



Resilience as mediator of depression, anxiety, and stress among underprivileged university students

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ABSTRACT

Background: Underprivileged university students are reported to deal with various mental health problems such as anxiety or depression because of academic or non-academic stressors, but they still have resilience skills.

Purpose: This study seeks to explore the mediating role of resilience in the connection between stress and both depression and anxiety.

Method: This study used a cross-sectional design involving 872 underprivileged students. The measuring instruments used in this study were the Connor-Davidson Resilience Scale-10 (CDRISC-10) and the Depression Anxiety Stress Scales-21 (DASS-21). Data analysis was conducted using structural equation modeling (SEM modeling).

Findings: Stress was significantly negatively correlated with resilience and positively correlated with anxiety and depression. Resilience mediated the relationship between stress and depression, $\beta = 0.016$, $p < .01$, 95% CIs [0.005, 0.029], but did not mediate the relationship between stress and anxiety, $\beta = 0.005$, $p > .01$, 95% CIs [-0.007, 0.018].

Implication: The findings of this study highlight the importance of resilience in the lives of underprivileged students, and it has prompted various stakeholders, including universities, to implement strategic programs to enhance student resilience based on specific conditions.

KEYWORDS

Anxiety; depression; resilience; stress; underprivileged university students

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Introduction

Students coming from poor family and low socioeconomic status or known as underprivileged students are reported to face various mental health problems including stress, depression, and anxiety (Ramón-Arбуés et al., 2020). A comprehensive analysis of studies involving students from diverse global regions revealed that approximately 34% of them exhibited signs of depressive symptoms, while around 32% displayed symptoms of anxiety (Deng et al., 2021). More specific research on underprivileged students reported that 63.1% had high levels of depression and 52.2% had high levels of anxiety (Rudenstine et al., 2021). Those phenomena also happen in Indonesia, based on Riset Kesehatan Dasar (RISKESDAS) that held by Ministry of Health of the Republic of Indonesia in 2018, it is known that there are 157,695 people aged 15-24 years, 202,438 who have graduated from high school, and 61,579 who have graduated from university are experiencing emotional disorders such as stress, depression, and anxiety (Ministry of Health of the Republic of Indonesia, 2019). Underprivileged university students in Indonesia receive a scholarship called Bidik Misi or Kartu Indonesia Pintar, based on data collected by the Ministry of Education, Culture and Research Technology, the number of students who received Bidik Misi scholarships from 2010-2024 was 1,052,445 students (Jatmika, 2024). A study explains that Bidikmisi students are vulnerable to mental health problems such as anxiety (Sari et al., 2024). This indicates that underprivileged students are included in that number and suggest that underprivileged students are among those affected.

Underprivileged students face a range of challenges that their more privileged peers may not encounter. These difficulties often stem from their low socioeconomic status, which includes factors such as having parents with limited income, experiencing parental loss, or having parents

who are not employed (Grakh et al., 2022). These conditions make the academic experience as a student even more challenging, underprivileged students face academic challenges such as encountering academic demands, adjusting to new friendships, and confusion about career choices (Amponsah et al., 2020) which then affects their physical health and prevents them from achieving their maximum academic potential. In addition to physical and mental health problems, underprivileged conditions also affect other aspects of life in students such as living in an environment with poor sanitation, lack of resources, and some parents who have low academic expectations (Johnson, 2019). Rice et al. (2017) added that the effects of underprivileged conditions on students include poor education, low income, depression in mothers, and negativity because children born into underprivileged conditions rarely receive empathy from their parents and caregivers, making it difficult for them to show empathy to their peers. Regarding mental health, children born into underprivileged conditions will experience higher stigma and discrimination than children born into privileged conditions, as a result children will find it difficult to recover from mental health problems and the effects will affect all family members. Various studies report that academic and non-academic stress is significantly associated with anxiety and depression in university students (Manpreet et al., 2016; Mirza et al., 2021; Zhang et al., 2022).

