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Gender Differences in Global Identity Development: Implications for Intercultural Competence in Higher Education

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Abstract

Developing a global identity has become crucial for fresh graduates. Higher Education Institutions are seeking ways to help students develop intercultural skills and prepare them for a diverse global world. Introducing intercultural skills is particularly important for first-year students, as their ability to adapt to diverse environments, such as university campuses, is tested upon enrollment. While various studies have examined programs and policies that develop intercultural competence in students, little is known about the role of demographics in understanding the intercultural competence development of first-year students. This study aims to understand the role of gender in global identity development. The study utilized the Beliefs, Events, and Values Inventory (BEVI) assessment to evaluate the global identity development of students. The survey was conducted in the first week of classes to understand the intercultural competence and worldview of incoming first-year students. A total of 2,442 first-year Technology students responded to the survey, with 1,901 identifying as male and 541 identifying as female. This study performed a gender-wise comparison for the 11 constructs of the BEVI scale that contribute to global identity. To develop a global identity, students need to demonstrate increases in Need Fulfillment, Basic Openness, Emotional Attunement, Self-Awareness, Sociocultural Openness, and Ecological and Global Resonance and decreases in Self-Certitude, Basic Determinism, and Religion and Gender Traditionalism. The analysis revealed that female students showed higher levels of Need Fulfillment, Basic Openness, Emotional Attunement, Self-Awareness, Sociocultural Openness, and Ecological and Global Resonance, with all increases being statistically significant. Female students also showed lower levels of Self-Certitude, Basic Determinism, and Religion and Gender Traditionalism compared to male students. The results of the study indicate that female students are more oriented towards developing global identities compared to male students. The findings of the study demonstrates that high level of Basic Openness and Sociocultural Openness among female students suggest they are more adaptable to diverse environments. Higher Emotional Attunement among female students indicates stronger emotional intelligence. Increased level of Self-Awareness and Ecological and Global Resonance among female students highlight a broader understanding and appreciation of global issues and sustainability. This perspective is essential for addressing global challenges and promoting responsible citizenship. Moreover, lower levels of Self-Certitude (not statistically significant), Basic Determinism, and Religious and Gender Traditionalism among female students reflect a more progressive outlook, which can lead to greater innovation and openness to new ideas. Lastly, the higher Need Fulfillment scores among female students suggest they are better at seeking and achieving personal and professional satisfaction. By understanding these gender differences in global identity development, Higher Education Institutions can tailor their programs and support services to better meet the needs of

all students. Encouraging the development of these beneficial traits across the student body can enhance overall intercultural competence and readiness for the global workforce.

1. Background

1.1 Importance of Global Identity Development & Intercultural Learning in STEM Education

The globalization of economies and societies has created an urgent need for higher education institutions to prepare students for an increasingly interconnected world [1], [2]. This preparation involves developing students' global identity and intercultural competence, which are crucial for success in diverse environments [3]. Global identity refers to an individual's sense of self as a member of the global community, encompassing awareness of global issues, appreciation for cultural diversity, and a sense of global responsibility [4].

STEM education plays a pivotal role in addressing global challenges and driving innovation. However, STEM fields have traditionally focused on technical skills, often overlooking the importance of intercultural competence and global awareness [5], [6] [7]. As STEM graduates increasingly work in multinational teams and on global projects, there is a growing recognition of the need to integrate intercultural learning into STEM curricula [8], [9] [10].

The development of global identity and intercultural competence is particularly crucial for first-year university students [11]. The transition to higher education presents a unique opportunity for students to expand their worldviews and develop skills necessary for global citizenship [12], [13]. Early exposure to diverse perspectives and global issues can set the foundation for ongoing intercultural learning throughout their academic careers and beyond [3].

1.2 Factors Influencing Global Identity Development in Higher Education

Research has shown that global identity development can vary based on demographic factors, including gender. Several studies have found gender differences in various aspects of intercultural competence and global awareness. For instance, Braskamp et al. [14] found that female students generally scored higher on measures of global perspective than male students. Similarly, Wandschneider et al. [15] reported gender differences in BEVI scores, with females often showing higher levels of sociocultural openness and emotional attunement. These gender differences in global identity development may be influenced by various factors. Some researchers suggest that socialization processes and gender role expectations play a role in shaping attitudes towards diversity and global issues [16]. Others point to potential differences in empathy and perspective-taking abilities between males and females [17].

