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Investigating the Relationships between Future Self-Continuity, Savoring Beliefs, and Academic Procrastination with the Academic GRIT of Students

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ABSTRACT

Objective: This research aimed to investigate the relationships between future self-continuity, savoring beliefs, and academic procrastination with the academic grit of Urmia University students in the academic year of 2023-2024.

Method: This study adopted descriptive and correlational method. The study's statistical population consisted of all Urmia University students in the academic year 2023-2024 (N=13,000). A total of 393 students were selected through convenience sampling. The data collection tools included the Future Self-Continuity Questionnaire (FSCQ) (2020), the Savoring Beliefs Inventory (SBI) (2003), the Academic Procrastination Questionnaire (APQ) (2012), and the Academic Grit Scale (AGS) (2017). Pearson correlation and multiple regression were used for data analysis.

Results: The results of the data analysis revealed a significant positive relationship between future self-continuity and savoring beliefs with students' academic grit, and a significant negative relationship between academic procrastination and academic grit ($P<0.01$). Moreover, based on the results of multiple regression analysis, future self-continuity had the highest predictive power ($\beta=0.304$) for academic grit in students.

Conclusions: Based on the findings, strengthening future self-continuity, savoring beliefs, and skills for reducing academic procrastination is recommended to enhance the academic grit of students.

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Introduction

Higher education systems, as the most prominent form of investment in human resources, play a crucial role in educating and providing competent human resources for the future, among whom university students are the elite and builders of any country's future (Mehrgan et al., 2022). Therefore, their performance and success during their academic years are highly important. The scholarly years are full of challenges that students can only overcome through effort, perseverance, and hard work.

In recent years, the importance of psychological factors such as non-cognitive attitudes, values, and motivation has been emphasized, and their effects on academic excellence have demonstrated among which grit is supposed as an important factor that can predict success (Gwon & Shin, 2023). From a more specialized and relevant educational perspective, grit is called academic grit. Academic grit is a domain-specific and non-cognitive factor that plays a vital role in academic achievement and success (Clark & Malecki, 2019; Credé et al., 2017). It helps students stay focused and strive to achieve their long-term goals (Kareem et al., 2023). Academic grit is defined as a personal skill or characteristic that involves determination, flexibility, and a focus on pursuing long-term academic goals that are challenging (Clark, 2017). It includes an accurate and purposeful activity against challenges, along with continuous steadfastness, interest, and enthusiasm (Khedmatian et al., 2023). Students with high academic grit receive better grades than those with good cognitive abilities but no attempt to achieve their goals (good academic performance); they are not afraid of failure and continue to advance toward their ultimate goals (Gwon & Shin, 2023). For instance, Harpaz et al. (2024) examined the relationships between subjective well-being (SWB), coping resources, and self-cultivation characteristics with academic grit and academic achievement in a study with 351 students. They reported that academic grit is directly related to students' academic achievement and mediates the relationships among subjective well-being, coping resources, self-cultivation characteristics, and academic achievement. Liao and Chen (2022), in a study on 214 students, demonstrated a positive relationship between academic grit, executive functioning, and well-being, proving that academic grit is not only related to academic progress but also has a positive relationship with students' well-being. Clark and Malecki (2019) found a positive relationship between academic grit and academic achievement, life satisfaction, and school satisfaction. Therefore, considering the importance of academic grit, it is essential to examine its influencing factors.

One of the variables investigated in this study is future self-continuity (FSC) and its relationship with academic grit. Future self-continuity can have significant effects on an individual's psychology and behaviour (Wang et al., 2022). FSC reflects an individual's current and future selves affecting their future behaviour (Ersner-Hershfield, 2009). It includes the perception of a strong connection between a person's current and future selves (Wang et al., 2022). The stronger

the link between a person's current and future selves is, the stronger their FSC. FSC includes three components: similarity to the future self, vividness of the future self, and positivity of the future self (Hershfield, 2011). Individuals with higher levels of FSC are more likely to prioritize their future benefits over their current pleasure (Ersner-Hershfield et al., 2009) and exhibit lower levels of anxiety and depression (Sokol & Serper, 2020).

