
Changing Perceptions: A Look into the Female Undergraduates' Thoughts on Engineering

CATHERINE ABBRUZZESE

Produced in Scott Launier's Spring 2017 ENC 1102

Introduction

The gender gap in STEM majors has been getting a lot of attention over the last three decades. Efforts to motivate women to join the engineering field have popped up all around; programs, societies, scholarships, and many other incentives encourage more females into the math and science fields. Despite these efforts, the percentage of female STEM major graduates is still very small across most areas. In 1993, women made up 8.9% of the engineering sciences workforce and, in spite all of these active attempts to increase that percentage, that number rose to only 14.9% in 2013, 20 years later (National Center for Science and Engineering Statistics, 2013). In an attempt to find a solution, there has been a lot of research done on the topic of what continues to push women away from this line of work. Many have focused on the factors that affect women before they choose a career (Hartman & Hartman, 2008; Besecke & Reilly, 2006; DiMaria, 2011; Gadalla, 1999), others have focused on the college curriculum and its effects on the undergraduate female's self-efficacy (Powell, Bagilhole, Dainty, & Neale, 2004; Fausto-Sterling, 1991), and others have focused on the enrollment vs. retention rate issue (Zalevski & Swiszcowski, 2009). For this paper, I will be focusing on the factors that affect the enrollment rate of women in STEM fields, which include the individual's background and experience, gender roles, and stereotypes.

Background

Two factors that seem to resurface in much of the research are the individual's background and the individual's experience. This may include having been exposed to STEM principles early on, such as having a role model in the family or having experienced engineering through a camp or workshop, introducing them to these career options. Personal experience early on appears to be a recurring characteristic in women who choose an engineering career. Studies have shown that those who have had experiences in science were more likely to choose one of these fields as a career than those who didn't have the same background (Besecke & Reilly, 2006; DiMaria, 2011; Gadalla, 1999). Additionally, those who did not have a lot of experience with these professions had misconceptions about the field's expectations. Erroneous preconceptions of those scientific careers, such as being "too demanding" or "isolated," having "unpredictable hours," and not being "rewarding," drive women away without before they have the chance to realize that there's more to the career than what they think (Reed, 2002; Besecke & Reilly, 2006; DiMaria, 2011).

Gender Roles and Stereotypes

Gender roles appear to be one of the most influential factors affecting the STEM gender gap. Women, from a young age, are taught to think that there are only certain jobs that they are fit to do, and that belief greatly impacts their future career decisions. Typically, women are portrayed as having to nurture, such as staying at home with the children, while men are out working. When surveyed on their opinion of the career choices for women, both males and females demonstrated the belief that women and men only fit into certain careers based on their gender roles. Reed (2002) notes that women explain the lack of females in IT careers as being due to the fact that it doesn't fit a woman's nature; their immediate presumption is that women should go into "nursing, fashion...[or the] arts." The men expressed similar beliefs about the capabilities of women; "Women aren't logical thinkers." They believe women are more intuitive and men are more logical, thus studying a science career just doesn't make sense for a woman (Reed, 2002). In addition, women also brought up that a scientific career doesn't allow them to lead a "balanced life" because, a woman's job is to get married and have children; thus, having a career impedes that ultimate goal (Reed, 2002; Hartman & Hartman, 2008). These beliefs are further reinforced with the lack of support that women find. Women are not encouraged to consider science by their school counselors; instead, they are pushed towards more "appropriate" careers. (Reed, 2002; Besecke & Reilly, 2006)

Stereotypes also play their part in pushing women away. One stereotype that is very prevalent throughout this topic is the general belief that men are better at math. Since most STEM fields have a heavy focus in math, this stereotype in particular scares women away from trying to study it. Although most women openly reject such stereotypes, studies have shown that a percentage of them still hold that belief to be true (Schmader, Johns & Barquissau, 2004), and that belief ultimately affects their performance. Studies have been conducted that prove that when women's skills, particularly those that have a negative stereotype to them (like math), are compared to those of men, they perform poorly in following tests (Schmader et al., 2004; Spencer, Steele, & Quinn, 1999). Members of stereotyped groups can feel pressured into situations, which can negatively impact their behavior; this is called "the Stereotype Threat" (Steele, 1997), and this is believed to be the most problematic issue contributing to the gender gap. Success in school has been related to a strong identification with it, and when the stereotype threat is prolonged, the stereotyped group will become defensive and begin to disassociate itself from others (Steele, 1997). Going back to the previously mentioned study, those individuals with a strong sense of gender identification proved to be at greater risk of stereotype threat (Schmader, 2002). Thus, when that prolonged feeling happens with women in respect to negative stereotypes in math, the combined low performance and dissociation reduces the desire to pursue math-heavy careers, such as the ones in STEM (Schmader et al., 2004; Kiefer & Sekaquaptewa, 2007).

After reviewing this research that spans across a wide time period, I want to know which of these factors is the most prevalent obstacle to gender equity in STEM for the current generation. The purpose of this research is to contribute more data about current female undergraduates' career decisions and the factors that affected those decisions to not pursue an engineering or computer science degree.

