Working in a Man's World:
Explaining Women's Career Confidence and Career Persistence in STEM by Gender Identity Threat through the Configuration of Professional and Gender Identities.

Social, Health & Organizational Psychology (Work and Organization Track)
Master thesis
Utrecht University

Student: Lisa van Marle (5630711)
Supervisor: Ruth van Veelen
Second reviewer: Jan Fekke Ybema
Date: 02-07-2020
Wordcount: 8102
Publicly accessible: Yes

Abstract

Compared to men, women in the field of science, technology, engineering and math (STEM) experience decreased levels of career confidence and persistence in STEM and therefore continue to be underrepresented in STEM. This study proposes that higher levels of gender identity threat negatively affects career confidence and persistence of men and women in STEM. Additionally, the configuration of professional and gender identities of men and women in STEM explains why increased gender identity threat leads to declined career confidence and persistence in STEM. To test these expectations, a quantitative cross-sectional design was used to analyze data containing men (N = 790) and women (N = 189) in STEM studies and occupations. The data is analyzed by means of a regression analysis, multiple nominal logistic regression analysis and two analyses of covariance. The results indicate that with higher levels of gender identity threat only leads men and women to experience declined persistence in STEM and not declined career confidence. Additionally, identity configuration explains the relationship between gender identity threat and persistence in STEM, as such that individuals with higher levels of gender identity threat are more likely to lead to conflicted (low professional/high gender identification) than integrated identity configuration. Which in turn explains why men and women with threatened gender identities experienced lower levels of persistence in STEM.

Key words: STEM, gender identity threat, identity configuration, persistence in STEM, career confidence.

Introduction

Women in the field of science, technology, engineering and math (STEM) continue to be underrepresented in STEM, such that in the Netherlands only 13 percent of the STEM workforce is currently female (Monitor Techniekpact, 2016). Consequently, unique strengths and talents of female STEM professionals are currently underutilized in the technical industry and therefore the STEM sector does not benefit optimally from gender diversity (Laeser, Moskal, Knecht, & Lasich, 2003).

The underrepresentation of women in STEM can be seen as a consequence of a decline in women's confidence and persistence in a career in STEM over the course of their educational and professional development (Cech, Rubineau, Silbey, & Seron, 2011; Van Veelen, Endedijk, and Derks, 2019). Career confidence is described as the individuals' perceived clarity about their future career (Gupta, Chong, and Leong, 2015; Van Veelen, et.al., 2019). Persistence in STEM is described as the intention to continue a career in the STEM sector (Cech, et.al., 2011).

The present study aims to replicate previous research about women's career perceptions in STEM (e.g. Cheryan, et.al., 2015; Shapiro & Williams, 2012) and therefore explains decreased career confidence and persistence in STEM by a social factor, namely the negative stereotypes against women in STEM (e.g. women are not good at math). Due to these negative stereotypes, women in STEM can be anxious that their performance is evaluated in the light of these negative stereotypes, also referred to as gender identity threat. Which in turn may explain the women's decreased career confidence and persistence in STEM compared to men (Shapiro & Williams, 2012; Hall, Schmader, Aday, Inness, & Croft, 2018).

Additionally, this study aims to extend on existing research by investigating the relationship between gender identity threat and career confidence and persistence in STEM from an identity perspective. Men and women in STEM identify with both the STEM professional and their male or female gender identity. Society typically associates the STEM professional identity, which contains the skills and knowledge to perform a job, with qualities that are typically associated with the men, such as excellent math skills, logic thinking and reasoning. Contrastingly, the female gender identity, which is the centrality of gender to the concept of self, is typically associated with attributes as being people oriented, social and caring (Ahlqvist, et.al., 2013; Sacharin, et.al., 2009). To cope with threatened gender identities women in STEM may integrate their professional and gender identities in a broader sense of self differently, this process is called identity configuration (Benet-Martínet & Haritatos, 2005). Consequently, women in STEM may have a propensity to experience identity

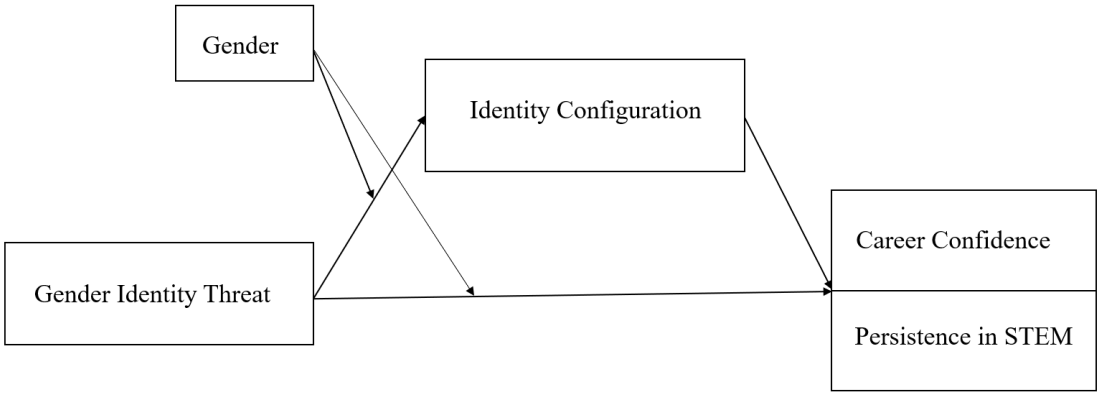
conflict rather than integration configuring their gender and professional identity. Which may explain the decreased career confidence and persistence of women in STEM (Manzi, Benet-Martínet & Coen, 2019). Hence, the following research question can be formulated:

Does gender identity threat negatively affect the career confidence and persistence of women in STEM more so than men? Can this relationship be explained by women's higher propensity to experience identity conflict relative to integration configuring their gender and professional identity in STEM?

To answer the research question, the relationship between gender identity threat and career confidence or persistence in STEM will be explored in further detail. The conceptual model of this study is displayed in Figure 1 and will be analyzed among STEM students and professionals in STEM.

Figure 1

Research model



Theoretical background

Gender Identity Threat and Career Confidence & Persistence in STEM

The concept of gender identity threat is based on theory about stereotype threat, which states that individuals can be concerned that their performance will be evaluated through the lens of negative stereotypes (Steele & Aronson, 1995). Society holds negative stereotypes about women's ability in STEM occupations (e.g. women are not good at math). As a result, women in STEM may be anxious to be judged based on these negative stereotypes and therefore experience gender identity threat (Hall et.al., 2018; Mercier, Barron, & O'Conner, 2006).

The level of gender identity threat is likely to influence career confidence and persistence of men and women in STEM (see Figure 1). Research about women's interest in STEM has shown that men and women who are reminded about negative gender stereotypes are likely to be anxious to be

judged based on these negative stereotypes and experience gender identity threat. Consequently, these women may experience a sense of not belonging in STEM, which in turn affects women's interest in and perceptions about STEM careers (Shapiro & Williams, 2012; Cheryan, et.al., 2015). Followingly, it can be expected that the more gender identity threat men and women in STEM experience, the lower their career confidence and persistence in STEM will be.

The relationship between gender identity threat and career confidence or persistence in STEM is expected to be especially strong for women in STEM compared to male peers. Society holds more negative stereotypes towards women in STEM than male peers (Ahlqvist, Londen, & Rosenthal, 2013; Sacharin, Lee, & Gonzalez, 2009). Consequently, women with higher levels of gender identity threat are expected to experience a stronger sense of not belonging in STEM compared to male peers. Therefore, women with threatened gender identities perceive more decreased career confidence and persistence in STEM compared to male peers.

