Research Report

Should I Stay or Should I Go?

Women's Implicit Stereotypic Associations Predict Their Commitment and Fit in STEM

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Abstract: Gender stereotypes that associate science and technology to men more than women create subtle barriers to women's advancement in these fields. But how do stereotypic associations, when internalized by women, relate to their own sense of fit and organizational commitment? Our research is the first to demonstrate that, among working engineers, women's own gender stereotypic implicit associations predict lower organizational commitment. In a sample of 263 engineers (145 women), women (but not men) who implicitly associated engineering with men more than women were less committed to their organization. This relationship was mediated by lower self-efficacy and value fit, and not explained by other personality, demographic, or organizational factors. We discuss how internalized cultural biases can constrain women's experiences in STEM.

Keywords: gender, implicit stereotypes, organizational commitment, STEM

Women are underrepresented in Science Technology, Engineering, and Math (STEM). Researchers have debated whether evaluators' implicit gender biases affect women's career opportunities, with conflicting evidence on whether such biases are harmful (Moss-Racusin, Dovidio, Brescoll, Graham, & Handelsman, 2012) or have little impact (Williams & Ceci, 2015). Less is known about how women's *own* implicit gendered associations might predict their feelings of fit and commitment within STEM organizations, outcomes that could help explain women's high attrition from the field (Fouad, Chang, Wan, & Singh, 2017; Frehill, 2010). The current research examined whether implicitly associating engineering with men more than women predicts female engineers' commitment to their organization. We explored a set of theoretically relevant mediators of this relationship that assess a lack of self-concept fit (e.g., "Do my abilities and values fit my organization?") and/or social fit (e.g., "Am I valued by my organization and accepted by others at work?"). Finally, we sought to test and rule out possible third variable explanations for observed effects.

Given the underrepresentation of women in STEM careers, it is perhaps not surprising that people have a general tendency to implicitly associate STEM with "male" more than with "female" (Nosek, Banaji, & Greenwald, 2002). These implicit stereotypic associations are distinct from explicit stereotypes, culturally learned in childhood (Baron, 2015; Miller, Eagly, & Linn, 2015), and often held by both men and women (Nosek et al., 2007). Although researchers have debated the general predictive power of implicit associations (Oswald, Mitchell, Blanton, Jaccard, & Tetlock, 2013; Greenwald, Banaji, & Nosek, 2015), existing research shows that implicit STEM = Male associations predict undergraduate women's math performance and engagement (Nosek et al., 2009; Nosek & Smyth, 2011).

Using a sample of male and female engineers, we provide the first test of how women's own implicit stereotypic associations predict their commitment to their engineering organizations. Prior research suggests that a lack of belonging, or fit, plays a key role in explaining why women avoid pursuing or consider leaving certain STEM fields, including engineering (Cheryan, Ziegler, Montoya, & Jiang, 2017). Feelings of belonging are informed by the gendered nature of the environment (Cheryan, Plaut, Davies, & Steele, 2009; Dasgupta, 2016). Thus, if some women have more strongly encoded an Engineering = Male association, we reasoned that this implicit stereotypic association might prevent them from feeling fully committed to their engineering company.

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Why Do Gendered Associations Predict Women's Organizational Commitment?

Our hypotheses were informed by the State Authenticity as Fit to Environment (SAFE) model, a novel theoretical framework that outlines distinct ways in which people can feel a lack of fit to an environment (Schmader & Sedikides, 2017). When the environment does not activate or align with valued self-attributes, people experience a lack of self-concept fit. When they feel they are not accepted or valued by others in the setting, they experience a lack of social fit.[1] Either experience can leave people feeling inauthentic, with a desire to escape or avoid the context. When a group is historically underrepresented and devalued in a domain, they might be at risk for experiencing either type of misfit. Thus, given that an Engineering = Male implicit association implies a tendency to view engineering as a male-dominated career, we believed the strength of this association could conceivable predict a lower sense of either self-concept fit or social fit.