The purpose of this research is to contribute more data about current female undergraduates' career decisions and the factors that affected those decisions to not pursue an engineering or computer science degree.

Methods

In this study, I will be focusing on factors that affect females' decisions prior to starting to study for their careers. In the most general terms, these factors are:

- The individual's background
- Their beliefs on gender roles
- Their perceptions about the engineering career

In order to research these factors and how they affect a woman's career decisions, I decided that interviews and focus groups were the best way to gather information. I thought that these were the best methods of research because they would give me first-hand accounts on how and why someone discarded engineering as a career option. Additionally, I could come to understand their opinion on the career. I also thought these methods would be the best ways to gain insight into the thought process that went into choosing a major other than engineering, as well as the outside factors that affected that process. The interview subjects were chosen based on two important features: their gender and their major. The participants had to be female and they had to be studying a non-engineering career.

I interviewed a total of fifteen female undergraduate students. Each interviewee was asked a series of questions concerning their majors, their background, and their opinion on engineering. I recorded the interviews on my phone with a voice recording application and soon after, transcribed them into a written document in order to have the data be visible and easily accessible. On average, each interview lasted almost five minutes (four minutes and forty-two seconds). In order to get the needed information for the research, every interview question was designed with the previously mentioned factors in mind. Some of the questions that were asked are:

- What are you majoring in?
- Were your parents supportive of your career choice?
- When talking to others about possible career choices, was engineering ever suggested?
- When deciding your major, did you at any point consider engineering?
- Were your future plans influential in your career choice?

(The full list of interview questions can be found in Appendix A and the full recorded interviews can be found in Appendix B.)

In addition to interviews, I also conducted three focus groups. For these groups, I decided to have a mix between engineering majors and non-engineering majors to have a discussion with different points of view. I also decided to have males participate to hear the opinions of the opposite gender. I wanted to hear the male opinion since engineering is such a male-dominated field and their opinions are important because they're something women have to deal with if they chose to go into this field. Their opinion could be a reason that someone was driven away from studying engineering if they thought men generally viewed women in negative light or as less smart. I met with each group and held an open discussion about their opinions on women in science careers, which I also recorded on my phone with the same voice recording application used for the interviews. The groups were meant to last about 10 minutes, and I kept them on topic by asking a couple of the questions from the individual interviews. On average, each group discussion lasted about nine minutes. Recordings of the group sessions can be found in Appendix B.

One problem to this method of primary research is that, due to time constraints, I was only able to choose a very small number of people to research and my sample population is so small that it might not accurately reflect the overall feelings of women. It is my hope that the primary research from this paper gives an idea as to what factors future research should focus on in order to introduce more women into engineering. However, no actual concrete answer can be concluded from my research due to that the population size.

Results

The following results are from the individual interviews presented in various stacked graphs.

