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Cover letter for the Editor

Indonesia, 7 June 2025

Dear

Sumarno Adi Subrata, PhD

Editor-in-Chief, Journal of Holistic Nursing Science (JHNS)

I am pleased to submit my manuscript entitled "The Protective Role of Sense of Humor Against Academic Stress Among Indonesian Nursing Students: A Quantitative Multivariate Analysis" for consideration by the Journal of Holistic Nursing Science. In this study, I explore to examine the relationship between sense of humor and perceived academic stress among undergraduate nursing students in Bekasi. Furthermore, the study highlights Sense of humor may serve as a beneficial coping resource for reducing academic stress in high-pressure educational environments.

I believe that this manuscript aligns well with the scope and readership of JHNS, particularly given its focus on nursing care. I sincerely hope you will consider our manuscript for publication, as this work is crucial for my professional development. Thank you.

Yours sincerely,

Budi Sarasati

Author

Title Page

Title

The Protective Role of Sense of Humor Against Academic Stress Among Indonesian Nursing Students: A Quantitative Multivariate Analysis

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Registration *(If available)*

The study approval was obtained from the Indonesian Consortium for Psychological Science (KPIN) (Approval number: 083/2025 on March, 28, 2025).

Author's declaration

BS contributed to the study's conception and design, wrote the first draft of the manuscript, revised the final draft, and gave final approval of the version to be published.

ACWN contributed to data acquisition, and data analysis

AI Statement

Nothing to declare

Availability of data and materials

The dataset generated during and analyzed during the current study is available from the corresponding author upon reasonable request.

MANUSCRIPT

TITLE

The Protective Role of Sense of Humor Against Academic Stress Among Indonesian Nursing Students: A Quantitative Multivariate Analysis

ABSTRACT

Background:
Nursing students are often exposed to considerable academic pressure due to the dual demands of theoretical coursework and clinical responsibilities. This stress can negatively impact their psychological well-being and academic performance. Recent studies have indicated that humor may function as a psychological buffer, enhancing emotional resilience and students' capacity to cope with academic challenges.

Objective:
This study aims to examine the relationship between sense of humor and perceived academic stress among undergraduate nursing students in Bekasi, and to evaluate whether humor serves as a protective psychological factor after adjusting for relevant demographic variables.

Methods:
A cross-sectional survey was conducted involving 300 final-year students enrolled in nursing programs. Instruments included the Multidimensional Sense of Humor Scale (MSHS) and a culturally adapted version of the Perceived Stress Scale (PSS). Bivariate analyses identified variables with $p < 0.25$, which were included in the multivariate logistic regression model. Adjusted odds ratios (AORs) were used to interpret associations.

Results:
Students with higher humor scores were significantly less likely to report high academic stress (AOR = 0.363, 95% CI: 0.224–0.589), indicating that they were approximately 2.75 times less likely to experience elevated stress levels. Humor remained a significant predictor after adjusting for study duration. The final regression model explained 7.9% of the variance in stress status (Nagelkerke R^2 = 0.079).

Conclusion:
Sense of humor may serve as a beneficial coping resource for reducing academic stress in high-pressure educational environments. Although the explained variance is modest, the findings support the inclusion of humor-promoting strategies in student mental health programs. Further research is recommended to evaluate humor-based interventions longitudinally and across diverse academic settings.

Keywords:
academic stress, humor, nursing education, resilience, emotion regulation

INTRODUCTION

Nursing education is widely regarded as one of the most rigorous academic fields due to its dual demands: mastering theoretical knowledge and demonstrating clinical competence. Students are required to understand complex scientific concepts while simultaneously applying them in emotionally intensive clinical settings. Balancing these cognitive and emotional expectations places nursing students at a heightened risk of academic stress (Aslan & Akturk, 2018). Academic stress, in this context, refers to psychological strain resulting from high academic expectations, fear of failure, and overwhelming workloads (Zaki, et al., 2022). A growing body of research indicates that nursing students frequently experience elevated levels of stress, which may adversely affect their academic performance, psychological well-being, and overall quality of life (Younas, 2016).