Gender Identity Threat & Identity Configuration

Examining identity processes is a useful framework in understanding how men and women in STEM cope with threatened identities. The Social Identity Theory (SIT) suggests that individuals align others and themselves to multiple innate (e.g., gender, ethnicity) or attained (e.g., profession, hobby's) social groups (Tajfel, Turner, Austin, & Worchel, 1979). For example, men and women in STEM are likely to align themselves with both the STEM professional and male or female gender identities.

To cope with a threatened gender identity men and women in STEM can configure their professional and gender identity in different ways (Von Hippel, Sekaquaptewa, & McFarlane, 2015). Based upon research about identity configuration of Chinese American biculturals and women in finance, especially women in STEM may experience the stereotypes associated with the STEM professional and threatened gender identity as conflicting. As a response, women may experience a need to choose between their professional and gender identity, this is called conflicted identity configuration (Benet-Martínet & Haritatos, 2005; Von Hippel, et.al., 2015). Additionally, women in STEM may respond to the incongruent professional and gender identities by dissociating themselves from both identities, this is called marginalized identity configuration (Benet-Martínet & Haritatos, 2005).

Contrastingly, men and women who experience lower levels of gender identity threat are likely to experience the stereotypes associated with the professional and gender identity as

compatible. Consequently, they find it easy to integrate these identities in a broader sense of self, this is called integrated identity configuration (Benet-Martínet & Haritatos, 2005; Von Hippel, et.al., 2015).

The relation between gender identity threat and conflicted or marginalized identity configuration is expected to be stronger for women in STEM than male peers. Society holds more negative stereotypes towards women in STEM than male peers (Ahlqvist, et.al., 2013; Sacharin, et.al., 2009). Negative stereotypes are expected to increase conflict or dissociation during the integration of their professional and gender identity. Consequently, women in STEM with threatened gender identities are more likely to configure their professional and gender identity in a conflicted or marginalized way than male peers.

The Role of Identity Configuration

Research about identity configuration shows that identity configuration may mediate the relationship between gender identity threat and career confidence and persistence in STEM (see Figure 1). Based on research about age-based stereotype threat it can be expected that men and women in STEM cope with threatened gender identities by configuring their professional and gender identity in a conflicted way. Consequently, these men and women perceive themselves as not belonging in STEM and therefore experience decreased career confidence and persistence in STEM (Manzi et.al., 2019; Wallen, Mor, & Devine, 2014). Especially women in STEM who identify strongly with their gender identity and less with their STEM identity are likely to pursue goals related to their gender identity and therefore experience lower levels of career confidence and persistence in STEM (Darling, Molina, Sanders, Lee, & Zhao, 2008; Manzi et.al., 2019). While men and women in STEM who identify strongly with their professional identity and less with their gender identity are likely to focus on the goals and expectations associated with their STEM profession and therefore experience slightly higher levels of career confidence and persistence in STEM.

Research about age-based stereotypes indicates that men and women in STEM who experience less gender identity threat are likely to configure their professional and gender identities in an integrated way. Consequently, these individuals perceive fit and belonging in STEM and experience the highest levels of career confidence and persistence in STEM (Benet-Martínet & Haritatos, 2005; Manzi et.al., 2019). No specific effects are expected for the role of marginalized identity configuration in the relationship between identity configuration and career confidence or

persistence in STEM. Thus, this type of identity configuration will be investigated in an exploratory fashion.

Hypotheses

Hypothesis 1. The more gender identity threat men and women in STEM experience, the lower their career confidence and persistence in STEM, this relationship is expected to be stronger for women than men.

Hypothesis 2. The more gender identity threat men and women in STEM experience, the more likely they are to configure their professional and gender identification in a conflicted or marginalized rather than an integrated way. These effects of gender identity threat on conflicted or marginalized identity configuration are expected to be stronger for women compared to men.

Hypothesis 3. The relationship between gender identity threat and career confidence or persistence in STEM is expected to be mediated by identity configuration. Specifically, particularly among women in STEM, the higher the experience of gender identity threat the higher the propensity to have a conflicted rather than integrated identity configuration, which in turn explains their lower career confidence or lower persistence in STEM relative to their male peers.

Note: No specific effects are expected for the role of marginalized identity configuration relative to an integrated or conflicted identity configuration. Thus, this identity configuration will be investigated in an exploratory fashion.

Method

Research design & participants

A cross-sectional research design was used to analyze a quantitative dataset containing men and women in STEM studies and occupations. Men and women enrolled in technical educational programs from two Universities and one University of Applied Sciences were invited for the study. Additionally, men and women employed at five companies in the STEM sector were asked to participate. These companies were specialized in for example transportation, engineering or mechatronics.

The dataset contained N =1273 participants in total. However, only participants that identified themselves as men or women, were enrolled in, or finished a study categorized as technical (cluster

I) and semi-technical (cluster II)[1] educational programs and answered questions on the model variables were included in this research. Therefore, *N* = 979 participants were included for analyses. Of these participants, *N* = 790 (81%) were male and *N* = 189 (19%) were female. The dataset contained *N* = 603 (62%) students and *N* = 376 (38%) employees in STEM. The group of students contained *N* = 453 (75%) men and *N* = 150 (25%) women, of which *N* = 337 (90%) were men and *N* = 39 (10%) were women.

In terms of educational level, *N* = 657 (67%) participants were either enrolled in or finished a degree on a scientific level and *N* = 308 (32%) participants were either enrolled in or finished a degree on a higher vocational level. *N* = 14 (1%) participants had missing values on their educational background. Additionally, the majority of the participants, *N* = 855 (87%) was enrolled in or finished a program categorized into cluster I, while *N* = 124 (13%) of the participants was enrolled in or finished a program categorized into cluster II. The age of participants ranged between 18 and 63 (*M* = 26,78 *SD* = 9.84).

Plan for analysis and power

Covariates were included in all analyses to test the hypotheses. Research about men and women in STEM showed that men in STEM generally are higher educated and were more often enrolled in or finished an educational program categorized into cluster I rather than cluster II compared to female peers (Beede, et.al., 2011). Therefore, the variables level of education (vocational versus scientific) and technicality of education (cluster I versus cluster II) were included as covariates in analyses to test the hypotheses. Also, research showed that men in STEM were more likely to be active in a STEM occupation and older, while women in STEM were more likely to be a student and younger (Monitor Techniekpact, 2016). Therefore, the variables career status and age were included in the analyses as covariates in analyses to test the hypotheses.

All analyses were conducted with the Statistical Program for Social Sciences (SPSS). For Hypothesis 1, the relationship between gender identity threat (independent variable) as well as the moderating effect of gender (men/women) on career confidence and persistence in STEM (dependent variables) was investigated by means of multiple linear regression analysis. A statistical sensitivity analyses using G*power3.1 resulted in a detectable effect of $F^2 = 0.01$ ($\alpha = 0.05$, $p = 0.80$, $N = 979$).

[1] In accordance with the guidelines of Platform Bèta Techniek (2008) the educational background of students and employees were categorized into two clusters. Cluster I contained only traditional bètatechnical courses, such as mathematics and mechatronics. Cluster II contained bètatechnical and non-bètatechnical courses such as business.

A multinomial logistic regression analysis was applied to test whether the propensity of type of identity configuration (dependent variable; 4 categories) depended on the level of gender identity threat (independent variable) and gender (men/woman; moderator) (hypothesis 2). A sensitivity analysis resulted in a detectable effect size of $F^2 = 0.80$ ($\alpha = 0.05$, $p = 0.80$, $N = 979$).

For Hypothesis 3 an analysis of covariance (ANCOVA) tested the relationship between the identity configuration (mediator; 4 categories) and career confidence or persistence in STEM (dependent variable). The sensitivity analysis resulted in a detectable effect size of $F^2 = 0.11$ ($\alpha = 0.05$, $p = 0.80$, $df = 3$, $N = 965$). Thereafter, an ANCOVA tested if the relationship between gender identity threat (independent variable) and gender (moderator; men/women) affected career confidence or persistence in STEM (dependent variables) via identity configuration (mediator; 4 categories). A sensitivity analysis resulted in a detectable effect size of $F^2 = 0.11$ ($\alpha = 0.05$, $p = 0.80$, $df = 3$, $N = 965$).