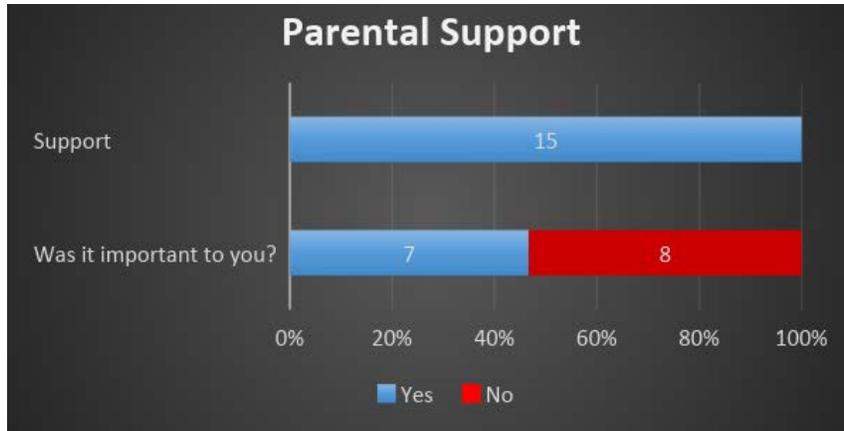


Table 1.1

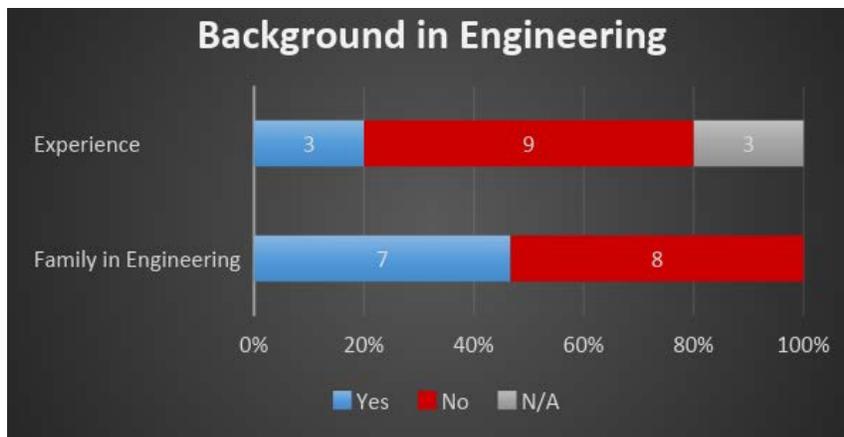


Table 1.2

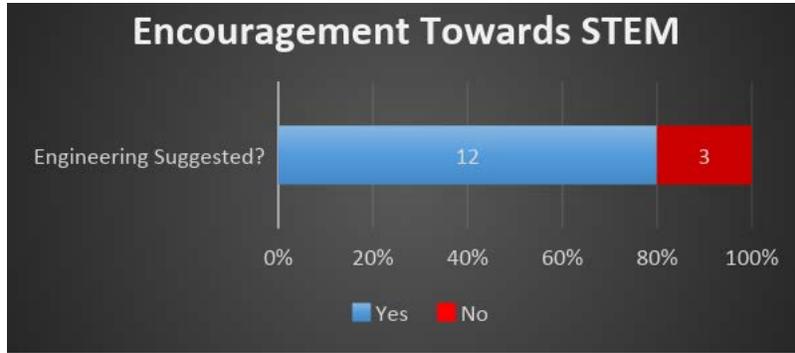


Table 1.3

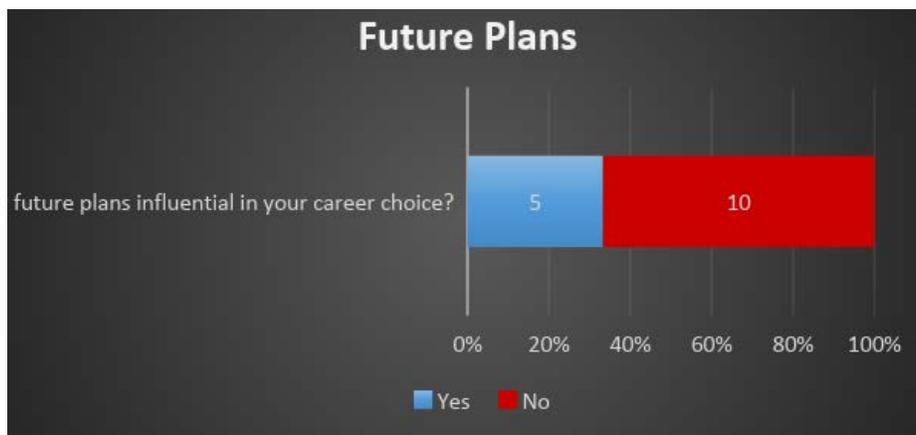


Table 1.4

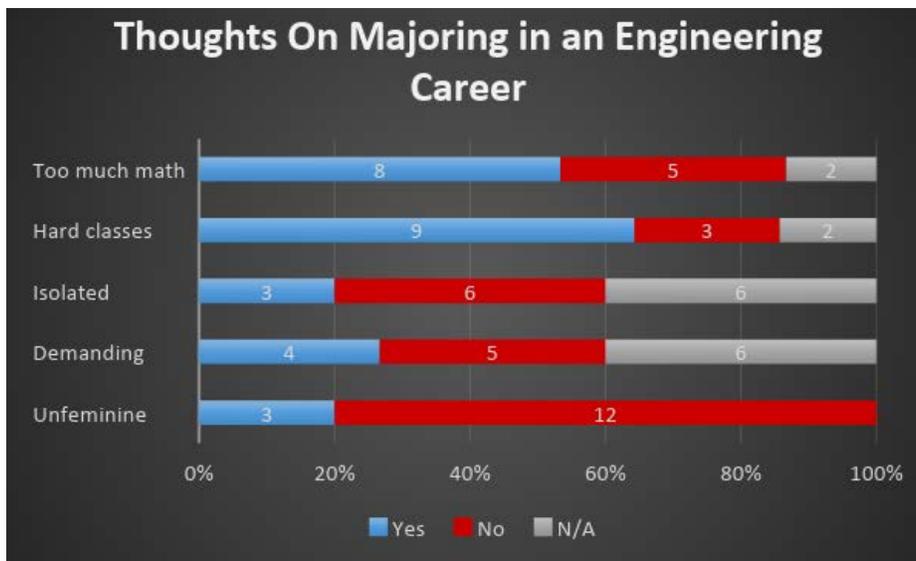


Table 1.5

The groups shared similar beliefs as the individual participants but there were some differences. In presenting the results, I will give an explanation of the topics discussed in each group and then give a graph with the overall opinions of the group.