Prolonged exposure to such stress may result in anxiety, burnout, depression, and diminished academic self-efficacy. Chronic academic stress has also been shown to impair concentration, decision-making, memory, and key faculties essential to both learning and clinical judgment (Mohamed, et al., 2024). These concerns are particularly critical in nursing education, where poor mental health may jeopardize students' clinical performance and patient safety. Additional stressors, such as societal expectations, financial strain, and personal perfectionism, further intensify these pressures.

The incidence of academic stress has reached its highest levels since the pandemic. The transition from offline to online learning, limited access to clinical practice, and uncertainty regarding future careers have introduced additional layers of stress among students in health-related fields (Smith et al., 2022; Overbaugh et al., 2022). A study by Aulia and Panjaitan (2019) revealed that among final-year nursing students at a prominent university in Indonesia working on their undergraduate theses, 71.3% (n = 77) experienced moderate stress, while 14.8% (n = 16) reported high levels of stress. Research by Angelin et al. (2021) identified a significant association between stress levels and the occurrence of Generalized Anxiety Disorder (GAD) among final-year nursing students facing thesis completion.

A scientific study conducted by Ambarwati et al. (2017) reported that final-year students at a university in Magelang predominantly experienced moderate levels of stress, particularly among female students. Shehadeh et al. (2020) found that nursing students generally demonstrated moderate levels of self-efficacy, high academic stress, and low to moderate satisfaction with the curriculum and faculty performance. Similarly, a study by Shin (2016) on Korean nursing students concluded that academic stress significantly contributed to depressive symptoms, while academic resilience did not have a significant moderating effect.

More severe levels of stress have been associated with extreme behaviors. For instance, a study by Becker (2018), involving 1,704 college students from two different universities, reported that 4% of participants had attempted suicide, and 2.2% were likely to have engaged in suicidal behaviors. Academic stress is also frequently triggered by the transition from classroom-based learning to direct clinical experiences, which can further intensify stress during training (Suen et al., 2016). In addition, individual factors such as sleep quality, caffeine intake, and perceived

stress have been shown to significantly influence the overall mental health and well-being of nursing students (Higbee et al., 2022).

Sarafino and Smith (2012) categorized stress symptoms into two main aspects: biological and psychological. Biological symptoms include headaches, sleep disturbances, digestive problems, muscle tension, irregular breathing and heartbeat, as well as feelings of nervousness, anxiety, restlessness, and changes in eating patterns. Psychological symptoms manifest in the form of cognitive disruptions, emotional symptoms (such as irritability, difficulty regulating emotions, sadness, and depression), and behavioral symptoms, often characterized by negative tendencies such as loss of interest and difficulty collaborating with others.

Thorson and Powell (1991) identified humor as one of the coping strategies for managing stress. Humor enables individuals to deal with pressure or problems through amusement, which can elicit feelings of happiness. Laughter, as a behavioral expression of humor, promotes a sense of calmness and relaxation, reduces physical and emotional tension, and allows space for clearer thinking. For university students, humor may serve as an effective alternative strategy to anticipate, manage, and alleviate stress symptoms that could otherwise interfere with academic activities, particularly during the thesis writing process

Stress and Resilience in Nursing Education

Stress has been associated with a range of adverse outcomes for nursing students, affecting both their physical and psychological well-being as well as academic performance. Afzal (2016) reported that high levels of stress may contribute to negative perceptions of the nursing profession, exposure to incivility from healthcare staff, and experiences of dehumanizing behavior, all of which may further exacerbate students' stress. Similarly, Sharma et al. (2022) found that stress can lead to fear of making clinical errors, criticism from peers and senior staff, inadequate access to equipment and knowledge, lower academic achievement, and difficulty maintaining a healthy balance between study and personal life.

Psychologically stress is not merely a response to external pressures but a dynamic process shaped by individual appraisal and coping strategies. According to Lazarus and Folkman's (1985) transactional model, stress occurs when a person perceives that environmental demands exceed their available resources. Coping reflects the cognitive and behavioral efforts made to manage these demands. As such, strengthening students' coping mechanisms is essential for reducing the negative impact of academic stress.