With respect to self-concept fit, we examined whether women with a stronger implicit Engineering = Male association would report lower *person-organization value fit* and/or lower *self-efficacy* for their job. Goal congruity theory speaks to value fit and suggests that gender stereotypes about STEM occupations contribute to young women's perceptions that these careers are mismatched to their own communal values (Diekman, Steinberg, Brown, Belanger, & Clark, 2017; Cheryan et al., 2009). Prior research has also linked implicit Math = Male associations to lower math self-efficacy among undergraduate women (Nosek & Smyth, 2011; Stout, Dasgupta, Hunsinger, & McManus, 2011). Yet, perceptions that one is well matched to the values of one's employer (Verquer, Beehr, & Wagner, 2003) and to the demands of one's job (Singh et al., 2013) are key predictors of organizational commitment. Thus, even among successful female professionals, those who implicitly associate engineering with men might feel that the organization is a poor fit to their own values and skills, which in turn, could predict lowered organizational commitment.

With respect to social fit, we examined whether holding implicit Engineering = Male associations would predict either lower *perceived organizational support* – a subjective sense that one is not valued by their organization as a whole; or higher *social identity threat* – a sense of being judged by colleagues on the basis of one's gender. Prior research suggests that members of negatively stereotyped groups often feel undervalued in their organization (Smith, Tyler, Huo, Ortiz, & Lind, 1998; Tyler, 2001). In addition, women in engineering, more so than men, report a chronic awareness of being evaluated by their gender, which can have downstream consequences for performance and burnout (Hall, Schmader, & Croft, 2015; Logel et al., 2009). Further, holding implicit Math = Male associations has been shown to make undergraduate women susceptible to such experiences of social identity threat (Forbes & Schmader, 2010). Based on this evidence, female engineers who implicitly associate engineering more with men could feel less committed to their organization because they perceive a lack of support from their organization and/or experience chronic concerns of being judged by their gender.

In sum, we examined the degree to which implicit stereotypic associations predict lower organizational commitment for women (but not for men). We reasoned that either lower self-concept fit or social fit (or both) could meaningfully account for the relationship between implicit STEM = Male associations and women's organizational commitment. However, we also considered the possibility that this relationship is spuriously caused by a third variable. Certain personality characteristics (neuroticism or stigma consciousness), demographic characteristics (age, income, education, and number of children), or the perceived gender inclusivity of one's organization could potentially be confounded with gender, implicit stereotypic associations, and/or organizational commitment.[2] Our analyses thus tested whether our predicted relationships were robust to controlling for these covariates.

Method

Participants

Our final sample included 263 adult engineers (145 women, 118 men) from 27 different engineering organizations across Canada and the US. Eligible participants were trained engineers and worked full-time in an office environment. Given feasibility concerns, our *a priori* goal was to recruit at least 200 engineers per gender for the initial survey, expecting some attrition and data loss. Additional sampling and

[1] Note that the SAFE model (Schmader & Sedikides, 2017) includes a third form of fit, goal-fit, which refers to the degree to which an environment affords one's goals. We construe the self-concept fit measures in this study as including elements of both self-concept fit and goal fit. Because none of the measures in this study were designed to specifically capture goal fit as distinct from self-concept fit, it is not discussed in this paper, and for we only distinguish between self-concept and social fit for conceptual parsimony.

[2] For more detailed theoretical reasoning on why we considered each of the tested covariates, please refer to the SOM.

variable details are provided in Supplementary Online Materials (SOM).

Procedure

As part of a larger study, participants completed online surveys for a $10 gift card. We report only measures relevant to the current hypotheses. An initial survey included measures of implicit Engineering = Male associations, organizational value, and social identity threat. Participants then completed daily diary surveys not relevant to the current paper. A final survey, completed 1 month after the first survey, included organizational commitment, person-organization fit, and self-efficacy. Measures were divided between the two surveys to reduce fatigue and in consideration of broader goals for the larger project.[3]

Measures

Unless otherwise specified, self-reports were made on a 7-point scale (i.e., 1 = *strongly disagree*, 7 = *strongly agree*).

Implicit and Explicit Stereotypic Associations

Participants completed a Brief Implicit Association Task (BIAT, Nosek, Bar-Anan, Sriram, Axt, & Greenwald, 2014; Sriram & Greenwald, 2009). This task measures the strength of associations between categories by analyzing the speed with which participants sort gender and domain-related words into stereotype congruent (is it a Male or Engineering word?) compared to incongruent categories (is it a Female or Engineering word?). On each trial, participants saw two conceptual categories presented on the top-center of the screen (e.g., Engineering and Male). In the center of the screen, exemplar words from one of four categories (Engineering, Family, Male, or Female; see Electronic Supplementary Materials, ESM 1) were presented randomly one at a time. Participants indicated whether that stimulus word does or does not belong in one of the two categories displayed.

