

Not all Heroes Wear Capes

Recruiting and Retaining Women in Cybersecurity

whoarewe

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A little herstory...

From the beginning of the computing revolution, women have had an important role in shaping how mathematics and computers come together.

- **Hypatia of Alexandria** - Math teacher and maker of astrolabes, commented some of the seminal works of mathematics;
- **Ada Lovelace** - Mathematician & creator of the first machine-run algorithm and worked on the Analytical Engine;
- **Grace Hopper** - Designed the first compiler for a programming language;

Through the end of the 19th century into the 1960s - Women were hired as 'computers' to literally compute, by hand, equations for subjects such as ballistics and encryption.

World War II and the Impact to Security

- Many younger men volunteered to go to the front lines in Great Britain.
- This left women to take up many “Men’s Jobs” such as teaching, factory work and mathematics.
- At **Bletchley Park**, a top secret cryptography “hacking” unit was formed with many maths experts, but also a majority of women were trained as codebreakers.
- Women in diverse fields such as languages, sciences and also many housewives were recruited to the cause.

These women helped win the war for the allies! Lady codebreakers made many advances in the cryptanalysis field.

Women & Post-WWII Computing Contributions

- Women were recruited to take care of the “software”, a lesser task in men’s eyes than designing and building hardware for the new computing machines;
- The programmers of the ENIAC computer in 1944, were six female mathematicians; previously were human computers at the Moore School's computation lab;
- **Grace Hopper** continued to contribute to computer science through the 1950s. She brought the idea of using compilers from her time at Harvard to UNIVAC;
- Women were instrumental in early space exploration at NASA. Humans would not have stepped on the moon without women calculating different trajectories and setting up the software for these missions.

Question!

With all these women bringing so many advances throughout history, why aren't there more women adopting Cybersecurity careers?

... and now for something completely different...

Some dismal numbers

25%

of cyber security roles are held by women.

Information Security Forum 2023

Not too welcoming or encouraging

- If 25% of your team are women, there are not many role models to emulate or social circles to lend a helping hand.

30%

of women say they feel discriminated against at work.

- ISC² "2022 Cybersecurity Workforce Study"

Not too welcoming or encouraging

- Imagine if 1 in 3 people on your team felt like they were not in a safe space? Would you stay if you weren't psychologically protected or could speak your mind without fear of repercussions?

Why are Women Underrepresented in Cybersecurity?

Nature, Nurture, Societal Bias

- Parents make decisions early on about what boys and girls should be doing;
- Social conditioning is still around “women’s work” vs “men’s work”;

Why are Women Underrepresented in Cybersecurity?

Women can't sciencelprogram as well as men.

- The numbers show **the opposite** occurring, standardized testing scores demonstrate girls scoring just as well as boys in the same cohorts;
- Women are graduating from universities in greater numbers than men;
- Women are graduating from STEM programs more than ever
 - Yet they only make 80% of what a man can make at the same job!!!

Why are Women Underrepresented in Cybersecurity?

Adversarial Nature of Cybersecurity Workplace Environments

- Cybersecurity teams are usually small and work intensely on incidents;
- These can foster hyper-competitive, non collaborative, war room environments and much us vs them thinking;

74%

of girls expressed an interest in STEM

-Girl Scouts of America STEM study 2018

13%

said they would consider a career in STEM as their first choice

-Girl Scouts of America STEM study 2018

57%

**responded that they would have to work harder than a man to be taken
seriously**

-Girl Scouts of America STEM study 2018

What can be done to encourage women in Cybersecurity

Start and change the conversation early in life.

- Teenage women in high school, or younger, should be exposed to cybersecurity as a viable and desirable career option.
- Such efforts should also work to diminish the impact of the conditioning that societal gender biases place on the choices of our children.

What can be done to encourage women in Cybersecurity

Adopt a policy of diversity in work teams

- The talent pipeline needs to be increased;
- Look outside traditional STEM backgrounds as many practitioners come from outside STEM fields;
- Do you really need a degree to do the cyberz?
- Hire for fit and delivery, teach the rest.
- Pay women what they are worth for the same work as a man would do!

What can be done to encourage women in Cybersecurity

Identify what women want in their work and their careers

- Not everyone is the same. Women have different wants, needs and motivations at different times. What might be true one day might be completely different two weeks, months or years later;
- Listen to what your teammates and direct reports are giving you as feedback and be flexible to adjust accordingly;

What can be done to encourage women in Cybersecurity

De-escalate the working environment

- Try to create an collaborative working environment, there are no good guys and bad guys only the team;
- In Cyber, we need people to “tell it how it is” or else incidents won’t get fixed. This is not a license to be an asshole or run roughshod over others. Respect above all else;
- Show vulnerability and empathy, this is a superpower that helps teammates get to know you more fully, especially in a WFH or hybrid environment;

What can be done to encourage women in Cybersecurity

Quickly deal with any disparaging comments and abusive behaviours

- Set the ground rules as to accepted and not accepted behaviours and re-inforce constantly up to and including warnings and termination;
- It's absolutely not acceptable to constantly be confronted with comments about one's look, body, voice or way of working;
- Also in this category: having to prove your 'cred' every day or being ignored due to not quite being at the same 'level' as others;
- Rely on HR policies on workplace abuse to support any decisions and work with HR partners when situations warrant.

What can be done to encourage women in Cybersecurity

Quickly deal with any disparaging comments and abusive behaviours

- My threshold is always the golden rule: Do unto others as they would do unto you.
- Would you, as a man, want to run the gauntlet everyday of people questioning your competency because of the way you dress, look or speak? This kind of abuse is what I feel makes women leave our field. Keep it friendly and professional. Criticize when needed, with respect and don't rely on ad hominem attacks.

Once Your Team is Together - What then?

Mentoring and Coaching

- Offer mentorship for women who may be new to the field or who have aspirations to rise through the ranks and experience different facets of cyber;
- Oftentimes skills such as executive presence or giving a presentation do not come naturally to people. Help out by discovering opportunities to lift everyone up;
- Be an ally to the women in your team to help them achieve their aspirations;
- Don't try to manipulate outcomes, people are allowed to feel what they feel and express those feelings - don't shortchange how people react to situations.

The “heart, head, step” method is what I use in mentoring, start with “what” style questions so as to not try to pin down anything and let conversation flow.

Once Your Team is Together - What then?

Using your heroes to their best advantage

When asked “What excites you the most about cybersecurity?” A survey of 311 women answered the following:

- Solving complex problems 73%
- Growing field with lots of opportunity 65%
- New technology 48%
- Future innovation 46%
- Legal and regulatory aspects 29%

Make sure you poll your team constantly as to their motivations and ensure as a manager or teammate you are doing all you can to encourage growth and interesting challenges.

In Conclusion

Encourage internships and mentorship with women in diverse fields to recruit into cyber;

Having a diverse team, fully including women in the process will ensure your team can deal with different situations;

The team will benefit from different points of view and skill sets to solving problems;

Ensuring a psychologically safe working environment will increase productivity and alignment of your team with their work;

If you keep the women on your team motivated, they will exceed expectations for your mission more than hinder it!