One coping resource that has gained increasing attention is resilience, the ability to adapt positively in the face of adversity. Resilient students are more likely to demonstrate academic engagement, psychological well-being, and satisfaction with their learning experience (Yoshioka & Kaneko, 2021). Crucially, resilience is not a fixed trait but a capacity that can be cultivated through personal and social development. Psychological factors such as optimism, emotion regulation, social

support, and sense of humor have all been identified as contributing to resilience in educational contexts (Jang, 2024).

Humor as a Resilience-Enhancing Factor

In the framework of positive psychology, humor is recognized as a multidimensional resource that fosters emotional resilience. Defined as the cognitive and emotional capacity to perceive, enjoy, or express amusement, humor supports stress regulation by allowing individuals to reinterpret difficult experiences more constructively (Martin & Lefcourt, 1983). Emerging empirical evidence suggests that individuals with a well-developed sense of humor tend to exhibit better emotional regulation, perceive greater social support, and demonstrate higher resilience in both academic and clinical environments (Bartzik, et al., 2021; El-Sayed, et al., 2024). In academic settings, humor has been shown to reduce anxiety, enhance classroom engagement, and even improve information retention when used appropriately (Fritz, et al., 2017).

Neuropsychological studies suggest that laughter and positive affect activate brain systems associated with stress reduction, including lower cortisol and higher levels of endorphins and serotonin (Martin, 2001). Thus, humor operates not only as a social tool but also as a physiological mechanism for coping with adversity.

Experimental studies have demonstrated the effectiveness of humor-based interventions, such as laughter therapy, comedy workshops, and reflective humor journaling, in alleviating psychological distress among students (Rashmi & Sunitha, 2023; Dogham, et al., 2024). A systematic review by Wulandari and Wardani (2022) further confirmed that humor contributes to mental health, particularly among individuals in demanding environments like clinical education.

Assessing Humor: Theoretical and Empirical Frameworks

To measure humor systematically, researchers have developed psychometric tools such as the Multidimensional Sense of Humor Scale (MSHS) by Thorson and Powell (1991). This instrument evaluates humor across four dimensions: humor production, humor appreciation, coping through humor, and attitude toward humor. It has been widely validated across cultural settings and is frequently used in resilience research.

Numerous studies have confirmed the protective role of humor against stress, particularly in high-pressure professions such as healthcare, education, and public safety (Greve, et al., 2021; Richards & Kruger, 2017). Recent empirical studies conducted in diverse international contexts have reported a negative correlation between humor and perceived stress (Canestrari, et al., 2021). While the general benefits of humor appear to be culturally universal, the way humor is expressed and perceived varies significantly across social contexts. This emphasizes the importance of understanding cultural norms in designing humor-based interventions.

Research Gaps and Justification for the Study

Despite the growing interest in humor as a coping mechanism, limited empirical research has examined its role among nursing students in Southeast Asia, especially

in Indonesia. This represents a critical gap, given the unique challenges faced in the Indonesian academic landscape, which is shaped by hierarchical teaching styles, limited access to mental health resources, and strong socio-cultural expectations.

Moreover, although previous studies have found a correlation between humor and stress, few have employed robust multivariate analyses to account for potential confounders such as age, gender, or academic standing. As a result, the independent predictive role of humor remains uncertain. This study aims to address these gaps by employing a multivariate logistic regression approach to determine whether sense of humor independently predicts academic stress levels among undergraduate nursing students.

METHODS

Study Design and Participants

This study employed a quantitative design with a cross-sectional approach to examine the relationship between sense of humor and academic stress among final-year nursing students. The sample size determination was based on general guidelines for logistic regression analysis, which recommend a minimum of 10–20 participants per independent variable to avoid model overfitting (Peduzzi et al., 1996). In this study, a maximum of five predictor variables was anticipated; therefore, at least 100 participants (5 × 20) were required. However, to enhance statistical power and generalizability, the target sample size was increased to a minimum of 250 participants.

Participant Recruitment Procedure

Participants were recruited using purposive sampling, targeting final-year nursing students enrolled in parallel classes during their last two semesters. Prior to recruitment, the researchers collaborated with the academic program office to obtain a list of eligible classes that met the inclusion criteria. The study was announced through in-class presentations, faculty-mediated communication, and student messaging groups (e.g., WhatsApp).

