

Increased number of female engineers in managerial roles brings unintended consequences

June 5 2017, by Phil Ciciora



Increased female representation in the managerial ranks of engineering organizations may add another layer of sex segregation on top of the one it's intended to mitigate, says a new paper from U. of I. labor professor M. Teresa Cardador. Credit: Photo by L. Brian Stauffer

Research from a University of Illinois expert who studies identity and meaning in occupations and organizations says a purposeful increase of female representation in the managerial ranks of the male-dominated profession of engineering may foster some unintended consequences, and may even add another layer of sex segregation on top of the one it's meant to mitigate.

Engineering remains one of the most sex-segregated occupations in the U.S., with women representing about 15 percent of the overall engineering workforce and as little as 8 percent in specialized fields such as mechanical engineering. To account for such disparity, engineering organizations have actively sought to promote women—so much so that female engineers are now in managerial roles in numbers disproportionate to their overall representation as employees.

But according to a new paper from M. Teresa Cardador, a professor of labor and employment relations at Illinois, engineering firms may have well-meaning intentions regarding the promotion of female engineers, but moving them into managerial roles may foster a form of "intraoccupational segregation" that appears to have unintended negative consequences.

Published in the journal *Organization Science*, the paper sheds light on how and why [sex segregation](#) persists despite women's increased representation in managerial and leadership ranks of engineering firms.

"There are typically two career paths in engineering organizations—technical or managerial," Cardador said. "So you can look at it in two ways: either women are more likely to move into managerial roles in engineering firms, or they're less likely to stay in technical roles. There are many men who pursue the managerial path as well, and women are still underrepresented at the highest managerial levels of an organization. But the number of female engineers who

choose or are ushered into the managerial career path is disproportionate to those who choose the technical path."

The paper's analysis of interviews with more than 60 engineers suggests that an inverted role hierarchy in engineering - that is, valuing technical roles over managerial roles—may explain these gendered career patterns and their unintended consequences.

"In business, the highest-status positions tend to be managerial. But in engineering, technical ability is revered while management is what you do if you have good organizational and communication skills," she said.

Subsequently, management is less associated with having "technical chops," Cardador said.

"Women are stereotyped as having less technical competence in engineering, which perhaps explains why men are much more likely to remain on the technical side and women are tracked into the management side," she said.

Although women's increased access to managerial positions in male-dominated occupations should represent an important step in addressing sex segregation by helping more women to stay in engineering, it may actually run counter to the retention benefits that organizations are trying to achieve, Cardador said.

"Companies are legitimately struggling with this problem of attracting and then retaining women in the engineering field, and are making a concerted effort to correct this imbalance," Cardador said. "But in their zeal to attract and retain female engineers, they may be overcorrecting and thereby undermining what they're trying to achieve. It's good intentions gone awry."

The negative consequences for women include fostering reduced identification with engineering as an occupation; reinforcing stereotypes about women's suitability for technical work; and increasing work-life balance tensions, according to the paper.

"From an identity perspective, some women reported that taking the managerial path allowed them to experience perceptions of enhanced role fit—the sense that they enjoyed and were well-suited for their work role," Cardador said. "But on the negative side, women on the managerial path described feeling mixed identification with engineering—that is, they didn't consider themselves or feel that they were considered by others as 'real engineers' once they went over to the management side."

Having women in managerial roles also tends to validate the idea that [women](#) have "soft skills" like the ability to socialize and communicate with co-workers but lack the technical capability to be in a highly specialized role, Cardador said.

"Female engineers also encounter more subtle forms of discrimination in the forms of task-assigning," she said. "If you're a woman and you're in a project meeting, you're often the one who gets tasked with taking notes or managing follow-up communication, simply because you're seen as more organizationally and socially adroit than your male engineer counterparts."

Women also typically have more responsibility for child care outside of work, "and my research shows that managerial roles create more work-life tension because they may not have as much flexibility as technical roles," she said.

"All of these things combined—the reduced identification with the profession, the persistent validation of stereotypes, and then these work-

life balance issues - have the potential to increase a woman's chances of leaving the profession, which may ultimately make the goal of retaining female engineers in engineering firms more tenuous."

A dearth of female engineers not only poses a problem for equal opportunity and gender equality issues, but also creates problems of "a diversity of ideas and creativity within organizations and the occupation itself," Cardador said.

More information: M. Teresa Cardador. Promoted Up But Also Out? The Unintended Consequences of Increasing Women's Representation in Managerial Roles in Engineering, *Organization Science* (2017). [DOI: 10.1287/orsc.2017.1132](https://doi.org/10.1287/orsc.2017.1132)

Provided by University of Illinois at Urbana-Champaign

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