© Journal of the Indian Academy of Applied Psychology
September 2024, Special Issue, 363-373

The Moderation Role of Gender and Educational Level in the Effect of Mental Well-being on Academic Procrastination

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This cross-sectional study investigates the relationship between mental well-being and academic procrastination among higher education students in Hyderabad, India. Additionally, it examines the influence of demographic factors, including gender and educational level, on these relationships. Method: A sample of 404 higher education students participated in this study. Mental well-being was assessed using the Warwick-Edinburgh Mental Well-being Scale (WEMWBS), while academic procrastination was measured using the academic procrastination scale. Demographic variables included gender (male, female, and LGBTQ+) and educational level (undergraduate, post-graduate, research). The bivariate correlation analysis revealed a significant negative relationship between mental well-being and academic procrastination ($r = -0.499$, $p < 0.05$). One-way ANOVA indicated no significant differences in academic procrastination levels among gender groups ($p = 0.053$). However, there was a significant difference in mental well-being levels among gender groups ($p < 0.001$), Significant differences in academic Procrastination among students at different educational levels ($p < 0.001$), a significant difference in mental well-being among students at different educational levels ($p = 0.000$) were found. Moderated multiple regression analysis revealed that the demographic variables of gender and educational level further influence the relationships. The study highlights a negative association between mental well-being and academic Procrastination. Moreover, it emphasises the impact of demographic factors on these relationships, suggesting that female and LGBTQ+ students and those at higher educational levels experience more significant reductions in academic Procrastination with improved mental well-being. These findings provide valuable insights for interventions to enhance higher education students' well-being and academic performance in Hyderabad, India.

Keywords: Mental Well-being, Academic Procrastination, Gender, Educational Level, Higher Education

Mental well-being (MWB), a multidimensional construct encompassing emotional, psychological, and social dimensions, is crucial in shaping students' academic experiences and outcomes (Alshehri, 2021). The World Health Organization defines mental well-being as allowing individuals to "realise their abilities, cope with life's stresses, work productively, and contribute to their community" (2018). On the other hand, Academic Procrastination (AP) refers to the intentional delay of academic tasks despite knowing the negative consequences (Chen & Han, 2017; Ferrari, 2001; Steel, 2007). Understanding the factors influencing academic procrastination is essential for educators and students, as it can significantly impact their ability to manage their academic responsibilities effectively (Fentaw et al., 2022; Glick & Orsillo, 2015; Rozental et al., 2022; Solomon & Rothblum, 1984). The intersection of these two factors has

profound implications for students' success and overall quality of life (Baiju & R, 2021; Carpi et al., 2022; Glick & Orsillo, 2015; Lattie et al., 2019; Spagert et al., 2022).

Previous research has consistently shown an inverse relationship between mental well-being and academic procrastination (Glick & Orsillo, 2015; Liinamaa et al., 2022; Peixoto et al., 2021; Sutcliffe et al., 2019). Individuals with higher mental well-being tend to exhibit lower procrastination tendencies due to self-efficacy, self-regulation, and a positive mental state (Glick & Orsillo, 2015; Liinamaa et al., 2022; Sutcliffe et al., 2019). Individuals with better mental well-being often possess higher levels of self-efficacy and self-regulation, enabling them to effectively initiate and sustain academic tasks (Baiju, n.d.; Fancourt et al., 2022; Huang et al., 2023; Huberty et al., 2019; Linden & Stuart, 2020). A positive mental state fosters a sense of purpose and motivation, reducing the likelihood of procrastination (Kotera et al., 2022; Linden & Stuart, 2020). However, the influence of demographic factors such as gender and educational level remains debated (Wang et al., 2022). Some studies have reported gender-based differences in procrastination tendencies, with males being more prone to academic procrastination (Albursan et al., 2022). Contemporary research indicates evolving patterns, suggesting reduced gender-based disparities (Fentaw et al., 2022; Klassen & Kuzucu, 2009). Educational level is also a significant determinant of procrastination behaviour, as research-intensive programs, such as postgraduate and research scholars, often present unique stressors contributing to heightened procrastination tendencies (Gu et al., 2023; Vargas, 2017). Additionally, demographic variables such as gender and sexual orientation should be considered in the context of mental well-being and academic procrastination, as the experiences of LGBTQ+ students may differ from their heterosexual peers due to factors such as social stigma, discrimination, and identity formation (Denney et al., 2021). Mental well-being is crucial in academic procrastination and demographic variables, but research gaps exist (Becker et al., 2014). Limited research has explored how mental well-being influences academic procrastination (Hernández et al., 2020; Kauhanen et al., 2023; Sureka & R, 2020; Zhou et al., 2022), and a deeper understanding of these processes could inform targeted interventions. The psychological pathways through which mental well-being affects academic behaviors, including self-regulation, motivation, and emotional well-being, are essential (Haider et al., n.d.; Kotera et al., 2022; Linden & Stuart, 2020; Zhou et al., 2022). Gender-based differences in procrastination behaviors require further investigation to identify driving factors. Research scholars face unique challenges in their academic journeys, and understanding how these challenges intersect with mental well-being and academic procrastination is crucial for providing practical support and resources. The literature underscores the complex relationship between mental well-being and academic procrastination among higher education students. However, questions surrounding the influence of demographic variables, including gender and educational level, persist. Addressing these gaps is essential for developing effective interventions that enhance students' well-being and academic success. The study investigates the relationship between mental well-being and academic procrastination among higher education students in Hyderabad, India. The study also examines the influence of demographic variables, including gender and educational level, on students' academic procrastination and mental well-being. The moderating role of gender and educational level in the

