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The dissertation entitled The Pursuit of Multiple Identity Goals Among Women in Science, Technology, Engineering and Mathematics (STEM) by Sadia Zaman at the Social Behavior Research Center, Institute of Psychology, SWPS University, Wrocław, under the supervision of Dr. hab. Katarzyna Byrka, SWPS prof., aims to examine the simultaneous pursuit of feminine and professional identity goals among women in STEM in the theoretical framework built upon the symbolic self-completion theory (Gollwitzer, 2018) and the goal systems theory (Kruglanski et al., 2018).

Across six experimental studies, the Author demonstrates that when women encounter setbacks in one of their identity goals—either feminine or professional—they often respond by reinforcing the other, leading to more positive emotional outcomes. The findings also suggest that symbolic expressions, such as clothing perceived to convey both femininity and professionalism, are linked to stronger identification with both identity domains and a greater sense of belonging. Additionally, the research reveals that women in STEM report a higher overlap between their gender and professional identity goals, as well as elevated levels of imposter syndrome compared to their male counterparts.

I strongly appreciate the Author's significant effort, thought, and methodological rigor invested in this dissertation. The work addresses an important and timely issue—how women in STEM navigate and negotiate feminine and professional identity goals—through a series of six thoughtfully and well-designed experimental studies. This dissertation provides valuable insight into affective and behavioral responses to identity goal threats.

Several aspects of this work stand out as particularly strong:

- 1) The dissertation's theoretical part is engaging, clearly written overall and includes timely references to the vast literature on women in STEM.
- 2) The studies are thoughtfully constructed, engaging, and often creatively operationalized, reflecting the Author's strong research design capabilities.
- 3) The experimental procedures are consistently well-designed, and the statistical analyses are nuanced, robust, and carefully interpreted.
- 4) Two initial Studies, 1 and 2, are conceptually coherent and form a solid empirical foundation for the overarching research narrative.
- 5) Including open-ended responses, where participants reflect on moments of perceived failure as a feminine woman or a STEM professional, offers a promising avenue for qualitative insights. This data source appears very rich. I would strongly encourage the Author to consider a more in-depth analysis and integration of these narratives to illuminate the lived experiences of threats to femininity and identity negotiation.
- 6) The Author's use of pre-registration, transparent reporting, and data sharing sets a high standard and reflects excellent scientific integrity.

While this dissertation demonstrates a high level of academic rigor, there are several areas where refinement would enhance the clarity, theoretical depth, and overall impact of the work. Below I raise several points and I am very keen on discussing them:

- 7) First of all, the foundational distinction between "feminine" and "professional" aspirations in women remains theoretically ambiguous. The adopted framing risks reinforcing a binary opposition that may not reflect women's lived experiences, especially those who integrate both domains fluidly (and naturally). Are these identity goals necessarily in tension, or could they be conceptualized as components of a hybrid identity in the context of STEM? It is not clear to me why these two identities can't form a single identity of a female professional in STEM?
- 8) More empirical and theoretical justification is needed to support the assumption that women in STEM perceive these identity goals as distinct and potentially conflicting. The current framing may inadvertently replicate the very gender norms it seeks to critique.
- 9) The literature review, while inclusive of relevant constructs, would benefit from a clearer structure and more coherent flow. Critical concepts—such as affective experiences (shame, guilt), identity threat, imposter syndrome, stereotype threat, and compensatory mechanisms—should be more systematically introduced and integrated from the outset. The opening theoretical chapter could be strengthened by beginning with the context of gender underrepresentation in STEM. Notably, section 1.4 (on femininity and STEM as identity goals) may serve as a more suitable entry point.
- 10) Important constructs such as fear of backlash (e.g., see work by Laurie Rudman or Madeline Heilman – only mentioned very briefly) could be embedded in the theoretical rationale –

currently the theoretical justification for the studies is scattered across the text and the dissertation lacks a cohesive theoretical introduction, presenting all relevant concepts underlying the hypotheses tested in studies 1-6, along a comprehensive studies overview (even presented graphically).