Procedure

The data used for this study was collected by researchers from the University of Twente for a study called "Bridge the Gap" in the academic year 2018/2019. This study aimed to identify the type and strength of professional identities of students and employees in the technical field. An online tool called the "Career compass" was developed to generate a large data-base about the professional identity and career choices of individuals working or studying in STEM. The study "Bridge the Gap" was approved by the Ethics Committee of the Behavioral Science and Management Faculty of the University of Twente.

Additionally, in collaboration with researchers from the University of Twente, in 2020 another round of data was collected by sending the "Career Compass" to employees of an organization active in software engineering[2]. The Ethics Committee of the Behavioral Science and Management Faculty of the University of Twente approved the additional data collection in 2020 as an addendum to the original study. Additionally, this study was in line with the General Data Protection Regulation guidelines from the Utrecht University.

Participants received an email which invited them to participate in the study including a link to the "Career Compass" (see https://cc.tech4people-apps.bms.utwente.nl/#//8SQyN for a demo version). Upon entering the compass tool, participants were presented with an informed consent from to inform them about the study purposes and about the anonymous way data was handled. When

[2] This data was collected by Lisa van Marle, author of this master thesis.

voluntarily proceeding to the questionnaire, participants agreed to the consent and the "Career Compass" started, which took about 15 minutes to complete. When the compass was completed the participants could enter their personal contact information to receive individual feedback on their professional identity profile (see https://cc-feedback.tech4people-apps.bms.utwente.nl/akpqA/user/Z6lKt for an example version). The contact information and the data from the survey were stored separately to ensure anonymity. Both the data collected for the study "Bridge the Gap" and this study were included in the analyses.

Instruments

The majority of the variables in the questionnaire were measured on a seven-point Likert scale (1 = completely disagree, 7 = completely agree) with an interval measurement level.

Gender. To determine the gender of participants, the question 'What is your gender' was asked. Participants could respond with men, women or other. Participants identifying with other were excluded from the analyses. Additionally, the variable gender was dummy coded into 0 = men and 1 = women.

Career confidence. The variable career confidence was measured with three questions adopted from Van Veelen et.al. (2019), namely 'I know what I want in my career', 'I have a clear sense of what I want to achieve in my career' and 'I have confidence in my career' ($\alpha = .79$).

Persistence in STEM. The variable persistence was measured with a question adapted to the career status of participants. Students were asked 'On a scale from 0 to 100, what is the chance that you will work in the technical sector in the future?'. Employees were asked 'On a scale from 0 to 100, what is the change that you will continue to work in the technical sector?'. These questions were merged into one variable, namely persistence in STEM.

Gender identity threat. Gender identity threat was measured with four questions adopted from Van Veelen et.al. (2019), for example 'It sometimes worries me that others might judge my work on the basis of my gender' ($\alpha = .91$).

Professional identification. Identification as a (future) STEM professional was measured with six items adopted from Leach et.al. (2008), for example 'I am glad to be a technical professional' ($\alpha = .90$).

Gender identification. Identification with one's gender was measured with four items adopted from Derks, et.al. (2011), for example 'Being a [woman/man] is important to me' and 'I feel closely connected to other people of my own gender' ($\alpha = .74$).

Covariates. The covariate career status was determined by allocating participants from the employee and student questionnaire to the codes 0 = students and 1 = employee. The covariate age was measured with the question 'How old are you?'. The covariate level of education was measured by the question 'What is your highest level of attained education?' and dummy coded into 0 = vocational and 1 = scientific. The covariate technicality of education was determined by assigning the outcome of the question 'What is the name of your highest attained degree?' into cluster I (technical) or cluster II (semi-technical) and dummy coded into 0 = cluster I and 1 = cluster II.

Results

Descriptive statistics

As displayed in Table 1, women (N = 189) identified less with their professional identity and experienced more gender identity threat compared to male peers (N = 790). Additionally, women generally experienced less career confidence and persistence in STEM than men.

Table 1

T-test for variables of the model

						95% *CI*	
Variable		***M (SD)***	***t***	***df***	***p***	***LL***	***UL***
Professional identification	Men Women	5.36 (1.01) 4.92 (1.16)	4.76	258.58*	< .001	.26	.62
Gender identification	Men Women	4.19 (1.23) 4.15 (1.16)	.39	977	.695	-.15	.23
Gender identity threat	Men Women	1.52 (.78) 2.85 (1.56)	-11.25	210.57*	< .001	-1.57	-1.10
Career confidence	Men Women	4.53 (1.26) 3.95 (1.30)	5.64	977	< .001	.38	.78
Persistence in STEM	Men Women	80.84 (15.70) 73.97 (19.23)	4.56	251.14*	<.001	3.90	9.83

Note. N = 979. The t-test compared the difference in scores on the variables between men = 0 and women = 1. * The Leven's test indicated that equal variances cannot be assumed, therefore a corrected version of the t-test was used.

As displayed in Table 2, for both men and women career confidence was positively related to persistence in STEM. For both men and women career confidence and persistence in STEM were positively related to professional identification. Additionally, professional identification was

positively related to gender identification for both men and women. Surprisingly, for only men and not women, gender identity threat was negatively related to career persistence.

Table 2

Correlation matrix of the variables of the model for gender groups separately

Variable	**1.**	**2.**	**3.**	**4.**	**5.**
1. Career confidence	-	.23**	-.03	.22**	.05
2. Career persistence	.21**	-	-.02	.63**	-.004
3. Gender identity threat	-.02	-.13*	-	.03	.19**
4. Professional identification	.36**	.51**	-.05	-	.11
5. Gender identification	.06	.03	.003	.18**	-

Note. Women (N = 189) are displayed above the diagonal; men (N = 790) are displayed below the diagonal. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

Cluster analysis

A K-means cluster analysis with professional and gender identification (Z-standardized variables) created the variable identity configuration and partitioned participants into four groups, namely marginalized (N = 147), conflicted (low professional/high gender identification) (N = 230), conflicted (high professional/low gender identification) (N = 317) and integrated (N = 285) identity configuration (see Table 3). An analysis of variance (ANOVA) indicated that the mean scores on professional identification, $F(3,975) = 638.97$, $p < .001$ and gender identification, $F(3,975) = 598.80$, $p < .001$, were different per identity configuration (see Figure 2).