In the context of STEM education, gender differences in global identity development take on additional significance. STEM fields have long struggled with gender imbalances, with women often underrepresented in many disciplines [18]. Understanding how male and female STEM students differ in their development of global identity and intercultural competence could inform efforts to create more inclusive and globally oriented STEM programs. Moreover, the

intersection of STEM education and global competence is increasingly important in addressing complex global challenges. Issues such as climate change, public health crises, and sustainable development require not only technical expertise but also the ability to work across cultures and understand global contexts [19]. By fostering global identity development in STEM students, universities can better prepare them to tackle these multifaceted global issues.

Finally, the development of global identity is not a one-time event but a continuous process. Mezirow's transformative learning theory [20] suggests that significant changes in perspective often occur through disorienting experiences and critical reflection. In the context of higher education, this highlights the importance of providing students with opportunities for intercultural encounters and reflection throughout their academic journey [21], [22].

1.3 Purpose of the Study

Understanding the baseline global identity of incoming first-year students is crucial for designing effective educational interventions. By identifying gender differences in global identity development early on, universities can develop their programs and support services to meet the specific needs of both male and female students. This tailored approach can help ensure that all students, regardless of gender, develop the intercultural competencies necessary for success in a globalized world. As higher education institutions strive to internationalize their campuses and curricula therefore the research into the factors influencing global identity development becomes increasingly valuable. This study aims to contribute to this body of knowledge by examining gender differences in global identity development among first-year STEM students, using the Beliefs, Events, and Values Inventory BEVI as a comprehensive assessment tool. Therefore the research question that we plan to answer through this study is

RQ: How do gender differences influence the development of global identity among first-year STEM students?

2. Theoretical Framework

Equilintegration (EI) Theory, developed by Shealy [23], provides a comprehensive framework for understanding how individuals construct, balance, and integrate their beliefs, values, and identities in response to personal, social, cultural, and ecological influences. EI Theory posits that individuals strive for a stable and coherent worldview by integrating diverse experiences and perspectives, which is crucial for developing intercultural competence. This theoretical framework emphasizes the dynamic interplay between personal growth and contextual factors, facilitating a deeper understanding of how people adapt to and engage with cultural diversity. To operationalize these concepts, EI Theory was used to develop the Beliefs, Events, and Values Inventory (BEVI), a psychometric tool designed to assess various constructs related to intercultural competence. Moreover, EI Theory can be instrumental in understanding gender differences in how individuals integrate and express their beliefs and values. By examining how males and females process and respond to their experiences within different cultural contexts, EI

Theory helps reveal underlying patterns and influences that shape gender-specific worldviews. For example, the BEVI can highlight distinct differences in constructs such as Emotional Attunement and Sociocultural Openness between genders, providing insights into how societal norms and expectations influence these differences. Understanding these gender differences through the lens of EI Theory enables educators and practitioners to develop targeted interventions and support systems that address the unique needs of both male and female students and thereby fostering a more inclusive and equitable environment. Thus, the BEVI, grounded in EI Theory, offers valuable data for enhancing intercultural understanding, promoting inclusive educational practices, and addressing gender-specific developmental needs.

3. Methods

3.1 Context

This study was conducted in The College of Technology (CoT) located in a large Mid-Western University. CoT is committed to enhancing intercultural competence among STEM students by integrating intercultural concepts within their regular STEM curriculum. Courses are delivered in an active learning format that promotes group work and student engagement, fostering critical thinking and problem-solving skills. The CoT encompasses six academic departments: engineering technology, technology education, computing and graphics, aviation, construction technology, and technology leadership, each designed to equip students with industry-relevant skills.

In addition to its robust curriculum, CoT offers a variety of programs to further develop intercultural competence. Students can access over 55 study abroad programs, domestic study away opportunities, virtual exchanges, and intercultural mentoring. These programs provide students with valuable experiences and perspectives from diverse cultures. Since 2017, CoT has expanded its initiatives to promote intercultural excellence by hiring diverse faculty and collaborating with the Office of Globalization and the Office of Recruitment, Retention, and Diversity. These efforts ensure that students gain technical skills and also develop the intercultural competence needed to thrive in a globalized world.

3.2 Participants

A total of 2,442 first-year students participated in the BEVI survey from 2017 through 2021. Of these, 1,901 students identified as male and 541 identified as female. This gender distribution allowed for a comparative analysis of global identity constructs across male and female students. The survey was administered to incoming first-year Technology students during the first week of classes to capture their initial levels of intercultural competence and global identity.