Participants completed 6 blocks of 20 trials. Three blocks included stereotype-congruent category labels (Male and Engineering), and three blocks included stereotype-incongruent category labels (Female and Engineering), with order counterbalanced. A *d*-score (algorithm from Nosek et al., 2014) of the average reaction times for stereotype-congruent pairings versus stereotype-incongruent pairings represents participants' gender stereotypical implicit associations, with positive numbers indicating a stereotypic Engineering = Male association.

As a parallel explicit measure of explicit associations, participants rated "Which group has stronger associations with Engineering?" using a scale ranging from 0 = *Females* to 100 = *Males*. The order of the implicit and explicit measure was counterbalanced.

Organizational Support

Participants rated the extent to which they agreed or disagreed with eight statements from a measure organizational support (e.g., "The organization values my contribution to its well-being"; $\alpha = .93$; Eisenberger, Huntington, Hutchison, & Sowa, 1986).

Social Identity Threat

Four items (Hall et al., 2015) asked participants to report the frequency of experiencing social identity threat at work (e.g., "How often do you worry that people at work will judge you because of what they think of your gender?") on a 7-point scale (i.e., 1 = *Never* to 7 = *Always*; $\alpha = .94$).

Person-Organization Value Fit

Participant's fit of their values to the organization was assessed with three items (e.g., "My personal values match my organization's values and culture"; $\alpha = .94$; Cable & DeRue, 2002).

Self-Efficacy

Self-efficacy as an engineer was measured by six items ("I feel prepared for most of the demands in my job"; $\alpha = .84$; Schyns & von Collani, 2002).

Organizational Commitment

Organizational commitment was assessed with six items (e.g., "I am quite proud to be able to tell people who it is I work for" and "I am thinking about leaving my current job"; $\alpha = .86$; Cook & Wall, 1980).

Covariates

To rule out possible third variable explanations for the relationship between implicit associations and organizational commitment, we examined several covariates. *Stigma consciousness* was assessed with four items from Pinel's (1999) scale ($\alpha = .79$). We assessed dispositional negativity as the average of the two *neuroticism* items ($r = .56$, $p < .001$) from the Ten Item Personality Inventory (TIPI; Gosling, Rentfrow, & Swann, 2003).

Finally, two variables measured the gender inclusiveness of their company: The presence of *gender inclusive policies* was assessed with a 17-item checklist (resulting in a score ranging from 0–17), and participants reported the *percentage of female engineers* at their company.

[3] The data are part of a larger dataset. Two other working manuscripts test distinct hypotheses using different variables (see SOM).

Table 1. Gender differences in means (*SDs*) for key study variables

	M_{men} (*SD*)	M_{women} (*SD*)	*t*	*p*	*d*	CI_{95}
Organizational Commitment	5.40 (1.16)	5.03 (1.44)	−2.55	.001	−.32	[−.57, −.08]
Implicit Association	0.24 (0.40)	0.18 (0.39)	−1.16	.248	−.15	[−.39, .09]
Organizational Support	5.22 (1.10)	4.95 (1.10)	−2.03	.043	−.25	[−.49, −.00]
SIT	1.81 (0.97)	2.99 (1.34)	8.27	<.001	.99	[.73, 1.25]
Person-Organization Fit	4.82 (1.23)	4.66 (1.27)	−1.07	.287	−.13	[−.37, .12]
Self-Efficacy	5.63 (0.80)	5.51 (0.69)	−1.35	.179	−.16	[−.40, .08]
Explicit Associations	69.14 (15.00)	75.89 (16.66)	3.42	<.001	.42	[.18, .67]
Stigma Consciousness	3.06 (1.09)	3.81 (1.20)	5.28	<.001	.67	[.42, .92]
Neuroticism	2.61 (1.09)	3.08 (1.16)	3.30	.001	.42	[.17, .66]
Age	36.25 (9.69)	33.86 (8.60)	−2.11	.036	−.26	[−.51, −.02]
Income	4.51 (1.04)	4.01 (1.19)	−3.56	<.001	−.44	[−.69, −.20]
Education	1.46 (0.62)	1.35 (0.53)	−1.46	.145	−.19	[−.44, .05]
Number of children	0.78 (0.96)	0.68 (1.03)	−0.84	.402	−.10	[−.34, .14]
Gender policy count	10.20 (2.32)	9.17 (2.74)	−3.25	.001	−.40	[−.65, −.16]
Percentage of female engineers	26.41 (11.54)	23.65 (12.4)	−1.82	.069	−.23	[−.47, .02]

Demographics

Participants reported gender, age, income, education, and number of children, among other demographic variables.

