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Anxiety Contributing Factors in College Students during the Final Project: Ordinal Logistic Regression Analysis

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Article Info

ABSTRACT

The prevalence of anxiety disorders among university students is high, particularly during periods of high stress, such as when students are completing their final projects. This research aimed to investigate how self-confidence and anxiety levels relate among students working on their final projects at the Statistics Department at Universitas Negeri Gorontalo. Research was conducted on 86 students aged 21-26 years old using an online questionnaire. Self-confidence, self-efficacy, and social support were independent variables, while anxiety levels (mild, moderate, and severe) were dependent variables. Selfconfidence was found to be significantly correlated with anxiety levels, while self-efficacy and social support were not significantly correlated. The result of ordinal logistic regression analysis indicated that students with high selfconfidence were 0.13 times more likely to experience mild or moderate anxiety compared to those with moderate self-confidence. Those with high levels of selfconfidence, however, are more likely to suffer from severe anxiety (26%) than those with moderate levels of self-confidence (4%). In certain academic situations, high self-confidence may not be a hindrance against anxiety. A more comprehensive understanding of anxiety will require further research considering additional factors that contribute to anxiety, factors that were not considered in this study.

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INTRODUCTION

The term "university students" refers to individuals currently enrolled in a public or private university and fall within the early adolescent age range of 18 to 24 years (1). It is common for university

students to experience demands in many different situations, which can result in anxiety, particularly during high-stress periods, such as finishing final projects (2). This final project or thesis is a crucial requirement for students to obtain a bachelor's degree, yet it can often lead to significant pressure, resulting in students experiencing anxiety symptoms (2,3).

According to the World Health Organization (WHO), anxiety disorders can cause intense and excessive fear and worry, often accompanied by physical tension and other symptoms. If left untreated, these feelings can last long and interfere with daily activities, impacting a person's family, social, school, or work life (4).

When an individual experiences anxiety, they feel afraid, tense, and worried, which are self-generated (5). The level of anxiety disorder can be categorized as mild, moderate, and severe anxiety (6–9).

Globally, anxiety disorders affect approximately 4% of the population, with 301 million people experiencing anxiety disorders in 2019, yet only 1 out of 4 people who suffer from anxiety disorders receive any treatment despite effective treatments being available (4). According to the Indonesia Ministry of Health (2018), in Indonesia there is nearly 10 percent (9.8%) of Indonesians suffered from anxiety disorder in 2018.

However, it is noted that just under a fifth (17.7%) of the Gorontalo population suffered from anxiety in 2018. Therefore, it is clear that in Indonesia, particularly in Gorontalo Province, anxiety disorder remains challenging (10).

Based on the preliminary survey conducted on students currently working on their final project at the Statistic Department, Universitas Negeri Gorontalo, 12 out of 13 students reported experiencing anxiety. The symptoms included restlessness, worry, nervousness, difficulty sleeping, and fear of their surrounding environment.

Prior research related to anxiety disorders has used quantitative analysis (7,8), cross-sectional analysis (1,9–11), fuzzy inference system (12), latent profile and k-means clustering (11). Previous research has identified a link between university students and anxiety symptoms. However, the specific reasons or causes of this relationship have yet to be entirely discovered. There is a lack of research examining the particular factors that contribute to anxiety in college students when completing final projects. This research aims to conduct further investigations to understand better the connection being referred to. Analytical methods such as regression analysis, particularly logistic regression analysis, can thoroughly explain factors contributing to anxiety.

A logistic regression analysis describes the relationship between independent variables and a dependent variable, which is a dichotomous variable (12). Ordinal logistic regression is one of the logistic regression analyses. When the dependent variable used was ordinal in nature, meaning they represent ordered categories, not continuous data, ordinal logistic regression is used (13,14).

Anxiety in college students has been investigated using ordinal logistic regression previously (7,15–18). However, there have been few studies that have used ordinal logistic regression to analyze anxiety among college students during their final project. Thus, further research regarding the level of anxiety during students' final projects is imperative, particularly at the Statistics Department at Universitas Negeri Gorontalo.

RESEARCH METHODOLOGY

The research was conducted from May until October 2024. As of this time, 114 college students aged 21-26 enrolled at Universitas Negeri Gorontalo in the Statistics Department were working on their final project. Using the Slovin formula, 89 students were recruited as participants. The data was collected using an online questionnaire platform. The questionnaire underwent validity and reliability testing using the Product Moment Correlation and Cronbach's Alpha coefficient.

