The Role of Creative Self-Concept in Mediating the Effects of Critical Openness and Reflective Skepticism on Cooperative Mindset

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Abstract: This study examined how reflective skepticism and critical openness affect cooperative attitudes by mediating creative self-concepts. The basis of this research is the importance of fostering a collaborative mindset in higher education, which can encourage teamwork, creativity, and innovative problem-solving. This study uses a quantitative, survey-based approach. The population in this study comprises active students in the economic education study program, totaling 417 students. The sampling technique uses *probability sampling, specifically simple random sampling*, meaning students are selected at random without specific qualifications. The sample size was determined using the Slovin formula, resulting in 204 students. These findings suggest that reflective skepticism and critical openness positively and significantly affect cooperative mindsets. Furthermore, it was shown that the influence of cooperative mindset and critical openness is mediated by creative self-concept. However, similar mediation was not found in the influence between reflective skepticism and cooperative mindsets. The study concluded that, in a collaborative learning setting in higher education, fostering a cooperative mentality requires the development of critical thinking skills and a creative self-concept.s

Abstrak: Tujuan dari penelitian ini adalah untuk menguji bagaimana skeptisisme reflektif dan keterbukaan kritis mempengaruhi sikap kooperatif melalui mediasi konsep diri kreatif. Dasar dari penelitian ini adalah pentingnya menumbuhkan pola pikir kooperatif di lingkungan pendidikan tinggi, yang dapat mendorong kerja sama tim, kreativitas, dan pemecahan masalah yang inovatif. Penelitian ini menggunakan pendekatan kuantitatif dengan metode survei. Populasi dalam penelitian ini adalah mahasiswa aktif program studi pendidikan ekonomi yang berjumlah 417 mahasiswa. Teknik pengambilan sampel menggunakan teknik *probability sampling* dengan metode teknik *simple random sampling* yang berarti mahasiswa dipilih secara acak tanpa adanya kualifikasi tertentu. Penentuan ukuran sampel dengan menggunakan rumus slovin sehingga diperoleh 204 mahasiswa. Temuan ini menunjukkan bahwa skeptisisme reflektif dan keterbukaan kritis secara positif dan signifikan mempengaruhi pola pikir kooperatif. Lebih lanjut, ditunjukkan bahwa pengaruh antara pola pikir kooperatif dan keterbukaan kritis dimediasi oleh konsep diri kreatif. Namun, mediasi serupa tidak ditemukan dalam pengaruh antara skeptisisme reflektif dan pola pikir kooperatif. Hasil penelitian menyimpulkan bahwa, dalam pengaturan pembelajaran kolaboratif di perguruan tinggi, menumbuhkan mentalitas kooperatif membutuhkan pengembangan kemampuan berpikir kritis dan konsep diri yang kreatif.

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A. Introduction

Digital technology has become an important component in teaching and learning in universities in the era of globalization and the industrial revolution. Therefore, developing a cooperative mindset is essential for fostering positive, effective professional relationships (Jördens et al., 2024). A collaborative mindset is a personal trait that encompasses thinking methods and approaches for achieving social change and innovation by involving multiple people in the creative process (Azkarate-Iturbe et al., 2024).

A cooperative mindset includes a new, socially transformational way of thinking and doing, as well as the personal qualities needed to encourage creative collaboration (Valtonen et al., 2021). Learning that promotes critical thinking, idea analysis, and engagement in pursuing shared solutions to difficult social problems can foster students' creativity. This can contribute to the development of individuals and groups who can collaborate for the benefit of all and provide creative, socially revolutionary solutions to the complex problems we are facing (Azkarate-Iturbe et al., 2024).

The need for cognition is one of the four elements of a cooperative mindset. The various cognitive and affective factors that influence how people interact with others are closely related to the development of a cooperative mentality (Azkarate-Iturbe et al., 2024). He et al (2019) noted that high cognitive demands can prompt people to solve social problems in new ways, thereby making the brain more adaptive.

A cooperative mindset is also associated with social skills that foster positive attitudes and dispositions towards cooperation, collaboration, and social justice (Yu et al., 2021). A cooperative mindset encourages deeper debate and reasoning in higher education, helping students develop their critical thinking skills (Zhang & Chen, 2021). Students with a strong cooperative mindset tend to value cooperation more, see the benefits in education, and enjoy teamwork. As a result, they may actively seek out or warmly welcome opportunities for a cooperative mindset (Jördens et al., 2024).

Based on initial observations, not all students have a strong cooperative mindset. Among them, the level of need for cognition is still relatively low. The data show that 54.9% of respondents do not like dealing with problems that require a lot of thought and responsibility, and 51% prefer simple, monotonous tasks to challenging ones that require deeper thinking.