When entering a diverse university world, each student will bring their own identity which includes language habits, behavior, style, worldview, values, also verbal and nonverbal communication methods. There is a quite striking difference between privileged students and underprivileged students in this case. This situation causes underprivileged students to experience psychological conflicts characterized by low self-esteem, anxiety, depression and conflicts that make individuals withdrawn and experience interpersonal difficulties. This condition is exacerbated by limited resources that result in underprivileged students being unable or unwilling to access mental health services which further worsens their condition (Fan, 2018). Anxiety and depression have different types, levels, and intensities so that they can lead to symptoms only or escalate to the level of disorder (Abdullah, 2021). One of the common anxiety disorders in college students is GAD or General Anxiety Disorder, adolescents who show high levels of GAD feel afraid of evaluation, score high on measures of perfectionism, have mild to moderate mood problems, poor concentration, and have short-term memory problems (Huberty, 2012). The research also explains that normal emotions in anxiety include fear and worry, while in depression there are sadness and disappointment. Therefore, these feelings to some extent do not matter. But, prolonged stress can lead to various physical and mental health problems, including depressive behaviors and anxiety disorders (Zhang et al., 2022). Depression is characterized as a condition marked by a persistent low mood and a lack of motivation to engage in activities, which can impact one's thoughts, behavior, and emotions. On the other hand, an anxiety disorder involves experiencing an overwhelming sense of fear and anxiety that can disrupt normal behaviors and functioning (Abdullah, 2021). However, it needs a concern when the anxiety has caused psychopathological symptoms and syndromes in anxiety, such as anxiety state and phobia, and when the depression had caused depressed state and demoralization (Abdullah, 2021; Park & Kim, 2020).

One of the key factors to tackle those mental psychological issue is having a resilient ability. Resilience can be described as ability to survive, adapt, and bounce back when facing any difficulties or something stressful (Cooper et al., 2013; Reivich & Shatte, 2002; Southwick & Charney, 2012). In youth settings, resilience focuses more on dynamic processes that change over time due to exposure to risk and protective factors originating from several places such as home, school, and community (Christmas & Khanlou, 2019). Students with good resilience skills are still able to improve their learning and performance despite having complex stressors (Oyewobi et al., 2020). Resilient students have perceived social support from significant others, a sense of belonging to the campus, and low psychological distress (Pidgeon, 2014). The ability to be

resilient is necessary since it can inspire students to embrace changes and foster personal growth (Ganesan et al., 2018), improve attitudes and performance, as well as increase their motivation (Gulzhaina & Hans, 2018). Resilience is also reported to have direct effects on students' mental health (Kaloeti et al., 2019). In addition, various studies also reported that resilience can help self-adjustment in university students (Haktanir et al., 2018), improve relationships with friends, teachers, family, and the environment (Ang et al., 2022), and reduce symptoms of depression and anxiety (Ramadianto et al., 2022).

This study focuses on the role of resilience in mediating depression, anxiety, and stress in university students, especially underprivileged ones. Several previous studies that explored the role of resilience in depression, anxiety, and stress study by Kumalasari and Akmal (2021) primarily concentrated on examining the connection between resilience, academic stress, and student satisfaction with learning and research outcomes among Indonesian undergraduate students. Similarly, Ramadianto et al. (2022) primarily investigated the interplay between resilience, anxiety, depression, and coping strategies among Indonesian medical students, but they did not extensively address the role of stress in their discussions. Research by Ramón-Arbués et.al. (2020) tested the prevalence of depression, anxiety and stress in undergraduate students, but did not explain the role of resilience as mediator. This is different from several previous studies that focused on more general population, such as adolescents aged 13-17 years (Anyan & Hjemdal, 2016), university students (Karing, 2021; Liu et al., 2021; Zhang et al., 2022), or specially undergraduate students (Manpreet et al., 2016; Mofatteh, 2021), this study will add variation to the research with more segmented participants, namely underprivileged students with their various challenges.

While resilience has been studied in various populations, such as adolescents (Anyan & Hjemdal, 2016) and general university students (Karing, 2021; Liu et al., 2021; Zhang et al., 2022), limited research has specifically addressed underprivileged university students, who may experience distinct challenges that impact their mental well-being. This study aims to fill this gap by examining whether resilience buffers the negative effects of stress and serves as a protective factor against anxiety and depression in underprivileged university students. Hypotheses for this study are: 1) Stress is negatively associated with resilience and positively associated with anxiety and depression., 2) Resilience can be a mediator between stress and depression and between stress and anxiety among underprivileged students.