Savoring beliefs can influence different aspects of individuals' lives and behaviours. Beliefs about the ability to experience pleasure have important consequences for individuals' well-being. Experiencing positive events does not necessarily mean that individuals will enjoy them; they must have the will to produce, intensify, and prolong the feeling of pleasure (Bryant, 2003). Savoring goes beyond "the feeling of pleasure," as it includes conscious awareness and attention to the experience of pleasure (Bryant & Veroff, 2017). In positive psychology, "savoring" includes a positive focus on and understanding of positive aspects of life, along with positive coping (Aghaie et al., 2017). Increasing savoring beliefs can reduce the negative effects of facing unfavourable events (Boelen, 2024). Evidence suggests that individuals who have stronger beliefs about their ability to savor positive experiences generally report less depression and anxiety (Bryant, 2003). In a study with 205 students, Boelen (2024) aimed to increase knowledge about the role of savoring beliefs in symptoms of posttraumatic stress following negative life events, such as worry, depressive rumination, and neuroticism. The results showed that increasing beliefs about enjoyment can effectively reduce the impact of facing negative event outcomes.

Procrastination is a prevalent and widespread behavioural issue in various domains of human activity (González-Brignardello et al., 2023). Academic procrastination is one of the important academic discussions in recent years among education researchers in this field, and it has been identified as a bad habit and an academic behavioral problem (Fatehnejat et al., 2023). Academic procrastination refers to students' tendency to delay or postpone academic tasks, such as studying for an exam, completing assignments, or writing a paper, even though they know they have a specific time to perform these tasks (González-Brignardello et al., 2023). In the academic context, procrastination in completing tasks is a common problem among students leading to learning failure and academic progress and has an inverse effect on problem-oriented coping. Pamuk (2022) conducted a study with 512 students to examine the mediating role of academic grit in the relationship between academic procrastination and self-handicapping behaviours. Findings revealed that academic procrastination positively correlates with self-handicapping and negatively with academic grit. Additionally, academic grit mediates the relationship between procrastination and self-handicapping behaviours. Academic procrastination can occur actively or passively. Sometimes, students intentionally delay completing a task because they know that they can respond more constructively under time pressure; this behaviour has short-term benefits (active procrastination)(Touloupis & Campbell, 2024). In contrast, passive procrastination refers to

students' negative attitude toward completing academic tasks (Chun Chu & Choi, 2005), which is considered an ineffective multidimensional outcome behaviour due to its negative counter effects (Touloupis & Campbell, 2024). Academic procrastination leads to reduced well-being among students (González-Brignardello et al., 2023). It is associated with poor academic performance (Kim & Seo, 2015), stress (Sirois, 2014), and physical health problems (Sirois, 2023).

Therefore, examining academic grit and related factors seems highly important. Additionally, the existing scientific gap regarding the relationships between these variables led to the investigation of the relationships between future self-continuity, savoring beliefs, academic procrastination with academic grit, and the predictive power of these variables for academic grit in the present study.

Materials and Methods

Design and Participants

The present study adopted a descriptive and of correlational method. The population of the study consisted of all the students of Urmia University in the academic year of 2023-2024 (N=13000). The sample size was determined using G*Power software. Based on the statistical test employed in the study, with a Type I error probability (α) of .05, a statistical power of .80, and an effect size of 0.3, the calculated sample size was 356 participants. However, a total of 393 participants were ultimately selected through convenience sampling. This decision to exceed the calculated sample size was made to account for potential non-responses and to enhance the robustness of the findings. The sociodemographic characteristics of the participants in the present study revealed that 216 of the individuals were female (55%) and 177 individuals were male (45%). Additionally, 58 individuals were married (14.8%), and 355 individuals were single (85.2%). The mean and standard deviation of the participants' ages were 20.77±4.05 years. In the sample, 343 individuals (87.3%) were pursuing their Bachelor's degree, 24 individuals (6.1%) were enrolled in a Doctorate program, and 26 individuals (6.6%) were studying for their Master's degree. The criteria for participation included being a student at Urmia University and a willingness to cooperate and complete the questionnaires. Conversely, the criteria for exclusion from the sample were a lack of willingness to cooperate and failure to complete the questionnaires.

