



Relationship between stress management skills and student resilience in collaborative project-based assessment

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ABSTRACT

This study aims to examine the relationship between stress management skills and students' resilience in facing collaborative project-based assessment. The participants were 117 junior high school students from two private schools in Bandung who were involved in collaborative project-based assessments. This study employed a quantitative correlational research design. Data were collected using questionnaires measuring students' stress management skills and resilience, which were validated through expert judgment and tested for reliability using Cronbach's Alpha. The data were analyzed using descriptive statistics and Spearman's correlation test. The results show that most students demonstrate high levels of stress management and resilience, indicating the use of adaptive coping strategies and strong learning perseverance. However, the correlation between stress management and resilience was very weak and not statistically significant. These findings indicate that students' academic resilience may be influenced more by external factors such as social support, learning environment, and academic context rather than individual stress management skills. This study highlights the importance of supportive learning environments in strengthening students' resilience when facing collaborative project-based assessments.

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INTRODUCTION

In 21st century education, students are required to have collaborative and critical thinking skills. This must be supported by the implementation of a scientific approach through innovative models, one of which is Project Based Learning (PjBL). The PjBL model is believed to be able to increase creativity, scientific process skills, as well as cognitive, affective, and psychomotor achievements of students (Riyadi et al., 2020).

The application of Project-Based Learning (PjBL) has been proven effective in improving 21st century skills, including critical thinking, communication, creativity, and collaboration. From a review of 17 national articles, PjBL encourages learner-centered learning through real projects that train problem analysis, idea delivery, creativity, and cooperation. In addition to improving learning outcomes, PjBL also fosters tolerance, courage to express opinions, and the ability to connect theory with life. Thus, PjBL is an efficient strategy for developing 4C skills in 21st-century education (Undari et al., 2023).

Project-based learning (PjBL) at SMAN 14 Bandung is implemented as part of the Merdeka Curriculum to encourage student creativity. The implementation focuses on PjBL in the form of collaborative projects between subjects. The project is carried out through a cabaret performance that requires students to develop their creativity. In this case, teachers function as facilitators and supervisors, monitoring the process from the preparation stage, implementation, to assessment and evaluation (Ratnawulan et al., 2024).

In the perspective of future education, PjBL is seen as capable of creating more meaningful learning because it is student-centered and based on real experiences. Through systematically designed projects, students not only gain knowledge but also practice problem-solving, generate innovative ideas, work together in teams, and communicate results effectively. The implementation of PjBL will be optimal if teachers act as facilitators and technology is integrated to support the project process. Thus, PjBL becomes a relevant and efficient approach in preparing students to face the challenges of the 21st century, while strengthening the direction of future education that emphasizes adaptive and collaborative skills (Mudinillah et al., 2024).

Performance assessment in project-based learning (PjBL) plays an important role as a form of authentic assessment that emphasizes the process, not just the final result. In a study at SMP Muhammadiyah 10 Surabaya, assessment was carried out through observation of student activities in the preparation, implementation, and reporting stages of a mathematics project. Teachers assessed the readiness of tools and materials, the appropriate use of concepts and tools, and the quality of reports and presentations. The PjBL model, which emphasizes active involvement, responsibility, and problem-solving skills, makes performance assessment a key indicator of learning success (Biantoro et al., 2020).

Assessment is a crucial component in the implementation of PjBL. Evaluation is carried out not only on the final results of the project but also on the learning process, competency achievement, and satisfaction. Assessment includes program evaluation, student competency assessment, and teaching methodology effectiveness, using methods such as observation, tests, portfolios, peer assessment, and satisfaction surveys. The review results emphasize the need for a comprehensive, evidence-based evaluation model that involves all stakeholders so that the implementation of PjBL can demonstrate a real improvement in the quality of learning (Dampierre et al., 2024).

According to Mawar and Fernandes (2025), the implementation of PjBL at Pertiwi 1 High School in Padang still faces various obstacles. Many students find it difficult to develop project plans, divide roles, and conduct field observations correctly. Some are not used to working independently, so the reports they produce tend to be opinions without data. Group conflicts also often arise due to an unbalanced division of tasks. In addition, students experience confusion in identifying problems, conducting interviews, and recording data systematically. Limited access to technology, especially for students from underprivileged families, further widens the gap between groups. These findings indicate that PjBL requires gradual familiarization, intensive mentoring, and facility support so that students can adapt optimally.

