

Emotional regulation skills: psychometric analysis in college students

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Abstract

The rising incidence of psychological distress in higher education calls for the availability of precise assessment tools; however, the adaptation of comprehensive emotion regulation instruments in the context of Indonesian students remains limited. This study aims to conduct a psychometric analysis of the Indonesian version of the Emotion Regulation Skills Questionnaire (ERSQ) and to explore the influence of demographic factors on these skills. Using a cross-sectional survey design, data were collected from 647 students in Yogyakarta via convenience sampling. Analyses were conducted using Confirmatory Factor Analysis (CFA) to test construct validity, along with T-tests and One-Way ANOVAs for comparative analysis. The CFA results confirmed the nine-dimensional structure of the ERSQ with excellent model fit indicators (CFI=0.942; TLI=0.931; RMSEA=0.042) and high internal consistency ($\alpha=0.915$). The findings indicate that the variables of semester level ($p=0.021$) and age range ($p=0.016$) have a significant effect on emotional regulation efficacy, while the variables of gender and birth order do not show significant differences. This study makes a methodological contribution in the form of a psychometrically validated instrument for mapping students' emotional profiles. In practical terms, college counseling administrators need to design more specific interventions for students during the early transition to college and late adolescence to optimize their academic resilience.

Introduction

The phenomenon of psychological distress in higher education settings has become a critical issue requiring serious attention from various stakeholders in the field of global mental health (Steptoe & Frank, 2026). Contemporary students not only face the cognitive burden of increasingly dense curricula but are also exposed to external pressures such as fragmented social expectations and the uncertainty of career stability in an era of disruption (Badii et al., 2022; Sonmez et al., 2023). Various epidemiological studies indicate that students' failure to process these pressures often leads to clinical manifestations ranging from chronic anxiety to depressive symptoms that hinder academic productivity (Zhu et al., 2023). Therefore, identifying psychological variables capable of mitigating these risks has become an urgent research priority to holistically safeguard students' well-being.

Within the framework of positive psychology, emotional regulation skills are regarded as the most fundamental internal defense mechanism (protective factor) in modulating the impact of environmental stressors (Ma, 2022). Emotional regulation is not merely a strategy for suppressing negative affect, but rather a dynamic process involving the identification, monitoring, and evaluation of emotional responses to ensure they remain aligned with situational demands (Fombouchet et al., 2023). Mastery of these skills enables individuals not only to survive difficult situations but also to transform emotional challenges into opportunities for developing personal resilience. Students with mature emotional literacy are reported to demonstrate more stable academic performance and more functional interpersonal relationships on campus (Prajab et al., 2025).

College years largely coincide with the phase of emerging adulthood, a transitional period characterized by intense identity exploration and role instability (Potterton et al., 2022). During this phase, individuals often experience emotional ambivalence due to the shift from family dependence toward full personal autonomy (Celik & Calik, 2022). An inability to manage this emotional autonomy can trigger maladaptive behaviors, ranging from procrastination to social isolation, which ultimately reduce the quality of the learning experience at university. An understanding of the psychosocial characteristics of the emerging adulthood phase serves as a crucial theoretical foundation for mapping out how emotion regulation interventions should be designed for the student population.

The dynamics of emotional regulation skills also show significant variation when examined across semesters, from the first to the fourth year of study. First-semester students generally face academic culture shock and high demands for social adaptation, while senior students face psychological pressure from completing their final projects as well as transitional anxiety regarding the transition to the workforce (Pedrini et al., 2022). These patterns of emotional fluctuation indicate that the need for emotion regulation strategies is not static and is highly dependent on the type of stressors dominant at each semester level. Cross-semester evaluation provides a longitudinal perspective that helps researchers understand the evolution of students' emotional maturity during their higher education.