Results

Gender Differences in Key Variables

We first tested for gender differences in key organizational variables with a series of independent sample *t*-tests summarized in Table 1. Consistent with past work (Singh et al., 2013), female engineers reported significantly lower organizational commitment than did male engineers. In addition, women were also less likely than men to report feeling supported by their organization and experienced more social identity threat. There were no significant gender differences in person-organization fit and self-efficacy.

A single-sample *t*-test against the scale midpoint (0) revealed that participants were more likely to automatically associate engineering with men than with women ($M = 0.21$, $SD = 0.40$, $t(262) = 8.38$, $p < .001$). A two-sample *t*-test revealed no significant gender differences in this implicit associations (see Table 1).

For explicit associations, a single-sample *t*-test against the scale midpoint (50) revealed that participants explicitly associated engineering significantly more with men than with women ($M = 72.86$, $SD = 16.26$), $t(262) = 22.80$, $p < .001$. In addition, a two-sample *t*-test revealed a stronger explicit Engineering=Male association among women than among men (see Table 1). Implicit and explicit associations were only weakly and nonsignificantly correlated, $r = .11$, $p = .068$.

Do Implicit Associations Predict Organizational Commitment?

To explore whether stereotypic implicit associations predicted lower organizational commitment for women, participants' organizational commitment was regressed on gender (Women = 0, Men = 1) and implicit Engineering = Male associations (standardized) on Step 1, followed by their interaction on Step 2. Results detailed in Table 2 revealed a main effect of gender that was significantly moderated by implicit associations, (see Figure 1). Simple slope analyses revealed that implicit gender associations predicted lower organizational commitment among women, but not men. Women had significantly lower organizational commitment than did men among participants with a strong (+1 *SD*; $d = .60$) Engineering = Male association, but this gender difference was absent for participants who had a weak Engineering = Male association (−1 *SD*; $d = -.19$).

A parallel analysis revealed that explicit associations did not interact with gender to predict organizational commitment, $\beta = .03$, $t(259) = 0.39$, $p = .694$. See SOM for analyses that tested outlier and order effects, as well as a discussion of why it was unnecessary and inappropriate to nest participants by organization.

Testing Alternative Explanations

Given the correlational nature of these data, we wanted to rule out the possibility that the observed relationship between women's implicit stereotypic associations and organizational commitment was accounted for by theoretically relevant explicit associations, personality variables,

Table 2. Summary of hierarchical regression analysis predicting organizational commitment (*N* = 263)

	Step 1					Step 2				
Variable	*B*	*SE B*	β	*t*(260)	*p*	*B*	*SE B*	β	*t*(259)	*p*
Gender	.37	.14	.16	2.61	.010	.37	.14	.16	2.60	.010
Implicit Associations	−.06	.07	−.06	−0.89	.374	−.07	.07	−.06	−0.92	.358
Gender × Implicit Associations						.33	.14	.19	2.31	.022
Simple Main Effects										
$\text{Association}_{\text{women}}$						−.21	.10	−.18	−2.22	.027
$\text{Association}_{\text{men}}$						.12	.11	.10	1.10	.272
Gender at high associations						.70	.20	.30	3.49	.001
Gender at low associations						.04	.20	.02	0.20	.841
R^2			.03					.05		
F			3.64*					4.24**		

Note. Implicit Associations were standardized. *$p < .05$; **$p < .01$.

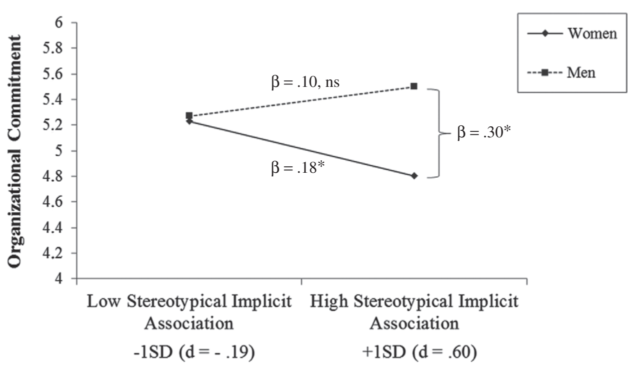

Figure 1. Implicit associations and gender predicting organizational commitment, measured on average 1 month later (*N* = 263). *$p < .05$; **$p < .01$; $^{\dagger}p < .10$.