Method

Participants

The sampling technique used in this research was convenience sampling. The inclusion criteria for participants in this research were (1) Underprivileged university students ((undergraduate students receiving government-funded financial assistance programs for economically disadvantaged students specifically the Bidikmisi or KIP scholarships (students with low income parents, <IDR 2,500,000), deceased parents, and non-working parents); (2) willing to participate in the implementation of the research as evidenced by informed consent. The number of participants was determined by the availability of participants who met the criteria and the willingness to participate in the study by signing the informed consent. Bidikmisi or KIP (Kartu Indonesia Pintar) Scholarship is a scholarship given to financially disadvantaged students.

This research used online methods in the Single Sign On (SSO) System of Universitas Diponegoro SSO is an integrated system that connects Universitas Diponegoro academics with various Information Technology facilities that contain various academic and non-academic information and services. Students who meet the criteria can participate in the research and complete the questionnaire on their account. Data collection was carried out on August 13-22,

2021. Before filling out the instrument, the participants had to complete a research consent approval and filling in their identity. Furthermore, they had to fill out the instruments.

Instruments

This research use Connor-Davidson Resilience Scale (CD-RISC 10) and Depression Anxiety and Stress Scale 21 (DASS 21). DASS 21 was designed to measure negative emotional states of stress as the predictor variable, and depression and anxiety as dependant variables. The DASS-21 consisted of three subscales with 21 total items which has Cronbach alpha coefficients with .93 for total score and .90, .88, .82 for stress, depression, and anxiety scale (Henry & Crawford, 2005) and has been adapted into Indonesian by (Damanik, 2006). An item example on this measure was "I feel my lips are often dry". This instrument was a Likert scale consisting of four response categories: never (0), sometimes (1), often (2), and very often (3). The interpretation of the results of this instrument was divided into three negative emotional states namely depression, anxiety, and stress with five categories of normal, mild, moderate, severe, and extremely severe. The higher the score, the higher the level of depression, anxiety and stress. Recommended cut-off scores DASS-21 are available (Lovibond & Lovibond, 1995) (Table 1). CD-RISC 10 consisted of 10 items to measure individual resilience (as a mediator in this study) which has Cronbach alpha coefficients with scores .85 (Campbell-Sills & Stein, 2007) and has been translated into Indonesian by (Listiyandini & Akmal, 2015). An item example on this measure was "I am able to adapt to changes that occur". This instrument was in the form of Likert scale consisting of five categories of choices: never (1), almost never (2), occasionally (3), often (4), and almost always (5). Interpretation of the results of this instrument was conducted by looking at the total score of all participants based on predetermined quartile categorization, such as 0-29 (low), 30-32 (slightly low), 33-36 (moderate) and 37-40 (high) (Connor & Davidson, 2018). The higher the score obtained, the higher the level of resilience. Recommended cut-off scores DASS-21 are available (Lovibond & Lovibond, 1995) (Table 1).

Table 1.

Cut-of scores DASS-21

	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Analytical Technique

Data analysis utilized regression testing using Statistical Program for Social Science 25 (SPSS-25) to determine resilience's mediating role. The mediating effect of resilience on the relationship between stress and anxiety symptoms and depression was tested using structural equation modeling (SEM modeling) to estimate the indirect, direct, and total effects for each relationship. The mediating effect was established when the 95% bias-corrected bootstrap confidence interval did not contain zero. The Analysis Moment of Structural (AMOS)-24 application was used to examine the relationship model of the research variables.

Result and Discussion

Characteristic of Participants

This research involved 872 participants consisting of 246 male (28.21%) and 626 female (71.79%) students. Parents' income was IDR.2,000,000-IDR.2,500,000 or equivalent to USD 122.20– USD 152.75 (22.94%), and had non-working father (43%) and mother (51.49%).

Participants were from rural areas (referring to individuals residing in regency regions) at 72.6% and urban areas (referring to individuals residing in city regions) at 27.4% (Table 2).

Table 2.

Participant demographics

Variable	Participant's characteristics	n	%
Gender	Male	246	28.21
	Female	626	71.79
Origin	Rural	633	72.6
	Urban	239	27.4
Education	Diploma	162	18.58
	Undergraduate	710	81.42
Parent's income	0-499,000 IDR	118	13.53
	500,000-999,000 IDR	63	7.22
	1,000,000-1,499,000 IDR	169	19.38
	1.500.000-1.999.000 IDR	182	20.87
	2.000.000-2.500.000 IDR	200	22.94
Father's status	Deceased	140	16.06
	Non-working	184	21.10
	Working	375	43.00
Mother's status	Deceased	45	5.16
	Non-working	378	43.35
	Working	449	51.49

Table 3 shows that most participants had low resilience (58.37%), and normal levels of depression (81.31%), anxiety (40.94%) and stress (72.71%).

