



The effect of self-esteem on academic anxiety through attribution bias among public senior high school students in Eastern Cirebon

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Article Info	Abstract
Keywords: Self-esteem, academic anxiety, attribution bias, high school students, guidance and counseling.	Self-esteem refers to individuals' perceptions of themselves, encompassing self-confidence and personal worth. Low self-esteem among students tends to affect their academic development, such as feeling incapable and lacking confidence in facing academic challenges, which in turn may increase academic anxiety. This study seeks to analyze the effect of self-esteem on academic anxiety through attribution bias among senior high school students in East Cirebon. The research employed a correlational design with a sample of 351 students selected using proportional multistage random sampling. Data were collected using the Rosenberg Self-Esteem Scale (RSE) with 10 items, the Academic Anxiety Scale with 11 items, and the Attribution Bias Instrument (ABI) with 32 items. Hypothesis testing was conducted using Hayes Model 4. The analysis results show a non-significant indirect effect of self-esteem on academic anxiety ($p > 0.05$). Furthermore, the indirect effect of self-esteem on academic anxiety through attribution bias was also not significant. In other words, attribution bias did not mediate the relationship between self-esteem and academic anxiety. This finding implies that it is important for school counselors to pay attention to students' self-esteem and attribution in order to reduce their academic anxiety.
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Introduction

The psychological and social development of adolescents at the senior high school level is often marked by the dynamics of academic anxiety. Academic anxiety, which refers to excessive fear or worry about achievement and academic demands, can affect students' performance and well-being. Studies indicate that academic anxiety among senior high school students may be influenced by various factors, one of which is self-esteem.

Self-esteem is a concept that has evolved from different psychological theories, beginning with William James's early perspective on self-evaluation, expanded by Rosenberg with a social focus, and later deepened by Rogers by emphasizing the importance of self-acceptance and consistency in life experiences. In his book *Society and the Adolescent Self-Image* (1965), Rosenberg noted that self-esteem is related to how individuals feel valued by others and the extent to which they are satisfied with themselves based on others' perceptions.

Self-esteem reflects an individual's perception of themselves, encompassing confidence and personal worth. Students with low self-esteem tend to feel incapable and lack confidence in facing academic challenges, which in turn may heighten their levels of academic anxiety. Conversely, students with high self-esteem are more capable of handling academic pressure calmly and with greater confidence. Academic anxiety often emerges as the main problems among students. Self-esteem is one of the factors affecting their academic anxiety.

A study found that individuals with lower self-esteem are at risk of suffering from academic anxiety (Liu et al., 2022). This finding asserts the importance of helping students improve their self-esteem in order to minimize academic anxiety and pressure. Academic anxiety should be viewed as a hindrance that may lower students' achievements (Choudhury & Sharma, 2020; L & Muthupandi, 2024). The term academic anxiety includes various types of anxiety related to academic activities, such as fear of achieving lower results compared

to peers, fear of taking on responsibilities, and stress experienced in the classroom environment (Cassady et al., 2019).

In the same vein, Mishra and Metilda (2015) reported similar findings, showing that self-esteem is one of the main contributing factors to students' anxiety. A cross-sectional study conducted by Nguyen et al. (2019) involved 1,149 students and reported the prevalence of low self-esteem among high school students in Vietnam and its relationship with risk factors such as anxiety, depression, academic stress, and suicidal thoughts. Their findings indicated that academic pressure from family and school was the primary cause of low self-esteem among Vietnamese students. Based on this study, anxiety was not found to be significantly associated with self-esteem. Furthermore, Falk and Heine (2015) emphasized culture as a broader factor shaping attributes that can strengthen self-esteem and reduce anxiety.

In addition, another factor that can influence academic anxiety, particularly among school students, is attribution bias. This bias arises when individuals tend to explain the causes of an event—whether success or failure—in a way that is not objective. In academic contexts, attribution bias can appear in several forms.

First, students who attribute their failures to a lack of ability (internal attribution) may feel less confident and experience heightened anxiety (Heider, 1958). Second, students who blame their failures on external factors such as the environment or teaching methods (external attribution) may lose motivation and feel they have little control over their learning outcomes (Weiner, 1985). Third, social evaluations from people around students, such as teachers, peers, or family members, can also reinforce these biases. Negative judgments from the environment may intensify academic anxiety, particularly when students feel they are being judged on the basis of their academic performance (Stephan & Rosenfield, 1978).