demographic variables, or perceptions of the employing organization. To explore these possibilities, we first examined bivariate correlations of these control variables and our key outcomes separately by gender. As summarized in Table 3, none of the control variables significantly related to both implicit associations and organizational commitment within gender, ruling out the possibility that any of these variables would fully account for a relationship between implicit associations and organizational commitment for either gender. Furthermore, as summarized in Table 4, the Focal Gender × Implicit Association interaction on organizational commitment remained significant when controlling for explicit Engineering = Male associations, personality factors (neuroticism and stigma consciousness), demographic variables (age, education, salary, number of children), and perceptions of organizational climate (gender inclusive policies, % of female engineers). There was no evidence, therefore, that female engineers who strongly associate engineering with men (and family with women) were less committed to their organization because they have more children, are more neurotic, conscious of gender bias, or have biased perceptions of their company's climate as less gender inclusive.

Testing Mediation

We next examined several possible mediators of the relationship (for women) between implicit associations and organizational commitment. We tested the conditional indirect effects of implicit associations on organizational commitment for men and women through two measures of social fit: (1) organizational support and (2) social identity threat; and two measures of self-concept fit: (3) person-organization fit and (4) self-efficacy (entered as simultaneous mediators). Although our primary focus was to test conditional indirect effects for women, we also tested whether paths a and c were moderated by gender, using bootstrapping analyses with 10,000 resamples in Model 8 of the PROCESS macro (Hayes, 2012) with all predictors (except gender) standardized.

Indirect Effects for Women

Results of analyses for women revealed significant indirect effects of implicit associations on organizational commitment through organizational support, IE = −.07, CI_{95} [−.15, −.001], person-organization fit, IE = −.07, CI_{95} [−.15, −.02], and self-efficacy, IE = −.04, CI_{95} [−.09, −.01], but not social identity threat, IE = −.01, CI_{95} [−.02, .007]. However, as shown in Figure 2, implicit associations were only significantly related to perceiving less person-organization value fit, β = −.20, $t(259) = -2.36$, $p = .019$, and less self-efficacy, β = −.19, $t(259) = -2.70$, $p = .024$, but were not significantly related to organizational support, β = −.16, $t(259) = -.188$, $p = .061$, and social identity threat, β = .04, $t(259) = 0.54$, $p = .589$. Controlling for

Table 3. Bivariate correlations on main variables and covariates

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.
1. Organizational Commitment		−.19*	.60*	−.31*	.62*	.33*	−.10	−.28*	−.16	.09	−.09	.11	.11	.21*	−.13
2. Implicit Associations	.10		−.16	.004	−.19*	−.20*	.05	.11	.13	−.17*	−.09	.01	−.14	−.14	.02
3. Organizational Support	.74*	.05		−.37*	.51*	.19*	−.10	−.45*	−.12	−.04	−.19*	.28*	.01	.25*	−.20*
4. Social Identity Threat	−.36*	−.08	−.43*		−.26*	−.13	.10	.68*	.13	−.20*	.09	−.12	−.13	−.26*	.17*
5. Person-Organization Fit	.67*	−.07	.69*	−.45*		.40*	−.02	−.25*	−.02	−.04	−.05	.03	.04	.28*	−.06
6. Self-Efficacy	.64	−.03	.50*	−.42*	.56*		−.03	−.16	−.31*	.17*	.14	−.03	.16	.17*	−.08
7. Explicit Associations	−.04	.24*	−.03	.01	−.09	−.10		.09	.14	−.20*	−.08	−.18*	−.03	−.12	−.13
8. Stigma Consciousness	−.19*	.02	−.22*	.37*	−.21*	−.13	.13		.10	−.15	.12	−.07	−.20*	−.25*	.07
9. Neuroticism	−.29*	−.02	−.29*	.17	−.33*	−.42*	.11	.26*		−.08	.04	−.05	.003	−.07	−.05
10. Age	−.02	−.06	−.01	.04	.01	.18	−.24*	.08	−.07		.44*	.25*	.54*	.18*	−.04
11. Personal income	.14	−.11	.14	−.04	.13	.25*	−.11	.01	−.15	.58*		.09	.29*	.12	.06
12. Education	.03	−.01	−.06	.004	−.09	.07	−.06	.04	−.08	.34*	.19*		.08	−.06	−.17*
13. Number of children	.05	−.14	.13	−.10	.09	.13	−.23*	−.08	−.11	.61*	.45*	.27*		.09	−.03
14. Gender related policy count	.23*	.002	.39*	−.14	.18*	.20*	−.06	−.18	−.16	−.06	.08	−.37*	−.01		.03
15. Percentage of female engineers	.17	.11	.17	−.03	.09	.04	−.05	.06	−.18	−.15*	−.04	−.11	−.16	.10	

Note. *$p < .05$, correlations below the diagonal for men, correlations above the diagonal for women.

