female applicants to forensic science programs. Thirty percent of respondents said that popular culture such as forensic television shows influenced their choice (Fig. 1). Additional popular forensic science (and medicine) television shows cast an increased number of women in strong roles [7]. Others experienced a violent crime in their life that propelled them to seek justice for others (Fig. 1).

The appeal of forensic science to the women surveyed is mainly a combination of being able to do something different every day, something that has a direct application on peoples' lives, and can bring justice to a victim (Fig. 2). These are things that are lost in many STEM research laboratories. The respondents stated that forensic science laboratory work is dictated by what crime has been committed and provides excitement and interest on a daily basis.

Female faculty with medical doctoral degrees received more discouragement in pursuing a STEM major than masters or other doctoral degrees (Fig. 3). Respondents reported that most of their discouragement occurred prior to starting their undergraduate degree (Fig. 4) and came mainly from their family members (Fig. 5).

FUTURE STUDIES

Future research should survey female non-STEM faculty to determine if they originally were planning on pursuing a STEM degree but did not. If they did change degrees, then determine what their main sources of discouragement were to see if there is a correlation to those that did not change majors.

Also, the original survey of forensic science students identified why they chose forensic science as a career. A new study could determine if they had or are being discouraged from pursing a STEM undergraduate or graduate degree.

Studies have shown that more women choosing forensic science as a career, but does it mean that less men are choosing forensic science as a career? A future study could compare the number of women versus men employed in forensic science laboratories compared to years past.

REFERENCES

[1] Adamo, S.A. (2013). Attrition of women in the biological sciences: Workload, motherhood, and other explanations revisited. Bioscience, 63(1), p. 43-48.

[2] Villablanco, A.C., Beckett, L., Nettiksimmons, J., and Howell, L.P. (2011). Career flexibility and family-friendly policies: An NIH-funded study to enhance women's careers in biomedical sciences. Journal of Women's Health, 20(10), p. 1485-1496.

[3] Jones, J. (2010). Closing the gender gap. Civil Engineering,80(7), p. 60-63.

[4] Houck, M. (2008). Is forensic science a gateway for women in science? Forensic Science Policy and Management, 1, 65-69.

[5] Goulden, M., Mason, M.A., and Frasch, K. (2011). Keeping women in the science pipeline. The Annals of the American Academy of Political and Social Science, 638, p. 141-162.

[6] Williams, W.M. and Ceci, S.J. (2012). When scientists choose motherhood. American Scientist, 100, p. 138-145.

[7] Potter, D. (2008, Aug. 15). More women examine a career in forensic science. USA Today. Retrieved on 15 February 2013 from http://usatoday30.usatoday.com/tech/science/2008-08-15-forensic-science-women_N.htm

CONTACT

Catherine G. Rushton, MSFS

Email: rushton1@marshall.edu