Table 3.

Resilience, depression, anxiety, and stress levels in participants

Variable	Level	n	%	M (SD)/R
Resilience	Low	509	58.37	29.58 (4.37)/ 13-40
	Mild	140	16.06	
	Moderate	181	20.76	
	High	42	4.82	
Depression	Normal	709	81.31	5.11 (5.87)/ 0-38
	Mild	75	8.60	
	Moderate	66	7.57	
	Severe	11	1.26	
	Extremely severe	11	1.26	
Anxiety	Normal	357	40.94	9.79 (7.03)/ 0-38
	Mild	103	11.81	
	Moderate	247	28.33	
	Severe	78	8.94	
	Extremely severe	87	9.98	
Stress	Normal	634	72.71	11.51 (7.45)/ 0-42
	Mild	115	13.19	
	Moderate	80	9.17	
	Severe	29	3.33	
	Extremely severe	14	1.61	

Note. M = Mean; R = Range

Data Analysis

Correlation analysis showed the results of the correlation analysis of the research variables (Table 4). Stress was significantly and negatively associated with resilience but positively associated with anxiety and depression ($p < .01$). The findings of the study demonstrated a significant negative association between stress and resilience, as well as a significant positive association between stress and both anxiety and depression.

The study's outcomes also revealed a significant adverse link between stress and resilience, while simultaneously indicating a positive connection between stress and anxiety and depression. These findings were consistent with earlier research that had demonstrated an inverse correlation between stress and resilience, as well as a direct correlation between stress and heightened levels of anxiety and depression (Anyan & Hjemdal, 2016; Kelifa et al., 2020; Lara-Cabrera et al., 2021).

Low resilience alongside normal levels of depression, stress, and anxiety in underprivileged students may occur due to engagement in student organizations for socialization and seek for social support (Megarini et al., 2022) and receiving scholarships like Bidik Misi or Kartu Indonesia Pintar (KIP). A study involving Malaysian university students reported similar findings to those observed in this study. The results indicated that more than half of the participants experienced normal to mild levels of stress and depression, with more than half of participants being scholarship recipients (Fauzi et al., 2021). These conveniences and opportunities may reduce the perception of challenges, leading to lower resilience. However, the low resilience observed among participants may also be indirectly caused by their low socio-economic status. Students with low economic status tend to have lower emotional intelligence and are less likely to demonstrate courage in facing both positive and negative situations (Khan & Dar, 2013). This may lead to lower resilience as they feel they lack sufficient resources to face challenging situations. Furthermore, previous studies have indicated that lower levels of Emotional Intelligence are associated with decreased resilience (Aljarboa et al., 2022). By considering these factors together, it can be suggested that while adequate facilities, social engagement, and financial aid reduce immediate stressors, underlying socio-economic challenges may still impact emotional coping abilities and overall resilience. Further research is needed to explore how these factors interact and influence resilience in underprivileged students.

Table 4.

Correlation for all the measures

Variable	Resilience	DASS		
		Depression	Anxiety	Stress
Resilience	1	-.220**	-.173**	-.215**
Depression	-.220**	1	.640**	.605**
Anxiety	-.173**	.640**	1	.691**
Stress	-.215**	.605**	.691**	1

Notes. ** Correlation is significant at the 0.01 level (2-tailed)

The two mediation analyses were performed using SEM modeling. Table 4 and Figure 1 show the 95% bias-corrected bootstrap CI and a summary of the results of the mediating role of resilience in stress and anxiety and the role of resilience in stress and depression. The first analysis examines the role of mediating resilience between stress and anxiety. The results show that resilience does not mediate the relationship between stress and anxiety, as evidenced by the unfulfilled p-value of the indirect effect ($p > 0.01$). The second analysis tested whether resilience could mediate the relationship between stress and depression ($\beta = 0.016, p < .01$). The results show that resilience partially mediates the relationship between stress and depression.