3.3 Data Collection

The data for this study were collected using the Beliefs, Events, and Values Inventory (BEVI), a psychometrically validated tool designed to assess a broad spectrum of psychological and cultural constructs that shape individuals' worldviews, intercultural competence, and global identity. The survey was administered during the first week of classes to capture baseline responses, reflecting the students' pre-existing intercultural competence and worldviews before any substantial exposure to the university environment or curriculum. The BEVI assessment was distributed electronically to all incoming first-year Technology students, and participation was voluntary. This study specifically focused on 11 key constructs that contribute to the formation of a global identity: Needs Fulfillment, Basic Openness, Emotional Attunement, Self-Awareness, Sociocultural Openness, Self Certitude, Basic Determinism, Religious Traditionalism, Gender Traditionalism, Ecological Resonance, and Global Resonance. These constructs were selected for their relevance in understanding how students navigate and integrate diverse perspectives and cultural contexts into their worldviews.

3.4 Data Analysis

The data was analyzed using both descriptive and inferential statistical methods. Descriptive statistics including means and standard deviations, were calculated to provide an overall view of the data, identifying patterns or trends across various constructs among male and female students. To further explore these differences, independent samples t-tests were conducted to assess whether the observed differences in mean scores between male and female students were statistically significant. The t-tests helped us determine if the variations in mean scores were due to random chance or if they represented meaningful differences in the characteristics of the two groups. The 95% level of confidence (p-values less than or equal to 0.05) was selected to assess the statistical significance of the BEVI constructs. Additionally, bar plots were generated to visually depict the mean scores and their respective standard deviations for each construct, facilitating a clearer comparison of gender-wise differences across the selected constructs.

4. Results

The analysis revealed notable differences in the BEVI construct scores between male and female students. Female students scored higher on most constructs indicating a greater receptiveness to diverse perspectives and a stronger alignment with global identity traits. In contrast, male students demonstrated higher scores in constructs such as Self Certitude, Basic Determinism, Religious Traditionalism, and Gender Traditionalism, suggesting a more traditional and self-assured approach to their worldview. These findings are visually represented in Figure 1, which provides a clear comparison of the mean scores across genders for each construct. A more in-depth exploration of these differences is discussed in the subsequent paragraphs.