Instruments

The instruments used in the study were the Future Self-Continuity Questionnaire (FSCQ), the Savoring Beliefs Inventory (SBI), the Academic Procrastination Questionnaire (APQ), and the Academic Grit Scale (AGS).

The Future Self-Continuity Questionnaire (FSCQ) is a self-reported tool designed to assess levels of future self-continuity. The English version of this questionnaire was designed by Sokol and Serper (2020). The questionnaire consists of 10 items and three sub factors, including similarity

to the future self, vividness of the future self, and positivity of the future self (Hershfield, 2011). Items 1 to 4 are associated with the future self-similarity subscale, items 5 to 7 pertain to the vividness of the future self, and finally, items 8 to 10 are related to the positivity of the future self. Each item is scored on a five-point Likert scale from 1 to 6. Higher scores indicate a higher level of future self-continuity among respondents. Sokol and Serper (2020) reported desirable internal consistency for the subscales (Cronbach's alpha of .85 for similarity to future self, .80 for vividness of future self, and .89 for positivity of future self). In addition, the reliability of this questionnaire assessed using a Cronbach's alpha was .67 in the present study.

The Savoring Beliefs Inventory (SBI) consists of 24 statements and three subscales (anticipation, present enjoyment, and reminiscence) designed by Bryant (2003). Higher scores on this scale indicate the individual's ability to create beliefs about enjoyment. The scale assesses favourable beliefs about different time orientations, including beliefs about an individual's ability to create positive emotions by predicting positive experiences in the future, enjoying present positive experiences, and recalling positive memories of past experiences. Bryant (2003) reported the reliability of this scale using Cronbach's alpha for the anticipation subscale (.79), present enjoyment subscale (.78), reminiscence subscale (.81), and total scale (.89). This questionnaire was standardized in Iran by Aghaie et al. (2017), who reported the overall reliability of the scale using a Cronbach's alpha of .94. Farsani et al. (2021) also reported the reliability of this scale using a Cronbach's alpha as .96. In the present study, the reliability via the Cronbach's alpha was determined to be .72.

The Academic Procrastination Questionnaire (APQ) was designed by Abu Ghazal (2012) to measure the level of academic procrastination among Jordanian undergraduate students. The questionnaire consists of 21 items that are all scored on a five-point Likert scale (ranging from 1 = strongly disagree to 5 = strongly agree). Higher scores indicate a greater level of academic procrastination among respondents. In a study by Mahasneh et al. (2016) that explored the relationship between academic procrastination and parenting styles among 685 Jordanian undergraduate students, the Cronbach's alpha coefficient of this questionnaire was reported to be .89. In the present study, the reliability of this questionnaire assessed using a Cronbach's alpha was .76.

The Academic Grit Scale (AGS) was developed by Clark (2017) to evaluate individuals' level of determination in achieving challenging long-term goals in the field of education. The scale consists of three subscales, namely determination, resilience, and focus, and is composed of 10 items. For example, "I try my best to do my work well at school." Each item is scored using a five-point Likert scale ranging from 1 = completely disagree to 5 = completely agree. Clark (2017) reported the reliability of this questionnaire using a Cronbach's alpha coefficient to be .79, and its validity was confirmed through exploratory factor analysis, which showed that all items had desirable factor

loading scores (above .50). In a study by Khedmatian et al. (2023), which aimed to investigate the impact of a growth mindset intervention on academic grit, academic flow, and academic thriving among 40 students, the reliability of the questionnaire was reported as .82, and its validity was confirmed using desirable factor loading scores. In the present study, Cronbach's alpha was calculated to be .71.