Table 3

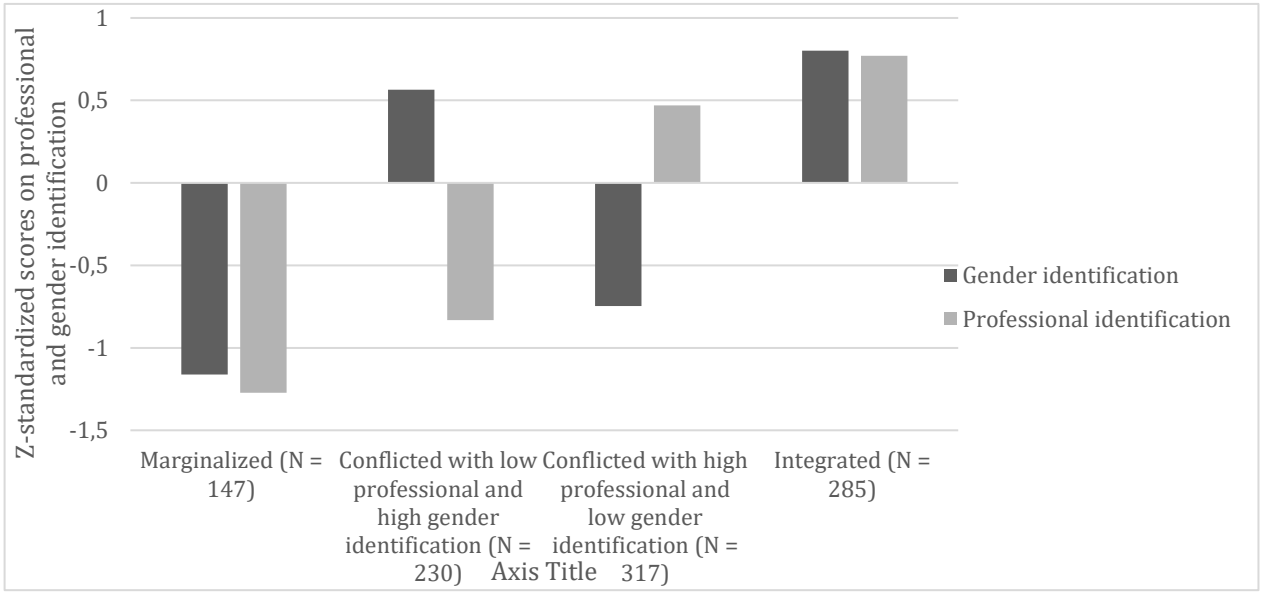
Frequencies and percentages of type of identity configuration per gender

Type of identity configuration	**Men's *N* (%)**	**Women's *N* (%)**	***N* per cluster (%)**
Marginalized	109_a (14%)	38_b (20%)	147 (15%)
Conflicted (low professional/high gender identification)	171_a (22%)	59_b (31%)	230 (23%)
Conflicted (high professional/low gender identification)	271_a (34%)	46_b (24%)	317 (32%)
Integrated	239_a (22%)	46_a (24%)	285 (30%)
Total	790 (100%)	198 (100%)	979 (100%)

Note. Similar subscript letters denote a subset of gender categories whose column proportions do not differ significantly from each other at the .05 level.

Figure 2

Mean scores on professional and gender identification per identity configuration



A chi-square test indicated that women were more likely to fall into marginalized or conflicted (low professional/high gender identification) identity configuration than male peers (see Table 3). In contrast, men were more likely to fall into a conflicted (high professional/low gender identification) identity configuration compared to female peers. No proportional differences were found between

women and men in the integrative configuration cluster. In line with expectations, these results indicate that gender determines identity configuration in STEM.

Gender Identity Threat and Career Confidence and Persistence in STEM

A hierarchical multiple regression tested if gender identity threat was related to career confidence and persistence in STEM and if this relationship was stronger for women than men (Hypothesis 1). In step 1, the covariates were included in the model. In step 2 gender identity threat (Z-standardized), gender (0 = men, 1 = women) and an interaction term between these variables were added to the model. Prior to analyses, the data was examined, the results indicated that all assumptions of the regression analyses were met.

The first step of the model indicated that the covariates accounted for 7% of the variance in career confidence $F(4, 960) = 18.05$, $p < .001$, $R^2 = .07$. The results of the second step of the model indicated that the variables of the model accounted for 2% additional variance in career confidence $\Delta F(3, 957) = 6.05$, $p < .001$, $\Delta R^2 = .02$.

Additionally, as displayed in Appendix A, women experienced less career confidence than men, $b = -.40$, $SE = .12$, $t(965) = -3.19$, $p = .001$ (0 = men, 1 = women). No effects of gender identity threat were found on career confidence, nor was the two-way interaction between gender and gender identity threat significant.

The first step of the model tested by the regression analysis indicated that the covariates accounted for 9% of the variance in persistence in STEM $F(4, 960) = 22.50$, $p < .001$, $R^2 = .09$. When the variables of the model were added, these accounted for 1% additional variance in persistence in STEM, $\Delta F(3, 957) = 6.94$, $p < .001$, $\Delta R^2 = .01$.

Additionally, as displayed in Appendix A, participants with higher levels of gender identity threat experienced less persistence in STEM, $b = -2.62$, $SE = .82$, $t(965) = -3.20$, $p = .001$. Additionally, women experienced marginally significantly less persistence in STEM than men, $b = -3.06$, $SE = 1.57$, $t(965) = -1.95$, $p = .051$ (0 = men, 1 = women). However, the two-way interaction between gender and gender identity threat was not significant. Therefore, Hypothesis 1 can only be confirmed partially, namely that more experienced gender identity threat leads to lower persistence in STEM.

The effects of the covariates indicated that employees experienced more career confidence, b =.41, $SE = .13$, t(965) = 3.26, $p = .001$ and persistence in STEM, $b = 4.85$, $SE = 1.61$, t(971) = 3.01, $p < .003$, than students (0 = student, 1 = employee). Additionally, participants experienced more

persistence in STEM when enrolled in or finished an educational program on vocational than scientific level, b = -2.46, SE = 1.10 $t(965)$ = -2.24, p = .025 or categorized in cluster I (technical) than cluster II (semi-technical) b = -6.93, SE = 1.55 $t(965)$ = -4.48, $p < .001$ (0 = cluster I, 1 = cluster II).

Gender Identity Threat and Identity Configuration

A multinomial logistic regression tested the relationship between gender identity threat and identity configuration (hypothesis 2). Prior to analysis, the data was examined, and the results indicated that all assumptions of a multinomial logistic regression were met. The integrated identity configuration category was used as the baseline against which the propensity to fall into any other category was compared.

As displayed in Appendix B the odds to fall into conflicted (low professional/high gender identification) relative to integrated identity configuration was higher when participants experienced more gender identity threat, Wald's $\chi2$ = 4.54, p = .033, OR = 1.37. No effects of gender identity threat were found on the propensity to have a marginalized and conflicted (high professional/low gender identification) identity configuration.

Additionally, the results showed that the odds to fall into a conflicted (high professional/low gender identification) was marginally significantly higher for female than male participants Wald's $\chi2$ = 3.04, p = .081, OR = 1.63. However, no significant effects were found for the two-way interaction between gender and gender identity threat. Thus, partially confirming Hypothesis 2, more experienced gender identity threat increased the odds of falling into conflicted (low professional/high gender identification) relative to an integrated identity configuration in STEM, but there was no difference between men and women in this pattern of results.

Effects of the covariates showed that the odds to fall into marginalized relative to integrated identity configuration were higher when enrolled in or finished an educational degree on a scientific than vocational level, Wald's $\chi2$ = 6.73, p = .009, OR = .54 (0 = vocational, 1 = scientific) or when enrolled in or finished an educational degree categorized in cluster II (semi-technical) than cluster I (technical), Wald's $\chi2$ = 5.75, p = .017, OR = .50 (0 = cluster I, 1 = cluster II).

Finally, the odds of falling into conflicted (low professional/high gender identification) Wald's $\chi2$ = 16.50, $p < .001$, OR = .93 or conflicted (high professional/low gender identification), Wald's $\chi2$ = 21.93, $p < .001$, OR = .94 relative to integrated identity configuration was higher as participants got older.

Identity Configuration and Career Confidence & Persistence in STEM

An ANCOVA tested the effect of identity configuration on career confidence and persistence in STEM (Hypothesis 3). Prior to analysis, the assumptions for an ANCOVA were tested. Notably, the assumptions homogeneity of regression slopes for the covariate age and homogeneity of variance could not be met and thus results should be interpreted with caution.

Partially confirming Hypothesis 3, as displayed in Figure 3 and Appendix C, the differences in average career confidence $F(1, 965) = 45.47$, $p < .001$, partial $\eta 2 = .09$, per identity configuration were significant. Participants with conflicted (high professional/low gender identification) ($M = 4.75$, $SE = .07$) and integrated ($M = 4.65$, $SE = .07$) identity configuration experienced the highest levels of career confidence. While participants with conflicted (low professional/high gender identification) identity configuration ($M = 4.05$, $SE = .08$) experienced less career confidence. Moreover, participants with marginalized identity configuration ($M = 3.77$, $SE = .10$) experienced the lowest levels of career confidence.