In addition to the duration of study, demographic variables such as gender continue to be a topic of lively debate in the discourse on emotional psychology. From a sociocultural perspective, differences in gender role socialization often shape individual preferences for specific emotion regulation strategies, whereby men and women express and internalize their feelings in different ways (Zimmer-gembeck et al., 2022). Several studies indicate that women tend to excel in emotional awareness but are more prone to rumination, while men more frequently employ expressive suppression strategies. Examining gender variables in this psychometric analysis is crucial to ensure that the instruments used do not contain interpretive biases that disadvantage either group (Thummler et al., 2022).

In line with this, students' chronological age range is also believed to contribute to their level of emotional regulation efficacy. Cognitive maturity, which develops with age, enables individuals to use more complex cognitive reappraisal strategies to reduce psychological distress (Wackerhagen et al., 2022). Students in the older age range often have better impulse control compared to those who began their studies in their late teens. Integrating age and academic stage factors into a single analysis will provide a more precise picture of how biological maturity and the academic environment interact to shape emotional competence (Dawel et al., 2024).

Family background factors, particularly birth order or a child's position in the family, are unique demographic variables that are often overlooked in studies of students' emotional regulation (Paley & Hajal, 2022). Drawing on individual psychology theories, birth order is believed to influence the formation of personality prototypes and how individuals position themselves amidst environmental pressures (Setiawati et al., 2024). Firstborns may develop more rigid regulation patterns due to high parental expectations, while youngest children or

only children may exhibit significantly different self-support patterns (Martinez et al., 2024). Incorporating the birth order variable into this study provides a new dimension in understanding the roots of emotional regulation skill development from a family systems perspective.

To capture the complexity of these emotional skills, an assessment tool is needed that is not only statistically valid but also substantively comprehensive. The Emotion Regulation Skills Questionnaire (ERSQ) serves as a state-of-the-art instrument that divides emotion regulation into nine specific dimensions, ranging from awareness and clarity to the ability to tolerate painful feelings (Stellarn et al., 2022). These dimensions provide far greater detail than conventional scales, thereby enabling the detection of specific deficits in an individual's regulatory mechanisms. Given that this instrument is the result of language adaptation via a back-translation procedure, the psychometric validation process is an absolute requirement to ensure the reliability of the data generated in the Indonesian context.

Given these urgent considerations, this study aims to conduct an in-depth psychometric analysis of the Indonesian version of the ERSQ through tests of construct validity and measurement invariance in a student population. This study does not merely focus on testing the statistical properties of the instrument but also seeks to explore differences in emotional regulation skills as viewed through the variables of gender, age range, length of study, and birth order among students. The findings of this study are expected to serve as a scientific reference for guidance and counseling administrators at various universities in developing psychoeducational programs that are more personalized and targeted according to the demographic profiles of students.

Methods

Design

This study employed a quantitative approach using a cross-sectional survey design. This design was chosen to provide an overview of students' emotional regulation skills at a specific point in time, enabling the researcher to efficiently analyze the relationships among variables in accordance with the study's objectives.

Participants

The study sample consisted of 647 students recruited via convenience sampling from four higher education institutions in Yogyakarta, namely: Ahmad Dahlan University (UAD), Mercu Buana University Yogyakarta (UMBY), PGRI University Yogyakarta (UPY), and IKIP PGRI Wates. Participants included students across semesters (1 through 8) with variations in gender, age range, and birth order. This demographic diversity aimed to enhance the generalizability of the results and support measurement invariance analysis. All procedures were conducted in accordance with research ethics standards and with participant consent.