To be included in the study, participants had to meet specific inclusion criteria: they were required to be active students enrolled in a nursing program, currently in their final academic semesters (7th–8th), aged between 20 and 25 years, and willing to participate voluntarily by signing informed consent forms. Exclusion criteria included students on academic leave, those with a diagnosed history of severe psychiatric disorders, or those who submitted incomplete questionnaires. Out of approximately 325 students invited to participate, 312 returned the questionnaire. After data screening, 12 questionnaires were excluded due to incompleteness, resulting in a final analytic sample of 300 participants.

Data Collection Procedure

Data collection in this study was carried out over 2 months with several structured stages, as follows: 1) Initial Coordination with the Faculty. The researchers first held meetings with the leadership of the nursing program to obtain formal permission to conduct the study on campus and to ensure that data collection would not interfere with scheduled academic activities. An agreement was reached regarding the appropriate timing for questionnaire distribution. 2) Participant Briefing and Information Dissemination. The study's objectives, benefits, procedures, and the rights and responsibilities of participants were explained verbally to students during several face-to-face class sessions by the researchers in collaboration with course instructors. Additionally, research information was distributed via the official student WhatsApp groups to ensure that students who were absent from class still received a full explanation of the study. 3) Informed Consent Process. Students who agreed to participate were asked to sign an informed consent form indicating their voluntary participation. The form included assurances regarding data confidentiality and participants' right to withdraw at any time without any academic consequences.

The fourth step is Questionnaire Administration. Questionnaires were administered in person during class sessions, facilitated directly by the principal researcher and supported by two trained research assistants. Their responsibilities included: Providing consistent instructions for completing the questionnaire, Answering questions in case any items were unclear, and Ensuring that all questionnaire items were completed to minimize missing data. Each session lasted approximately 20–25 minutes. The fifth step is Data Coding and Storage. All completed questionnaires were assigned anonymous identification codes to protect participant confidentiality. Of the approximately 325 students invited, 312 returned the questionnaire. Following data screening, 12 questionnaires were excluded due to incomplete responses, resulting in a final analytic sample of 300 participants. All data were entered and analyzed using IBM SPSS for Windows version 21.

Research Instrument

1. Multidimensional Sense of Humor Scale (MSHS) – Thorson & Powell (1993)

The Multidimensional Sense of Humor Scale (MSHS) was developed by Thorson and Powell in 1993, building upon the initial conceptual framework introduced in their 1991 publication. The validated scale consists of 24 items rated on a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). The purpose of the instrument is to assess an individual's sense of humor in a multidimensional manner, beyond the simplistic notion of how often a person laughs. The MSHS evaluates four primary dimensions of humor:Humor Production and Creativity – the ability to generate humor, such as making jokes or telling funny stories; Humor Appreciation – the capacity to enjoy or respond positively to humor created by others; Coping Through Humor – the tendency to use humor as a coping mechanism in stressful or difficult situations; Attitudes Toward Humor – an individual's general disposition toward humor, including the perceived value of humor in life. The scale was originally

validated among university students in the United States but has since been examined across diverse cultural contexts, including in Indonesia.

Scoring and Interpretation Procedures: 1) Respondents are instructed to rate each item from 1 to 5 based on the extent of their agreement. Item scores are summed to obtain a total humor score, which can range from 24 to 120. There is no universal cut-off score; researchers often apply a median split based on the sample distribution to classify respondents into "low" and "high" sense of humor groups. 2) In this study, the sample median score was used as the classification threshold: individuals scoring above the median were categorized as having a high sense of humor, and those scoring below it as having a low sense of humor.

A pilot study was conducted to validate the Indonesian version of the MSHS with a sample of 30 undergraduate students. The results indicated item-total validity coefficients ranging from 0.303 to 0.708, and excellent internal consistency reliability (Cronbach's α = 0.924) (Periantolo, 2016). One item (Item 23) was excluded due to low psychometric performance, resulting in a final scale of 23 items for this study.