Preliminary observations in junior high school project-based assessments indicate varying student responses in Project-Based Summative Assessment activities, which also revealed several obstacles in the field. The facts in the field show that some students began to complain and did the project half-heartedly, while other students showed strong resilience when faced with failure, continuing to try until the project was successful. The different reactions among these groups of students prompted the author to further examine student resilience in facing project-based summative assessments and to assess the relationship between the level of resilience and students' ability to manage stress during the project work process. Based on this description, the main issue in this study is the extent to which stress management skills are related to students' resilience in facing Collaborative Project-Based Assessments. Thus, this study aims to examine the relationship between stress management skills and student resilience in the context of Collaborative Project-Based Assessments.

Academic stress in students arises as a result of demanding curricula, numerous assignments with tight deadlines, and high expectations from teachers and parents. This condition is exacerbated by limited study time, dynamic peer relationships, and students' doubts about their own abilities. According to Gadzella and Masten, academic stress can be characterized by symptoms of frustration,

conflict, pressure, change, and self-imposed pressure, which then give rise to physical reactions such as fatigue, emotional reactions such as sadness and disappointment, and procrastination (Khilma & Utami, 2024).

Stress management in the journal article (Aprilianingrum et al., 2025) is described as cognitive and behavioral efforts to control or reduce pressure from academic demands and the social environment. Lazarus and Folkman divide coping strategies into two types: problem-focused coping—which includes directly confronting the source of stress, analyzing and planning solutions, and seeking social support—and emotion-focused coping, such as controlling emotions, avoiding problems, accepting personal responsibility, interpreting stress positively, and taking psychological distance from the source of pressure.

In the journal *Resilience in “High-Risk” Adolescents Reviewed from Protective Factors*, resilience is described as an individual's ability to recover and adapt positively when facing stress or difficult conditions. Resilience does not only mean survival, but also a developmental process that allows adolescents to move forward despite living in risky situations, such as slum environments, low-income families, or having parents with mental disorders. Protective factors that support resilience include internal aspects—such as social skills, problem-solving abilities, independence, internal locus of control, and life goals—as well as external aspects, such as involvement in groups, supportive relationships, and positive expectations from the environment. Research shows that adolescents with strong protective factors are able to cope with life's pressures, avoid negative behaviors, and demonstrate healthy adjustment. Thus, resilience is an important psychological asset for “high-risk” adolescents to remain adaptively functioning despite various limitations (Mulyati, 2009).

In a journal article (Sari et al., 2023), project-based learning (PjBL) combined with performance assessment proved to be effective in improving cognitive learning outcomes. In this model, students actively design, implement, and present projects related to organ system material, so that they understand the concepts while producing tangible products. Performance assessment evaluates the entire process with clear rubrics, making the assessment more objective. Research shows that the combination of PjBL and performance assessment helps students think critically, collaborate, and take responsibility, making it an effective approach to improving learning outcomes and 21st-century skills.

In a study on resilience and stress management (Muhlisa, 2021), it was found that the better students used coping strategies, the higher their ability to persevere, bounce back from difficulties, and adapt to academic pressure. Coping strategies are an important factor that helps students deal with heavy study demands, while academic resilience emerges as the ability to remain productive and positive even in stressful situations. Thus, this study confirms that stress management through appropriate coping plays a major role in shaping students' academic resilience.

Another study on resilience and stress management (Ainurrohmah et al., 2023) shows differences between those who use problem-focused coping (PFC) and emotion-focused coping (EFC). Students with PFC tend to have higher resilience because they actively face problems, plan solutions, and seek help. Conversely, students with EFC are more focused on managing emotions, avoiding problems, or accepting situations without solutions, resulting in lower resilience. The analysis shows that the majority of students fall into the moderate resilience category, but the PFC group is more prevalent in the high category. These findings emphasize that adaptive coping strategies play an important role in strengthening learning resilience in the face of academic demands.

RESEARCH METHOD

This study employed a quantitative correlational research design to examine the relationship between students' stress management skills and resilience in facing collaborative project-based assessments. A correlational design is commonly used to investigate relationships between variables without manipulating them or establishing causal effects (Creswell, 2014). The population of this study consisted of junior high school students who participated in collaborative project-based assessments as part of the Final Summative Assessment in the 2024/2025 academic year. The sampling technique used was purposive sampling, in which participants were selected based on their

direct involvement in collaborative project-based assessment activities. The research sample consisted of 117 students from two private junior high schools under the Yayasan Salib Suci foundation, namely SMP Pandu Bandung and SMP Santo Yusup 2 Bandung.