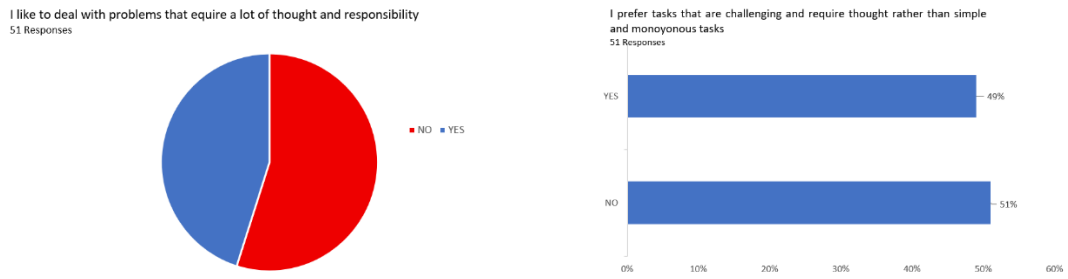

Figure 1. Results of observation

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According to He et al (2019), the development of a student cooperative mindset is hampered by the fact that not all students have high cognitive needs. This aligns with observational findings indicating that some students tend to avoid assignments that require deep thinking and critical reflection.

This lack of need for cognition can impact a weak cooperative mindset. Students are less encouraged to actively contribute to teamwork and seek innovative solutions to the problems they face. Therefore, a learning strategy is needed to increase students' need for cognition, thereby motivating them to think critically, explore new ideas, and actively participate in teamwork.

The main key to creative thinking is critical openness, which is the ability to accept a wide range of new strategies by evaluating data and infinite viewpoints that reflect a tendency to be open to new ideas, to critically evaluate, and be ready to change one's perspective based on evidence (Álvarez-Huerta et al., 2022). According to Van Laar, van Deursen, van Dijk, and de Haan, as cited in Bao & Koenig (2019), Critical openness refers to openness and flexibility toward new and unknown entities, attitudes, and ideas. This means that an individual who welcomes new experiences can have a good level of critical openness.

Critical openness, which includes the ability to think reflectively and analyze information, is important in shaping an individual's creative self-concept. The tendency to accept new concepts, critically assess them, and be prepared to adapt opinions to the availability of new information (Orakcı & Khalili, 2024). Critical openness and reflective skepticism are two aspects of critical thinking.

Reflective skepticism is the tendency to learn from past experiences, to critically question evidence, and to be ready to defy facts and draw explanations from the past. Critically skeptical individuals often do not take information for granted. They tend to analyze, evaluate, and test whatever evidence they get before making a decision (Bravo et al., 2020). Reflective skepticism does not mean total distrust, but rather a balanced, informed, and critical attitude toward public information (Mukumbang et al., 2024).

Students who practice reflective skepticism are better able to combine multiple perspectives while being skeptical of data and assumptions from different fields, and strengthen their literacy and assess complex material. This can allow for more imaginative and creative problem-solving (Macalalag et al., 2024).

Students need to have strong confidence. Therefore, students need a positive self-concept because it can shape their mindset, fostering high confidence and optimism (Novita, 2021). A person with a strong self-concept will be more excited, more confident, and generally have a positive outlook on many things, including failure. On the other hand, a person with poor self-image tends to give up easily, is pessimistic, and doubts their own ability to complete activities (Juliyanti & Pujiastuti, 2020).

The concept of creative self is a person's belief in their creative abilities, describing how much they believe they are individuals with the capacity to generate innovative and practical solutions (Azkarate-Iturbe et al., 2024). A strong creative self-concept makes people

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more confident in their ability to create brilliant ideas and find innovative solutions to various problems, thereby enhancing their effectiveness in productive teamwork.

Based on the concepts discussed, this study uses the 7C's theory of Creativity Thought developed by Todd Lubart (1994) as the basis for developing a research model. This research stems from the understanding that a cooperative mindset involves thinking in terms of cooperation, collaboration, and joint decision-making. This mindset is characterized by the ability to accept, understand, and engage openly with others.

According to the 7C's theory of Creativity Thought, creative individuals "invest" in original ideas as investors do in the stock market. They buy ideas that are not widely known, then work to develop and disseminate them until the community recognizes their great value. Furthermore, they promote it until it gets wide recognition and appreciation. Experience and education that encourage reflection and teamwork foster a cooperative attitude. This theory also highlights the importance of social interaction in developing creativity, which includes seven elements of creativity, such as Creators, Creating, Collaborations, Contexts, Creations, Consumption, and Curriculum that contribute to a cooperative mindset and creative self-concept (Lubart & Thornhill-Miller, 2019).

In critical openness, they critically assess ideas that have not yet been widely accepted rather than reject them outright. According to the creators, fostering essential photo penness and collaboration by enabling fair and reasonable consideration of other members' ideas is an important component of a cooperative mindset. In addition, individuals who practice reflective skepticism are better able to distinguish between beneficial and nonbeneficial ideas. This ability contributes to the internal process of evaluating an idea before making a full "investment" in it, as this theory suggests. This attitude reduces the potential for interpersonal conflict, increases trust within the group, and allows for healthy collaboration.