Guided by Wu et al.'s (2022) findings on the relationship between self-esteem and academic anxiety, this study was designed. Their study, conducted among secondary students during the COVID-19 pandemic, contrasts with the present research in context. They also recommended that future research examine possible mediating or moderating variables, such as attribution bias and coping skills that may influence the relationship between academic anxiety and self-esteem among senior high school students. Due to the limitations of that study and its recommendations, the present research was designed to examine the effect of self-esteem on academic anxiety through one of the suggested variables, namely attribution bias, among senior high school students.

Furthermore, the literature review reveals that prior research has not explored the effect of self-esteem on academic anxiety while considering attribution bias as a moderating factor. This gap highlights the potential contribution of the present study as a reference for future investigations. The differences in findings among previous studies further motivated the researchers to investigate the effect of self-esteem on academic anxiety through attribution bias among students of public senior high schools in Eastern Cirebon. The results of this study are expected to demonstrate that self-esteem, academic anxiety, and attribution bias can exert significant influence on students in the school context.

Method

This study employed a quantitative approach with an ex post facto design using correlational analysis to examine the effect of self-esteem on academic anxiety through attribution bias. The population consisted of 2,856 students from public senior high schools in Eastern Cirebon. Based on this population, participants were recruited using proportional multistage random sampling derived from Slovin's formula. As a result, 351 students from public senior high schools in eastern Cirebon were recruited. The following table presents the sample distribution:

Table 1. Sample distribution

No	School	Sample	Total Grade
1	SMAN 1 Lemahabang	86	3
2	SMAN 1 Ciledug	147	4
3	SMAN 1 Pabedilan	118	4
Total		351	11

Rosenberg's (1979) 10-item self-esteem scale were used to collect data on self-esteem. This scale used 4-point likert scale, from 1 (strongly disagree) to 4 (strongly agree). This scale was considered valid and reliable, as shown by the Cronbach's alpha of 0.833. In addition, academic anxiety data were collected using the Academic Anxiety Scale (Cassady, 2019), which contains 11 statement items with the same four-point response

scale: 4 (strongly agree), 3 (agree), 2 (disagree), and 1 (strongly disagree). Validity testing confirmed that all 11 items were valid, with a reliability coefficient (alpha) of 0.780.

Attribution bias in this study was measured using the Attribution Bias Instrument (Espinoza et al., 2012), which consisted of 32 items with four-point response scale: 4 (strongly agree), 3 (agree), 2 (disagree), and 1 (strongly disagree). The validity test result showed that 27 items were valid, while 5 items were not. The Cronbach's alpha was 0.792. The collected data were then analyzed using Hayes' path analysis, Model 4, to examine the indirect effect of self-esteem on academic anxiety through attribution bias.

Result and Discussion

The descriptive analysis using SPSS version 26 showed that the average level of students' self-esteem was in the high category ($M = 30.56$, $SD = 3.317$). Meanwhile, students' academic anxiety fell into the low category ($M = 20.62$, $SD = 4.739$), and attribution bias was in the moderate category ($M = 92.40$, $SD = 11.591$). Table 1 presents the categorical levels of all variables.

Table 2. Categories

Variables	<i>M</i>	<i>SD</i>	Category
Self-esteem	30.56	3.317	High
Academic anxiety	20.62	4.739	Low
Bias attribution	92.40	11.591	Moderate

In order to find out the effect among variables, Hayes Model 4 was done and described in Table 3.

Table 3. Hayes model 4 process analysis

	β	<i>se</i>	<i>t</i>	<i>p</i>	<i>R</i>	<i>R</i> ²	<i>F</i>	<i>p</i>
Y								
Krit M1					.138	.019	8.807	<.01
X	.133	.045	2.967	<.01				
Krit M2					.133	.017	8.199	<.01
X	.167	.058	2.863	<.01				
Krit M3					.114	.013	6.01	>.01
X	.117	.048	2.452	>.01				
Krit M4					.143	.020	9.469	<.01
X	.142	.046	3.077	<.01				
<i>CI 95%</i>								
Indirect effect		Effect		<i>se</i>		<i>LL</i>		<i>UL</i>
M1		.0435		.0193		.0092		.0857
M2		-.0075		.0122		-.0353		.0135
M3		.0032		.0120		-.0191		.0308
M4		-.0149		.0153		-.0493		.0121

Note: Y (academic anxiety), X (self-esteem), M (Attribution bias) 1 (Failure- Ability), M2 (Failure-Effort), M3 (Success-Ability), M4 (Success-Effort)

