Of girls and geeks: Environment may be why women don't like computer science

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Just the appearance of science fiction memorabilia, computer game boxes and junk food in a classroom or workplace is enough to create an environment that makes computer science an unattractive field to many women. Photo by Sapna Cheryan

(PhysOrg.com) -- In real estate, it's location, location, location. And when it comes to why girls and women shy away from careers in computer science, a key reason is environment, environment, environment.

The stereotype of computer scientists as nerds who stay up all night coding and have no social life may be driving women away from the field, according to a new study published this month. This stereotype can be brought to mind based only on the appearance of the environment in a

classroom or an office.

"When people think of computer science the image that immediately pops into many of their minds is of the computer geek surrounded by such things as computer games, science fiction memorabilia and junk food," said Sapna Cheryan, a University of Washington assistant professor of psychology and the study's lead author. "That stereotype doesn't appeal to many women who don't like the portrait of masculinity that it evokes."

Such objects help create what Cheryan calls ambient belonging, or the feeling that you fit or don't fit in somewhere.

"It is the sense you get right away when you walk into a room. You look at the objects and make an instant appraisal of how you would fit with the objects and the people who are typically found in that environment. You also make a judgment of 'I like it here' or 'I don't belong here,'" she said

Cheryan set up four experiments involving more than 250 female and male students who were not studying computer science to look at possible reasons why the proportion of women in the field is dropping while the proportion of women in such disciplines as biology, mathematics and chemistry is increasing.

In the first experiment, students entered a small classroom that either contained objects stereotypically associated with computer science such as Star Trek posters, video game boxes and Coke cans, or non-stereotypical items such as nature posters, art, a dictionary and coffee mugs. The students were told to ignore these objects because the room was being shared with another class. After spending several moments in the classroom, the students filled out questionnaires that asked about their attitude toward computer science.

Women exposed to the stereotypical setup expressed less interest in computer science than those who saw the non-stereotypical objects. Men placed in the same situations did not show a similar drop in interest in computer science. Cheryan said this study suggests that a student's choice of classes or a major can be influenced by the appearance of classrooms, halls and offices.

The other three experiments which asked student to imagine stereotypical and non-stereotypical objects in various environments, found that:

- When women were given the choice of joining one of two all-female teams at a company, and the only difference between the teams was the objects found in the teams' workrooms, 82 percent of the women picked the team with the non-stereotypical workroom.

- The stereotypical and non-stereotypical objects were the determining factor for both women and men when they were given the choice of taking similar jobs at one of two companies that had workforces evenly split by gender. Both genders had a preference for the job in non-stereotypical work environment, but women's preferences for the non-stereotypical environment were significantly stronger than men's. Women also felt less of a sense of ambient belonging in the stereotypical work environment than men.

- After being questioned about their attitudes toward a Web design company, males and females were asked to choose between identical job offers from two such companies. The only difference between the firms was the objects in each company's workplace. Women were more likely to accept an offer with the

non-stereotypical company while men had the opposite preference. The more women perceived the stereotypical environment as masculine, the less interested they were in that company.

"These studies suggest objects such as science fiction books and Star Trek posters communicate whether or not a person belongs in an environment. "Instead of trying to change the women who do not relate to the stereotype, our research suggests that changing the image of computer science so that more women feel they fit in the field will go a long way to recruiting them into computer science," said Cheryan.

"We want to attract more people to computer science. The stereotype is not as alienating to men as women, but it still affects them as well. A lot of men may also be choosing to not enter the field because of the stereotype. We need to broaden the image of the field so both women and men feel more welcome. In workplaces and universities we can do this by changing the way offices, hallways and labs look. The media can also play a role by updating the image of computer science. It would be nice for computer scientists in movies and television to be typical people, not only computer geeks."

Co-authors of the research, published in the *Journal of Personality and Social Psychology*, are psychologists Victoria Plaut of the University of Georgia; Paul Davis of the University of British Columbia, Okanagan; and Claude Steele of Columbia University.

Source: University of Washington (news : web)