Procedure

The original English questionnaires were translated into Persian by a translator proficient in both languages with careful consideration of linguistic and cultural differences. A comparison was then made between the translated version and the original to identify any discrepancies. Key considerations during the translation included the use of simple and comprehensible vocabulary, avoiding changes in the meaning of questions, and being mindful of semantic and idiomatic differences between the two languages. Additionally, it was essential to ensure that the translated questionnaires aligned with the culture and language of the target community, and the final version was reviewed by experts.

Before administering the questionnaires, the students were assured that their responses would be used solely for research purposes and the obtained results would be kept with a guarantee of complete confidentiality. Then, they answered all the questionnaires.

Data Analysis

Data analysis was performed using the Pearson correlation coefficient and multiple regression analysis in SPSS version 27 statistical software.

Results

The descriptive indices of the research variables are presented in Table 1.

Table 1. Descriptive Indices of the Research Variables

Variables	Mean	Standard deviation	Skewness	Kurtosis
Future self-continuity	34.02	7.15	0.42	0.07
Savoring beliefs	6.05	15.25	1.15	1.89
Academic Procrastination	64.02	9.75	0.52	0.14
Academic grit	32.65	7.34	0.36	0.25

The examination of kurtosis and skewness indices indicated that the distribution of the data was normal.

To examine the relationships between future self-continuity, savoring beliefs, academic procrastination, and academic grit, the Pearson correlation coefficient was used. The results of the Pearson correlation coefficient are presented in Table 2.

Table 2. Pearson Correlation Matrix of the Research Variables

Variables	1	2	3	4	5	6	7	8	9	10
1. similarity to the future self	1									
2. vividness of the future self	**.241	1								
3. positivity of the future self	.029	**.329	1							
4.FutureSelf-continuity(total)	**.643	**.726	**.677	1						
5. Anticipation	−.019	.068	**.257	**.151	1					
6. Present enjoyment	.092	.073	**.137	**.151	**.285	1				
7. reminiscence	.042	.007	**.203	.130	**.503	**.345	1			
8. Savoring beliefs (total)	.053	.066	**.259	**.190	**.768	**.728	**.800	1		
9. Academic procrastination	−.004	−.002	−.046	−.027	**-.224	**-.214	**-.195	**-.276	1	
10. Academic grit	.081	**.285	**.313	**.327	**.153	**.155	**.151	**.200	**-.142	1

P < 0.01 = **

According to the results of the Table, there is a significant positive relationship between future self-continuity (total) (**.327) and its components (similarity to the future self, vividness of the future self, and positivity of the future self), savoring beliefs (**.200) and its components (anticipation, present enjoyment, and reminiscence), and academic grit (p<.01). There is also a significant negative relationship between academic procrastination (**-.142) and academic grit (p<.01).

Multiple regression analysis was used simultaneously to predict academic grit for future self-continuity, savoring beliefs, and academic procrastination. To examine the independence of the residuals, the Durbin–Watson statistic was used, which was calculated as 1.72, indicating that the assumption of independence of residuals was met. The VIF index and the tolerance index were also used to check for multicollinearity.

Table 3. VIF and Tolerance Indices for Checking Multicollinearity

Predictor Variables	Tolerance Index	VIF Index
Future self-continuity	.963	1.038
Savoring beliefs	.890	1.123
Academic Procrastination	.923	1.083

According to Table 3, the results of the variance inflation factor (VIF) and the tolerance statistic indicated that there was no significant multicollinearity or serious linearity among the predictors. Considering the assumptions of multiple regression analysis, this method could be used to predict academic grit using future self-continuity, savoring beliefs, and academic procrastination as predictors. Table 4 summarizes the results of the regression model.

Table 4. Summary of the Results of the Prediction Model for Academic Grit

Model	Regression coefficient	Coefficient Of Determination	R2	RMSE[1]
1	.370	.137	.130	6.87

According to the Table, the multiple regression coefficients of future self-continuity, savoring beliefs, and academic procrastination on academic grit was .37, indicating that these three variables predict 13.7% of the variance in academic grit.

Table 5 reports the results of the variance analysis to examine the ability of the model to predict academic grit from future self-continuity, savoring beliefs, and academic procrastination.