Table 5.
Mediating analysis

Effect	Depression		Anxiety		Resilience	
	B (SE)	Bias-corrected bootstrap 95% CI	B (SE)	Bias-corrected bootstrap 95% CI	B (SE)	Bias-corrected bootstrap 95% CI
DE						
Resilience	-0.13*** (0.04)	-0.21 - -0.04	-0.04 (0.04)	-0.14 - 0.05		
Stress	0.46*** (0.03)	0.40 - 0.53	0.65*** (0.02)	0.59 - 0.71	-0.13*** (0.02)	-0.17 - -0.09
IE						
Resilience						
Stress	0.02*** (0.01)	0.01 - 0.03	0.01 (0.01)	-0.01 - 0.02		
TE						
Resilience	-0.13*** (0.04)	-0.21 - -0.04	-0.04 (0.05)	-0.14 - 0.05		
Stress	0.48*** (0.03)	0.42 - 0.54	0.65*** (0.03)	0.60 - 0.71	-0.126*** (0.02)	-0.17 - -0.09

Notes. SE: standard error; B: Unstandardized path koefisien; CI: Confidence Interval; DE : Direct Effect; IE : Indirect Effect, TE : Total Effect, ***p<0.01

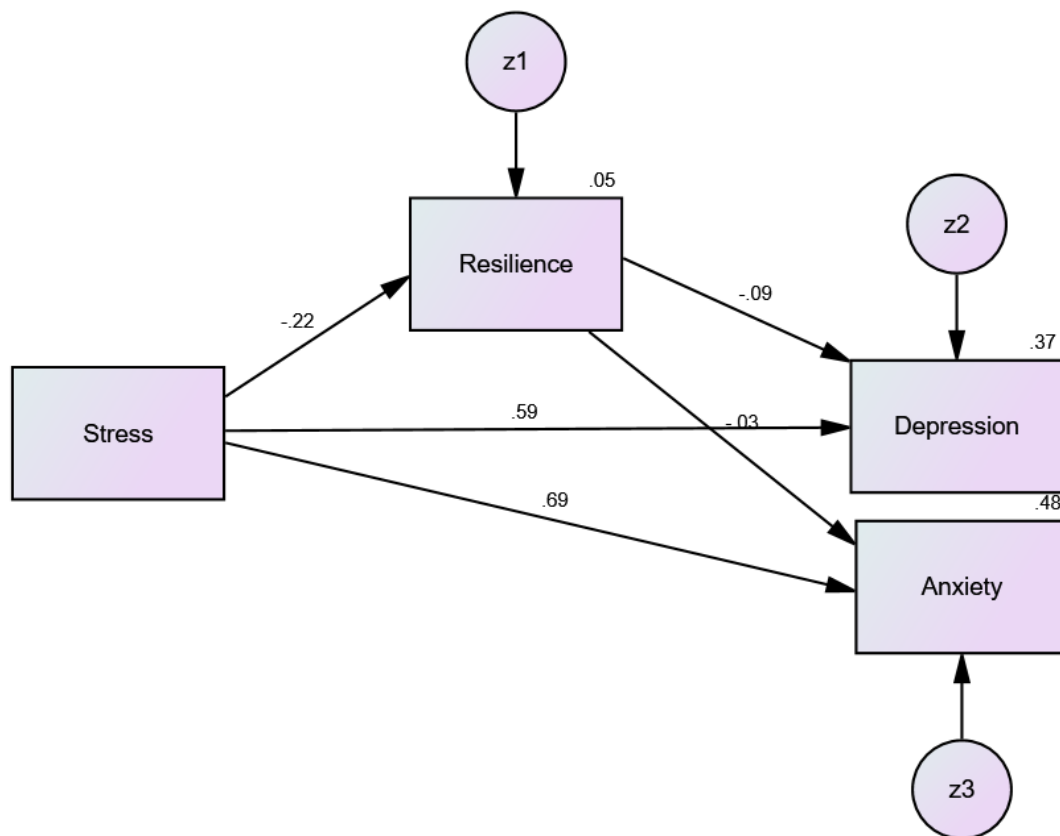


Figure 1. Mediating Effect

The first analysis indicates that resilience does not mediate the relationship between stress and anxiety. Several studies emphasize the crucial role of resilience as a key factor in reducing the impact of stress on anxiety in various context (Anyan & Hjemdal, 2016; Tamarit et al., 2023; Tuxunjiang et al., 2022). However, other factors can influence the dynamics between these variables, such as hope, which is known to mediate the relationship between resilience and depression, anxiety, and stress (Rambod et al., 2024) or coping strategies, which mediate the relationship between resilience and mental health (Muniandy et al., 2021). Previous study

highlights that the interaction between resilience and coping strategies can affect anxiety levels, with varying results depending on the type of coping strategy used (Gloria & Steinhart, 2016). For example, individuals with productive coping strategies are associated with lower anxiety levels, while those with unproductive coping strategies tend to have higher anxiety (Portillo-Reyes et al., 2022).

