Better Approaches to Well-Intentioned, but Harmful Messages (Case Study 1)
Overcoming Stereotype Threat to Improve Retention

| ✎ K-12 Education | 🏛 Undergraduate | 🎓 Graduate |

EXPERIMENTS WITH STEREOTYPE THREAT DEMONSTRATE BEST PRACTICES

Students often approach education as a search for their inherent talents, rather than development of new abilities, because they believe that intelligence is unchanging. This belief leads students to drop challenging subjects when faced with initial difficulties or stereotype threats. A successful intervention designed to short-circuit this process was studied by Good et al. (2003). The intervention had four steps:

1. College students mentored seventh-graders and taught them that intelligence can be increased.

2. Mentors attributed any learning difficulties to the situation instead of students' shortcomings.

3. Mentors gave the seventh-graders access to information about how the brain forms new connections over time.

4. The middle-school students communicated what they had learned about the expandable nature of intelligence to others.

Results of this experimental intervention included improved test performance and no gender gap in test performance. Other interventions produced similar results when students were encouraged to believe that intelligence increases through practice and effort. And some experiments showed that in certain situations, it was enough simply to tell students that the test they were about to take had never shown gender differences in outcomes.

TRUE STEREOTYPE THREATS FROM COMPUTING EDUCATION — AND RECOMMENDATIONS FOR AVOIDING THEM

Calling attention to women's underrepresentation in computing can cause stereotype threat, even when it is well-intended. These true stories illustrate problems and suggest solutions.

TRUE STORY	POSSIBLE SOLUTION
During orientation for new computer science undergraduate majors, a woman who was comfortable in computing because her mother is a computer scientist hardly noticed the typical gender composition of her cohort. She was the only woman in her group of fifty new students, an unfortunate, but familiar situation. Then the woman was approached by a solicitous counselor who intended to encourage her by gushing, "You are so brave to major in computer science! I really admire you." The new student had not been worried until that moment.	**Builds Community:** The counselor might simply have introduced herself to students, and students to each other, perhaps revealing shared values by asking them why they chose this major. Initiating conversations in this way could begin forming community and put everyone at ease.
An instructor sent students an end-of-course email saying, "Women earned three of the top four course averages in the class … The course average for you seven women was 2.6 points higher than for the thirteen men. You're showing that women can do just fine in CS: good work!" (What did he expect?)	**Avoids Invoking Negative Stereotypes:** The instructor might have sent an email congratulating the top students on their performance. The message could also have included a grade distribution, so students could compare themselves with classmates. This information would allow the women to see how well they had done without making their achievement seem unusual.

RESOURCES

Good, C., Aronson, J., Inzlicht, M. (2003). Improving adolescents' standardized test performance: An intervention to reduce the effects of stereotype threat. *Journal of Applied Developmental Psychology 24*(6), 645-662.

Good, C. Aronson, J., Harder, J. (2008). Problems in the pipeline. *Journal of Applied Developmental Psychology 29*(1), 17-28.

NCWIT offers practices for increasing and benefiting from gender diversity in IT at the K-12, undergraduate, graduate, and career levels.

This case study describes a research-inspired practice that may need further evaluation. Try it, and let us know your results.

How Do Stereotype Threats Affect Retention?
with Case Study 1

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Fear and anxiety are powerful motivators. When we fear that our actions will confirm negative stereotypes about our "group," or about ourselves as members of a group, then this "stereotype threat" negatively affects our behavior. According to Aronson and Steele, stereotype threat harms both performance and motivation by reducing our feelings of competence, belonging, and trust in our colleagues.

Stereotype threat hinders performance. For example, experiments show that White male engineering students get lower-than-usual test grades when told in advance that Asians typically score higher than any other group on math tests. Likewise, other experiments have shown that African Americans underachieve on academic tests when threatened by racial stereotypes about intelligence. Elderly people have more trouble with memory tests when reminded of their age. Public use of computer software designed for the opposite sex triggers feelings of stress due to stereotype threat. And, women underperform on math tests when gender is called to their attention.

Stereotype threat also influences choices and aspirations. For example, experiments show that women avoid leadership roles in a project after viewing commercials showing female stereotyped behaviors (such as dreaming about becoming homecoming queen). Women also reduce their intentions to become entrepreneurs after reading a story that describes entrepreneurs in stereotypically masculine ways. In addition, awareness of low expectations for "people like me" prompts us to set harsher standards for our own work and opt out if we do not meet them. This may explain why women with B grades in computer science are more likely than their male peers to leave the major.

One strategy for minimizing the harmful effects of stereotype threat is to avoid invoking stereotypes. Unfortunately, avoiding explicit comments is not always enough. The social situation and subtle nonverbal cues can also create stereotype threat. The suggestions below can help minimize the chance of causing feelings of stereotype threat in others:

- Well-intentioned comments can have unfortunate consequences if they raise awareness of negative stereotypes. Think and examine your assumptions before you communicate.

- Foster the belief that intellectual ability—like a muscle—increases with exercise and effort.

- Avoid characterizing a person as a representative of his or her group.

- Foster cooperation over competition to reduce evaluative peer interactions and increase feelings of belonging.

- Provide intentional role models (see NCWIT practice sheet on role modeling).

- When feasible, mask the identity of the person being rated, as is done in double-blind reviews. Make your process known, because knowing that evaluations are not publicly linked to a person removes fears that their performance has implications for their group.

- Regularly assess outcomes to ensure that diversity practices have the desired outcomes.

STEREOTYPES AFFECT EVALUATION AND PERFORMANCE

Stereotypes can suppress women's representation in computing when they bias evaluation, inhibit performance, and distort choices. Because of the negative stereotypes about women's interest and ability in computing, both evaluators and potential IT professionals expect less of women in this arena—and often route women into tasks where women are thought to be successful (without consideration of the individual woman).

When stereotypes prejudice evaluations, they affect hiring, promotions, and recommendations. For example, studies show that raters favor men's over women's journal submissions, job applications, leadership skills, teaching, speeches, and musical auditions. When sex is concealed, however, raters' judgments are no different for men and women. The different results obtained when sex is known and unknown demonstrate that unintentionally and unknowingly, evaluators may unfairly judge women's performances and products.

Stereotypes persist, in part, because they help us to interpret information. We often filter new experiences based on what we already know or believe. As a result, we tend to pay attention to information that confirms our preexisting beliefs and overlook information that challenges our preconceptions. Recognizing the difference between assumptions and evidence-based judgments is difficult, but necessary for bringing gender balance to computing.

RESOURCES

Correll, S. (2001). Gender and the Career Choice Process: The Role of Biased Self-Assessments. *American Journal of Sociology*, *106*(6), 1691–1730.

Shapiro, J. & Neuberg, S. (2007). From Stereotype Threat to Stereotype Threats. *Personality and Social Psychology Review*, *11*, 107.