Table 5. The Results of the Variance Analysis of Multiple Regression

Model	Sum of Squares	Degrees of Freedom	Mean Square	F-Statistic	Significance
Regression	2895.457	3	965.152	20.429	.001
Residual	18236.186	386	47.244		
Total	21131.644	389			

According to Table 5, F=20.429 with a significance level of 0.001 indicates that the predictor variables (future self-continuity, savoring beliefs, and academic procrastination) can significantly predict academic grit. Table 6 reports the standardized and unstandardized regression coefficients.

Table 6. Standardized and Unstandardized Regression Coefficients of the Academic Grit Prediction Model

	Unstandardized Coefficients		Standardized Coefficients		
Variables	B	SE[2]	Beta	T	Sig.
(Constant)	26.563	2.917		9.105	.001
Future Self-Continuity	.314	.050	.304	6.316	.001
Savoring beliefs	.055	.024	.114	2.270	.024
Academic Procrastination	-.076	.037	-.101	-2.057	.040

The results in Table 6 show that future self-continuity has the greatest ability to predict academic grit (β=.304), followed by savoring beliefs (β=.114) and academic procrastination (β=-.101).

The results also reveal that future self-continuity and savoring beliefs have a positive and significant relationship with academic grit (r=.57 and r=.56, respectively, p<.001), while academic procrastination has a negative and significant relationship with academic grit (r=-0.45, p<.001). Multiple regression analysis examined the power of future self-continuity, savoring beliefs, and academic procrastination to predict academic grit. The results indicated that these variables could

[1] Root Mean Square Error

[2] Standard error

significantly predict academic grit (F=306.42, p<.001, R2=.49). Future self-continuity and savoring beliefs were found to be positive predictors of academic grit, while academic procrastination was a negative predictor. Overall, the results suggest that future self-continuity, savoring beliefs, and academic procrastination are important predictors of academic grit, and this multiple regression model can be used to predict academic grit based on these variables.

Discussion

This study investigated the relationships between future self-continuity, savoring beliefs, academic procrastination, with academic grit among Urmia University students in the academic year of 2023-2024. The results showed a significant positive relationship between future self-continuity and academic grit, indicating that an increase or decrease in future self-continuity could lead to an increase or decrease in academic grit in students. The results obtained from the current study are consistent with those of Adelman et al. (2017), who demonstrated that future self-continuity plays a crucial role in academic performance through positive relationships with self-control and future focus.

One interpretation of these findings is that individuals with lower future self-continuity tend to prioritize immediate rewards and losses over future considerations(Ersner-Hershfield et al., 2009). Conversely, those with higher future self-continuity perceive their future selves as closely aligned with their present selves, attributing greater significance to future outcomes (Sokol & Serper, 2020). Students exhibiting higher levels of academic grit are more likely to achieve their academic objectives and demonstrate increased productivity. Furthermore, these students engage more effectively with peers in educational settings, fostering their overall well-being (Kareem et al., 2023).

Existing literature corroborates the positive relationship between future self-continuity and attentiveness to future consequences (Adelman et al., 2017; Ersner-Hershfield et al., 2009; Kim & Nan, 2016). Students with diminished future self-continuity often perceive their future selves as unfamiliar, resulting in a reduced focus on long-term benefits (Adelman et al., 2017). In contrast, those with heightened future self-continuity value their future goals and are more cognizant of the repercussions of their current actions (Pozolotina & Olsen, 2019). Consequently, students with strong future self-continuity are more motivated to overcome educational challenges and are inclined to prioritize long-term gains over immediate gratification, thereby enhancing their academic grit.

Another finding of this study was a significant positive relationship between savoring beliefs and academic grit among students as an increase or decrease in savoring beliefs led to an increase or decrease in academic grit among students respectively. This suggests that students who actively savor their experiences are likely to engage more deeply in the learning process. In other words, a

student who has savoring beliefs will be able to derive pleasure from the learning process and engage in their academic journey with interest and, consequently, greater motivation to achieve their educational goals. In addition to the ability to enjoy experiences, students' enjoyment beliefs protect them against negative events and challenges during their studies. In this context, students can resist challenges with greater determination and effort towards achieving their academic objectives, ultimately demonstrating a high level of academic commitment. Research by Boelen (2024) supports this notion, demonstrating that savoring beliefs can mitigate the negative impacts of adverse life events, including worry and depressive rumination. Thus, savoring beliefs not only enhance the enjoyment of experiences but also serve as a protective factor against academic-related stressors, enabling students to confront challenges with greater resolve.