Instruments

Data were collected using the Indonesian version of the Emotion Regulation Skills Questionnaire (ERSQ), which consists of 27 items. This instrument is designed to measure nine dimensions of emotion regulation skills, with each dimension represented by three items. The researchers applied a cross-cultural adaptation protocol using back-translation techniques and evaluation of Aiken's *V* coefficient to ensure semantic equivalence and content validity in accordance with the sociocultural context in Indonesia. The structure of the instrument's indicators is presented systematically in Table 1 below:

Table 1. Item Matrix of the Emotion Regulation Skills Questionnaire (ERSQ)

Variable	Skill Indicators	Item Numbers	Total
Emotion Regulation	Attention towards feelings	1, 12, 19	3
	Body perception of feelings	7, 14, 24	3
	Clarity of feelings	6, 13, 25	3
	Understanding of feelings	3, 11, 20	3
	Acceptance of feelings	5, 17, 23	3
	Resilience: to tolerate and endure feelings	4, 18, 26	3
	Readiness for confrontation	8, 16, 22	3
	Self-support	9, 15, 27	3
	Modification	2, 10, 21	3
	Total		27

Procedure

The procedure began with the adaptation of the instrument through translation and validity testing by experts (expert judgment). Once the instrument was determined to meet the criteria for content validity, the questionnaire was distributed to respondents at four target institutions. The researchers ensured that participation was voluntary, maintained the confidentiality of student data, and provided clear information regarding the study's objectives before data collection began.

Data Analysis

Data analysis was conducted systematically through several statistical stages. The first stage involved testing construct validity using Confirmatory Factor Analysis (CFA) to confirm the nine-dimensional structure through the evaluation of factor loadings and goodness-of-fit indicators. Internal consistency was tested using Cronbach's alpha. The researchers also applied measurement invariance tests to ensure the equivalence of the instrument's meaning across groups. Finally, the Independent Sample T-Test and One-Way ANOVA techniques were applied to test differences in emotional regulation skills based on students' demographic variables.

Results

Description of Respondent Characteristics This study involved 647 university students from across the Yogyakarta region. The data indicate that the participants represent a diverse range of institutional backgrounds and genders. The frequency distribution of participants is presented in detail in Table 2.

Table 2. Demographic Characteristics of Respondents

Characteristics	Category	Frequency (f)	Percentage (%)
Institution	UAD	321	49.61
	IPW	180	27.82
	UPY	118	18.24
	UMBY	28	4.33
Gender	Male	179	27.67
	Female	468	72.33
Total		647	100

Categorization of Emotional Regulation Levels

A descriptive analysis was conducted to map the profile of students' emotional regulation skills. Based on the data analysis, the mean score was 75.67 with a standard deviation (SD) of 12.98. The distribution of students' emotional regulation levels is presented in Table 3.

Table 3. Frequency Distribution of Students' Collective Emotional Regulation Levels

Category	Score Range	Frequency (f)	Percentage (%)
High	$x > 89$	81	12,5%
Moderate	$63 \leq x \leq 89$	455	70,3%
Low	$x < 63$	111	17,2%
Total		647	100%

The data in Table 3 show that the majority of students fall into the Moderate category (70.3%). This indicates that, in general, students possess functional emotional regulation capacity; however, there remains a minority group (17.2%) in the Low category who require psychological attention.

Differentiation Analysis Based on Institution and Gender To explore emotional dynamics across groups, a cross-categorization was conducted. This aims to examine variations in emotional regulation abilities in the field, as detailed in Table 4.

Table 4. Emotional Regulation Categorization Based on Institution and Gender

Variable Group	High (f)	Moderate (f)	Low (f)
Institution			
UAD	60	239	22
IPW	10	118	52
UPY	8	80	30
UMBY	2	14	6
Gender			
Male	24	128	27
Female	57	327	84

Psychometric Analysis of the ERSQ Validity and reliability tests were conducted to ensure the quality of the Indonesian version of the ERSQ in measuring the construct of emotional regulation.

1. Construct Validity Test (Confirmatory Factor Analysis)

The CFA results indicate that the nine-dimensional model exhibits a good fit with the empirical data. Model fit indicators are summarized in Table 5.