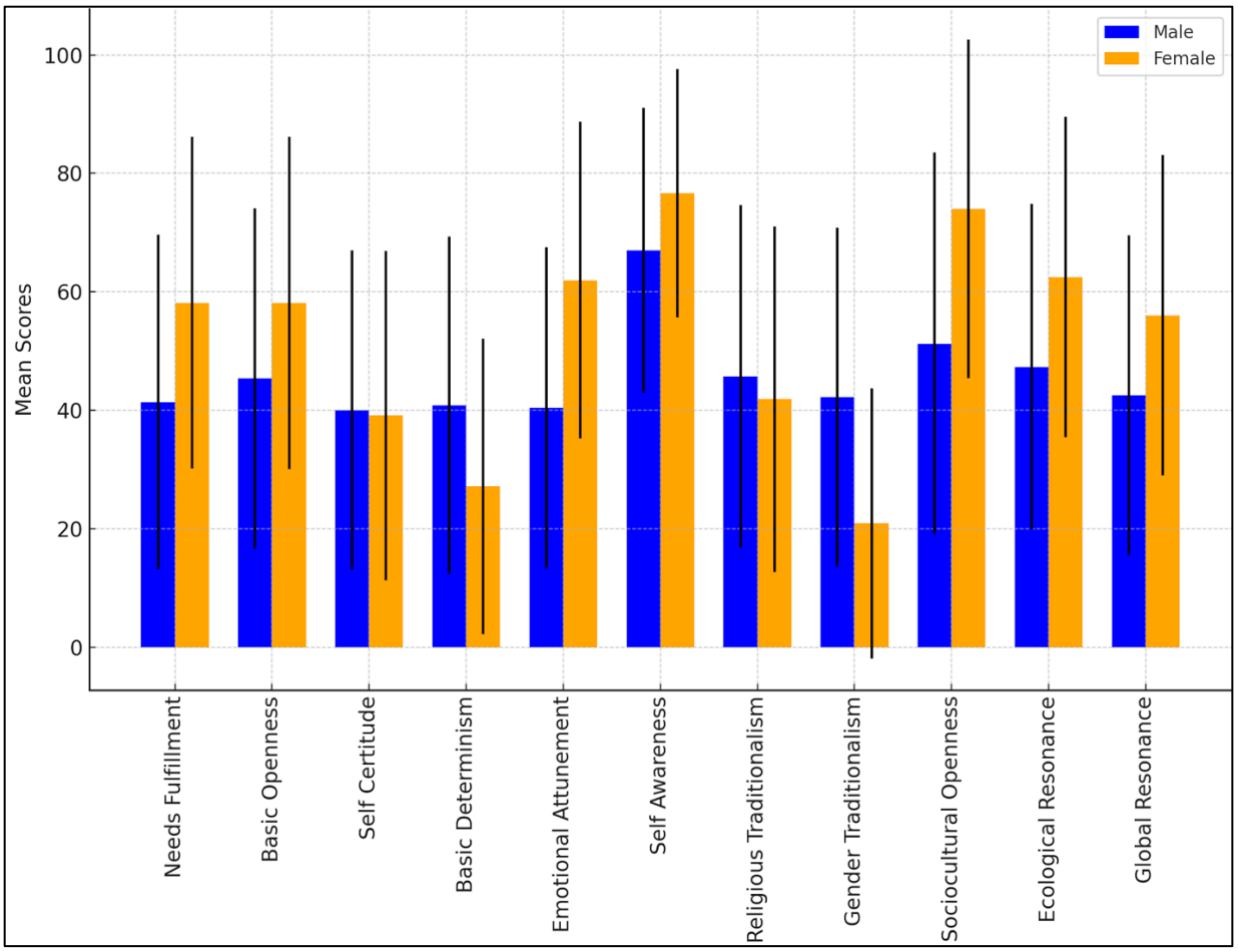

Figure 1: Gender-wise Mean Scores Comparison

4.1 Needs Fulfillment

Female students (M= 58.16, SD = 28.04) showed higher gains in Needs Fulfillment than male students (M= 41.42, SD = 28.22, t=-8.92, df=998, p=0.00), indicating a statistically significant difference between the two groups. This result suggests that female students are better at seeking and achieving personal and professional satisfaction compared to male students. The higher Needs Fulfillment scores among female students imply that they have higher self-efficacy and might experience a greater sense of fulfillment and well-being during their educational journey.

4.2 Basic Openness

Female students scored significantly higher on Basic Openness (M=58.11, SD = 28.11), compared to male students who had a mean score of (M= 45.38, SD = 28.74, t=-8.81, df=998, p=0.00). This suggests that female students show a higher capacity to handle complex emotional situations, which is essential for adaptability and growth in diverse environments. The higher Basic Openness scores among female students also indicate that they are honest about their thoughts, feeling and experiences.

4.3 Self Certitude

Male students showed a slightly higher mean score (M= 40.05; SD = 26.92), while female students had a mean score of (M=39.11, SD = 27.78) for self-certitude. Also, the t-test revealed that the difference was not statistically significant. Overall the self-certitude score was low for both groups, a lower score on self-certitude suggests that both male and female students are empathetic but are very pessimistic about their success and growth.

4.4 Basic Determinism

Male students showed a higher score for basic determinism (M= 40.85, SD = 28.51), than female students (M= 27.13, SD = 24.97, t=11.27, df=998, p=0.00), indicating a statistically significant difference. This suggests that male students are more likely to hold deterministic views, believing that events are predetermined and less subject to change by individual actions. In contrast, the lower scores among female students indicate a lesser tendency towards deterministic thinking, suggesting they may be more open to the idea that personal actions can influence outcomes.

4.5 Emotional Attunement

Female students showed a higher level of emotional attunement (M= 61.95, SD = 26.76), than the male students (M=40.44, SD = 27.13, t=17.80, df=998, p=0.00), indicating a statistically significant difference. This suggests that female students have higher levels of emotional attunement, meaning they are more in tune with their own emotions and the emotions of others. This higher emotional intelligence among female students indicates a stronger ability to understand and manage emotions, which is crucial for effective interpersonal interactions and empathy.

4.6 Self-Awareness

Female students showed a high level of self-awareness (M= 76.70, SD = 20.97), which was significantly higher than the male students (M= 67.01, SD = 24.03, t=-8.86, df=998, p=0.00), indicating a statistically significant difference. This suggests that female students have a higher capacity to self-regulate and showcase a deeper understanding of their thoughts, emotions, and behaviors.

4.7 Religious Traditionalism

Male students showed a slightly higher score for religious traditionalism (M= 45.70, SD = 28.91), than the female students (M= 41.88, SD = 29.16, t=2.69, df=998, p=0.01), indicating a statistically significant difference. This suggests that male students are more likely to adhere to traditional religious beliefs compared to female students. The lower scores among female students indicate a lesser degree of adherence to traditional religious norms and values.