The study utilized probability sampling, specifically simple random sampling. The inclusion criteria were healthy individuals between the ages of 21 and 26, with no chronic illnesses or ongoing treatment for anxiety and depression, who had not been under the care of their parents since childhood, and who were working on their final project. The respondents who did not complete the online questionnaire were also excluded from the analysis. So, the eligible participants were 86 after eliminating three students who failed in inclusion criteria from an initial 89 participants in the Statistics Department, Universitas Negeri Gorontalo.

The independent variables (X) were Self-confidence, Self-efficacy, and Social Support. Meanwhile, the level of anxiety was the dependent variable (Y), which was categorized as mild, moderate, and severe anxiety. After the data is collected, the correlation analysis is employed between the independent and dependent variables. Only the independent variable significantly correlated with the dependent variable was included in the next step, conducting an ordinal logistic regression. All the analyses used R software.

RESULT
Univariate Analysis

Table 1. Participants Characteristics

Variables	Total	
	n	%
Anxiety (Y) Mild		
	3	3.5
Moderate	72	83.7
Severe	11	12.8
Self-confidence (X_1) Low		
	0	0
Moderate	50	58.1
High	36	41.9
Self-efficacy (X_2)		
Low	15	17.4
Moderate	0	0
High	71	82.6
Social support (X_3)		
Low	20	23.3
Moderate	0	0
High	66	76.7

As shown in Table 1, nearly half of 86 college students in the Statistics Department have high selfconfidence, just over four out of five have high self-efficacy, and roughly three out of four have social support as they work on their final project. In addition, Table 1 shows that a significant majority of students reported moderate anxiety. In contrast, a small minority of students suffered from severe anxiety, and an insignificant amount of students had a mild anxiety disorder during the completion of their final project.

Bivariate Analysis
A bivariate analysis determines whether the independent and dependent variables are correlated. The analysis uses the Fisher test if an expected value is less than five. Alternatively, the Pearson Chi-square test should be used (19–22). The results are provided in Table 2.

Table 2. Bivariate analysis for Level of Anxiety with Independent Variables

Variables	Anxiety			Expected			Values	p-value
			Mild	Moderate		Severe		
Self-confidence (X_1)								
Moderate High	3	47	0	1.74	41.86	6.39		
	0	25	11	1.26	30.14	4.60		0.01
Self-efficacy (X_2)								
Low	1	14	0	0.52	12.56	1.92		0.14
High	2	58	11	2.48	59.44	9.08		
Social support (X_3)								
Low	2	17	1	0.70	16.74	2.56		0.69
High	1	55	10	2.30	55.26	8.44		

As can be seen in Table 2, only variable X1 has rejected H0 because of its p-values (0,01), which is less than α (0,05). Thus, during their final project, the level of self-confidence is significantly correlated with the level of anxiety in college students at the Statistics Department, Universitas Negeri Gorontalo. Meanwhile, the student's level of self-efficacy (X2) and the amount of social support (X3) failed to reject the H0, as the pvalue was greater than α. As a result, it did not significantly correlate with the anxiety level of college students at the Statistics Department, Universitas Negeri Gorontalo.

Moreover, Table 2 gives information that 47 of the 86 students with moderate self-confidence level experienced moderate anxiety. In addition, more than half of the 86 students have high levels of self-

efficacy and social support while experiencing moderate levels of anxiety, as depicted in Table 2.

Multivariate Analysis

An ordinal logistic regression model is employed for multivariate analysis. In the bivariate analysis, only variables X1 exhibit significant correlations with Y. Therefore, an ordinal logistic regression analysis will be conducted using only the level of self-confidence (X1) as the independent variable. The results are shown in Table 3.

Table 3. Ordinal Logistic Regression Analysis

Coefficients	Estimate	Exp(β)	Z value	p-value
Self-confidence(high)	-2.07	0.13	-2.97	0.00
Severe | Mild	-3.12			
Mild | Moderate	-2.80			

Table 3 indicates that students' self-confidence level (X1) does significantly influence anxiety level (Y) among college students at the Statistics Department, Universitas Negeri Gorontalo, as the p-value is lower than α (0.00 < 0.05). Consequently, the level of anxiety among students in the Statistics Department of Universitas Negeri Gorontalo is significantly influenced by their level of self-confidence. The cumulative logit model for students working on their final project at the Statistics Department of Universitas Negeri Gorontalo can be expressed in Equation (1) and (2), based on the results in Table 3.

$$\text{logit}[P(Y_i \leq 1)] = -3.12 - (-2.07)\text{self-confidence}_{(\text{high})} \qquad (1)$$

$$\text{logit}[P(Y_i \leq 2)] = -2.80 - (-2.07)\text{self-confidence}_{(\text{high})} \qquad (2)$$

The next step is calculating the odds ratio. In logistic regression, the odds ratio is a measure used to interpret the coefficients, which indicate the comparison of the tendency levels between two or more categories on an independent variable (23). The results are displayed in Table 4.