Table 4. Results of moderated regression analyses (βs and *p*-values) predicting organizational commitment from implicit associations, gender, and their interaction models testing various covariates are summarized

Model	Original analysis with no covariates			Controlling for explicit associations			Controlling for personality			Controlling for demographics			Controlling for organizational variables		
Predictor	β	*t*(259)	*p*	β	*t*(258)	*p*	β	*t*(257)	*p*	β	*t*(247)	*p*	β	*t*(251)	*p*
Step 1 Covariates															
Explicit Associations				−.11	1.73	.085									
Stigma Consciousness							−.23	3.91	< .001						
Neuroticism							−.19	3.11	.002						
Age										−.04	0.43	.667			
Income										.02	0.21	.834			
Education										.07	1.00	.317			
Number of children										.11	1.42	.158			
Inclusive policies													.23	3.72	< .001
Percentage women													.00	0.003	.997
Step 2															
Gender	.16	2.60	.010	.14	2.30	.022	.06	0.87	.383	.17	2.57	.011	.12	1.92	.056
Implicit Associations	−.06	0.89	.374	−.05	0.74	.463	−.03	0.50	.619	−.03	0.53	.597	−.03	0.48	.634
Step 3															
Gender × Implicit Association	.19	2.31	.022	.20	2.42	.016	.16	2.01	.045	.20	2.31	.022	.17	2.01	.046

participant gender, implicit associations, and their interaction; organizational support, $\beta = .47$, $t(255) = 7.59$, $p < .001$, person-organization value fit, $\beta = .37$, $t(255) = 5.59$, $p < .001$, and self-efficacy, $\beta = .22$, $t(255) = 4.05$, $p = .001$ (but not social identity threat, $\beta = -.02$, $t(255) = -0.38$, $p = .707$) each uniquely predicted significantly higher organizational commitment. When controlling for these mediators, the relationship between women's implicit associations and their organizational commitment became nonsignificant, $\beta = -.03$, $t(255) = -0.42$, $p = .677$, consistent with mediation.

Indirect Effects for Men

Although our hypotheses focused on women's experiences, we also explored parallel models for men. Among men, implicit gender associations did not predict any of the mediators, βs $< .07$, $t < 0.75$, $p > .450$, and thus revealed no evidence for direct or indirect effects of implicit

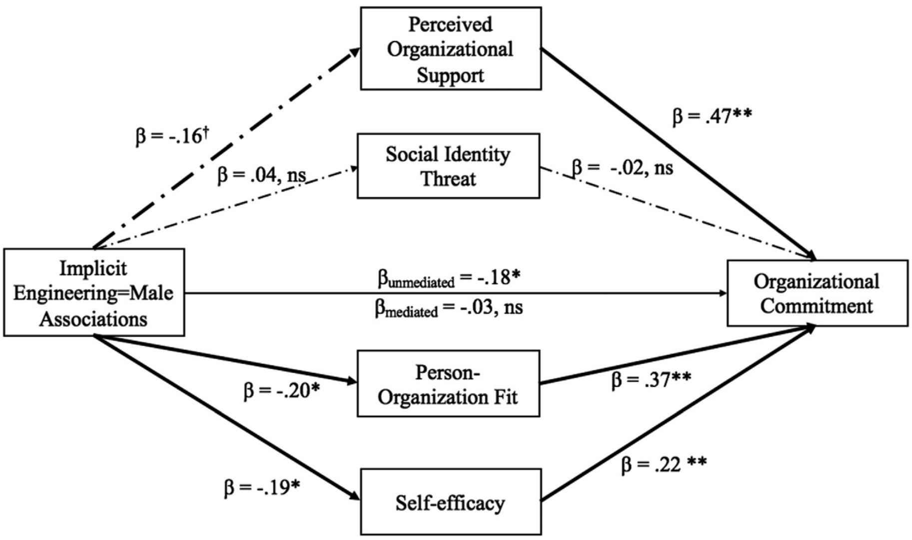

Figure 2. Mediation model for women. Solid lines indicate significant paths; bolded lines indicate significant indirect effects. $*p < .05$; $**p < .01$; $^{\dagger}p < .10$.