4.8 Gender Traditionalism

Male students showed a higher level of gender traditionalism (M=42.23, SD = 28.64), which was significantly higher than the female students (M= 20.89, SD = 22.86, t=20.92, df=998, p=0.00), indicating a statistically significant difference. This suggests that male students are more likely to hold traditional views about gender roles compared to female students. The lower scores among female students indicate a lesser degree of adherence to traditional gender norms, reflecting a more progressive outlook on gender roles.

4.9 Sociocultural Openness

Female students showed a higher level of Sociocultural Openness (M=74.00, SD = 28.61), than the male students (M=51.27, SD = 32.27, t=18.66, df=998, p=0.00), indicating a statistically significant difference. This suggests that female students exhibit a higher level of openness to diverse cultures and social perspectives compared to male students. The higher Sociocultural Openness scores among female students indicate a greater willingness to engage with unfamiliar surroundings and appreciate cultural diversity.

4.10 Ecological Resonance

Female students showed a higher level of Ecological Resonance (M=62.50, SD = 27.10) than the male students (M=47.32, SD = 27.49, t=11.72, df=998, p=0.00), indicating a statistically significant difference. This suggests that female students have a stronger connection and responsiveness to ecological and environmental issues compared to male students. The higher Ecological Resonance scores among female students highlight their greater awareness and concern for environmental sustainability and global ecological challenges.

4.11 Global Resonance

Female students also showed a higher level of Global Resonance (M=56.04, SD = 27.03) than the male students (M= 42.58, SD = 27.02, t=-10.06, df=998, p=0.00), indicating a statistically significant difference. This suggests that female students possess a stronger sense of connection and engagement with the community and global issues compared to male students. The higher Global Resonance scores among female students indicate a greater sense of social responsibility. The findings suggest that female students are more attuned to global challenges and are likely to be more proactive in seeking solutions and engaging in international interactions.

5. Discussion

The study used a quantitative approach to answer the research question. A t-test was conducted to see if there were any significant differences among the eleven BEVI constructs that contribute to global identity development. The findings of the study revealed significant gender differences across the ten BEVI constructs. Female students scored higher in Needs Fulfillment, Basic Openness, Emotional Attunement, Self Awareness, Sociocultural Openness, Ecological Resonance, and Global Resonance. These results suggest that female participants report greater

fulfillment of their needs and showcase a higher degree of openness to new experiences and ideas, greater emotional intelligence, and increased awareness of their thoughts and feelings. Moreover, female students showed a higher level of acceptance and integration of diverse cultural and social experiences, as well as a greater attunement to environmental and global issues.The increase in scores for female students in Needs Fulfillment signifies that they are more likely to feel that their emotional and psychological needs are being met. This could be reflective of stronger social support networks or a greater tendency to seek and maintain fulfilling relationships. In Basic Openness, the higher scores for females indicate a greater willingness to embrace new experiences, ideas, and changes, which can lead to more adaptive and resilient behavior in diverse and dynamic environments. Higher scores in Emotional Attunement among female students suggest they have a better ability to understand and manage their own emotions as well as empathize with others. This trait is crucial for effective communication and building strong interpersonal relationships. Increased Self Awareness in females implies a deeper understanding of their own strengths, weaknesses, and motivations, which can facilitate personal growth and self-improvement. In terms of Sociocultural Openness, higher scores for female students indicate a greater acceptance of and interest in diverse cultures and social practices. This openness can enhance intercultural competence and foster a more inclusive mindset. Ecological Resonance scores being higher for females highlight their heightened sensitivity and responsiveness to environmental issues, which could be linked to a more empathetic and caretaking disposition.

Conversely, male students scored higher in Basic Determinism, Religious Traditionalism, and Gender Traditionalism. Higher scores in Basic Determinism suggest that male students are more inclined to see the world in terms of fixed rules and predictable outcomes, which might make them less flexible in adapting to new or uncertain situations. Increased scores in Religious Traditionalism for male students indicate a stronger adherence to traditional religious beliefs and practices, which could influence their moral and ethical decision-making processes. The significantly higher scores in Gender Traditionalism for male students suggest a greater endorsement of conventional gender roles, potentially reflecting resistance to gender equality and changing social norms.

The lack of significant gender differences in Self Certitude suggests that both male and female students exhibit similar levels of confidence and self-assurance. This indicates that, despite other differences, both genders maintain a comparable sense of self-confidence and belief in their abilities.