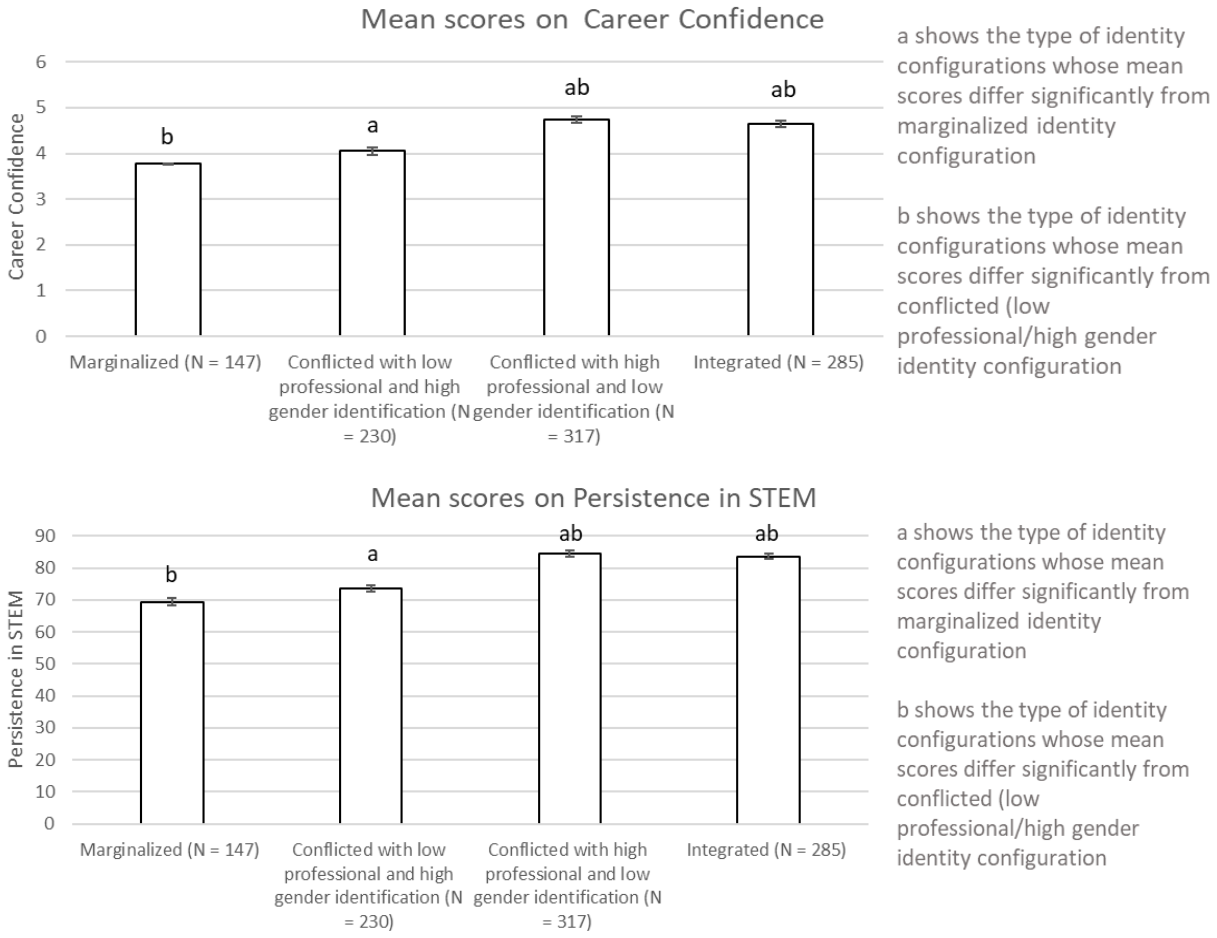
The results of covariates indicated that, older participants experienced more career confidence than younger peers, $F(1, 965) = 6.08$, $p = .038$, partial $\eta 2 = .005$. Employees ($M = 4.60$, $SE = .10$) experienced higher levels of career confidence than students ($M = 4.23$, $SE = .07$), $F(1, 965) = 9.17$, $p = .003$, partial $\eta 2 = .01$ (0 = student, 1 = employee).

Additionally, the differences in average persistence in STEM $F(3, 965) = 52.42$ $p < .001$, partial $\eta 2 = .14$, $R^2 = .22$, per identity configuration were significant. Participants with conflicted (high professional/low gender identification) ($M = 84.58$, $SE = .84$) and integrated identity configuration ($M = 83.63$, $SE = .91$) experienced the highest level of persistence in STEM. While participants with conflicted (low professional/high gender identification) identity configuration ($M = 73.58$, $SE = 1.00$) experienced less persistence in STEM. Moreover, participants with marginalized identity configuration ($M = 69.43$, $SE = 1.24$) experienced the lowest levels of persistence in STEM.

Additionally, employees ($M = 78.44$, $SE = 1.21$) experienced higher levels of persistence in STEM than students ($M = 74.41$, $SE = .92$), $F(1, 965) = 7.11$, $p = .008$, partial $\eta 2 = .01$. Participants experienced more persistence in STEM when enrolled in or finished an educational program categorized in cluster I (technical) ($M = 79.31$, $SE = .60$) than cluster II (semi-technical) ($M = 73.53$, $SE = 1.35$), $F(1, 965) = 16.16$, $p < .001$, partial $\eta 2 = .02$ (0 = cluster I, 1 = cluster II).

Figure 3

Means and standard errors of career confidence and persistence in STEM per type of identity configuration



The mediation effect of identity configuration

Gender identity threat only related to persistence in STEM, and not to career confidence. Therefore, a mediation analysis was conducted to test the relationship between gender identity threat and persistence in STEM via identity configuration by the means of an ANCOVA. Because gender did not have a main effect on identity configuration (see Hypothesis 2), this variable was included as an additional covariate in the model. Prior to analysis, the assumptions for an ANCOVA were tested. Notably, the assumptions homogeneity of regression slopes for the covariate age and homogeneity of variance could not be met and thus results should be interpreted with caution.

Partially confirming Hypothesis 3, this ANCOVA indicated that the relationship between gender identity threat and persistence in STEM, $F(3, 965) = 7.30$ $p = .007$, partial $\eta 2 = .01$, was

partially explained by identity configuration, $F(3, 965) = 50.41$ $p < .001$, partial $\eta 2 = .14$ (see Appendix D). Participants with conflicted (high professional/low gender identification) identity configuration ($M = 84.46$, $SE = .84$) and integrated identity configuration ($M = 83.51$, $SE = .90$) experienced the highest levels of persistence in STEM. While participants with conflicted (low professional/high gender identification) identity configuration ($M = 73.92$, $SE = 1.00$) experienced less persistence in STEM. Moreover, participants with marginalized identity configuration ($M = 69.40$, $SE = 1.23$) experienced the lowest levels of persistence in STEM.

Of the covariates, participants experienced more persistence in STEM when enrolled in or finished an educational program categorized in cluster I (technical) ($M = 78.35$, $SE = .73$) than cluster II (semi-technical) ($M = 73.12$, $SE = 1.36$), $F(1, 965) = 13.71$, $p < .001$, partial $\eta 2 = .01$ (0 = cluster I, 1 = cluster II). Additionally, students ($M = 73.84$, $SE = .95$) experienced less persistence in STEM than employees ($M = 77.64$, $SE = 1.25$), $F(1, 965) = 6.51$, $p = .011$, partial $\eta 2 = .01$.