Table 4. Odds Ratio using Predicted Probabilities

Selfconfidence	Anxiety		
	Mild	**Moderate**	**Severe**
Moderate	0.01	0.94	0.04
High	0.07	0.67	0.26

According to the proportional odds assumption, the odds ratio for the first level of anxiety is equal to the odds ratio for the second level. The comparison between moderate self-confidence versus high self-confidence for the respective probabilities is 0.04 and 0.26.

DISCUSSION

Table 1 reveals that the majority of students experienced moderate anxiety during their final project, with only a small number experiencing severe or mild anxiety. Further, in Table 2 indicated that among 86 students, 47 with moderate self-confidence experienced moderate anxiety, and more than half had high selfefficacy and social support while also experiencing moderate anxiety. Bivariate analysis reveals a significant correlation between self-confidence and anxiety levels in students at the Statistics Department of Universitas Negeri Gorontalo, while self-efficacy and social support had no significant relationship.

Self-confidence is defined as a feeling of self-assurance that encourages independent decision-making, reduces fear of taking action, and reflects a knowledge of one's capabilities and the ability to use those capabilities effectively (24–26). As indicated in prior research (24,27,28), the results of the correlation analysis point to a significant correlation between student self-confidence and anxiety when it comes to completing their final projects.

In addition, using ordinal logistic regression, the findings indicate that students with a high level of selfconfidence have a 0.13 times lower likelihood of experiencing mild or moderate anxiety as compared to students with a moderate level of self-confidence. The odds ratio derived from this analysis shown in Table 4 indicates that students who pose a high level of self-confidence are more likely to suffer from severe anxiety, 26% versus 4% for moderately confident students. Additionally, for the lowest category of anxiety

(mild), students with high self-confidence were more likely to suffer the lowest category than students with moderate self-confidence (7% vs. 1%).

Ordinal logistic regression results contradict intuitive expectations based on the odds ratio. It appears that students with high self-confidence are more susceptible to severe anxiety compared to their moderately confident peers. As this finding indicates, high self-confidence may not always be a protective factor against anxiety but instead may be associated with increased vulnerability. Several factors are not addressed in this research that may clarify the finding that high self-confidence may lead to an increase in anxiety.

Research has shown, for example, that increased screen time negatively impacts sleep quality and physical activity, both of which can contribute to higher levels of anxiety (29). In previous research, physical activity has also been linked to lower levels of depression and anxiety as well as greater happiness (8,30). Additionally, prior research (31) has shown that perfectionism is significantly and positively associated with severe anxiety, and although its role is small, it continues to play an important role. Specifically, anxiety and perfectionism are bidirectional, with anxiety causing perfectionism and vice versa (31).

Thus, the relationship between self-confidence and anxiety among students is complex, emphasizing that high self-confidence does not guarantee an individual is not anxious. Examining the underlying causes behind this relationship, mediated factors, and academic topics would be beneficial in the future.

CONCLUSION

The research was conducted among students at the University of Negeri Gorontalo's Statistics Department to determine the relationship between self-confidence and anxiety. The majority of students cited self-confidence as a factor influencing their anxiety levels. It was found that students who were high in self-confidence had a greater likelihood of suffering from severe anxiety than students who were moderate in self-confidence. Several studies have suggested that high self-confidence may not always prevent anxiety and, in particular, academic situations, may increase vulnerability.

While this study provides valuable insights, it also identifies areas that require further investigation. Further studies are needed to determine whether other factors, such as screen time, sleep quality, physical activity, and perfectionist tendencies, can mediate the relationship between self-confidence and anxiety.

RECOMMENDATION

Providing students with mental health support programs that provide counseling and stress management workshops will aid them in coping with their anxiety. The programs should be accessible to a wide range of students with varying levels of self-confidence and based on their needs.

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