These gender differences align with existing BEVI studies, which often highlight that females tend to score higher on constructs related to openness and emotional intelligence, while males show a preference for traditionalism and determinism. For instance, Shealy [24] found that females typically demonstrate greater sociocultural openness and ecological resonance, reflecting their broader socialization towards inclusivity and empathy. Similarly, research by

Wandschneider et al. [15] indicated that female students often exhibit higher levels of emotional attunement and global resonance, suggesting a deeper engagement with and sensitivity to global and environmental issues. These patterns are consistent with societal and cultural norms that encourage females to be more emotionally expressive and open to diverse experiences.

5.1 Implications for Teaching and Learning The implications of these findings for teaching and learning in STEM and first-year education are significant. Educators should account for the observed gender differences when developing curricula and instructional strategies. Given that female students scored higher on constructs like Emotional Attunement, Sociocultural Openness, and Global Resonance, educators can leverage these strengths by integrating specific experiential learning opportunities. For instance, incorporating service-learning projects that engage students with diverse communities can enhance their sociocultural openness. Facilitating study abroad programs or virtual exchange experiences can deepen their global resonance and cultural awareness. Additionally, collaborative projects that require cross-cultural communication and group discussions focused on global issues can further develop their emotional attunement and empathy. These targeted activities will provide female students with practical contexts for applying their intercultural competence in real-world scenarios. On the other hand, male students demonstrated higher scores in constructs such as Self Certitude, Basic Determinism, Religious Traditionalism, and Gender Traditionalism, indicating a more rigid and traditional perspective. Educators should consider incorporating pedagogical strategies that foster critical thinking and self-reflection, such as debates, ethical case analyses, and role-playing scenarios. These methods can challenge students to question their assumptions and develop a more nuanced understanding of complex global issues. Encouraging male students to engage with perspectives different from their own can promote more open-mindedness and adaptability, which are essential skills in the increasingly interconnected global landscape. Furthermore, the findings emphasize the need for creating a supportive and inclusive learning environment that addresses the specific needs of both male and female students. For instance, educators could facilitate mixed-gender project teams to foster mutual learning and reduce gender-based biases. This balanced approach can help cultivate a classroom culture where diverse perspectives are valued and all students feel empowered to contribute. The distinct gender differences highlighted in this study call for the adoption of gender-sensitive teaching approaches in STEM education. By recognizing and addressing these differences in the first-year, educators can create a more equitable and effective learning environment that supports the holistic development of all students, ultimately contributing to a more inclusive and diverse STEM workforce.

6. Conclusion

The findings from the BEVI (Beliefs, Events, and Values Inventory) study underscore significant gender differences across various psychological constructs, highlighting the divergent ways in which male and female students integrate and express their beliefs, values, and identities. Females exhibited higher levels of Needs Fulfillment, Basic Openness, Emotional Attunement,

Self Awareness, Sociocultural Openness, Ecological Resonance, and Global Resonance, indicating a greater openness to new experiences, emotional intelligence, and sensitivity to cultural and environmental issues. Males, on the other hand, scored higher in Basic Determinism, Religious Traditionalism, and Gender Traditionalism, reflecting a more structured and traditional worldview. These insights, grounded in the Equilintegration (EI) Theory, reveal the intricate interplay between gender, personal growth, and contextual factors, offering valuable implications for educational practices aimed at fostering intercultural competence and inclusivity.

7. Limitations

Despite the valuable insights gained from this study, several limitations must be acknowledged. First, the study's cross-sectional design limits the ability to draw causal inferences about the observed gender differences. Longitudinal studies would be more effective in tracking changes over time. Second, the sample was limited to first-year STEM students, which may not be representative of the broader student population. Future research should include a more diverse sample in terms of academic disciplines, cultural backgrounds, and age groups. Additionally, while the BEVI provides a comprehensive assessment of various psychological constructs, self-report measures may lead to biases such as social desirability and self-perception inaccuracies. Using complementary methods such as qualitative interviews or behavioral observations, could provide a better understanding of the constructs under study.

8. Future Work

In future research we plan to conduct a longitudinal study to explore how gender differences in global identity development have evolved over time. We also plan to expand the sample to include students from various academic disciplines and cultural backgrounds, that will enhance the generalizability of the findings. Moreover, integrating qualitative methods, such as in-depth interviews or focus groups, with the BEVI can provide richer, more detailed insights into the underlying factors influencing gender differences in intercultural competence.

References

[1] A. J. Magana, T. Amuah, S. Aggrawal, and D. A. Patel, "Teamwork dynamics in the context of large-size software development courses," *Int. J. STEM Educ.*, vol. 10, no. 1, p. 57, Sep. 2023, doi: 10.1186/s40594-023-00451-6.