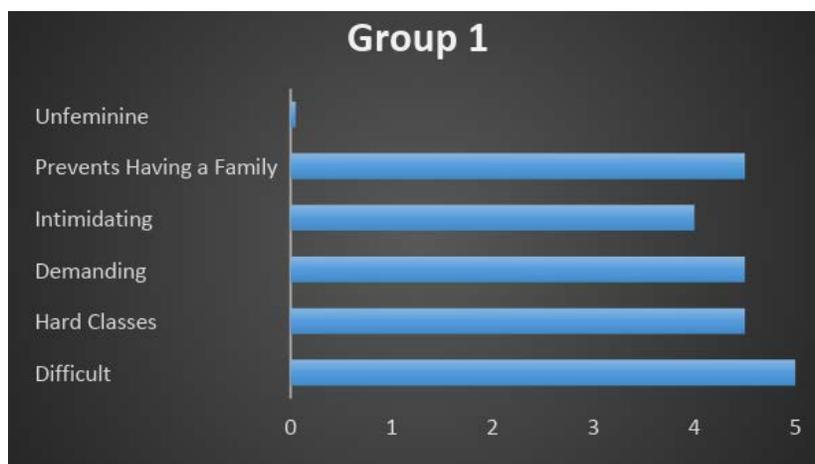


Table 2.1

The graph is set up with a 5-point scale with the following meanings:

- 5 – Strongly Agree
- 2.5 – Somewhat Agree
- 0 – Strongly Disagree

This group talked about the difficulties of the engineering career. Almost all of the participants agreed that studying engineering is very difficult, entails spending more time in college, and requires taking a lot of hard classes. One factor that came up was the fact that studying for this career means, for women, they will be unable to have a family due to the demanding nature of the career. The females present in that room agreed with that assessment.

Additionally, the job opportunities for women in the engineering field are few because when faced with a choice between a man and woman, most participants agreed that employers would choose a man, believing that women are more likely to have to take maternity leave. This was later refuted by saying that women think differently than men and nowadays employers are trying to have diversity in the workforce so they are more likely to hire women. Another factor that was brought up is that engineering careers are well paid and women might be more interested in pursuing STEM careers because of that fact. The guys in the room discussed how engineering was pushed onto them, but some of the girls mentioned how no one had really encouraged them to pursue it due to the nature of the woman being seen as the more nurturing of the sexes.

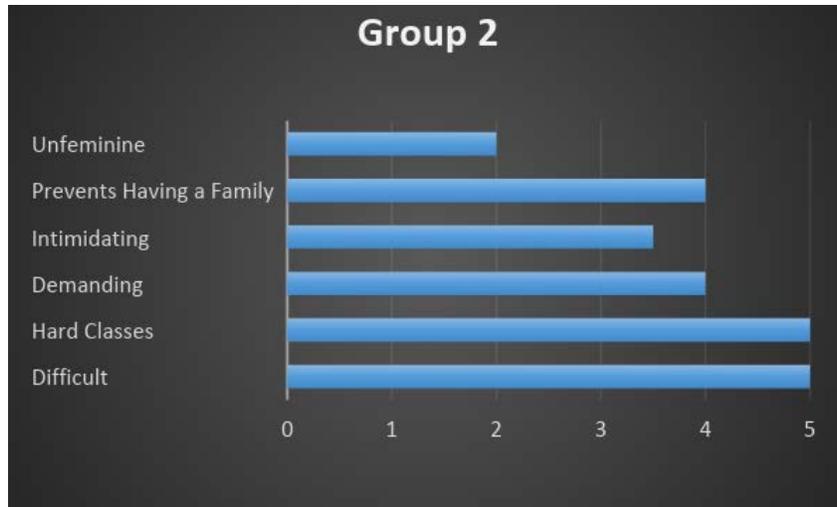


Table 2.2

The graph is set up with a 5-point scale with the following meanings:

- 5 – Strongly Agree
- 2.5 – Somewhat Agree
- 0 – Strongly Disagree

This group, as with the previous one, also focused on the hardships perceived with studying engineering. The majority of the participants agreed that studying engineering would mean a lot of math and hard science classes. The girls who had decided not to study engineering said that they were intimidated by the level of difficulty of some of the math classes they would have had to take if they had chosen to pursue engineering. One of them said that she had considered engineering but she didn't feel like she was smart enough to do well in all those math courses, and she didn't think she'd be good at her job if she majored in it because of the difficulty of these courses. Others agreed that if you're not particularly good at math it wouldn't be a good idea to study for a career that required you to do math every day.

They also brought up the fact that studying a career like this would be hard on a woman who wanted a family because engineering takes a lot of time and effort. In contrast to the previous group, however, some of the participants in this group felt that STEM careers were unfeminine. A discussion arose out of this; two girls participating held that, since engineering has been primarily male-dominated, one could say that it was an unfeminine field. Engineering couldn't possibly have feminine aspects. Others in the group held that careers are neither feminine nor male, and that you couldn't reasonably label engineering as unfeminine.