Critical openness and reflective skepticism are essential for selecting, evaluating, and generating original ideas. Therefore, these two mindsets act as "thinking instruments" that help people invest in new ideas and can increase one's capacity to develop cooperative attitudes, respect others' viewpoints, and successfully achieve goals.

In higher education, critical openness and reflective skepticism can foster a cooperative mindset (Prabhakar PS et al., 2023). Furthermore, Azkarate-Iturbe et al (2024) found that critical openness and a reflective attitude toward information significantly increase students' creative confidence. This aligns with the 7C's theory of Creativity Thought, which views Creators as creative people and emphasizes collaboration, underscoring the importance of working together during the creative process.

The concept of the Creative Self emphasizes the creation and reflection on a person's perception of their creative abilities. Creative Self-Concept is an important form of motivation and self-perception that allows individuals to "invest" in innovative ideas. When a person has a strong creative self-concept, they are more confident to contribute to teamwork, open to differences, and build a cooperative mindset because they believe their ideas are valuable and worth sharing in social spaces.

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Creative self-efficacy and a growth mindset are key mediators of the educational environment's influence on students' creativity (Li & Li, 2025). These results are in line with the 7C's theory of Creativity Thought, which holds that, in the creative process, individuals with a creative self-concept and cooperation reinforce a positive school environment that allows students to work together and thrive through group projects, discussions, and social interactions. These findings align with the research by Benedek et al (2025). This shows that individuals with stronger creative self-concepts, such as those who engage in group work and are more open to new ideas, can influence their mindset.

Previous research emphasizes that critical thinking and openness to new experiences are essential for fostering creativity and a cooperative mindset. A study by Zhang & Chen (2021) found that students with strong critical thinking skills are usually more receptive to new concepts and better prepared to work in groups. This aligns with the findings of Azkarate-Iturbe et al (2024), who emphasize the need for cognition, which drives individuals to search for and process complex information to solve problems creatively.

In addition, research by Valtonen et al (2021) shows that students' cooperative mindset can be improved through teaching strategies that encourage introspection and the critical evaluation of concepts and ideas. Critical openness involves the ability to objectively assess facts and viewpoints, an essential element in shaping one's creative self-concept (Álvarez-Huerta et al., 2022). A study by Bao & Koenig (2019) shows that individuals who are open to new experiences tend to have higher levels of critical openness, which can improve their ability to generate innovative ideas.

However, according to Giacomazzi et al (2022), Critical thinking is not always effective in Sub-Saharan Africa because it lacks contextual relevance, which can lead to conflicts in cooperative thinking. In addition, according to Chen et al (2022), openness to experience cannot be considered a significant influence on cooperative or collaborative thinking because it yields very different results across environments and other factors. This is consistent with the research of Dolbier et al (2024), which shows that various approaches to increasing open-mindedness often yield stable or negligible benefits, suggesting that openness alone cannot guarantee the development of the general inking skills.

The novelty of this research lies in the role of creative self-concept, which bridges the influence of critical openness and reflective skepticism in forming a cooperative mindset. In contrast to previous studies that focus more on the r elationship between the two variables separately or in the context of primary-middle education, this study offers a new approach by looking at how creative self-concept can play a role as something that can encourage confidence that they have innovative ideas that can be useful for growing their mindset, especially in the context of cooperation through critical openness and reflective skepticism that allows students to assess, accept, and process complex ideas in a collaborative and creative context.

However, although previous studies have emphasized the role of critical thinking dispositions and openness to experience in supporting creativity and collaboration, empirical findings remain inconsistent regarding their effects on cooperative mindset in

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higher education. Some studies report positive relationships between critical openness, reflective skepticism, and collaborative attitudes, while others reveal weak or context-dependent effects. In addition, most prior research has examined these variables separately or focused on primary and secondary education, providing limited evidence on their simultaneous interaction among university students. Notably, the psychological mechanism explaining how critical openness and reflective skepticism influence cooperative mindset has not been sufficiently explored. In particular, the mediating role of creative self-concept in linking these cognitive dispositions to cooperative mindset remains unclear. Therefore, this study addresses this gap by investigating the direct effects of critical openness and reflective skepticism on cooperative mindset and their indirect effects through creative self-concept.

B. Method

This study uses a quantitative research design with a survey method, testing hypothetical variables with an emphasis on theoretical testing. The population in this study is active students of Economics Education at one of the universities in Indonesia. The total population in this study is 417 students.

The sampling technique in this study is probability sampling. The probability sampling technique uses simple random sampling, meaning that students are selected at random regardless of qualifications (Sugiyono, 2020). The sample size in this study was determined using the Slovin formula, yielding a sample size of 04 students.