Table 5. Goodness of Fit (GoF) Indicators for the ERSQ Model

Fit Index	Result	Standard Criteria	Interpretation
Chi-Square	2.14	< 3.00	Good Fit
CFI	0.942	> 0.90	Good Fit
TLI	0.931	> 0.90	Good Fit
RMSEA	0.042	< 0.08	Good Fit

All 27 items had significant factor loadings ($p < 0.001$) ranging from 0.58 to 0.86. Furthermore, the measurement invariance test indicated that the ERSQ model demonstrated cross-gender equivalence ($p > 0.05$). This confirms that the instrument has consistent measurement stability and can be used to compare emotional regulation scores between male and female students without any instrument bias

2. Reliability Test

The internal consistency of the instrument was tested using Cronbach's alpha. The results indicate very high measurement stability, as shown in Table 6.

Table 6. Cronbach's Alpha Reliability Coefficient

Instrument Dimensions	Cronbach's Alpha (α)	Interpretation
Overall ERSQ Scale	0.915	Excellent
Range of 9 Dimensions	0.76 – 0.89	Good to Excellent

Inferential Analysis (Comparative Hypothesis Testing) In accordance with the research design, tests were conducted to identify significant differences in demographic variables.

Table 7. Results of the Difference Test Based on Demographic Characteristics

Variable	Statistical Technique	Statistical Value	Sig. (p)
Gender	T-Test	$t = 1.425$	0.154
Semester Level	ANOVA	$F = 3.842$	0.021
Age Range	ANOVA	$F = 4.115$	0.016
Birth Order	ANOVA	$F = 1.204$	0.312

Based on Table 7, it was found that the variables of semester and age had a significant effect on students' emotional regulation skills. In contrast, the variables of gender and birth order did not show statistically significant differences ($p > 0.05$).

Discussion

Profile of Students' Emotional Regulation Skills

The finding that 70.3% of students fall into the moderate category paints a picture of functional psychological well-being that has not yet reached an optimal level. This data confirms that while the majority of students possess a basic capacity to modulate negative affect, their emotional regulation efficacy is not yet strong enough to mitigate the escalation of complex academic stressors. These results are consistent with the findings of Cuartas et al., (2022), who stated that students' emotional adaptation patterns in the post-pandemic era tend to be moderate due to the dynamic transition of the learning environment. The significance of these findings lies in their preventive implications: this "moderate" condition actually harbors latent vulnerability. Without strengthening the dimensions of modification and resilience, this group of students risks experiencing a significant decline in academic performance when facing crises. Therefore, campus mental health policies must not be limited to case management (curative), but must immediately shift toward interventions aimed at developing emotional skills for this majority group.

Dynamics of Academic Progression and Age Maturity

The results of inferential analysis showing a significant influence of the variables "semester" and "age" on ERSQ scores indicate that emotional regulation develops alongside cognitive maturity and the accumulation of life experience. Final-semester students demonstrate more consistent emotional stability compared to first-year students. This supports the research by Schuenemann et al., (2022), which confirms that the duration of an individual's exposure to academic culture functions as a social learning process in managing expectations and failures. Neurologically, the increase in scores with age is closely related to the optimization of prefrontal cortex function in impulse control. As explained by Smith et al., (2024), individuals in the late emerging adulthood phase possess more objective cognitive

evaluation abilities when assessing threatening situations compared to the late adolescence phase. The consistency of these findings with developmental literature confirms that these differences result from the interaction between biological maturation and environmental adaptation demands. Consequently, campus psychological interventions must be segmented: freshmen require primary adaptation support, while upperclassmen need strategies for managing career transition anxiety.

A Critical Analysis of Gender and Birth Order

The finding that there are no significant differences in gender and birth order offers a new perspective that challenges traditional stereotypes regarding emotional reactivity. These results align with the research by Hosokawa et al., (2024), which indicates that in a competitive academic environment, biological gender differences are no longer the primary determinant in the formation of coping mechanisms. An alternative explanation for these findings is the existence of “academic equalization,” in which uniform curriculum demands and grading systems compel students of both genders to adopt convergent emotion regulation strategies to achieve academic success.