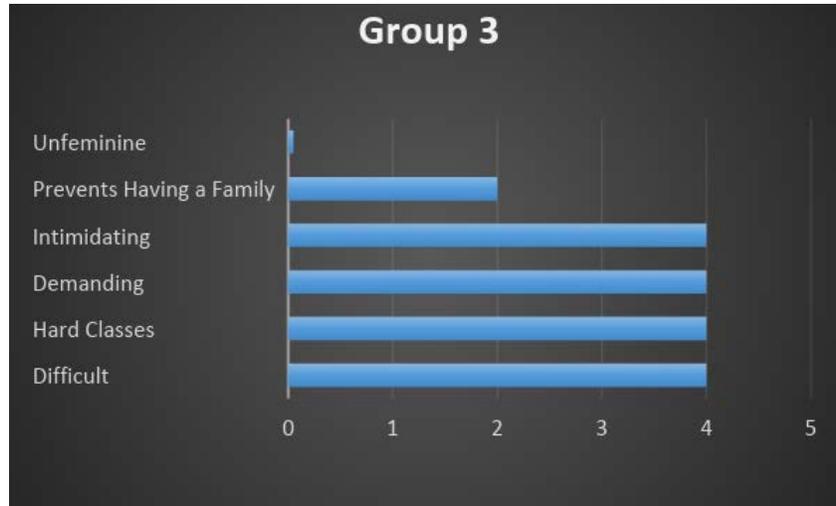


Table 2.3

The graph is set up with a 5-point scale with the following meanings:

- 5 – Strongly Agree
- 2.5 – Somewhat Agree
- 0 – Strongly Disagree

Group 3 had less extreme thoughts about studying engineering and choosing it as a career. Most thought that difficult classes were in store for an aspiring engineer; however, it was nothing that “someone with a passion couldn’t handle.” They all pretty much agreed that it wouldn’t be an easy career to choose, but that it wasn’t impossible and no one should be turned away just because of the curriculum.

Additionally, it was also generally agreed upon that engineering wasn’t unfeminine and that it shouldn’t be a burden on someone who wants a family. Again, one participant stated that if you want it, you can make it happen. One of the female participants said that going into engineering is intimidating because you’re going into a field where you’re a minority, and that can be very hard to do. Other girls agreed that the male dominance of the field might make it hard for females to join because it would mean standing out from the population, and some people don’t want to do that. Some of the guys agreed that if the roles were reversed, they would think twice before going into a career that was female-dominated because they might feel weird being the only guys. Someone brought up the example of being a fashion designer: he said that he felt that going into that career might make him feel strange because, in his view, it’s mainly a career that women or homosexual males go into. Everyone agreed that it was just a matter of getting over gender differences and that society is changing rapidly today, and soon gender differences will be a thing of the past.

Discussion

The purpose of this research is to explore the factors that affected women's decision to not major in an engineering field. This gender gap issue began to be addressed in the 1980s with the introduction of new programs that tried to encourage women to join STEM majors. I wanted to research which factors were making those efforts fruitless because, despite those new programs, women still make up less than 15% of the engineering population workforce today (citation?).

Starting with the individual interviews, the first thing I focused on was parental support and whether or not that was important to the participants. All of the participants had support from their parents and friends in their career choice, but only about half of them said that was important to them. I also took note that about half of the participants had some sort of connection to engineering through their family. One of the factors explored is previous exposure to engineering, and I discovered that despite the connection to engineering through family members, those seven participants didn't really know more about engineering than those participants who didn't have family members in the engineering field. One thing to note is that all seven participants who had family in the engineering field stated that the family member was an uncle or a cousin, someone they typically don't see every day or are not very close to. I think that for a family member to have an impact on an individual's choice, they would have to be someone they see often or someone they

Most of the participants held that engineering wasn't unfeminine, so the problem is not centered around femininity and how women view themselves. Instead, the problem lays in how they view engineering and the way engineering is portrayed, or rather the lack of portrayal for engineering.

deeply respect, which was not the case for any of these participants; therefore, I cannot conclude much in respect on how impactful having family in engineering might be for a woman.

Encouragement towards engineering didn't seem to be an impactful factor as 12 out of the 15 participants said that engineering was something that was suggested to them. In the groups, the women participating had more or less the same experiences. A small minority said no one ever pushed them towards STEM, but most said that it had been recommended to them. This may make it seem as if there was no correlation between encouragement and the decision to not pursue an engineering career, but I think that there's more that meets the eye. Most of these girls said that engineering was suggested to them as they were finalizing their career decision, which typically happens senior year of high school. If counselors or family members wait until senior year to suggest engineering, then that suggestion isn't as impactful as

it could be. This is due to the way that they have grown to see engineering. This takes me to my next point, which is the perceptions of the engineering career.

Most of the participants held that engineering wasn't unfeminine, so the problem is not centered around femininity and how women view themselves. Instead, the problem lays in how they view engineering and the way engineering is portrayed, or rather the lack of portrayal for engineering. A couple of participants admitted that they didn't know much about engineering other than the fact that they are in charge of building things. Almost all of the participants held that engineering was only about tough math classes and physics. In addition, most of the responses as to why they were disinterested in pursuing an engineering career were due to the fact that they perceived engineering careers as isolated and they would rather work with people. They have

gained most of these perceptions from the media and how it portrays this side of science when, in fact, there is so much more to engineering. There is a vast amount of possibilities in engineering that fits all types of personalities. There are some branches of engineering that require workers to talk to a multitude of people. Other branches require a lot of travel, and there are endless possibilities. I interviewed participants on the stereotypes that they knew about engineering: “nerdy,” “isolated,” “only for guys.” Even though many of them said they didn’t believe in these stereotypes, their thoughts on the engineering career reflected these stereotypes.