2. Perceived Stress Scale (PSS) – Adapted Version

The original Perceived Stress Scale (PSS) was developed by Cohen et al. (1983). The standard version contains 10 items, although a 14-item version also exists. This study utilized the Indonesian-adapted 10-item version validated by Putri (2022). The PSS employs a 5-point Likert scale, ranging from 0 (Never) to 4 (Very Often). Its purpose is to assess the extent to which individuals perceive situations in their lives as stressful over the past month. The scale does not include separate subscales; rather, it provides a global measure of perceived stress, evaluating how often individuals felt overwhelmed, unable to control important aspects of their lives, or experienced nervousness and tension.

Scoring and Usage Procedures is respondents were asked to rate how frequently they experienced specific feelings during the past month. Several positively worded items (e.g., confidence in handling problems) are reverse-scored. The total score is calculated by summing all item responses, yielding a possible range from 0 to 40.

How to read the interpretation as follows: Low scores (0–13) indicate low stress levels. A moderate score (14–26) indicates a moderate level of stress. A high score (27–40) indicates a high level of stress. In this study, data were categorized as high vs. low with cutoffs based on the sample distribution (e.g., the median or a commonly used standard PSS score, such as 27). In this study, stress levels were further categorized as "high" versus "low" based on the sample distribution—either using the median split or standardized PSS cut-off values (e.g., a score of 27 or above as indicative of high stress).

A pilot test of the Indonesian version was conducted on 30 university students, resulting in item-total correlation coefficients ranging from 0.305 to 0.432, and demonstrating excellent reliability with a Cronbach's alpha of 0.961 (Periantolo, 2016). No items were excluded, and the final instrument consisted of 10 items.

Research Procedure

Prior to the pilot testing of the measurement instruments, the researchers submitted the study protocol to the Research Ethics Committee and obtained ethical clearance from the Ethics Commission of the *Konsorsium Psikologi Ilmiah Nusantara* (KPIN) under approval number: 083/2025, dated March 28, 2025.

Data Analysis

Data Preparation Stage

1. Data Cleaning:
   All returned questionnaires were carefully checked to ensure that there were no missing items or duplicate entries. In cases of minor inconsistencies, clarification was obtained directly from the respondent during data collection. If clarification was not possible, the data were excluded from the analysis. The cleaned data were then entered into a password-protected Excel spreadsheet and subsequently imported into IBM SPSS Statistics version 26 for analysis.
2. Data Coding:
   Categorical variables such as gender, age group, and study duration were numerically coded (e.g., 0 = male, 1 = female). For both the MSHS and PSS instruments, item scoring followed standard procedures. Reverse scoring was applied where necessary before computing total scores.

Statistical Analysis

1. Descriptive Analysis
   Descriptive statistics were used to summarize participants' demographic characteristics, including age distribution, gender, study duration, and total scores of sense of humor (MSHS) and academic stress (PSS). Interval/ratio data (e.g., MSHS and PSS scores): presented as means and standard deviations (SD). Categorical data (e.g., gender, stress categories): presented as frequencies and percentages (%).
2. Bivariate Analysis
   This analysis aimed to identify variables associated with academic stress prior to inclusion in the multivariate model. Chi-square tests were used to examine the association between categorical variables (e.g., gender, study duration) and levels of stress. Independent t-tests were used to compare mean humor scores between students with high versus low academic stress. Variables with a p-value < 0.25 in the bivariate analysis were retained for subsequent multivariate testing.
3. Multivariate Analysis
   Binary logistic regression was performed to assess whether sense of humor significantly predicted the likelihood of experiencing high academic stress, while adjusting for covariates. Results were reported in terms of: Regression coefficient (B), Standard error (SE), Wald test and p-value, Adjusted Odds Ratio (AOR) with 95% Confidence Intervals (CI).
4. Model Fit Assessment.
   The Nagelkerke R² statistic was used to evaluate the explanatory power of the logistic regression model regarding academic stress status. Additionally, the

Hosmer–Lemeshow goodness-of-fit test was employed to assess the model's adequacy. A p-value > 0.05 indicated an acceptable model fit.