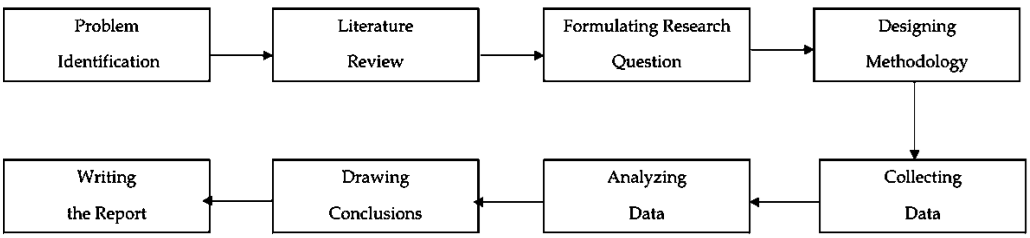

Figure 2. Research Flow

Data collection conducted via the Google Forms platform. This questionnaire consists of a four-point Likert scale, ranging from 1 (Strongly Disagree) to 4 (Strongly Agree). This study consists of four main variables: cooperative operational mindset (Y) as the dependent variable, critical openness (X1) and reflective skepticism (X2) as independent variables, and creative self-concept (M) as a mediating variable.

This study uses IBM SPSS version 25 to conduct data analysis. The data tests performed in this study include validity and reliability tests, statistical descriptive tests, classical assumption tests, multiple linear regression tests, and Sobel tests.

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Table 1. Variable Indicators

Variable	Indicator	Source
Cooperative Mindset (Y)	The need for cognition, interdependence of goals, social entrepreneurship, and social justice	Azkarate-Iturbe et al (2024)
Critical Openness (X1)	Openness to new ideas, critical evaluation of ideas, and willingness to change thinking in light of evidence.	Sosu (2013)
Reflective Skepticism (X2)	Evaluation of experience, examination of the credibility of information, consideration of the consequences of decision-making, and reflection on actions	Sosu (2013)
Creative Self-Concept (M)	It includes two main components: *creative self-efficacy* (solving complex problems), confidence in creative abilities, imagination and ingenuity, successful experience in difficult situations, and the ability to offer solutions. As well as *creative personal identity,* which consists of creative self-identification, the importance of creativity in oneself, and creativity as part of oneself	Karwowski (2016)

The structure of the path analysis used in this study is divided into 2 as follows:

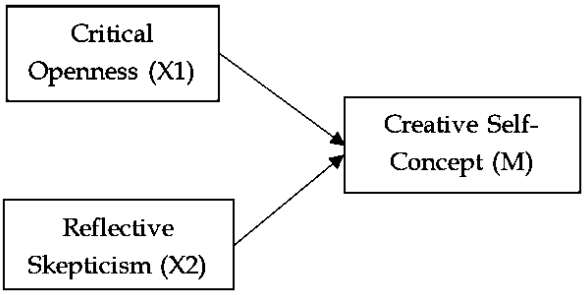

Figure 3. Equation structure 1

There is an influence of critical openness (X1) and reflective skepticism (X2) on creative self-concept (M).

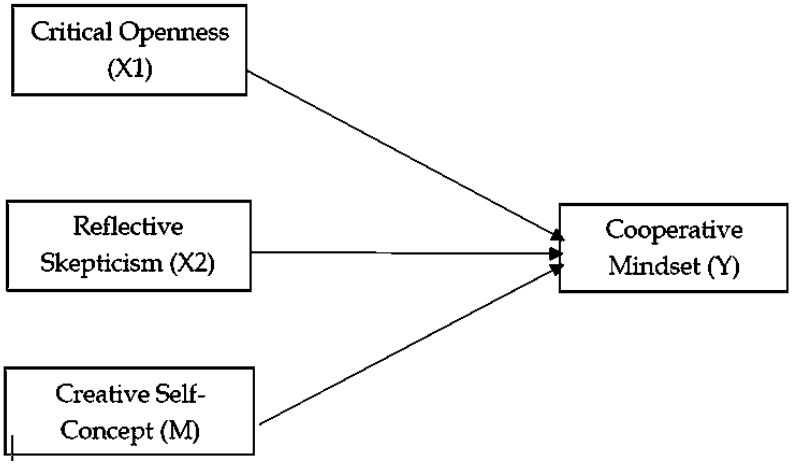

Figure 4. Equation Structure 2

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There is an effect of critical openness (X1), reflective skepticism (X2), and creative self-concept (M) on cooperative mindset (Y).