Additional exploratory analysis

Since various tests showed that gender and identity configuration had significant effects on both career confidence and persistence in STEM, it was interesting to check whether gender (men = 0, women = 1) influenced the relationship between identity configuration and career confidence and persistence in STEM. A moderation test using the PROCESS function from Andrew F. Hayes in SPSS (model 1) was performed. Results showed no evidence for gender differences in the relation between identity configuration and career confidence, $F(3, 965) = 1.65$, $p = .176$ $R^2 = .17$, and persistence in STEM, $F(3, 965) = .935$, $p = .423$, $R^2 = .22$.

Discussion

Compared to men, women experienced lower levels of career confidence and persistence in STEM and therefore, continued to be underrepresented in STEM. The purpose of the current study was to investigate the underrepresentation of women in STEM from a stereotype and identity perspective.

The effect of gender identity threat on career confidence and Persistence in STEM

Outcomes showed that, women in STEM experienced less career confidence and persistence in STEM than male peers. In line with previous research, this study indicated that career confidence and persistence in STEM differed for men and women (Cech, et.al., 2011; Van Veelen et.al., 2019).

Although data indicated that women experienced less confidence in their STEM career than men, women's confidence in a STEM career was not affected by gender identity threat. Another

explanation for women's declined confidence in a career in STEM might be that women felt very dissimilar in the male-dominated STEM sector. Consequently, women had less faith in a career in STEM than men (Van Veelen et.al., 2019).

Additionally, this study showed that men and women in STEM who experienced more gender identity threat were less likely to continue their career in STEM. Following previous research about gender identity threat (e.g. Shapiro & Williams, 2012; Cheryan, et.al., 2015), those who experienced discomfort or stigma in their STEM study or occupation because of their gender, were inclined to leave the STEM sector.

Although data revealed that women reported less persistence in STEM relative to men, the effect of gender identity threat on career outcomes was not different for men and women. A reason for this insignificant effect might be that men also experienced difficulties fitting into their work context (Peters, Ryan, & Haslam, 2015). For example, men might be concerned that they could not live up to the masculine stereotypes. Consequently, men and women in STEM with threatened gender identities were equally likely to persist in STEM.

The role of identity configuration

A social identity perspective was adopted to understand how men and women in STEM configured their gender and professional identity. This study showed that women in STEM were more likely to use marginalized identity configuration or conflicted (low professional/high gender identification) identity configuration. While men in STEM were more likely to fall into conflicted (high professional/low gender identification) identity configuration. Additionally, men and women in STEM were as likely to configure their professional and gender identities in an integrated way. These outcomes are in line with previous research and shows that the process of configuring professional and gender identities differs for men and women (Manzi et.al., 2019).

Also, this study showed that men and women who experienced discomfort or stigma in their study or work were more likely to experience internal conflict configuring their gender and professional identity whereby they identified stronger with their gender than professional identity. Contrastingly, men and women who experienced fit with the STEM work context, were likely to configure their professional and gender identity in an integrated way. This finding is in line with previous research and shows that identity strategies can help men and women cope with their threatened gender identity (Benet-Martínet & Haritatos, 2005; Von Hippel, et.al, 2015).

Although data revealed that men and women configured their professional and gender identities differently, the effect of gender identity threat on identity configuration was not different for men and women. A reason for this insignificant effect might be that men also experienced difficulties fitting into their work context (Peters et.al., 2015). For example, men might be concerned that they cannot live up to masculine stereotypes. Consequently, men and women in STEM with threatened gender identities were equally likely to configure their professional and gender identities in a marginalized or conflicted way.

Additionally, outcomes showed that men and women in STEM with integrated or conflicted (high professional/low gender identification) identity configuration had higher confidence and persistence intentions in a career in STEM than men and women in STEM with marginalized or conflicted (low professional/high gender identification) identity configuration. In line with previous research, this indicates that how men and women in STEM manage their professional and threatened gender identity influences career perceptions (Manzi et.al., 2019).

Finally, this study showed that men and women who experienced gender identity threat were more likely to experience identity conflict whereby they identified strongly with their gender and less with their professional identity than identity integration. Consequently, men and women with threatened gender identities were less likely to persist in STEM. This is in line with previous research and indicated that how men and women in STEM manage their professional and gender identity plays a role in how men and women in STEM cope with their threatened gender identity. Which in turn explains why men and women in STEM are inclined to leave the STEM sector (Manzi et.al., 2019).

Limitations and suggestions for future research

Due to the cross-sectional nature of the data, conclusions about causality of effects should be interpreted with caution. This study indicated that gender identity threat affected how men and women in STEM configured their professional and gender identities, however a reverse causal model could also be possible. For example, men and women who experienced conflict configuring their professional and gender identity might be more sensitive to negative gender stereotypes and hence experienced more gender identity threat. However, a Cox and Snell's and Nagelkerke's test showed a good fit with the research model and therefore implied that gender identity threat affected identity configuration. Nevertheless, future research with a longitudinal research design could determine the direction of the relationship between gender identity threat and identity configuration.

Additionally, very few employees active in STEM were included in the analyses of this study, therefore the effects of this study may only be applicable to women in STEM occupations. However, the ratio of female employees in this study and in STEM were comparable to each other (Monitor Techniekpact, 2016). Consequently, the effects of this study were likely to be representative for the STEM sector. Nonetheless, future research could solve possible power problems by attracting more female employees to their study.

Furthermore, this study analyzed a dataset containing both students and employees in STEM. Consequently, the sample size and therefore the statistical power of the tests increased. However, a disadvantage of including both students and employees in the analyses was that the effect of differences between students and employees on career perceptions were overlooked. For example, in general the group of students in STEM contained more women and was younger compared to the group of employees (Monitor Techniekpact, 2016). Additionally, research showed that employees perceived more gender bias than students (Sipe et.al., 2016). Therefore, future research could conduct separate analyses for students and employees and compare these results.

For this study the statistical program SPSS was used for testing the hypotheses of this study. Specifically, the approach of Baron and Kenny (1986) was used to test if identity configuration explained the relationship between gender identity threat and persistence in STEM. However, due to the categorical nature identity configuration, SPSS could not test whether the mediation effect was statistically significant. Although the use of more advanced statistical programs was beyond the scope of this master thesis, future research could use statistical programs such as Mplus and R to test the indirect effects of identity configuration more precisely.

Implications

Previous research investigated the underrepresentation of women in STEM by looking at the effect of gender identity threat on women's career perceptions in STEM. To my knowledge, no research explained this relationship from an identity perspective. Therefore, this study contributed to previous research by giving more insight in why women are underrepresented in STEM. Consequently, science could use this knowledge as a starting point for research to gain an even better understanding of women's underrepresentation in STEM.

Additionally, this study showed men and women in STEM with integrated identity configuration had the most positive career perceptions. Therefore, STEM educational programs and companies could increase women's career confidence and persistence in STEM by supporting women

towards process of identity integration. Research of Rodriguez and Ouellettes (2000) about the integration of homosexual and religious identities indicated that STEM educational programs and companies could support women towards the process of identity integration by removing negative stereotypes about women in STEM. For example, by sending positive messages about women's abilities in STEM (e.g. women are great mathematicians). Consequently, women in STEM were likely to experience increased career confidence and persistence in STEM and hence were likely to continue their career in STEM.

Conclusion

Compared to men, women continued to be underrepresented in STEM. Due to threatened gender identities men and women in STEM studies and occupations were less inclined to persist their career in STEM, but were not less confident about their career in STEM. In turn, the way men and women in STEM configured their professional and threatened gender identities explained why gender identity threat negatively affected career perceptions. To increase women's persistence in STEM, educational programs and organizations in STEM could support women configuring their gender and professional identity in an integrated way by removing negative stereotypes about women's abilities in STEM.