Data were collected using questionnaires measuring students' stress management skills and resilience in facing collaborative project-based assessments. Each questionnaire consisted of 30 items measured using a four-point Likert scale ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). Higher scores indicate better stress management abilities and higher levels of student resilience. The instruments were developed based on theoretical frameworks related to coping strategies and academic resilience. Stress management skills refer to students' ability to regulate emotions and apply coping strategies in dealing with academic pressure (Lazarus & Folkman, 1984). Meanwhile, resilience refers to students' ability to adapt, recover, and remain persistent when facing difficulties in the learning process (Cassidy, 2016).

Prior to data collection, the instruments were evaluated through expert judgment to ensure content validity. Three experts in educational psychology, language, and educational assessment reviewed the instruments. The results of the expert review were used to revise and refine the questionnaire items. The reliability of the instruments was subsequently tested using Cronbach's Alpha. Data collection was conducted using online questionnaires distributed through Google Forms to the participating students. Respondents were instructed to answer the statements honestly based on their experiences in participating in collaborative project-based assessments.

The data analysis was conducted in several stages. Descriptive statistics were first used to describe students' stress management and resilience levels. Next, validity and reliability tests were conducted to evaluate the quality of the instruments. A normality test using Kolmogorov–Smirnov and Shapiro–Wilk tests was then performed to determine the distribution of the data. Because the data were not normally distributed, the relationship between stress management skills and student resilience was analyzed using the Spearman correlation test (Field, 2013).

RESULT AND DISCUSSION

This section presents research findings related to students' stress management and resilience abilities in facing Collaborative Project-Based Assessment. Data obtained from questionnaires were analyzed to determine the level of each variable and the relationship between students' stress management and resilience abilities. Content validity tests were conducted on both instruments to ensure that each question item was able to measure the variables of students' stress management abilities and resilience. Content validity was measured using the Aiken V coefficient, based on the assessment of three experts in the fields of educational psychology (guidance counseling), measurement and assessment, and language. The validity test results are shown in Table 1.

Based on the results of the V Aiken calculation, all items on both the stress management and resilience measurement instruments had values between 0.89 and 1.00. This indicates that all items on both instruments are valid, as the V Aiken values are above the minimum threshold of 0.70. Thus, there are no instrument items that require revision according to expert assessment, so the instruments are declared suitable for use in research.

After all instrument items are declared content valid, the next step is to test the reliability of the instruments to determine the extent to which the instruments provide consistent and reliable results in measuring students' stress management and resilience abilities. The reliability test was conducted using Cronbach's Alpha. The instrument was declared reliable if the Cronbach's Alpha value was ≥ 0.70 . The following are the results of the Cronbach's Alpha reliability test on both instruments with $n=30$ and significance of 0.05.

Table 1. Aiken's V value on the Stress Management and Resilience Instrument

No Item	Stress Management Instrument		Resilience Instrument	
	V' Aiken	Remarks	V' Aiken	Remarks
Item 1	1.00	Valid	0.85	Valid
Item 2	0.93	Valid	1.00	Valid
Item 3	0.93	Valid	0.96	Valid
Item 4	1.00	Valid	0.89	Valid
Item 5	0.93	Valid	0.81	Valid
Item 6	0.93	Valid	1.00	Valid
Item 7	1.00	Valid	0.74	Valid
Item 8	0.93	Valid	0.93	Valid
Item 9	1.00	Valid	1.00	Valid
Item 10	0.93	Valid	1.00	Valid
Item 11	0.93	Valid	0.93	Valid
Item 12	0.93	Valid	0.96	Valid
Item 13	0.93	Valid	1.00	Valid
Item 14	0.93	Valid	1.00	Valid
Item 15	1.00	Valid	0.93	Valid
Item 16	0.96	Valid	0.93	Valid
Item 17	1.00	Valid	0.89	Valid
Item 18	0.93	Valid	0.89	Valid
Item 19	0.93	Valid	0.89	Valid
Item 20	0.93	Valid	1.00	Valid
Item 21	0.89	Valid	1.00	Valid
Item 22	0.89	Valid	1.00	Valid
Item 23	0.96	Valid	1.00	Valid
Item 24	0.93	Valid	0.89	Valid
Item 25	0.93	Valid	0.89	Valid
Item 26	0.89	Valid	0.89	Valid
Item 27	0.93	Valid	1.00	Valid
Item 28	0.96	Valid	1.00	Valid
Item 29	0.96	Valid	0.85	Valid
Item 30	0.89	Valid	1.00	Valid

Table 2. Reliability Values of the Instruments on Stress Management and Resilience

Instrument	Cronbach's Alpha	Remarks
Stress Management	0.916	Very high reliability
Resilience	0.918	Very high reliability

Cronbach's Alpha values of 0.916 and 0.918 for each instrument indicate that the instruments used have a very high level of reliability. This means that the 30 items in the instrument consistently measure the same construct, so that the measurement results can be trusted and are stable when used in similar contexts.