Research on university students shows that perceived anxiety and stress are negatively associated with resilience, suggesting that resilience may not fully mediate the relationship between stress and anxiety (Batmaz & Çelik, 2024). The impact of resilience on anxiety may vary based on demographic factors such as age and socioeconomic status. It is known that older adults tend to have higher resilience and better cope with the effect of difficulties (Hsieh et al., 2024). In contrast, this study focuses on underprivileged students, who generally have lower resilience. Additionally, individual with lower socioeconomic status tend to have lower resilience, which affects the psychological stress (Parvar et al., 2022). The underprivileged students in this study have similar conditions. Beyond demographic factors, individual factors not addressed in this study could influence the results. Life experiences, such as early life stress and adulthood experiences, in interaction with genetic and environmental factors, can affect individuals' responses to stress and resilience. This is also observed in undergraduate students facing various life challenges (Albayrak et al., 2024).

The second analysis reveals that resilience partially mediates the relationship between stress and depression. Previous studies indicate that resilience can mediate the relationship between COVID-19 related stress and depression, with individuals exhibiting higher resilience being more protected from the depressive effects of stress (Hu et al., 2022). Other studies have found that resilience partially mediates the relationship between stress and depressive symptoms (Catabay et al., 2019). A longitudinal study reported that resilience fully mediates the positive affect on changes in depression and partially mediates the negative effect on depression changes (Loh et al., 2014).

The results of this study suggest that while resilience plays a role in reducing the impact of stress on depression, it does not completely neutralize the negative effects of stress. This is evident from the significant direct effect of stress on depression even after accounting for resilience. These findings highlight the importance of interventions that not only focus on enhancing resilience but also directly target stress management to effectively reduce levels of depression. However, resilience alone may not be sufficient to buffer the effects of stress on depression, as it is influenced by both internal and external factors. For instance, social support is an external resource that has been found to moderate the relationship between stress and mental health outcomes. Studies indicate that resilience and social support together mediate the effects of stress on depression (Catabay et al., 2019; Hu et al., 2022; Shi et al., 2022). This is because social support provides emotional backing, reduces stress, and mitigates depressive effects (Catabay et al., 2019; Hu et al., 2022). Other research has identified coping strategies as mediators in the relationship between resilience and mental health (Muniandy et al., 2021). This emphasizes the need for comprehensive interventions that not only enhance resilience but also cultivate effective coping mechanisms and foster supportive social environments.

Overall, the findings of this study because depression and anxiety are very complex disorder and influenced by many factor. A study found protective factors for anxiety such as mindfulness, optimism, and coping strategies (Karing, 2021). Furthermore, it is known self-confidence, goal orientation, social competence, family cohesion, and social support are potential to reduce symptoms of depression (Askeland et al., 2020). The relationship between stress and anxiety and depression can also be influenced by personal disposition, family warmth, coherence, and external support systems (Anyan & Hjemdal, 2016). Further research should consider other factor that may contribution resilience as a mediator between stress and anxiety or stress and anxiety.

Conclusion

Resilience is proven to play a significant role in the relationship between stress and depression and stress and anxiety. Although the results indicate that resilience does not mediate the relationship between stress and anxiety, these findings highlight resilience's role as a protective factor against the direct effects of stress, without reducing anxiety. Resilience plays a role in mitigating the impact of stress on depression, but it does not fully neutralize the negative effects of stress on depression, as various internal and external factors can influence the dynamics of this relationship.

The different results of resilience as a mediator on stress with anxiety and depression influenced by various factors. So, further researchers also should consider other factor that may contribution resilience as a mediator between stress and anxiety such as hope, and coping strategies and other factor contribution resilience as a mediator between stress and depression such as social support and coping strategies. The evaluation of this research is the criteria for underprivileged students are quite board. Therefore, researcher can determine more specific criteria for underprivileged students. The results of this study support the statements that resilience is a dynamic process model. Resilience has various concepts and models influenced by various protective factors and risk factors.

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