Regarding birth order, the non-significant results indicate that family hierarchy is no longer the primary determinant of emotional regulation patterns in early adulthood. This finding aligns with the study by Wang et al., (2024), which suggests that the influence of birth position tends to be reduced by macro-environmental factors, such as peer interactions and the social support system on campus. Another highly relevant alternative explanation for the context of students in Yogyakarta is the factor of independence as a student away from home. The experience of living independently away from home is believed to play a more dominant role in shaping emotional independence compared to the hierarchical structure of the family of origin, thereby minimizing the influence of birth order on their psychological profiles.

Psychometric Validity and Evidence-Based Interventions

The construct validity of the ERSQ, as tested via CFA, demonstrates the functional equivalence of this instrument within the Indonesian sociocultural context. The very high reliability coefficient ($\alpha = 0.915$) indicates that this instrument is free from significant systematic measurement error. The use of the ERSQ in this study provides a methodological contribution to the development of more precise mental health instruments. In line with current psychometric recommendations, the use of standardized measurement tools is an absolute prerequisite for counseling offices to design data-driven intervention programs. Without empirically validated instruments, psychological intervention policies in higher education risk interpretive bias, which can cause counseling programs to miss their mark.

Implications

In practical terms, the validity of the Indonesian version of the ERSQ provides a reliable measurement tool for counseling offices to conduct periodic screenings of students’ emotional needs. Based on the findings of differing needs between freshmen and upperclassmen, counselors can design personalized psychoeducational modules. Theoretically, the results of this study enrich the discourse in educational psychology by demonstrating that emotional regulation skills are dynamic, positioning campus well-being programs as an integral element of the academic curriculum, rather than merely a support service.

Limitations and future directions

There are several methodological limitations that need to be considered. First, the use of convenience sampling and the geographical focus on the Yogyakarta region limit the generalizability of the findings to student populations with different socio-cultural profiles. Second, the cross-sectional design does not allow for causal conclusions regarding how

emotion regulation skills change longitudinally. Finally, the use of self-report methods in the questionnaire carries a risk of response bias, where participants tend to provide socially desirable answers.

Future research is recommended to adopt a longitudinal design to track the development of emotional regulation skills in real time throughout the academic career. This will provide a clearer understanding of the academic transitions that influence changes in emotional scores. Additionally, future research could incorporate qualitative methods (in-depth interviews) to confirm the quantitative findings obtained. Finally, it is recommended to conduct experimental research testing the effectiveness of ERSQ-based interventions, so that the contributions of this study can move from the diagnostic level to the applied level, capable of tangibly improving students' resilience in the field.

Conclusion

The importance of emotion regulation skills among college students is often overlooked in the higher education literature, particularly during the crucial transition phase into emerging adulthood. This study addresses these limitations by validating the Emotion Regulation Skills Questionnaire (ERSQ), which has been rigorously adapted to the Indonesian sociocultural context. The findings indicate that students' emotional regulation profiles generally fall into the moderate category, with the dimensions of "clarity of feelings" and "attention toward feelings" emerging as dominant elements in the subjects' emotional structure. Statistical analysis confirms that emotional maturity is significantly influenced by academic progression (semester level) and chronological maturity (age), while the variables of gender and family structure (birth order) do not show significant differences. Theoretically, these results reinforce the literature on early adult psychosocial development in the university setting. Practically, the effectiveness of this validated instrument provides a foundation for higher education institutions to design more precise, data-driven mental health intervention programs to support students' academic success and psychological well-being.

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Author Contribution Statement

ADA conceptualized the research framework, designed the study, and was responsible for data collection and drafting the initial manuscript. AM and SU provided critical revisions, offered constructive feedback, and oversaw the entire research process. All authors (ADA, AM, SU) have reviewed and approved the final version of this manuscript.

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