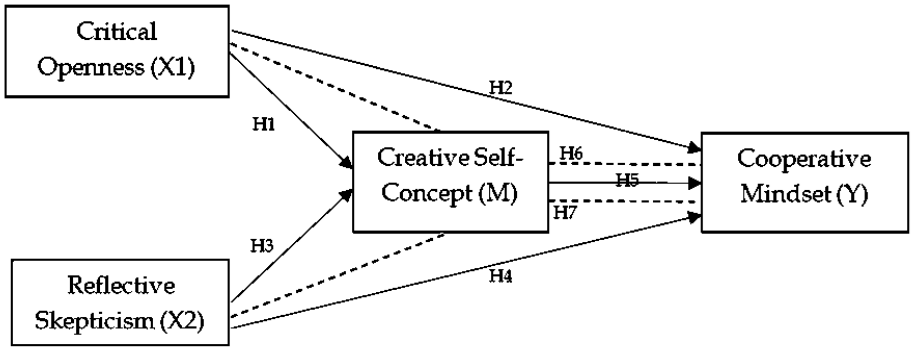

Figure 5. Complete Path Analysis Structure

Based on the above research model, it can be concluded that the hypotheses in this study are:

H1 = Critical openness has a positive effect on creative self-concept
H2 = Critical transparency positively affects a cooperative mindset.
H3 = Reflective skepticism has a positive impact on creative self-concept
H4 = Reflective skepticism has a positive impact on a cooperative mindset
H5 = Creative self-concept has a positive effect on cooperative mindset
H6 = Creative self-concept mediates the influence of critical openness on cooperative mindset
H7 = Creative self-concept mediates the influence of reflective skepticism on cooperative mindsets.

C. Result

It is known that the results of the descriptive analysis show that the critical openness variable (X1) has a minimum value of 10 while the maximum value is 28, the average is 23.431 and the standard deviation is 2,665, the variable of reflective skepticism (X2) has a minimum value of 9 while the maximum value is 16, the average is 13,500 and the standard deviation is 1,532, the variable of cooperative mindset (Y) obtains a minimum value of 18 while the maximum value is 48, the average is 37,661 and the standard deviation is 4,721, the variable Creative self-concept (M) obtains a minimum value of 19 while the maximum value is 44, the average is 35,799 and the standard deviation is 4,647.

Table 2. Descriptive Statistical Analysis

Descriptive Statistics				
	Min	**Max**	**Mean**	**Std. Deviation**
Critical Openness (X1)	10.00	28.00	23.4314	2.66527
Reflective Skepticism (X2)	9.00	16.00	13.5000	1.53289

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Descriptive Statistics				
	Min	**Max**	**Mean**	**Std. Deviation**
Creative Self-Concept (M)	18.00	48.00	37.6618	4.72164
Cooperative Mindset (Y)	19.00	44.00	35.7990	4.64756

According to the results of the Kolmogorov-Smirnov normality test, structural equation 1 yielded a p-value of 0.08, indicating that the data are normally distributed. Furthermore, the results of the normality test for structural equation 2 indicate a p-value of 0.167, indicating that the data obtained in substructural equation 2 can also be directly.

In the multicollinearity test, a variable is free of multicollinearity if its tolerance is greater than 0.10 and its VIF is less than 10.00. The results of the multicollinearity test for structural equation 1 showed a tolerance value of 0.650 and a VIF of 1.538, indicating the absence of multicollinearity. Meanwhile, the results of the multicollinearity test for structural equation 2 showed a tolerance value of 0.716 and a VIF of 1.397, indicating the absence of multicollinearity.

Heteroscedasticity testing uses a Glejser test. The heteroscedasticity test in equation 1 of the output showed that there was no significant relationship between the independent variables and the residual absolute values, as indicated by Sig. > 0.05. This means theodel is free from heteroscedasticity. Furthermore, the heteroscedasticity test on equation 2 output shows that there is no significant relationship between the independent variables and the residual absolute values (Sig.>0.05), indicating that this model is also free from heteroscedasticity.

Table 3. Multiple Linear Regression Test Structural Equation 1

Coefficients[a]				
	Unstandardized Coefficients			
Model	**B**	**Std. Error**	**t**	**Sig.**
1 (Constan)	11.226	2.731	4.109	.000
Critical Openness (X1)	.637	.129	4.944	.000
Reflective Skepticism (X2)	.714	.224	3.188	.002

Dependent Variable: Creative Self-Concept (M)

Judging from the coefficients table, the multiple linear regression test for structural equation 1 on the Critical Openness variable yields a p-value of 0.000 (<0.05). This means that Critical Openness has a significant effect on the concept of creative self. Meanwhile, the variable for reflective skepticism shows a significant Sig value. 0.002 (<0.05), which also means that reflective skepticism has a significant effect on the creative self-concept.