relationship between mental well-being and academic procrastination is assessed.

Hypotheses

H_{01}: There is no significant relationship between mental well-being and academic procrastination among higher education students in Hyderabad, India.

H_{02}: There is no significant difference in academic procrastination levels between male, female, and LGBTQ+ students in higher education in Hyderabad, India.

H_{03}: There is no significant difference in academic procrastination levels among students at different educational levels (under graduation, post-graduation, and research) in Hyderabad, India.

H_{04}: There is no significant difference in mental well-being levels between male, female, and LGBTQ+ students in higher education in Hyderabad, India.

H_{05}: There is no significant difference in mental well-being levels among students at different educational levels (under graduation, post-graduation, and research) in Hyderabad, India.

H_{06}: The relationship between mental well-being and academic procrastination is not influenced by the demographic variables of gender and educational level among higher education students in Hyderabad, India.

Method

Research Design

A cross-sectional investigation design was employed to examine the relationship between mental well-being, academic procrastination (Babu et al., 2019; Snehitha et al., 2022), and the influence of demographic variables among higher education students in Hyderabad, India. Cross-sectional research allows data collection at a single point, providing insights into the associations and differences among variables within the studied population (Creswell & Creswell, 2017; Kothari, 2013).

Participants

The study sample comprises 404 higher education students pursuing in different higher education institutes in Hyderabad, India. Participants were selected using random sampling. The sampling distribution involved is 110 under-graduation students (Male - 62, Female - 44, LQBTQ+ -4); 152 post-graduation students (Male - 71, Female - 73, LQBTQ+ - 8) and 142 research scholars (Male - 75, Female - 53, LQBTQ+ - 14).

Self-administered questionnaire used to collect the data. Participants were approached in person. Ethical approval was obtained before data collection to ensure participant consent, confidentiality, and data security.

Measures:

The self-administered questionnaire included the participant's demographic variables, i.e. gender and educational level. Followed by "Warwick-Edinburgh Mental Well-being Scale" (Tennant et al., 2007) and Academic Procrastination Scale (APS) originally developed by Busko (1998) was used to measure the participants' academic procrastination.

Results

Bivariate correlation analysis: The bivariate correlation analysis examined the relationship between mental well-being and academic procrastination.

Table 1. Bivariate Correlation analysis between mental well-being and academic procrastination.

Variables	MWB and AP
Pearson correlation	-0.499
Sig. (2-tailed)	0.000

Table 1 shows the results of bivariate correlation analysis. r = -0.499 revealed a significant negative correlation between mental well-being and academic procrastination. This indicates that as mental well-being levels increase, students tend to exhibit lower academic procrastination levels and vice versa. The correlation is statistically significant, as evidenced by the p-value (two-tailed), which is less than the commonly used significance level of 0.05.

Table 2. One-Way ANOVA Results for Academic Procrastination by Gender and Educational Level.

Academic_Procastination						
Gender	Volume	SS1	df	MS2	F	Sig.
	Between Groups	210.420	2	105.210	2.966	.053
	Within Groups	14226.422	401	35.477		
	Total	14436.842	403			
Educational level						
	Between Groups	2648.711	2	1324.355	45.051	.000
	Within Groups	11788.131	401	29.397		
	Total	14436.842	403			

SS1-Sum of Squares, MS2- Mean Squares

Table 3. Post-hoc multiple comparisons results for academic procrastination and educational level.