Another factor that was mentioned a lot was family. The three focus groups had discussions that held engineering as a career that requires your utmost attention, leaving little room for anything else—especially a family. The participants of those groups all agreed with each other that engineering would be a hindrance for any woman looking to have a family later on, yet in the individual interviews, 66% of the participants stated that future plans played little to no role in their current plans because they wanted to focus on themselves for now. Some did say that they steered clear of engineering because they fully intended to have a family, and they wanted to have a career that would allow them to do that, thus engineering was not a possibility. However, most felt that now is the time for them to find something they want to do and worry about future plans and responsibilities later when they’ve settled down.

Putting all of it together, it appears that the biggest obstacle in reducing the gender gap in engineering is changing the way it’s being portrayed towards women. Engineering isn’t talked about often enough in schools and as a result, women are forced to make erroneous assumptions about what it would be like to be an engineer and the responsibilities that come with being one. What’s more, engineering isn’t the type of career that people come into contact with often. It’s not like being a lawyer or a doctor, where there’s plenty of media portrayal and where the general population can experience and see the career in action. Therefore, part of the importance of engineering gets obscured by lack of awareness by young girls, and so they begin to aspire to go into careers that they are more familiar with, leaving engineering behind without a second thought. When engineering finally gets suggested in their senior year of high school, it’s already too late. They’ve made up their minds about what it would be like to study engineering and they would rather do something else.

Conclusion

Between personal experience, gender roles, and the perception on engineering, the biggest factor keeping women away from graduating as engineers is their perceptions. Women learn very little about engineering and the many options that are open to them should they choose to pursue a major in it. There are many programs in place that encourage women to obtain an engineering degree by rewarding them with scholarships and awards, but these programs only benefit those who are already interested in engineering. A possible solution for the gender gap would be to put more programs in place that educate women about what engineering entails, what they can accomplish, and how it can affect their future plans instead of rewarding those who already know about engineering. I think programs like this would increase interest in STEM fields and it could see an increase in the percentage of women in the workforce.

Further research can be done on this subject by recreating a similar research with a larger sample population. More research questions that can be pursued could be: why do women who are studying engineering change their major, why do women stop practicing engineering after they’ve graduated, and what factors affect women who drop out of engineering?

References

- Besecke, L. M., & Reilly, A.H. (2006). Factors influencing career choice for women in science, mathematics, and technology: The importance of a transforming experience." *Advancing Women in Leadership*, 21. Retrieved from http://www.advancingwomen.com/awl/summer2006/Besecke_Reilly.html
- DiMaria, F. (2011). Enrollment vs. retention - Why are there so few women engineers? *The Hispanic Outlook in Higher Education*. Retrieved from <https://www.hispanicoutlook.com/articles/enrollment-vs-retention-why-are-there-so-few-women>
- Fausto-Sterling, A. (1991). Race, gender and science. *Transformations*, 2(2), 4.
- Gadalla, T. M. (1999). Are more women studying computer science? *Resources for Feminist Research*, 27(1/2), 137-142.
- Hartman, H., & Hartman, M. (2008). How undergraduate engineering students perceive women's (and men's) problems in science, math and engineering." *Sex Roles*, 58(3-4), 251-265.
- Kiefer, A. K., & Sekaquaptewa, D. (2007). Implicit stereotypes, gender identification, and math-related outcomes. *Psychological Science*, 18, 13-18.
- National Center for Science and Engineering Statistics. (2013). *Women in S&E Occupations: 1993-2013*. Retrieved from: <https://nsf.gov/statistics/2016/nsb20161/#/figures>
- Powell, A., Bagilhole, B., Dainty, A., & Neale, R. (2004). Does the engineering culture in UK higher education advance women's careers?" *Equal Opportunities International*, 23 (7/8), 21-38.
- Reed, S. (2002). Women vs. men: A WITI survey offers a glimpse at the information technology gender gap." *Woman Engineer*, 22(3), 40.
- Schmader, T. (2002). Gender identification moderates stereotype threat effects on women's math performance. *Journal of Experimental Social Psychology*, 38(2), 194-201. doi:10.1006/jesp.2001.1500
- Schmader, T., Johns, M., & Barquissau, M. (2004). The costs of accepting gender differences: The role of stereotype endorsement in women's experience in the math domain. *Sex Roles*, 50(11/12), 835-850. doi:10.1023/B:SERS.0000029101.74557.a0
- Spencer, S. J., Steele, C. M., & Quinn, D. M. (1999). Stereotype threat and women's math performance. *Journal of Experimental Social Psychology*, 35(1), 4-28. doi:10.1006/jesp.1998.1373
- Steele, C. M. (1997). A threat in the air: How stereotypes shape intellectual identity and performance. *American Psychologist*, 52(6), 613-629. doi:10.1037/0003-066X.52.6.613
- Zalevski, A., & Swiszczowski, L. (2009). Gender and attitudes to enterprise. *Equal Opportunities International*, 28(1), 65-79.