Engineering = Male associations on men's organizational commitment. However, formal tests of moderated mediation did not reveal that any of the four conditional indirect effects were significantly different for men and women, all *p*s > .05. For more detail, see SOM.

In sum, these results are most consistent with the hypothesis that women (but not men) with strong Engineering = Male associations feel less self-efficacy and self-concept fit leading to lower commitment to their engineering organization. The lack of significant relationship of women's implicit associations to organizational support and social identity threat preclude strong conclusions about these variables as mediators.

General Discussion

Women tend to leave STEM careers at a disproportionate rate (Frehill, 2010; Fouad et al., 2017). Our data suggest that women, but not men, with stronger Engineering = Male associations report feeling lower organizational commitment. Results from additional analyses provided no evidence that women with higher Engineering = Male associations were simply less committed to their organizations because they are more neurotic, stigma conscious, had different demographic characteristics, or saw their workplace as less gender inclusive. Instead, mediational findings revealed that women with stronger implicit Engineering = Male associations felt less efficacious and perceived less value fit at work, which predicted their lower organizational commitment. Although we cannot clearly conclude that these effects were statistically distinct for men, there was no evidence of these indirect effects among men. These findings point toward a new understanding of how internalized implicit associations might signal a lack of fit for women in STEM.

Using the SAFE Model as an interpretative framework (Schmader & Sedikides, 2017), we suggest that women's internalized stereotypic associations might erode their sense of self-concept fit to STEM organizations. Self-concept might be especially susceptible to implicit Engineering = Male associations because such stereotypical associations highlight the mismatch between one's gender and one's profession. Cognitive consistency principles dictate that we try to align perceptions of ourselves with perceptions of groups with which we identify (Greenwald et al., 2002). Thus, associating engineering with men might motivate women to decouple their self-concept from engineering. The lack of clear evidence that social fit variables (organizational support and social identity threat) significantly mediated the relationship between implicit association and organizational commitment might suggest that women's meta-perceptions of others or their organization are less directly affected by their implicit associations. However, because some observed effects were marginal and our analyses preclude direct tests of the relative strength of indirect effects, we cannot completely rule out a role of social fit in the relationship between implicit associations and women's organizational fit. Future research, ideally employing longitudinal designs, should aim to further explore the relative effects of internalized stereotypes on social versus self-concept fit.

Although our focus was on implicit stereotypic associations, it's worth noting that, in line with past studies (e.g., Dasgupta & Asgari, 2004; Nosek, Banaji, & Greenwald, 2002), explicitly reported associations did not predict women's organizational commitment as implicit associations did. Past work suggests that explicit stereotypes might be less predictive of outcomes if these measures are biased by a desire to avoid holding negative stereotypes, whereas implicit measures circumvent these motivations (Nosek et al., 2002). However, our measure of explicit Engineering = Male association might not capture other types of explicit stereotypes and beliefs, and thus follow up work would also be needed to better examine the relative effects of explicit versus implicit stereotypes among female engineers.

The current study is the first to directly test women's *own* implicit gender associations as predictors of organizational commitment. By examining how implicit associations predict working engineers' organizational commitment rather than just engagement at the undergraduate level, these findings demonstrate that implicit associations remain an important predictor of women's experiences after establishing a STEM career. Although the correlational design precludes strong causal claims, the time-delay between measures makes it difficult to infer that a decrease in women's organizational commitment is causing more stereotypical associations. A larger scale, longitudinal design is needed to assess the extent to which implicit associations predict *changes* in commitment and attrition. However, given the known relationship between reduced organizational commitment and turnover in female engineers (Fouad, Singh, Cappaert, Chang, & Wan, 2016), the present findings highlight psychosocial underpinnings of this process.

Author Contributions

All authors contributed to the research design. Supervision of data collection was performed by W. M. Hall. K. Block performed the data analysis (W. M. Hall helped) and prepared the manuscript under the supervision of T. Schmader. All authors provided revisions and approved the final version.

Electronic Supplementary Materials

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ESM 1. Texts (.docx)
Additional information on sampling, all variables collected, as well as analyses on outliers and analyses specific to men.

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