Table 4. Multiple Linear Regression Test Structural Equations 2

Coefficients[a]				
	Unstandardized Coefficients			
Model	**B**	**Std. Error**	**t**	**Sig.**
1 (Constan)	5.351	2.474	2.163	.032

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Coefficients[a]				
	Unstandardized Coefficients			
Model	**B**	**Std. Error**	**t**	**Sig.**
Critical Openness (X1)	.445	.119	3.749	.000
Reflective Skepticism (X2)	.261	.200	2.308	.022
Creative Self-Concept (M)	.437	0.61	7.131	.000

Dependent Variable: Cooperative Mindset (Y)

Judging from the coefficients table, the multiple linear regression test for structural equation 2 on the Critical Openness variable yields a p-value of Sig. 0.000 (<0.05). This means that Critical Openness has a significant effect on the cooperative mindset. The variable of reflective skepticism has a value of Sig. 0.022 (<0.05) w, which also means that reflective skepticism has a significant effect on the cooperative mindset. Meanwhile, the creative self-concept variable shows a Sig. Value. 0.000 (<0.05), which also means that reflective skepticism has a significant effect on the cooperative mindset.

Table 5. Test Results F Structural Equation 1

ANOVA[a]					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1 Regression	1278.515	2	639.257	41.365	.000
Residual	3106.245	201	15.454		
Total	4384.760	203			

Dependent Variable: Creative Self-Concept (M)

Based on Table 5, the F test for Structural Equation 1 yields a p-value of Sig. 0.000, which means that the variables of critical openness and reflective skepticism have a significant influence on the concept of creative self.

Table 6. Test Results F Structural Equation 2

ANOVA[a]					
Model	**Sum of Squares**	**df**	**Mean Square**	**F**	**Sig.**
1 Regression	2188.168	3	729.389	62.408	.000
Residual	2337.494	200	11.687		
Total	4525.662	203			

Dependent Variable: Cooperative Mindset (Y)

Based on Table 6, the F test for Substructural Equation 2 yields a Sig. Value. 0.000, which means the variable of critical openness, reflective skepticism. The concept of creative self-concept significantly influences the cooperative mindset.

Table 7. Determinant Coefficient Test of Structural Equation 1

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.540a	.292	.285	3.93115

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The R-square value in the summary model table is 0.292. This shows that the influence of critical openness and reflective skepticism on the creative self-concept is 29.9%, as a range of external and internal factors influences students' creative self-concept.

Table 8. Test of Determinant Coefficients of Structural Equations 2

Model Summary				
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**
1	.695a	.484	.476	3.41869

The Vasquared coefficient of the summary model table is 0.484. This shows that the co-occurrence of the variables of critical openness, reflective skepticism, and creative self-concept is associated with a cooperative mindset of 8.4%. A wider range of external and internal factors can influence this student's cooperative mindset.

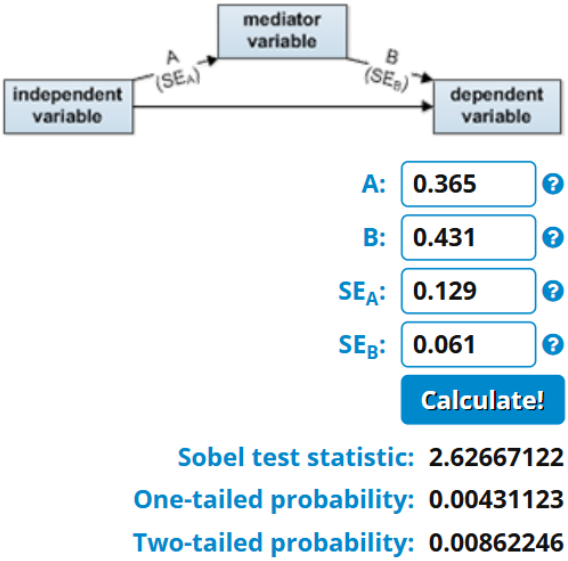

Figure 6. H6 Sobel Test Results

Based on the results of the Sobel test for substructural equation 1, the significance value obtained was 0.00862246, which is lower than the threshold of 0.05. This result indicates that creative self-concept plays a statistically significant mediating role in the relationship between critical openness and cooperative mindset. In other words, critical openness does not only exert a direct influence on students' cooperative mindset but also indirectly enhances cooperative attitudes by strengthening students' confidence in their creative abilities. This finding suggests that students who are open to new ideas and willing to critically evaluate information tend to develop a stronger creative self-concept, which subsequently encourages greater willingness to collaborate, accept diverse perspectives, and engage constructively in teamwork. Therefore, creative self-concept functions as an important psychological mechanism that bridges cognitive openness and cooperative behavior in higher education contexts.

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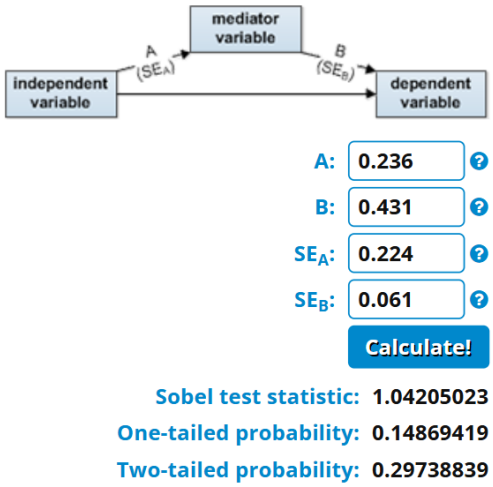

Figure 7. H7 Sobel Test Results

Based on the results of the Sobel test for substructural equation 2, the value of Sig. Obtained as 0.29738839. This means that the value of 0.29738839 < 0.05 indicates that the variable of creative self-concept cannot mediate the influence of critical openness on a therapeutic mindset.