The analysis showed that the self-esteem variable did not have an effect on academic anxiety ($p > 0.05$). As shown in Table 2, high self-esteem did not influence the level of academic anxiety among students ($\beta = 0.0128$, $p = 0.839 > 0.05$). This is indicated by the two-tailed significance value being greater than 0.05, leading to the conclusion that there is no effect of self-esteem on students' academic anxiety. This suggests that high self-esteem does not determine the level of academic anxiety. The influence observed is categorized as a direct effect, which refers to the relationship between the independent variable and the dependent variable without the mediation of another variable. Accordingly, the test results revealed no direct influence from variable X to variable Y, meaning that self-esteem does not affect academic anxiety among students in public senior high schools in Eastern Cirebon.

Furthermore, the results of the analysis showed that self-esteem had a significant effect on attribution bias, as presented in Table 2, indicating that higher self-esteem influenced attribution bias among students. However, it should be noted that the effect of self-esteem was not entirely consistent across all aspects of attribution bias. Specifically, the dimensions of Failure–Ability, Failure–Effort, and Success–Effort were significantly influenced by self-esteem ($p < 0.05$), whereas the dimension of Success–Ability was not affected by self-esteem ($p > 0.05$). The analysis therefore indicates that the hypothesis was only partially supported. This

means that students' success attributed to their own ability was not influenced by high self-esteem, while failure due to effort and ability, as well as success due to effort, were influenced by high self-esteem. Accordingly, it can be concluded that self-esteem has a partial effect on attribution bias.

The results further showed that attribution bias did not have a significant effect on academic anxiety. Nevertheless, it should be emphasized that certain aspects of attribution bias were found to influence students' academic anxiety, while others did not. It was found that the Failure–Ability aspect of attribution bias significantly influenced academic anxiety, as indicated by a significance value of $p < 0.05$. This means that failure due to students' lack of ability was associated with higher levels of academic anxiety. Meanwhile, other aspects such as Failure–Effort, Success–Ability, and Success–Effort were not shown to affect students' academic anxiety ($p > 0.05$). The analysis therefore indicates that the hypothesis was only partially supported. In other words, students' lack of ability was found to increase academic anxiety. Thus, attribution bias was shown to have a partial effect on academic anxiety among students.

The indirect effect of self-esteem on academic anxiety was not significant ($p > 0.05$). Furthermore, the direct effect of self-esteem on academic anxiety, with attribution bias included, was also not significant ($p > 0.05$). Accordingly, attribution bias does not mediate the relationship between self-esteem and academic anxiety, indicating that there is no effect of self-esteem on academic anxiety through attribution bias among public senior high school students. In addition, the regression coefficient β was found to be negative ($\beta = 0.0128$), showing that attribution bias neither weakened nor strengthened the effect of self-esteem on academic anxiety ($p > 0.05$). This result further supports the conclusion that self-esteem has no effect on academic anxiety through attribution bias.

The relatively low level of academic anxiety observed may be predicted by other variables not examined in this study. Thus, high self-esteem cannot be taken as a sufficient reason for minimizing academic anxiety. Lower self-esteem was also reported to associate with higher social anxiety, indicating that self-esteem influences anxiety primarily through mechanisms such as fear of evaluation (Mi & Jiang, 2024). These findings indicate that self-esteem tends to have a stronger connection with social anxiety compared to academic anxiety. Moreover, previous research has shown that university students with higher self-esteem generally exhibit lower levels of both trait and state anxiety (Syamsuyurnita et al., 2023).

A similar pattern was reported in Nguyen et al.'s (2019) cross-sectional study involving 1,149 Vietnamese secondary students, which found that low self-esteem was significantly related to anxiety, depression, academic stress, and suicidal tendencies. Their findings showed that academic pressure from family and school was the main cause of low self-esteem among Vietnamese students. Based on that study, anxiety was not found to be significantly associated with self-esteem.

This contrasts with another study that reported a significant effect of self-esteem on academic anxiety (Adiwijaya et al., 2024). According to the study, anxiety levels are influenced by several self-esteem-related factors. Students who lack confidence in their self-worth often struggle to form a clear sense of self, and when this self-concept becomes unstable or uncertain, it can provoke feelings of anxiety. The relationship between self-esteem and academic anxiety is thus complex and multifaceted, with evidence suggesting that self-esteem can influence anxiety levels in educational settings. However, some studies challenge the idea that self-esteem consistently reduces academic anxiety.