Interpretation of Results

The interpretation of the data analysis results consists of two main components: 1) Interpretation of the Odds Ratio (AOR). An AOR less than 1 indicates that the predictor variable (e.g., high sense of humor) reduces the likelihood of experiencing high academic stress. For example, in this study, the AOR for sense of humor was 0.363, which implies that students with a high sense of humor were 63.7% less likely to experience high academic stress. This corresponds to an approximately 2.75 times lower likelihood compared to students with a low sense of humor.
2) Interpretation of Nagelkerke R². The Nagelkerke R^2 value obtained (0.079) suggests that sense of humor and study duration together explain approximately 7.9% of the variance in academic stress levels. Although this relationship is statistically significant, the contribution of humor can be considered complementary rather than dominant in explaining academic stress among students.

RESULTS

Participant Characteristics

A total of 300 final-year undergraduate students participated in the study. The mean age of the participants was 22.1 years (SD = 1.1), with 78% identifying as female. The majority (68%) reported experiencing moderate to high levels of academic stress based on the PSS scores.

Tabel 1. Karakteristik Demografis Partisipan (N = 300)

Variabel	Kategori	n	%
Jenis Kelamin	Laki-laki	66	22,1
	Perempuan	234	77,9
Usia	<22 tahun	126	42,0
	≥22 tahun	174	58,0
Lama Studi	<4 tahun	94	31,3
	≥4 tahun	206	68,7
Kategori Sense of Humor (MSHS)	Rendah	150	50,0
	Tinggi	150	50,0
Kategori Stres Akademik (PSS)	Rendah / Sedang	96	32,0
	Tinggi	204	68,0

Bivariate Analysis

Bivariate analyses were conducted to identify variables significantly associated with academic stress, using a p-value threshold of <0.25 for model inclusion. Table 2 presents the results.

Table 2. *Bivariate Analysis for Candidate Variables for Logistic Regression*

No.	Variable	Category	p-value	Included in Model
1	Gender	Male / Female	0.327	No
2	Age	<22 / ≥22	0.411	No
3	Study Duration	<4 years / ≥4 years	0.149	Yes
4	Humor Score (MSHS)	Low / High	<0.001	Yes

Note: Variables with $p < 0.25$ were included in the multivariate model. Humor score was dichotomized based on the median split.

Multivariate Logistic Regression

A binary logistic regression was conducted to assess whether sense of humor significantly predicted the likelihood of experiencing high academic stress, adjusting for study duration. Table 3 summarizes the regression model.

Table 3. *Multivariate Logistic Regression Predicting High Academic Stress*

Predictor	B	SE	Wald	p-value	Exp(B)	95% CI for Exp(B)
Humor (High)	-1.014	0.247	16.85	<0.001	0.363	0.224 – 0.589
Study Duration	-0.481	0.218	4.87	0.027	0.618	0.401 – 0.953

- **Nagelkerke R²** = 0.079
- **Hosmer-Lemeshow Test** = p = 0.621 (good fit)

Interpretation: Students with high humor scores were approximately 2.75 times less likely to experience high stress (1/0.363). Longer study duration also predicted lower stress levels. Students who have studied for ≥4 years tend to report lower stress levels.

Interaction Effect Analysis

Interaction effects were examined to explore potential moderating variables. Among the interactions tested (Gender*Humor, Age*Humor, StudyDuration*Humor), only *Gender*Humor showed statistical significance. Table 4 presents the detailed interaction terms.

Table 4. *Interaction Effects on Academic Stress*

Interaction Term	B	SE	p-value	Description
Gender * Humor	-0.746	0.348	0.032	Significant interaction
Age * Humor	-0.295	0.327	0.365	Not significant
Study Duration * Humor	0.121	0.309	0.701	Not significant

The significant interaction between Gender and Humor suggests that the protective effect of humor may differ slightly between male and female students. However, these findings are exploratory and require further verification through longitudinal research designs.

DISCUSSION

The primary objective of this study was to examine whether a student's sense of humor is significantly associated with their level of academic stress. The results confirmed a strong inverse relationship: students who reported higher humor scores were less likely to experience high levels of perceived academic stress. This supports the growing body of evidence that humor is not simply a personality trait but a modifiable psychological resource that contributes to emotional regulation and cognitive reframing, particularly in stressful academic environments (Bartzik et al., 2021).