D. Discussion

This study aims to answer key questions about how critical openness and reflective skepticism affect cooperative mindsets, and whether creative self-concept can serve as a mediator. The research shows that vital openness and reflective skepticism have a direct, significant positive influence on cooperative mindsets. In addition, critical transparency has been shown to have an indirect impact through creative self-concept, whereas mediation is not found in the influence of reflective skepticism on cooperative mindsets. This research aligns with the 7Cs theory of Creativity Thought, which emphasizes important aspects such as Creators, Creating, and Collaboration in the process of creative thinking and social cooperation.

Critical openness allows individuals to accept new ideas and evaluate them objectively, which can fofoster cooperative anndset asand self-creativityStudents who have a high level of critical openness tend to have stronger confidence in their own creative abilities and tend to be easy to work with, accept the opinions of others, and be willing to change their perspective to achieve common goals, these characteristics strongly support the development of their mindset. According to Panggabean (2024), critical openness is very useful for improving analytical skills, creativity, the application of concepts or data, and introspection. Students' creativity can increase when critical thinking skills are developed through a variety of techniques. Furthermore, searches by Harianto (2024) show that critical openness helps students more easily accept and appreciate others' points of view, thereby strengthening a cooperative mindset in the classroom. Building successful collaboration in the school requires developing critical thinking skills.

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Students who think reflectively, are skeptical of information, and are accustomed to critically evaluating knowledge and considering previous experiences, are usually better able to develop confidence in their creative capacity and are better prepared to participate in cooperative learning and social interaction. These findings highlight how important critical evaluation of arguments, problem-based learning techniques, and multidisciplinary debate can be useful tools for fostering a cooperative mindset and reflective skepticism. Research by Álvarez-Huerta et al (2022) shows that reflective skepticism tends to challenge prejudice and weigh a variety of options, helping them feel more confident when coming up with original ideas and more confident in their potential to codevelop innovative and effective solutions. Bravo et al (2020) reveal that reflective skepticism tends to challenge preconceived ideas and weigh vations, helping them feel more confident when coming up with original ideas. This perspective encourages more deliberate, action-oriented group decision-making, an important component of a cooperative mindset.

Reflective skepticism has been shown to have a direct, positive effect on a cooperative mindset, but no indirect effect through creative self-concept has been found. Reflective skepticism is characterized by a tendency to assess information thoroughly, consider experience, and not easily accept claims in the absence of supporting evidence. These skills are more evaluative and individualized, although they can improve critical thinking and logical decision-making. This explains why reflective skepticism does not automatically reinforce perceptions of an individual's creative capacity (the concept of the creative self), and thus does not serve as a bridge for cooperative thinking. This means that while skeptical and reflective students tend to be more meticulous in analyzing information, it does not necessarily make them feel more confident in their own creative abilities.

As explained by Macalalag et al (2024), creative self-concepts can reinforce isolationist tendencies, such as skeptical tendencies toward information, especially that derived from societal standards, and encourage reflective skepticism. Although a creative self-concept promotes critical reflection, it does not always lead to a cooperative attitude, especially when people are skeptical of social information or others' intentions. Reflective skepticism is indeed useful for improving thinking skills and more imaginative decision-making, but it does not necessarily strengthen confidence in one's personal creative potential. This is in line with the findings of Bravo et al (2020), which state that skeptical attitudes tend to focus on evaluation and prudence in accepting new information, thus strengthening the analytical side more than the expressive side needed in the creative process.

These results are relevant to education in Indonesia today. Preliminary data from this study show that 54.9% of students are not familiar with the challenge of deep thinking, feel uncomfortable with tasks that require complex thinking, and 51% prefer easy, monotonous tasks. These findings align with He et al (2019), who found that low need for cognition can hinder the development of creativity and a cooperative mindset, suggesting that learning strategies are needed that encourage students to be open to new ideas, be more reflective, and be active in cooperation.

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These findings are supported by international studies, such as Álvarez-Huerta et al (2022), which found that openness to diversity and challenges can increase creative confidence, an essential factor for successful collaboration. Research by Álvarez-Huerta et al (2022) also shows that creative self-concept plays a major role in shaping students' cooperative mindset in higher education. Zhang & Chen (2021) found that critical thinking skills training can strengthen cooperative abilities, especially in clinical practice. The same point is also emphasized by Harianto (2024), who shows that openness to various points of view helps foster a collaborative attitude in the classroom. Meanwhile, that critical education encourages students to be more open to diverse opinions, which is very important in group cooperation.