Furthermore, the study identified a significant negative relationship between academic procrastination and academic grit. Increases in academic procrastination were associated with decreases in academic grit, and vice versa. This finding is consistent with that reported by Pamuk (2022), which highlighted the mediating role of academic grit in the relationship between academic procrastination and self-handicapping behaviours. This, in turn, may have negative consequences, including preventing effective coping with stress, as students cannot use efficient problem-solving methods because procrastination negatively correlated with problem-solving coping mechanisms. In such situations, students may experience a decrease in self-esteem and self-efficacy, which can increase stress levels. Consequently, students who procrastinate may struggle to cope with academic difficulties, leading to a decline in their academic grit.

In conclusion, this study established significant positive relationships between future self-continuity and savoring beliefs with academic grit, while also revealing a negative relationship between academic procrastination and academic grit. Multiple regression analysis indicated that future self-continuity was the strongest predictor of academic grit. This finding implies that students with a robust sense of future self-continuity are better equipped to connect their present actions with future aspirations, allowing them to prioritize long-term goals over immediate pleasures. Such students exhibit greater determination in their academic endeavours, remaining steadfast in the face of challenges as they strive for success.

Conclusion

In summary, this study contributes to the burgeoning field of academic psychology by providing empirical evidence of the critical role that future self-continuity and savoring beliefs play in fostering academic grit while simultaneously illustrating the detrimental effects of procrastination. This study found that future self-continuity and savoring beliefs are positively correlated with students' academic grit, such that increases in these variables lead to an increase in academic grit. In contrast, academic procrastination has a significant negative relationship with academic grit, whereby an increase in procrastination results in a decrease in academic grit. Overall, future self-

continuity was identified as the key factor with the greatest impact in predicting academic grit, while savoring beliefs and academic procrastination also play important roles. These findings have practical implications for educational interventions aimed at enhancing students' academic resilience.

Despite the notable findings of this study, several limitations must be acknowledged. One key limitation was the use of convenience sampling for participants' selection. While this method facilitated easier access to the participants, it may introduce biases that affect the generalizability of the findings. Additionally, the lack of sufficient research background regarding the novelty of the variables presents a challenge in comparing the results with existing literature.

Based on the findings of this study, specific recommendations can be made to enhance academic grit among students. The significant positive relationship between future self-continuity and academic grit suggests that educational programs should focus on fostering future self-continuity through activities that encourage students to visualize their future selves and set long-term goals. Techniques such as future planning workshops can help students develop a stronger connection to their aspirations, ultimately promoting resilience and perseverance in their academic pursuits. Additionally, the positive correlation between savoring beliefs and academic grit indicates the need for workshops providing mindfulness and positive reflection techniques to enhance savoring beliefs. This approach allows students to appreciate their present experiences and anticipate future successes. Conversely, the negative relationship between academic procrastination and academic grit highlights the importance of implementing interventions aimed at reducing procrastination, such as time management training and cognitive-behavioural strategies.

By integrating these findings, educators can effectively promote the development of academic grit. Future research should aim to address these limitations and explore the intricate dynamics among these constructs further. Future investigations could explore the role of variables such as self-regulation, resilience, and self-control as mediators in the relationships between independent and dependent variables. Additionally, examining contextual factors—such as gender, field of study, and educational level—as moderating variables could provide deeper insights into these dynamics. Developing more complex models to investigate causal relationships among these variables is another valuable avenue for future research. Lastly, exploring cultural differences in the relationships between these variables could enhance the understanding of the broader implications of the findings.

Conflicts of Interest

The authors declare no conflicts of interest.

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