Dependent Variable: Academic_Procastination Tukey HSD		
Educational Level	Comparison	Sig.
	UG & PG	0.542
	PG & Research	0.000
	Research and UG	0.000

To test Hypothesis 2 regarding gender differences in academic procrastination levels among higher education students in Hyderabad, India, a one-way ANOVA test was performed, with results reported in Table 2. The result suggests no significant difference in academic procrastination levels among male, female, and LGBTQ+ students, as the p-value is 0.053, which exceeds 0.05. Therefore, Hypothesis 2 is supported, indicating that gender does not significantly impact academic procrastination levels in this sample.

Hypothesis 3 focused on the impact of educational levels (under graduation, post-graduation, and research) on academic procrastination. Table 2 show a significant difference in academic procrastination levels among students at different educational levels (p = 0.000). Post-hoc tests reported in Table 3 revealed a significant difference between undergraduate and research scholars and post-graduation and research scholars. However, no significant difference in academic procrastination levels was found between undergraduate and post-graduation students. This suggests that students engaged in research exhibit significantly different procrastination behaviors compared to those at lower educational levels.

Table 4. One-Way ANOVA Results for mental well-being by gender and educational Level.

Mental Well-being						
Gender	Source	SS1	df	MS2	F	Sig.
	Between Groups	2921.470	2	1460.735	28.275	.000
	Within Groups	20716.320	401	51.662		
	Total	23637.790	403			
Educational Level	Between Groups	2733.133	2	1366.567	26.214	.000
	Within Groups	20904.656	401	52.131		
	Total	23637.790	403			

SS1-Sum of Squares, MS2- Mean Squares

Table 5. post-hoc multiple comparisons results for mental well-being by gender and educational Level.

Dependent Variable: Mental Well-being Tukey HSD		
	Comparison	Sig.
Gender	Male & Female	0.000
	Female & LGBTQ+	0.001
	LGBTQ+ and Male	0.999
Educational Level	UG & PG	0.000
	PG & Research	0.011
	Research and UG	0.000

To test Hypothesis 4, which focuses on gender differences in mental well-being levels among higher education students in Hyderabad, India, another one-way ANOVA was conducted and reported in Table 4. The results indicate a significant difference in mental well-being levels among gender groups, as the p-value is less than 0.05. Post-hoc tests, as reported in Table 5, revealed a significant difference in mental well-being between male and female students, as well as between LGBTQ+ and female. However, no significant difference was observed between male and LGBTQ+ students. These findings suggest that gender plays a role in mental well-being, particularly when comparing male and female students.

Another one-way ANOVA was conducted to test Hypothesis 5, which examines the influence of educational levels on mental well-being among higher education students in Hyderabad, India. Table 4 shows a significant difference in mental well-being among students at different educational levels ($p < 0.001$). From Table 5, post-hoc tests revealed substantial differences between undergraduate and research scholars and post-graduation and research scholars. However, there was no significant difference in mental well-being levels between undergraduate and post-graduation students. This implies that research scholars experience significantly distinct levels of mental well-being compared to those at lower educational levels.

Hypothesis 6 aimed to explore whether the relationship between mental well-being and academic Procrastination is influenced by demographic variables, specifically gender and educational level. This moderated multiple regression analysis allows testing whether the relationship between mental well-being and academic procrastination varies depending on the levels of the moderator variables (gender and educational level).

Table 6. Coefficients and p-values for the main effects and interaction terms.

Model		B	Sig.
Main effects	(Constant)	48.798	0.000
	Mental Well-being	-0.343	0.000
	Gender	-0.908	0.031
	Educational level	-1.813	0.000
Interaction terms	(Constant)	31.302	0.000
	Mental Well-being_ Gender	-0.121	0.033
	Mental Well-being_ Educational Level	-0.150	0.001
a. Dependent Variable: Academic_Procastination			

The coefficient for mental well-being is -0.343, and the p-value is < 0.001. This indicates a significant negative relationship between mental well-being and academic procrastination. As mental well-being increases, academic procrastination tends to decrease among students. The coefficient for gender is -0.908, and the p-value is < 0.05. This suggests a significant negative relationship between gender and academic procrastination. The coefficient for educational level is -1.813, and the p-value is < 0.001. This indicates a significant negative relationship between educational level and academic procrastination.

