Female Participation in Computer Science

In the early 70s 14% of the women in the US starting their academic career chose the field Computer Science as their major. In the following 13 years this number increased to 37%. However, again 13 years later, in the year 1997 the number declined to 27% (4). This fluctuation might seem odd to some. Especially, considering that some women were pioneers in the Computer Science field. Ada Lovelace supposedly wrote the first program (**CITE**). Grace Hopper was responsible for one of the first linkers (**CITE**). The following chapter will delve into that fluctuation with providing an overview on the different factors that played a major role in the increased lack of interest in the field. Furthermore, it will also show the different strategies on solving this problem. It will conclude with a short overview on the FLOSS community, where women participate to an even lesser extend.

Contributions to Absence of Female Participation

Stereotypes

Computer Science is perceived as a male-dominated environment with smart engineers, that are interested in nerdy hobbies, however, lack social-skills (2). Especially TV shows like *The Big Bang Theory* or movies like *Revenge of the Nerds* depict engineers in that stereotypical manner (3). It is hypothesized that these stereotypes are reason for women's lack of consideration in pursuing a career in Computer Science. Master et al. was able to back up that hypothesis with an experiment: They removed all, perceived, stereotypical elements and decoration, like Science Fiction posters, from a class room. As consequence, they found that the interest of the women in the Computer Science field increased**.** Rooms that weren't redecorated lessened their interest, as it discouraged their feeling of belonging in that environment (4).

Additionally, stereotypes can also influence women in another way, as during their childhood people grow up with the perception that some occupations, like the STEM fields, are for men, and some, like social sciences, arts or humanities, are for women (7).

However, women are also subject to stereotypical discrimination. **MORE INFO** (6)

Social Barrier

Dubbed as social barriers are intrinsic and extrinsic factors lessening the interest in Computer Science for women. Intrinsic factors deal with the hesitation in beginning a career in a perceived masculine field or their expectation in having a work-family imbalance. Other factors are the potential of under-estimation or being put at a disadvantage for displaying expertise (2). Furthermore, another barrier can be career counselors, teachers or parents that lack understanding of the field or simply don't recommend them because they perceive it as a field that is more appropriate for men (2, 7). As Varma points out children are more likely to consider a career in Computer Science when their family supports them for it (7).

Role Models

Carter et al. notices that the lack of female role models nowadays, in contrast to the early beginnings of computing with Ada Lovelace or Grace Hopper, might contribute to the disinterest in the field for women (1).

Exposure to Computers

Certain roles and factors play a role in exposure to computers and how they are used. Studies found that the financial situation of a school influences the access to computers of students. Gender plays a factor in the interaction with computers: the Internet is used differently, there's a higher chance men have used the computer for coding programmes, video games are tailored to appeal to boys, however, the first time people use the computer is because of video games. In a study conducted by Varma they found out that, while accessibility of computers in the school is evenly distributed between the genders, at home, boys were more likely to have access to computers than girls (7).

Efforts in Increasing Female Participation

TODO

Women in FLOSS

As described in the previous section women tend to get familiar with computers usually later than men. Similarly, women enter the FLOSS community later as well. Men make their first experiences during their time at university, while women are already pursuing a career when they do so. In 2013 Robles et al. conducted a survey on female participation in the FLOSS community and noted a surge in new arrivals: between 2010 and 2013 38,54% of their female participants made first experiences in that field. That's a contrast to the 18.75% of male new arrivals (8).

In the aforementioned survey they also delved into the different ways software engineers contribute. They were split into "Code, programming", "Other", which is documentation, testing, translating, etc. or "Both". It's noteworthy that men mostly contributed via source-code contributions, however, women performed the other tasks more frequently (8).

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