Catherine Abbruzzese

Catherine Abbruzzese is a sophomore at the University of Central Florida majoring in Computer Science with a minor in Math. She is hoping to obtain a Master's degree and pursue a career as a software engineer. In her spare time, Catherine enjoys exercising, playing music, reading, and learning new skills.

APPENDIX A: Interview Questions

1. What are you majoring in?
2. Why did you choose that major?
3. Were your parents supportive of your choice?
 - a. If not, has this affected your decision?
 - b. If yes, would you have changed your mind if they hadn't?
4. Did you receive any other encouragement from other people such as counselors?
5. When talking to others about possible career choices, was engineering ever suggested?
6. Did you at any point consider engineering?
 - a. If not, why not?
 - b. If yes, why did you discard it as an option?
7. What are your thoughts about the engineering career?
 - a. Do you consider engineering unfeminine?
8. What do you know about gender roles?
 - a. Do you believe in these?
9. Were your plans for the future influential in your career choice?
10. What are some stereotypes that you know about the engineering career?
 - a. Were those influential to you?
 - b. Do you believe these stereotypes affect other women's career decisions?

APPENDIX B: Recordings and Transcripts

Interview #12

Interviewer (I): So what is your major?

Participant (P): Right now, I'm joining the navy but once I'm settled in and stationed I'm going to major in psychology

I: Why did you choose that major?

P: I chose this major because there's a lack of psychologists that could potentially relieve the steady-increasing, suicide rate in the navy by treating those sailors with depression and other mind issues

I: Oh, I respect that. I think that's a really good and important reason. Were your parents supportive of your choice?

P: Thank you. Well, my parents are fully supportive of it now. And my close friends and their family are also very supportive of me joining something greater

I: If they hadn't been supportive would you have considered changing your decision?

P: No, I think I would've decided to still join regardless of what they think

I: Was engineering suggested?

P: It came up in a discussion for brief minutes with my mom

I: And why did you decide not to pursue it?

P: I was somewhat intrigued by engineering but I never really was interested enough to actually pursue it. My heart is set on helping others and I think I can do that better with psychology than engineering

I: What are your thoughts about engineering?

P: I know it's a highly demanded, well-paying job. But also it can be rigorous to attain a degree in engineering because of all the classes you have to take in college

I: Do you consider engineering unfeminine?

P: In a way, engineering is unfeminine because I've only seen male engineers but that's only the stereotype. Women have grown to be interested in the field for the last couple of years. I personally have a friend who is female but wants to study engineering.

I: Were your plans for the future influential in your career path?

P: Yes. I want to have a family one day and the military can set my future children for good if they decide to go to college. Family and housing are things that the military provide for tremendously

I: What stereotypes do you know about engineering?

P: I think the only stereotype I see is that since there are so few women in engineering the competition of being a woman in this field is very high and it may be tough to come out on top or obtain a job. And that's how I see it in any field when it comes to being a woman, the typical gender role of a woman is to be docile and work little jobs like secretaries- not something hard and difficult like engineering.

I: Okay, so what do you think about those gender roles? Do you think they have been influential to you?

P: I don't think so. Gender roles are not a concern for me as I clearly see that there's millions of women who join the military every day- even though it's usually seen as a "male" decision to join the military. My own recruiting chief is a woman *and* she runs the whole office, which are full of men. I think as long as you set your mind to it, gender differences are negligible when it comes to ability and it shouldn't affect what we decide to do.

Interview #14

Interviewer (I): So what are you majoring in?

Participant (P): The long title is Organismal Biology with a concentration in Conservation/Biodiversity and French. But basically I'm double majoring in Biology and French.

I: Why did you choose that major?

P: For Biology I've had a passion for animals as long as I can remember so I would like to go into a career that involves them. I'm thinking maybe research. Also Auburn University does not offer a Zoology degree so this is what correlates the most with my interests. For French, I was originally going to minor just to keep up the skill and then they said I have time to double major and that looks a lot nicer.

I: Wow, that's cool and were your parents supportive of your choice?

P: I have been fortunate that my parents have been supportive of my choices. My dad believes in doing what you love and so does my mom. My mom does differ in the fact that she does remind me of the shaky pay, schedule, and job security. Federico [Her stepfather] likes to remind me that I might scoop poop.

I: Did you receive any other encouragement? For example, friends or counselors? Other family members?

P: I have received support from friends but no prominent encouragement from anybody.

I: When you were deciding what you wanted to study, was engineering ever suggested?

P: Oh boy let me tell you. I come from a family of engineers. My grandfather and aunt were civil, my cousin is environmental, and my uncle was mechanical. It has been my uncle's dream, ever since he had nieces, that one of us would go to Purdue University and become an engineer. He started dropping hints when I was in elementary school. My cousin became an engineer but none of us will fulfill his wish of going to Purdue.