The results of this study confirm that critical openness is an important element in forming a cooperative mindset, both directly and through creative self-concept. Critical openness is a key cognitive factor in developing both a creative self-concept and a collaborative mindset. This attitude not only facilitates the evaluation of ideas but also encourages expression and contribution to a shared solution. While reflective skepticism contributes directly, it does not have a mediating influence through the creative self-concept. Reflective skepticism can help with group assessment and decision-making, but it does not necessarily strengthen confidence in the personal creativity required for long-term collaboration. These findings underscore the importance of balancing the development of reflective and expressive abilities in collaborative learning. Higher education needs to develop a learning strategy that not only encourages critical evaluation but also strengthens confidence in students' creativity as the basis for effective collaboration, just as effective learning strategies need to combine the habituation of critical openness with the strengthening of creative expression and social acceptance to build a learning environment that supports sustainable cooperation.

E. Implication

The findings of this study provide several important implications for instructional practice, curriculum development, and educational policy in higher education. The strong influence of critical openness and reflective skepticism on a cooperative mindset highlights the need for teaching strategies that intentionally cultivate students' higher-order thinking skills. Learning environments should encourage active dialogue, critical evaluation of ideas, reflective questioning, and collaborative problem-solving, as these experiences contribute directly to the development of a cooperative disposition. In addition, the mediating role of creative self-concept in the relationship between critical openness and cooperative mindset emphasizes the importance of fostering students' confidence in their creative potential. Educational institutions need to design learning activities that allow students to express creative ideas, engage in innovation-oriented tasks, and receive constructive feedback that strengthens their creative identity.

From an institutional standpoint, these results underscore the need to cultivate a learning climate that supports creativity, critical thinking, and collaborative engagement.

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Lecturers should incorporate diverse pedagogical approaches—such as open discussions, interdisciplinary projects, and inquiry-based learning to reinforce both cognitive flexibility and students' belief in their own creative capabilities. At the policy level, universities can use these findings to enhance curriculum frameworks by embedding critical thinking and creative self-development as core competencies within cooperative learning initiatives. Together, these implications suggest that strengthening cooperative mindsets in higher education requires not only cognitive skill development but also institutional support for fostering creative confidence and reflective learning habits.

F. Limitation and Suggestion for Further Research

This study offers important insights into the relationships among critical openness, reflective skepticism, creative self-concept, and cooperative mindset; however, several limitations must be acknowledged. The research was conducted with a sample limited to students in a single economics education study program at one state university, limiting the generalizability of the findings to broader academic contexts. Differences in disciplinary cultures, learning environments, and institutional characteristics may produce varying patterns of cognitive traits and cooperative behavior. Future research should therefore expand the sample to include students from multiple study programs, universities, and regions to capture a more diverse range of characteristics and enhance external validity.

Additionally, the study employed a cross-sectional survey design, which provides only a snapshot of students' cognitive dispositions and cooperative mindset at a single point in time. This design limits the ability to examine causal relationships or developmental changes. Longitudinal or experimental studies are recommended to explore how critical openness, reflective skepticism, and creative self-concept evolve, and how interventions may strengthen a cooperative mindset in more dynamic learning environments.

The reliance on self-reported questionnaires also poses potential bias, such as social desirability or subjective misjudgment. Mixed-method approaches, including interviews, behavioral observations, and qualitative case studies, can yield richer, more nuanced insights. Future studies may also explore the role of contextual moderators, such as learning climate, digital literacy, teaching strategies, and cultural influences, which may strengthen or weaken the relationships identified in this research.

Finally, further research should examine this model across different educational levels or integrate additional mediating or moderating variables, such as growth mindset, social-emotional competence, or collaborative skills, to deepen understanding of the cognitive and psychological mechanisms that support cooperative mindsets in higher education.

D. Conclusion

The results show that a high level of critical openness is associated with stronger confidence in one's creative abilities and a tendency to a cooperative mindset. In contrast, reflective skepticism directly affects creative self-concept and a cooperative attitude. These

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findings underscore the importance of developing critical thinking skills and positive self-concept in fostering a collaborative mindset among students in an educational environment. Overall, this study highlights the complex interplay between critical openness, reflective skepticism, creative self-concept, and cooperative mindsets in shaping student attitudes and behaviors.

These findings provide valuable insights into creativity, critical thinking, and collaboration in educational contexts. The results of this study contribute to our understanding of how individual traits and beliefs influence cooperative interactions and creative problem-solving strategies in the academic environment.

This study will serve as a guide for future scholars who will conduct more thorough and precise studies with a cooperative mindset. Using a rigorous research method to delve further into the research issue helps improve comprehension and guarantee the quality of the findings.

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