In addition, the limited influence of self-esteem on attribution bias may be linked to several interrelated factors. While self-esteem is often associated with personal values and social behavior, its impact on biases related to attributes such as race or gender appears to be limited. High self-esteem does not necessarily imply reduced prejudice toward out-groups, as individuals may still hold biased views while feeling confident in their own identity. Self-esteem is shaped by social identity, which may lead individuals to favor their own group over others, as shown in studies of international students where in-group bias served to enhance their collective self-esteem (Zheng, 2024).

Attribution bias, meanwhile, is influenced by multiple factors. Personal characteristics may shape vulnerability to cognitive bias, with higher cognitive ability potentially reducing bias through more analytical thinking (Toet et al., 2016). Mood and emotions also play a role, meaning that emotional states such as stress and attention can affect the occurrence and intensity of bias, influencing decision-making processes. Moreover, social structures may reinforce racial bias by perpetuating inequality and shaping individual attitudes and behaviors (Skinner-Dorkenoo et al., 2023).

Academic anxiety can indeed be influenced by a variety of factors, including individual and environmental aspects, as well as certain attributional biases that may not be immediately visible. Regarding studies on attribution bias, Kusumawardani and Yulianti (2023) found that self-attribution bias influences individual behavior in decision-making. Their study also revealed that self-attribution bias does not affect

overconfidence bias, while overconfidence bias does influence investor behavior, and self-attribution bias continues to play a role in shaping individual behavior. These findings stand in contrast to Ravneet's (2017) research, which showed that attributing failure to ability plays a role in increasing anxiety, while attributing failure to effort can help reduce anxiety in individuals.

When facing failure, students often adopt internal attributions such as "I failed because I am not smart enough." Such feelings reflect a sense of incompetence in handling tasks, which in turn intensifies fear toward academic assignments. In addition, when facing success, students who attribute their achievement to external factors may also experience anxiety because they remain uncertain about their own abilities. This uncertainty can heighten the risk of future failure, leading them to believe that they lack sufficient capability to cope with academic challenges. On the other hand, anxiety disorders also tend to emerge at this stage, particularly among students in schools who experience academic anxiety. Individuals—in this case, students—with low self-esteem often suffer from symptoms of anxiety (Adiwijaya et al., 2024). Previous research has shown that self-esteem can influence students' academic anxiety in schools.

Some factors may account for the limited effect of self-esteem on attribution bias. Self-esteem is often associated with personal values and social behavior, whereas its effect on attribution bias, such as race or gender, is limited. High self-esteem does not necessarily indicate lower bias toward out-groups, as individuals may hold prejudiced views while remaining confident in their own identity. Espinoza and associates (2012) stated that gender stereotypes play an important role in one's attribution bias. Their study showed that female students tend to associate their success with effort, whereas male students tend to link it to ability. Parents and teachers also contribute to attribution bias. For instance, parents who hold stereotypes about children's math skills may influence their children's self-view in the academic context.

This implies the need to improve high school students' psychological well-being. The present study highlights the importance of interventions aimed at improving students' self-esteem, which may significantly reduce academic anxiety. It is also important to address how students perceive the causes of their academic success or failure.

Conclusion

This study concludes that self-esteem does not influence academic anxiety; attribution bias is influenced by self-esteem; however, attribution bias does not affect academic anxiety. Attribution bias does not moderate the effect of self-esteem on academic anxiety. Therefore, school counselors are recommended to develop students' self-esteem and provide adaptive attribution training to help them build a more positive and realistic mindset toward their learning achievements. This finding can also serve as a basis for developing a guidance and counseling curriculum that is more responsive to students' emotions, in order to create a healthier and more productive learning environment.

Author Contributions Statement

Farhah Prihasti Anggraeni: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing – original draft. **Heru Mugiarto:** Supervision, Methodology, Validation, Writing – review & editing. **Sunawan:** Supervision, Project administration, Validation, Writing – review & editing. All authors have contributed to the development of the manuscript and approved its final version for publication.

Declaration of Generative AI

In preparing this manuscript, the authors employed ChatGPT to assist in refining the language and improving the overall clarity of the text. The authors carefully evaluated and revised the AI-assisted content where necessary and remain fully accountable for the accuracy, originality, and final version of the published work.

Declaration of Competing Interest

The authors declare that they have no financial interests or personal affiliations that could be considered to have influenced the research findings or the interpretation of the results presented in this article.

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