References

Ahlqvist, S., London, B., & Rosenthal, L. (2013). Unstable identity compatibility: How gender rejection sensitivity undermines the success of women in science, technology, engineering, and mathematics fields. *Psychological Science*, *24*(9), 1644-1652. doi: 10.1177/0956797613476048

Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of personality and social psychology*, *51*(6), 1173. doi: 0022-3514/86/S00.75

Beede, D. N., Julian, T. A., Langdon, D., McKittrick, G., Khan, B., & Doms, M. E. (2011). Women in STEM: A gender gap to innovation. *Economics and Statistics Administration Issue Brief*, (04-11). https://dx.doi.org/10.2139/ssrn.1964782

Benet-Martínez, V., & Haritatos, J. (2005). Bicultural identity integration (BII): Components and psychosocial antecedents. *Journal of personality*, *73*(4), 1015-1050. doi: 10.1111/j.1467-6494.2005.00337.x

Cech, E., Rubineau, B., Silbey, S., & Seron, C. (2011). Professional role confidence and gendered persistence in engineering. *American Sociological Review*, *76*(5), 641-666. http://dx.doi.org/10.1177/0003122411420815

Cheryan, S., & Plaut, V. C. (2010). Explaining underrepresentation: A theory of precluded interest. *Sex roles*, *63*(7-8), 475-488. doi: 10.1007/s11199-010-9835-x

Cheryan, S., Master, A., & Meltzoff, A. N. (2015). Cultural stereotypes as gatekeepers: Increasing girls' interest in computer science and engineering by diversifying stereotypes. *Frontiers in psychology*, *6*, 49. doi: 10.3389/fpsyg.2015.00049

Cohen, J. (1988). *Statistical power analysis for the behavioural sciences* (2nd ed.). Hillsdale, NJ: Erlbaum.

Darling, E., Molina, K., Sanders, M., Lee, F., & Zhao, Y. (2008). Belonging and achieving: The role of identity integration. *Advances in motivation and achievement*, *15*, 241-273. doi: 10.1016/S0749-7423(08)15008-7

Derks, B., Ellemers, N., Van Laar, C., & De Groot, K. (2011). Do sexist organizational cultures create the Queen Bee?. B*ritish Journal of Social Psychology*, 50(3), 519-535. doi: 10.1348/014466610X525280

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical

power analysis program for the social, behavioural, and biomedical sciences. *Behavior Research Methods*, 39, 175-191. doi: 10.3758/BF03193146

Gupta, A., Chong, S., & Leong, F. T. (2015). Development and validation of the vocational identity measure. *Journal of Career Assessment*, *23*(1), 79-90. doi: 10.1177/1069072714523088

Hall, W., Schmader, T., Aday, A., Inness, M., & Croft, E. (2018). Climate control: The relationship between social identity threat and cues to an identity-safe culture. *Journal of personality and social psychology*, *115*(3), 446. doi: 10.1037/pspi0000137

Laeser, M., Moskal, B. M., Knecht, R., & Lasich, D. (2003). Engineering design: Examining the impact of gender and the team's gender composition. Journal of Engineering Education, 92(1), 49-56. https://doi.org/10.1002/j.2168-9830.2003.tb00737.x

Leach, C. W., Van Zomeren, M., Zebel, S., Vliek, M. L., Pennekamp, S. F., Doosje, B., J.W. Ouwerkerk & Spears, R. (2008). Group-level self-definition and self-investment: a hierarchical (multicomponent) model of in-group identification. Journal of personality and social psychology, 95(1), 144. doi: 10.1037/0022-3514.95.1.144

Manzi, C., Paderi, F., Benet-Martínez, V., & Coen, S. (2019). Age-based stereotype threat and negative outcomes in the workplace: Exploring the role of identity integration. *European Journal of Social Psychology*, *49*(4), 705-716. https://doi.org/10.1002/ejsp.2533

Mercier, E. M., Barron, B., & O'Connor, K. M. (2006). Images of self and others as computer Users: the role of gender and experience. *Journal of computer assisted learning*, 22(5), 335-348. doi: 10.1111/j.1365-2729.2006.00182.x.

Monitor Techniekpact (2016). *Monitor facts & figures bètatechniek 2016.* https://www.techniekpact.nl/cdi/files/825b3dea7053748e05edf9b6ef7f7fe7e5f52cdc.pdf

Peters, K., Ryan, M. K., & Haslam, S. A. (2015). Marines, medics, and machismo: Lack of fit with masculine occupational stereotypes discourages men's participation. British Journal of Psychology, 106(4), 635-655. https://doi.org/10.1111/bjop.12106

Platform Bèta Techniek (2008). Van natuur en techniek naar science en technology. https://docplayer.nl/1673604-Van-natuur-en-techniek-naar-science-technology.html

Rodriguez, E. M., & Ouellette, S. C. (2000). Gay and lesbian Christians: Homosexual and religious identity integration in the members and participants of a gay-positive church. Journal for the scientific study of religion, 39(3), 333-347. https://doi.org/10.1111/0021-8294.00028

Sacharin, V., Lee, F., & Gonzalez, R. (2009). Identities in Harmony: Gender—Work Identity Integration Moderates Frame Switching in Cognitive Processing. *Psychology of Women Quarterly*, *33*(3), 275-284. doi: 10.1177/036168430903300303

Shapiro, J. R., & Williams, A. M. (2012). The role of stereotype threats in undermining girls' and women's performance and interest in STEM fields. Sex Roles, 66(3-4), 175-183. doi: 10.1007/s11199-011-0051-0

Sipe, S. R., Larson, L., Mckay, B. A., & Moss, J. (2016). Taking off the blinders: A comparative study of university students' changing perceptions of gender discrimination in the workplace from 2006 to 2013. Academy of Management Learning & Education, 15(2), 232-249. https://doi.org/10.5465/amle.2014.0139

Steele, C.M., & Aronson, J. (1995). Contending with a stereotype: African-American intellectual test performance and stereotype threat. Journal of Personality and Social Psychology, 69, 797–811. https://doi.org/10.1037/0022-3514.69.5.797

Tajfel, H., Turner, J. C., Austin, W. G., & Worchel, S. (1979). An integrative theory of intergroup conflict. Organizational identity: A reader, 56-65.

Von Hippel, C., Sekaquaptewa, D., & McFarlane, M. (2015). Stereotype threat among women in finance: Negative effects on identity, workplace well-being, and recruiting. *Psychology of Women Quarterly*, *39*(3), 405-414. doi: 10.1177/0361684315574501

Van Veelen, R., Derks, B., & Endedijk, M. D. (2019). Double Trouble: How Being Outnumbered and Negatively Stereotyped Threatens Career Outcomes of Women in STEM. Frontiers in psychology, 10, 150. doi: 10.3389/fpsyg.2019.00150

Wallen, A. S., Mor, S., & Devine, B. A. (2014). It's about respect: Gender− professional identity integration affects male nurses' job attitudes. *Psychology of Men & Masculinity*, *15*(3), 305. doi: 10.1037/a0033714

Appendix A Linear model of predictors on career confidence and persistence in STEM

	Career confidence													
	Step 1							Step 2						
						95% *CI*							95% *CI*	
	B	***SE***	***β***	***t***	***p***	***LL***	***UL***	***B***	***SE***	***β***	***t***	***p***	***LL***	***UL***
Direct effects														
(Constant)	3.98	.13		25.33	.000	3.67	4.29	4.10	.16		25.78	.000	3.79	4.41
Gender identity threat								-.01	.06	-.01	-.21	.835	-.14	.11
Gender								-.40*	.12	-.12	-3.19	.001	-.63	-.15
Interaction effect														
Gender identity threat x gender								-.03	.09	-.02	-.33	.745	-.21	.15
Covariates														
Career status	.45**	.13	.17	3.54	.000	.20	.70	.41*	.13	.16	3.26	.001	.16	.66
Age	.01*	.01	.10	2.11	.035	.001	.03	.01	.01	.09	1.91	.057	.000	.03
Educational level	*-.16*	*.09*	-.06	-1.84	.066	-.33	.01	-.15	.09	-.06	-1.77	.078	-.32	.02
Technicality of education	.02	.12	.01	.15	.881	-.22	.25	.10	.12	.03	.83	.406	-.14	.34