I: Hm but did you ever consider doing engineering?

P: I did! I like fixing things and there is a lot of money in it. Sadly, I am not a fan of math or physics. Also engineering often correlates to more than 4 years of college.

I: So what are your thoughts about engineering?

P: I think it is a fantastic field that will always provide jobs although it is competitive. I think it takes a good amount of work to get there, like a lot of school, again competitive field, but the payoff is worth it. It is definitely a male dominated field and not extremely welcoming to females but some of the best engineering work can be accredited to women.

I: Would you consider engineering unfeminine?

P: Certainly not! Though I have always had the belief that women can do anything men can. I also go to a university with a large acclaimed engineering program so I know plenty of engineers and I have friends of both genders in the program.

I: Were your plans for the future influential in your career path? For example, if you were planning to get married or have kids, stuff like that.

P: Not really. I always thought career first, life later. I do worry about money and I am trying to explore options in my field that pay well. I would like to have a family in the future and I would like to be able to support them. I know I will need the income of a spouse also to fully be able to raise a family though. As far as having time for kids I would like to travel for a while before settling down therefore I'm ok with the erratic schedule that comes with science. I am also exploring options that have a more regular schedule that I could transfer to sometime in the future. I am not sure that I will need to because I have a friend whose father does what I wish to do and he seems to be doing fine.

I: Would you consider engineering a hindrance to future goals?

P: I think anything can be a hindrance if you let it. So yes engineering can be but so can any other career. It depends on how a person allows their career to shape their life.

I: What are some stereotypes that you know of with women in the engineering field?

P: I think that women are coming a long way in the STEM fields but there are definitely gender-based stereotypes. Most involve intelligence and a woman's validation to be there. In addition, if it is in a military setting or any other intense setting there is speculation on whether a woman can handle it.

I: And what do you know or think about gender roles?

P: I'm just going to flat out say that I think they are the stupidest thing ever. I try not to let them hinder my choices. I cannot tell you how angry it makes me every time the reasoning for something is because "you're a girl." So what? I was raised by a single mom who was the Chief Marketing Officer of a large company and she always told me that wanting to do something and having the ability to do it are the only two criteria of making something happen. I think that women have proven that it is possible to have a career and raise a family so there's no reason to think that it's unnatural or anything. I also believe that it goes the other way. Men can do what they wish so a stay at home dad could totally be a thing. In addition to being raised by a single mom I was also raised by a single dad who worked from home as a freelance advertiser (until there was no money in it then he went to school to become a massage therapist). We have come too far as a society to let gender become a factor in the validity of an individual. Another disclaimer is that my father was a single dad until I was in 6th grade and my mom was a single mom until I was in 12th grade.

Interview #15

Interviewer (I): What are you majoring in?

Participant (P): I'm majoring in pre-nursing

I: Why did you decide to pursue this major?

P: I chose it because I enjoy learning about science and I had to spend a lot of time in the hospital during my childhood so I grew an interest in the medical field due to that experience

I: Were your parents supportive?

P: Yes, my parents were supportive of me doing what I was interested in

I: If your parents hadn't been supportive, do you think you would've changed your major? Or, at least, thought about changing it?

P: Yes, I probably would've changed my mind. Their opinions mean a lot to me and I trust that they know me well and whether or not what I decided to study fits my personality

I: Did you receive any other encouragement?

P: I received encouragement from my doctors and some of my friends

I: In talking about what you wanted to study with others, was engineering ever suggested to you?

P: Engineering was maybe briefly mentioned but was never actually discussed in detail. It was just one of those majors that right from the start of college searching, I said I wasn't very interested in

I: Why's that?

P: Well, I never considered it because it seems like it's centered around the side of science I don't like- such as physics, and it just never gained my interest. I'm mainly interested in biology and anatomy- that side of science

I: So what do you think about the engineering career?

P: I think the engineering career is great. Engineers create amazing things used all around the world. I just personally never saw myself as one

I: What are some stereotypes you know about engineering?

P: The only stereotype I know about it is that all engineers are antisocial introverts, which is definitely not true

I: Would you consider engineering unfeminine?

P: I think that it started out as unfeminine years ago but as society evolves and changes so do our careers. Now there's nothing "unfeminine" about engineering and I think it's empowering, especially for young girls, to see women in math and science driven careers

I: Were your future plans influential in your career decision? For example, if you planned to get married and have kids

P: No, my future plans never influenced my career choice. I think right now is the time to focus on myself and find a career that I love and when the times comes to get married and maybe start a family, then I will work it out then

I: So what do you think about gender roles? Do you think those are influential to you, do you believe in them?

P: I think gender roles are a thing of the past but I never believed in them. I think that everyone has the ability to do whatever they want- if you want it bad enough, you'll find a way to make it happen. Since I don't believe in gender roles or stereotypes, I don't think that were at all influential to me.