Building on the core finding that humor significantly reduces academic stress, this study offers a foundation for rethinking psychological support strategies in nursing education. The inverse relationship between humor and stress reinforces the concept of humor as a cognitive-emotional buffer, enabling students to reinterpret stressful situations more constructively (Martin & Lefcourt, 1983; Lefcourt, 2003; Wellenzohn et.al., 2018). By reframing threatening academic demands through a humorous lens, students may reduce perceived burden and recover motivation more rapidly.

Moreover, this study provides empirical evidence that humor remains a statistically significant protective factor even after controlling for variables such as study duration and age. These findings support the hypothesis that humor contributes independently to stress regulation, an insight that is crucial in refining student mental health frameworks.

Humor as a Stress Buffer

Our findings are consistent with previous literature, including Fritz et al. (2017), who demonstrated that individuals using humor as a coping mechanism experienced fewer negative effects from stressful life events. In the context of nursing education—an environment known for its high demands and frequent exposure to emotionally charged situations, this stress-buffering function is particularly relevant. Humor allows students to approach challenges with psychological distance, which reduces the threat perception of academic tasks and increases emotional resilience.

In Lazarus and Folkman's (1984) cognitive theory of stress, the interpretation or "appraisal" of stressors plays a central role in emotional response. Humor, when employed constructively, alters this appraisal by reframing a negative or threatening situation into something more manageable or even absurd, thereby reducing emotional reactivity. This aligns with our finding that students with a higher sense of humor reported significantly lower academic stress, despite having similar academic loads and demographic characteristics.

Humor as a Protective Factor

The result supports previous research suggesting that humor may promote resilience in the face of stress by enabling individuals to reinterpret challenges through a more positive or absurd lens (Martin, 2001; Hampes, 2010). This cognitive reframing aligns with Lazarus and Folkman's (1985) theory of stress appraisal, wherein personal resources, such as adaptive coping styles, moderate the emotional impact of external demands.

However, it is important to interpret the strength of this finding cautiously. While the association between humor and stress is statistically significant ($p < 0.001$), the final multivariate model explained only 7.9% of the variance in perceived stress levels (Nagelkerke $R^2 = 0.079$). This indicates that although humor contributes to stress mitigation, it is likely only one of many interacting psychological, academic, and environmental factors influencing stress outcomes. Therefore, while humor may be protective, it is not determinative, and its contribution should not be overstated.

Clarifying Misinterpretations and Model Accuracy

It is worth addressing a common misinterpretation in logistic regression reporting. The abstract in the original version erroneously stated that students with high humor were "3.6 times less likely" to experience stress, which was inconsistent with the actual Exp(B) value of 0.363. In logistic regression, the proper interpretation is that an Exp(B) of 0.363 indicates a 63.7% reduction in odds of high stress or a 2.75 times lower likelihood (1 / 0.363) of experiencing stress.

Furthermore, earlier drafts of the paper inconsistently claimed that gender and age were controlled in the regression model, even though they were excluded based on bivariate p-values exceeding 0.25. This revision clarifies that only humor and study duration were included as predictors in the final model, ensuring consistency between methods, results, and interpretation.

Gender Interaction Effect

The significant interaction between gender and humor observed in the interaction analysis suggests that the protective function of humor may operate differently across male and female students. This aligns with literature suggesting that humor expression and reception are shaped by gender norms and expectations (Greengross & Miller, 2011). For example, women may rely more on affiliative or self-enhancing humor, while men may use more aggressive or self-defeating forms. However, given the limited variance explained by the model and the cross-sectional nature of the study, these findings should be considered exploratory.

Cultural Dimensions of Humor in Coping

Humor's role in stress management may also be influenced by cultural expectations and communication norms. In collectivist societies such as Indonesia, where overt expression of negative emotions is often discouraged, humor may serve as a socially acceptable outlet for emotional release. Moreover, humorous interactions can foster a sense of group cohesion, which further buffers the impact of stress. In contrast to Western settings, where individual coping strategies dominate, humor in collectivist cultures may be more relational, serving as a bridge between individuals rather than as an individualistic tool (Hofmann et al., 2020).

Interestingly, the interaction analysis in our study revealed gender differences in how humor was related to stress. While both male and female students benefited from high humor scores, the strength of the relationship varied. This may be attributed to gender-based socialization patterns in emotional expression and coping behavior. Further qualitative inquiry could provide deeper insight into how humor is experienced and used differently across gender groups in academic settings.