Note. *N* = 965. The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded into 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

	Persistence in STEM													
	Step 1							Step 2						
						95% *CI*							95% *CI*	
	B	***SE***	***β***	***t***	***p***	***LL***	***UL***	***B***	***SE***	***β***	***t***	***p***	***LL***	***UL***
Direct effects														
(Constant)	76.19	2.02		37.75	.000	72.23	80.15	76.88	2.04		37.72	.000	72.88	80.88
Gender identity threat								-2.62*	.82	-.16	-3.20	.001	-4.22	-1.01
Gender								-3.06	1.57	-.07	-1.95	.051	-6.13	.02
Interaction effect														
Gender identity threat x gender								2.05	1.16	.10	1.77	.077	-.23	4.32
Covariates														
Career status	5.26*	1.62	.15	3.24	.001	2.08	8.44	4.85*	1.61	.14	3.01	.003	1.69	8.02
Age	.15	.08	.09	1.80	.072	-.10	.31	.13	.08	.08	1.61	.107	-.03	.29
Educational level	-2.46*	1.11	-.07	-2.23	.026	-4.63	-.30	-2.46*	-1.10	-.07	-2.24	.025	-4.61	-.30
Technicality of education	-7.74*	1.54	-.16	-5.03	.000	-10,75	-4,72	-6.93*	1.55	-.14	-4.48	,000	-10.00	-3,90

Note. *N* = 965. The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded into 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

Appendix B Coefficients for the model predicting identity configuration

		Identity Configuration						
							95% *CI* for *Odds*	
		B	***SE***	**Wald**	***p***	***Odds***	***LL***	***UL***
Marginalized	**Direct effects**							
	(Intercept)	.54	.71	.58	.446			
	Gender identity threat	-.17	.18	.91	.339	.84	.59	1.20
	Gender = 0	-.32	.29	1.27	.261	.72	.41	1.27
	Gender = 1	0[b]	.	.	.	.	.	.
	Interaction effect							
	Gender identity threat x gender = 0	.33	.25	1.76	.185	1.39	.85	2.27
	Gender identity threat x gender = 1	0[b]	.	.	.	.	.	.
	Covariates							
	Career status = 0	.44	.35	1.61	.205	1.55	.79	3.06
	Career status = 1	0[b]	.	.	.	.	.	.
	Age	-.01	.02	.64	.424	.99	.96	1.02
	Level of education = 0	-.62	.24	6.73	.009	.54	.34	.860
	Level of education = 1	0[b]	.	.	.	.	.	.
	Technicality of education = 0	-.70	.29	5.75	.016	.50	.28	.88
	Technicality of education = 1	0[b]	.	.	.	.	.	.

Conflicted (low professional/high gender identification)	**Direct effects**							
	(Intercept)	1.91	.70	7.44	.006			
	Gender identity threat	.31	.15	4.54	.033	1.37	1.03	1.83
	Gender = 0	.10	.28	.13	.716	1.11	.64	1.93
	Gender = 1	0[b]	.	.	.	.	.	.
	Interaction effect							
	Gender identity threat x gender = 0	-.12	.21	.30	.584	.89	.59	1.35
	Gender identity threat x gender = 1	0[b]	.	.	.	.	.	.
	Covariates							
	Career status = 0	-.11	.30	.14	.711	.89	.49	1.62
	Career status = 1	0[b]	.	.	.	.	.	.
	Age	-.07	.02	17.54	.000	.93	.90	.96
	Level of education = 0	-.25	.20	1.53	.216	.78	.53	1.15
	Level of education = 1	0[b]	.	.	.	.	.	.
	Technicality of education = 0	-.23	.28	.65	.419	.80	.46	1.38
	Technicality of education = 1	0[b]	.	.	.	.	.	.
Conflicted (high professional/low gender identification)	**Direct effects**							
	(Intercept)	1.64	.61	7.35	.007			
	Gender identity threat	.14	.16	.75	.386	1.15	.84	1.56
	Gender = 0	.49	.28	3.04	.081	1.63	.94	2.82
	Gender = 1	0[b]	.	.	.	.	.	.
	Interaction effect							
	Gender identity threat x gender = 0	-.02	.21	.01	.916	.98	.65	1.48
	Gender identity threat x gender = 1	0[b]	.	.	.	.	.	.

Covariates							
Career status = 0	-.41	.26	2.48	.115	.66	.40	1.11
Career status = 1	0[b]	.	.	.	.	.	.
Age	-.06	.01	21.93	.000	.94	.91	.96
Level of education = 0	-.11	.18	.35	.551	.90	.63	1.28
Level of education = 1	0[b]	.	.	.	.	.	.
Technicality of education = 0	.13	.28	.23	.635	1.14	.66	1.98
Technicality of education = 1	0[b]	.	.	.	.	.	.

Note. N = 979. Cox and Snell R^2 = .11, Nagelkerke R^2 = .12. The reference category is integrated identity configuration. The subscript letter b indicates that a parameter is set to 0, because it is redundant. The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

Appendix C Means, standard deviations and analysis of variance for career confidence and persistence in STEM

	Career confidence										
	Marginalized		**Conflicted (low professional/high gender identification)**		**Conflicted (high professional/low gender identification)**		**Integrated**		***F***	***p***	***η2***
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***			
Direct effect											
(Intercept)									629.98	.000	.40
Identity configuration	3.74	1.43	3.98	1.21	4.73	1.16	4.74	1.16	32.42**	.000	.09
Covariates											
Career status									9.17*	.003	.01
Age									4.33*	.038	.01
Level of education									1.29	.257	.001
Technicality of education									2.16.	.215	.002

Note. $N = 965$. $R^2 = .16$. The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

	Persistence in STEM										
	Marginalized		**Conflicted (low professional/high gender identification)**		**Conflicted (high professional/low gender identification)**		**Integrated**		***F***	***p***	***η2***
	M	***SD***	***M***	***SD***	***M***	***SD***	***M***	***SD***			
Direct effect											
(Intercept)									1502.31	.000	.61
Identity configuration	68.49	22.26	72.72	16.94	84.65	11.70	84.77	12.41	52.42**	.000	.14
Covariates											
Career status									7.11*	.008	.01
Age									2.83	.093	.003
Level of education									1.92	.166	.002
Technicality of education									16.16**	.000	.02

Note. $N = 965$. $R^2 = .22$.The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.

Appendix D Means, standard deviations and analysis of variance for persistence in STEM

	Persistence in STEM										
	Marginalized		**Conflicted (low professional/high gender identification)**		**Conflicted (high professional/low gender identification)**		**Integrated**		***F***	***p***	***η2***
	M	***SE***	***M***	***SE***	***M***	***SE***	***M***	***SE***			
Direct effect											
(Intercept)									1360.60	.000	.59
Identity configuration	69.40	1.12	73.92	1.00	84.46	.84	83.51	.90	50.41**	.000	.14
Gender identity threat									7.30*	.007	.01
Covariates											
Career status									6.51*	.011	.01
Age									2.35	.125	.002
Level of education									2.20	.138	.002
Technicality of education									13.71**	.000	.01
Gender									.60	.439	.001

Note. $N = 965$. $R^2 = .23$. The variable gender is dummy coded into 0 = men and 1 = women. The variable career status is dummy coded into 0 = student and 1 = employee. Level of education is dummy coded 0 = vocational and 1 = scientific. Technicality of education is dummy coded into 0 = cluster I and 1 = cluster II. *Correlation is significant at .05 level. ** Correlation is significant at .01 level.