[2] A. J. Magana, A. Jaiswal, T. L. Amuah, M. Z. Bula, M. S. Ud Duha, and J. C. Richardson, "Characterizing Team Cognition Within Software Engineering Teams in an Undergraduate Course," *IEEE Trans. Educ.*, vol. 67, no. 1, pp. 87–99, Feb. 2024, doi: 10.1109/TE.2023.3327059.

[3] F. Wang, K. Pait, K. Acheson, L. Sternberger, R. Staton, and C. N. Shealy, "Beliefs, Events and Values Inventory assessment of global identity: Implications and applications for international, cross-cultural and transformative learning," *Cult. Competence High. Educ. Sect. Aust. Perspect. Policies Pract.*, pp. 83–113, 2020, Accessed: Nov. 15, 2023. [Online]. Available: https://library.oapen.org/bitstream/handle/20.500.12657/39549/1/2020_Book_CulturalCompetenceAndTheHigher.pdf#page=92

[4] J. J. Arnett, "The psychology of globalization.," *Am. Psychol.*, vol. 57, no. 10, p. 774, 2002, Accessed: Jul. 23, 2024. [Online]. Available: https://psycnet.apa.org/fulltext/2002-18352-003.html

[5] A. Jaiswal, K. Patel, D. Patel, and A. Magana, "Perceived scrum Values, Conflict Resolution Ability, and Cultural Self-Awareness in the Context of System Analysis and Design Teamwork," in *2022 ASEE Annual Conference & Exposition*, 2022.

[6] A. Jaiswal, M. Sapkota, and K. Acheson, "Bridging borders: assessing the impact of semester-long study abroad programs on intercultural competence development in undergraduate engineering students," *Int. J. STEM Educ.*, vol. 11, no. 1, p. 24, May 2024, doi: 10.1186/s40594-024-00483-6.

[7] J. M. Grandin and E. D. Hirleman, "Educating engineers as global citizens: A call for action/A report of the national summit meeting on the globalization of engineering education," *Online J. Glob. Eng. Educ.*, vol. 4, no. 1, p. 1, 2009.

[8] A. Jaiswal, M. Sapkota, T. Karabiyik, and P. Thomas, "CULTIVATING A GLOBAL MINDSET IN FIRST YEAR CYBERSECURITY STUDENTS THROUGH INTERNATIONALIZATION OF CURRICULUM," in *ICERI2023 Proceedings*, IATED, 2023, pp. 2226–2230. Accessed: Jan. 01, 2024. [Online]. Available: https://library.iated.org/view/JAISWAL2023CUL

[9] A. Jaiswal, P. Thomas, and T. Karabiyik, "Characterizing Intercultural Competence among Cybersecurity Majors," presented at the 2023 IEEE Frontiers in Education Conference (FIE), IEEE, 2023, pp. 1–5.

[10] S. Granato, E. Havari, G. Mazzarella, and S. V. Schnepf, "Study abroad programmes and student outcomes: Evidence from Erasmus," *Econ. Educ. Rev.*, vol. 99, p. 102510, 2024, Accessed: Jul. 23, 2024. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0272775724000049

[11] B. S. Malau-Aduli, S. Ross, and M. D. Adu, "Perceptions of intercultural competence and institutional intercultural inclusiveness among first year medical students: a 4-year study," *BMC Med. Educ.*, vol. 19, no. 1, p. 346, Dec. 2019, doi: 10.1186/s12909-019-1780-y.

[12] M. Bittinger, L. Jin, and X. Dou, "From Pre-Freshman Abroad to Freshman On-Campus: Examining Intercultural Competence Development Through an Extended Journey.," *Front. Interdiscip. J. Study Abroad*, vol. 34, no. 1, pp. 61–96, 2022, Accessed: Jul. 23, 2024. [Online]. Available: https://eric.ed.gov/?id=EJ1346272

[13] A. Jaiswal, R. J. Smith, H. Diatta-Holgate, P. V. Morris, and K. Acheson, "Comparing Students' Multicultural Awareness Development in Online vs. Face-to-Face Diversity Courses Before, During, and After COVID-19," *Trends High. Educ.*, vol. 3, no. 4, pp. 885–