After the research data was collected through questionnaires on students' stress management and resilience abilities, the next step was to conduct a descriptive analysis to obtain an initial picture of the students' stress management and resilience levels. This descriptive analysis aims to describe the data systematically, so that the distribution of scores, averages, and general trends of both variables can be seen before conducting a relationship analysis. The following table shows the results of the descriptive analysis for both variables measured using Jamovi software:

Table 3. Descriptive Analysis of the Stress Management and Resilience Instrument's

Criteria	Stress Management	Resilience
Number of Respondents	117	117
Mean Score	93.03	92.05
Minimum Value	60.00	55.00
Maximum Value	120.00	120.00
Standard Deviation	10.43	10.64

Based on descriptive data from 117 respondents, the average stress management score of 93.03 and academic resilience score of 92.05 indicate that the majority of students are in the high category for both variables. Referring to Lazarus and Folkman's theory, stress management includes two main strategies: problem-focused coping (PFC) and emotion-focused coping (EFC). High scores in stress management indicate that students tend to use adaptive strategies such as seeking solutions, planning actions, and managing emotions constructively in the face of academic pressure. Meanwhile, according to Cassidy (2016), academic resilience is categorized into three levels: low, medium, and high, based on students' ability to persevere and bounce back from learning difficulties. With an average score of 92.05 and a standard deviation of 10.64, the data distribution shows that most students have high resilience capacity, able to face academic challenges with a positive attitude, perseverance, and effective problem-solving strategies. Overall, this data shows that students who are able to manage stress adaptively tend to have high levels of academic resilience. This supports the assumption that appropriate coping strategies contribute directly to students' resilience in facing learning pressures and academic demands.

After the research instruments were declared valid through the Aiken test and reliable based on Cronbach's Alpha, the next step was to analyze the data characteristics. Before conducting a correlation test, it is necessary to know the data distribution to ensure that the data is normally distributed. Therefore, a normality test was conducted using the Kolmogorov-Smirnov and Shapiro-Wilk methods for each research variable. The normality test in this study was also conducted with a significance level of 0.05 and using the SPSS program. The following are the results of the normality test on both instruments.

Table 4. Reliability Values of the Instruments on Stress Management and Resilience

Instrument	Kolmogorov-Smirnov Sig.	Remarks	Shapiro-Wilk Sig.	Remarks
Stress Management	0.005	Not Normal	0.004	Not Normal
Resilience	0.059	Normal	0.006	Not Normal

The results of the normality test for the stress management variable show that the data are not normally distributed, based on both the Kolmogorov-Smirnov and Shapiro-Wilk tests. The significance values in both tests are below the significance level of 0.05, where the Kolmogorov-Smirnov test Sig. is 0.005 and the Shapiro-Wilk test Sig. is 0.004. The normality test results for the resilience variable showed different results between the two methods. Based on the Kolmogorov-Smirnov test, the significance value of 0.059 was above the threshold of 0.05, so the resilience data could be considered normally distributed. However, the Shapiro-Wilk test showed a significance value of 0.006, which means that the null hypothesis is rejected, and the data is not normally distributed. This testing criterion is in accordance with the research by Rao et al. (2024), which states that if the Shapiro Wilk and Kolmogorov-Smirnov tests yield $p < 0.05$, then the data is not normal.

Because the normality test on both instruments showed that the data was not normally distributed, the hypothesis test to determine whether there was a relationship between stress management skills and student resilience in facing collaborative project-based assessments was conducted using a non-parametric test, namely the Spearman correlation test. The following are the results of the Spearman correlation test using Jamovi software.