- 11) The Author could also consider integrating Tobin et al.'s (2010) model of self-socialization to deepen the discussion of gender identity development and internalized gender norms. This model could be useful in explaining how gender identity is not simply imposed but actively constructed, maintained, and sometimes negotiated or resisted. In research on women in STEM, this framework can be used to understand how women actively navigate and integrate (or separate) professional and feminine identities in response to social expectations and personal goals.
- 12) The novelty and theoretical contribution of the dissertation also require clearer articulation. The research questions, while interesting, should be more explicitly framed in terms of the theoretical gaps they address. The study's goal and novelty should be explicitly stated in the text – what novel lines does your study uncover that help strengthen existing concepts and theories?
- 13) The rationale for selecting certain symbolic behaviors (e.g., room decoration, clothing choices) as indicators of identity goal completion or compensatory actions is not fully explained. Were these derived from qualitative data or pretesting? Establishing this would bolster the validity of the chosen operationalizations, and allow for more reliable inferences from the results obtained.
- 14) The relationship between the six studies should be more clearly articulated. How do they build upon one another? For example, the purpose and relevance of Study 6 should be better linked to the previous studies.

- 15) Important individual-level variables—such as group identification and sense of belonging—are only included in the final studies. More consistent theoretical framing would benefit their inclusion in all studies.
- 16) The omission of contextual variables (e.g., disciplinary differences, organizational climate) limits the external validity of the findings. STEM is not monolithic; as there are more women within biology and chemistry (sciences) vs engineering might be an important moderator of the results.
- 17) In addition, incorporating individual-level moderators (e.g., the centrality of STEM identity, the strength of gender identification, and the personal importance of femininity) could enrich the interpretation of the results. It is not clear why these variables have not been included in this research project, as highly identifying women may be more prone to experience imposter syndrome or may find it harder to reconcile their feminine and professional identities.
- 18) The inclusion of research such as Hall et al. (2018) on identity-safe work climates would situate the findings within a broader environmental framework: 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), 446–467. <https://doi.org/10.1037/pspi0000137>.
- 19) The current focus on symbolic behaviors such as outfit choice and room decoration, while interesting, may not fully capture the range of compensatory strategies available to women in STEM. The Author might consider exploring more ecologically valid and impactful behaviors, such as social media engagement to highlight personal or professional achievements, which could serve as potent symbols of identity affirmation (point which is actually mentioned in the dissertation, but not used in the study design).

- 20) In Study 2, the finding that pride was particularly sensitive to manipulation deserves a deeper exploration - why impact of both the time points and the manipulation was stronger for pride?
- 21) Can the Author elaborate on the post-hoc analysis results revealing a significant association between high identity goal overlap and reduced imposter syndrome specifically among *men* but not women? In the results of study 6, women's congruence between feminine and professional identities was stronger than men's. The current explanation given in the text, that the men's more substantial congruence reduces the need to integrate these two identities, potentially mitigating imposter syndrome, is not thus valid here.
- 22) The final conclusion section is currently underdeveloped. It would benefit from a more detailed reflection on the implications of the findings for theory, practice, and policy. Specifically, how might these insights inform interventions for: Women navigating identity tensions in STEM? Mentors, supervisors, or academic institution leaders seeking to foster more inclusive environments?

Other points:

- Please note that Hofstede's "Masculinity" dimension has been updated in the literature and is now referred to as "Motivation towards Achievement and Success." Terminology should be updated accordingly.

Overall, this dissertation offers a thoughtful, empirically grounded, and socially relevant exploration of identity regulation among women in STEM. I commend the Author on this thought-provoking body of work and look forward to seeing how this research evolves.

In conclusion, I would like to state that the dissertation entitled *The Pursuit of Multiple Identity Goals Among Women in Science, Technology, Engineering and Mathematics (STEM)* by Sadia Zaman at the Social Behavior Research Center, Institute of Psychology, SWPS University, Wrocław, under the supervision of Dr. hab. Katarzyna Byrka, SWPS prof. and submitted to me for review meets the requirements set for doctoral theses in accordance with the *Law on Higher Education and Science* of 2018, and I recommend allowing the candidate to proceed to the next stages of the doctoral process.

Gdańsk, 22nd May 2025



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