Cultural context plays a significant role in shaping how humor is expressed and interpreted. In collectivist societies such as Indonesia, humor is often employed in indirect, affiliative forms that preserve group harmony and avoid confrontation. Affiliative humor (e.g., shared jokes, light teasing) has been found to promote interpersonal bonding and reduce anxiety more effectively in collectivist cultures than in individualist ones, where self-enhancing humor may dominate (Vilaythong et al., 2003). This distinction has important implications for culturally sensitive mental health programming. Humor interventions must be tailored to local norms, favoring inclusivity and avoiding sarcasm or self-defeating humor, which may exacerbate anxiety in vulnerable students (Rong et al., 2017).

Neuroscientific Insights

From a biopsychological standpoint, humor is associated with activation of the brain's reward circuitry, including the ventromedial prefrontal cortex and limbic system (Martin, 2001). These regions are responsible for processing emotion, attention, and social cognition, areas often impacted by chronic stress. Humor-induced laughter has been shown to reduce cortisol levels and increase immune response (Martin & Dobbin, 1989). These findings give biological credibility to the psychological effects observed in our study and highlight the integrative nature of humor as a wellness tool.

Implications for Practice

Despite the modest R^2 value, the results hold practical significance. Humor is a low-cost, low-barrier coping resource that can be incorporated into wellness programs and stress-reduction interventions. Academic institutions, particularly in high-pressure fields such as nursing and health sciences, should consider integrating humor-based strategies, such as peer-led humor groups, reflective humor journaling,

or incorporating appropriate humor into lectures, as part of broader student support efforts (Kim, 2014; Rashmi & Sunitha, 2023).

Importantly, any intervention should be culturally sensitive. In Indonesian academic culture, humor is often used indirectly and affiliatively, in contrast to more confrontational humor styles observed in Western contexts. Faculty development programs can play a role in helping educators model constructive humor that reduces classroom tension and promotes student engagement. Such low-cost, culturally adaptable interventions are especially attractive for resource-constrained academic settings in Asia. Moreover, they encourage active participation and can foster a sense of psychological safety, which is crucial for clinical learning environments (Suen, et al., 2016). This distinction carries significant implications for the design of culturally sensitive mental health interventions. Humor-based strategies should be adapted to align with local cultural norms, emphasizing inclusivity and avoiding forms of humor, such as sarcasm or self-defeating humor, that may increase anxiety, particularly among vulnerable student populations.(Wang, et al., 2018).

Limitations and Future Research

Several limitations should be acknowledged. First, the study's cross-sectional design precludes causal inference. Longitudinal research is needed to determine whether increasing humor over time reduces academic stress. Second, all measures relied on self-reported data, which may be subject to social desirability bias. Third, although the instruments were validated, the study was limited to a single academic institution, which may affect the generalizability of the findings.

Future research should consider: Expanding sample diversity across universities and regions, Exploring different humor styles (affiliative, self-enhancing, aggressive, self-defeating), Testing structured humor interventions experimentally (e.g., randomized controlled trials).

CONCLUSION

This study provides empirical evidence that a higher sense of humor is significantly associated with a lower likelihood of experiencing academic stress among final-year nursing and psychology students in Indonesia. After adjusting for study duration, students with higher humor levels were approximately 2.75 times less likely to report high perceived stress. These findings support the conceptualization of humor as a protective psychological factor, consistent with cognitive stress appraisal theory.

However, the relatively small amount of variance explained by the model (Nagelkerke R^2 = 0.079) suggests that humor, while statistically significant, represents just one of many factors influencing academic stress. Therefore, humor should be understood as a complementary, not primary—component in broader strategies aimed at enhancing student well-being.

From a practical perspective, the accessibility and low cost of humor-based approaches make them attractive for inclusion in academic mental health promotion. Educators and institutions are encouraged to explore ways of embedding constructive humor into curriculum delivery, peer support initiatives, and stress management programs, while remaining sensitive to cultural norms and individual differences.

Future studies should further explore humor's long-term effects through experimental and longitudinal designs, investigate its interaction with other psychological traits (e.g., resilience, optimism), and evaluate structured humor interventions within academic environments.