902, 2024, Accessed: Nov. 04, 2024. [Online]. Available: https://www.mdpi.com/2813-4346/3/4/51
[14] L. A. Braskamp, D. C. Braskamp, K. C. Merrill, and M. Engberg, “Global Perspective Inventory (GPI): Its purpose, construction, potential uses, and psychometric characteristics,” *Glob Perspect Inst*, pp. 1–35, 2014, Accessed: Jul. 23, 2024. [Online]. Available: https://www.academia.edu/download/100632196/manual.pdf
[15] E. Wandschneider *et al.*, “The Forum BEVI Project: Applications and implications for international, multicultural, and transformative learning,” *Mak Sense Beliefs Values Theory Res Pr.*, vol. 25, pp. 150–228, 2015, Accessed: Nov. 15, 2023. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=1ck8CwAAQBAJ&oi=fnd&pg=PA407&dq=Wandschneider,+E.,+Pysarchik,+D.+T.,+Sternberger,+L.+G.,+Ma,+W.,+Acheson,+K.,+et+al.+(2015).+The+Forum+BEVI+project:+Applications+and+implications+for+international,+multicultural,+and+transformative+learning.+Frontiers:+The+Interdisciplinary+Journal+of+Study+Abroad,+25,+150-228.&ots=w5zJHLY3R1&sig=OaPjHS_OAu4bI05cj_JIbKO3iHA
[16] A.-M. D. Nguyen, *Expatriate effectiveness and cultural intelligence among multiculturals and monoculturals abroad*. University of California, Riverside, 2010. Accessed: Jul. 23, 2024. [Online]. Available: https://search.proquest.com/openview/30a0e3a8d0c3026b761b51b484395378/1?pq-origsite=gscholar&cbl=18750&casa_token=L3SBTFdQCkMAAAAA:l7ZOaziW-CA5QTWEynv3O10brquRVkMNplG_cNCrxn2yVA_5conuuLqDXScsZoO0ZAMOj-HFEj4
[17] L. Christov-Moore, E. A. Simpson, G. Coudé, K. Grigaityte, M. Iacoboni, and P. F. Ferrari, “Empathy: Gender effects in brain and behavior,” *Neurosci. Biobehav. Rev.*, vol. 46, pp. 604–627, 2014, Accessed: Jul. 23, 2024. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0149763414002164?casa_token=4ZRUq6Qi0T0AAAAA:b4wZwsUfyajQYr9sdC9BZ4o0e3aqIfWKmdTuhorD9iEWE2Jwmi5K11-NQOMonOfNeNldTC62oA
[18] D. N. Beede, T. A. Julian, D. Langdon, G. McKittrick, B. Khan, and M. E. Doms, “Women in STEM: A gender gap to innovation,” *Econ. Stat. Adm. Issue Brief*, no. 04–11, 2011, Accessed: Jul. 23, 2024. [Online]. Available: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=1964782
[19] L. Stoner, L. Perry, D. Wadsworth, K. R. Stoner, and M. A. Tarrant, “Global citizenship is key to securing global health: The role of higher education,” *Prev. Med.*, vol. 64, pp. 126–128, 2014, Accessed: Jul. 23, 2024. [Online]. Available: https://www.sciencedirect.com/science/article/pii/S0091743514001716?casa_token=5-v9TJqwcp8AAAAA:e2xM2bjdPD88QA8UBKYsb3O3f95llhsFaTsg1wZbPQjlUoJU0pWS9YvumAToZzLJv1WFtoFQoQ
[20] J. Mezirow, “An overview on transformative learning,” *Lifelong Learn.*, pp. 40–54, 2008.
[21] E. W. Taylor, “Intercultural Competency: A Transformative Learning Process,” *Adult Educ. Q.*, vol. 44, no. 3, pp. 154–174, Sep. 1994, doi: 10.1177/074171369404400303.
[22] S. Gill, “Universities as spaces for engaging the other: A pedagogy of encounter for intercultural and interreligious education,” *Int. Rev. Educ.*, vol. 62, no. 4, pp. 483–500, Aug. 2016, doi: 10.1007/s11159-016-9572-7.

[23] C. N. Shealy, “A model and method for ‘making’ a Combined-Integrated psychologist: Equilintegration (EI) Theory and the Beliefs, Events, and Values Inventory (BEVI),” *J. Clin. Psychol.*, vol. 60, no. 10, pp. 1065–1090, Oct. 2004, doi: 10.1002/jclp.20035.
[24] C. N. Shealy, “Beliefs, events, and values inventory (BEVI),” *Mak. Sense Beliefs Values Theory Res. Pract.*, pp. 113–173, 2016, Accessed: Jun. 19, 2024. [Online]. Available: https://books.google.com/books?hl=en&lr=&id=1ck8CwAAQBAJ&oi=fnd&pg=PA113&dq=Craig+Shealy+bevi&ots=w5ARPF-WR2&sig=CF1xeyWngzAQXqStYG0694Lqq8Q