Table 5. Spearman Correlation Test on the Stress Management and Resilience Instruments

			Stress Management	Resilience
Spearman's rho	Stress Management	Correlation Coefficient	1.000	0.021
		Sig. (2-tailed)	.	0.819
		N	117	117
	Resilience	Correlation Coefficient	0.021	1.000
		Sig. (2-tailed)	0.819	.
		N	117	117

The results of Spearman's correlation analysis show that there is no significant relationship between stress management skills and student resilience in facing Collaborative Project-Based Summative Assessment in 117 respondents. This can be seen from the significance value of 0.819, which is greater than the significance level of 0.05. In addition, based on the Spearman correlation coefficient, a value of 0.021 was obtained, indicating that the level of stress experienced by students has a very weak correlation with their level of resilience. The determination of the correlation strength criteria refers to the guidelines proposed by [Azijah and Mahdy \(2023\)](#) as follows.

Table 6. Correlation Strength

Interval	Degree of Relationship
0.00 – 0.199	Very Weak
0.20 – 0.399	Weak
0.40 – 0.599	Moderate
0.60 – 0.799	Strong
0.80 – 1.00	Very Strong

The results of the correlation analysis show that even though students face difficulties in carrying out collaborative project-based assessments, this does not automatically reduce their ability to adapt and bounce back in the learning process. This finding is in line with [Cassidy's \(2016\)](#) statement that academic resilience is influenced by various protective factors, such as intrinsic motivation, social support, and learning strategies, not only by the level of task difficulty or assessment complexity. In addition, [Lazarus and Folkman \(1984\)](#) emphasize that the effectiveness of stress management through the application of appropriate coping strategies plays a more important role in influencing students' psychological conditions and academic performance than the amount of pressure itself.

These findings are also in line with research conducted by [Komalasari et al. \(2025\)](#), which found that teacher support influences the creation of student academic resilience. The higher the teacher support, the higher the student academic resilience. Teacher support acts as a protective factor that helps students cope with academic demands, reduces the risk of dropping out of school, and improves their ability to adapt in difficult situations. This study also emphasizes that in addition to teacher support, other factors such as peer support and students' personal circumstances also influence resilience. However, another study by [Muhlisa \(2021\)](#) actually states different results. The study confirms that coping strategies contribute significantly to academic resilience, although other factors such as social skills, environmental support, and intrapersonal abilities also influence student resilience. Students who are able to use coping strategies effectively—whether problem-focused or emotion-focused—have higher levels of academic resilience. This means that the more adaptively students manage academic pressure, the greater their ability to persevere, bounce back from difficulties, and adapt to the demands of college.

The difference in results can be traced back to the research subjects used. In the author's study, the research subjects were junior high school students aged 12 to 15 years old. Meanwhile, [Muhlisa's \(2021\)](#) study subjects were university students. The age difference between the two research subjects certainly had an influence on the research results. This difference can be explained by several factors, namely individual development factors, academic context factors, and social and support factors.

Students are in early adulthood with more mature cognitive and emotional capacities, enabling them to consciously and purposefully use coping strategies, both problem-focused and

emotion-focused. This ability allows stress management to contribute directly to increased academic resilience, in line with Santrock's (2018) view of cognitive and socioemotional maturity, as well as Lazarus and Folkman's (1984) emphasis on the role of coping in psychological resilience.

In contrast, junior high school students are still in early adolescence, with emotional regulation and coping skills that are not yet fully developed. As a result, despite experiencing academic stress, their resilience relies more on external factors such as support from teachers, family, and peers, rather than personal coping skills. Academic context factors also play a role, where university students face complex and long-term academic pressures, making coping strategies a primary tool for survival, while junior high school students face relatively lighter stress. Overall, the effectiveness of individual coping is a dominant factor in university students' resilience, while junior high school students' resilience is more supported by social and environmental support (Santrock, 2018; Lazarus & Folkman, 1984).

CONCLUSION

Based on the research, the instruments used to measure students' stress management and resilience are valid and reliable. Descriptive analysis shows that the majority of students have high scores on both variables, indicating good adaptive coping skills and learning resilience. Although the correlation between stress management and resilience is very weak, students are still able to adapt. This shows that resilience is influenced not only by individual coping, but also by social support, environment, and academic context, where university students rely more on personal coping, while junior high school students rely more on external support. Recommendations Based on the research findings, several recommendations can be made: teachers and schools should continue to provide social support and build a conducive learning climate to increase student resilience, especially for junior high school students whose personal coping skills are still developing. Future researchers are encouraged to consider additional factors such as peer support, intrapersonal skills, and psychological conditions, as well as to use larger samples. In addition, schools can organize stress management and resilience-building training programs to prepare students for project-based assessments and other academic challenges.

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