The coefficient for the interaction term mental well-being and gender is -0.121, and the p-value is < 0.05. This suggests that the relationship between mental well-being and academic procrastination is significantly influenced by gender. The coefficient for the interaction term mental well-being and educational level is -0.150, and the p-value is 0.001 ($p < 0.001$). This indicates that the relationship between mental well-being and academic procrastination is significantly influenced by educational level. Overall, these results suggest that mental well-being has a significant negative association with academic procrastination among higher education students in Hyderabad, India. The relationships are further influenced by the demographic variables of gender and educational level. Female and LGBTQ+ students and those at higher educational levels tend to experience more significant reductions in academic procrastination as their mental well-being improves.

Discussion

The study reveals a significant negative correlation between mental well-being and academic procrastination, suggesting that students with higher levels of mental well-being are less likely to engage in procrastinatory behaviours. This finding aligns with previous research consistently highlighting the inverse relationship between these constructs (Glick & Orsillo, 2015; Liinamaa et al., 2022; Peixoto et al., 2021; Sutcliffe et al., 2019). The study emphasizes the importance of considering students' mental well-being as a crucial determinant of their academic behaviours. Interventions to enhance students' mental well-being may effectively reduce academic procrastination tendencies. By fostering a positive mental state, educational institutions can equip students with the psychological resources to overcome procrastination and engage more effectively in their academic tasks (Baik et al., 2019; Fentaw et al., 2022; Furlan & Cristofolini, 2022; Ghafari et al., 2021). However, the direction of causality remains an open question. Future longitudinal research could provide deeper insights into whether improvements in mental well-being led to reduced procrastination or vice versa.

The results indicate no significant difference in academic procrastination levels between male, female, and LGBTQ+ students in higher education in Hyderabad,

India. This contradicts some earlier studies that suggested gender-based variations in procrastination tendencies, with males often being more prone (HAYAT et al., 2020); some studies identified no significance differences in gender (Babu et al., 2019; Fentaw et al., 2022; Klassen & Kuzucu, 2009; Snehitha et al., 2022). The educational level is also one of the significant factors influencing procrastination behaviour. Our results indicated a significant difference in academic procrastination levels among students at different educational levels, with research scholars reporting higher procrastination tendencies than undergraduates and postgraduates. Previous research suggests no link between educational level and academic procrastination (Albursan et al., 2022; HAYAT et al., 2020; Lu et al., 2022; Sureka & R, 2020), but stressors in research-level programs contribute to heightened procrastination behaviours, necessitating targeted interventions (Vargas, 2017).

The significant differences in mental well-being among male, female, and LGBTQ+ students revealed in this study resonate with previous research. A survey by Lina Spagert, Christian Janssen, and Christoph Geigi (2022) found that gender differences exist in mental well-being, with women reporting higher levels of psychological distress this findings are supported by other studies (Barbayannis et al., 2022; Carpi et al., 2022). Research on LGBTQ+ individuals has highlighted unique mental health challenges due to societal discrimination and stigma (Denney et al., 2021). However, some studies reported no gender difference in mental well-being (Alshehri, 2021; Baiju & R, 2021). The study reveals significant differences in mental well-being across educational levels, with no prior research supporting or contradicting these findings. As students progress to higher educational levels, academic demands and pressures may impact their mental well-being (Alshehri, 2021; Barbayannis et al., 2022; Bewick et al., 2010; Sining et al., 2022; Spagert et al., 2022), necessitating future research.

The complex interplay between mental well-being, gender, educational level, and academic procrastination is moderated by gender and educational level. Female and LGBTQ students and those at higher educational levels tend to experience more significant reductions in academic procrastination as their mental well-being improves. While previous studies have explored the individual influences of mental well-being, gender, and educational level on academic procrastination (Albursan et al., 2022; Alshehri, 2021; Baiju & R, 2021; Barbayannis et al., 2022; Becker et al., 2014; Bewick et al., 2010; Carpi et al., 2022; Fentaw et al., 2022; HAYAT et al., 2020; Klassen & Kuzucu, 2009; Lu et al., 2022; Spagert et al., 2022; Sureka & R, 2020; Wang et al., 2022), they must delve into their combined effects. These findings underscore the importance of tailored interventions that consider the diverse needs of students based on their gender and educational level.

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