PYSCHE 165 JOURNAL
LPPM Universitas Putra Indonesia YPTK Padang
Lubuk Begalung Highway, Padang, Zip Code: 25221, Sumatera Barat, Indonesia
Volume: 19, Issue: 2, Page: 130 -134, June 30th, 2026, e-ISSN: 2502-8766
Available online at website: https://jpsy165.org/ojs/index.php/jpsy165/index

The Interplay Between Metacognition and Self-Regulated Learning Among Merit-Based Scholarship Recipients

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Abstract
The Grade Point Average (GPA) is one part of the results of student learning achievement. For scholarship recipients with certain minimum requirements on GPA. Maintaining a GPA is certainly not easy for students and often encounter many challenges, especially in *self-regulated learning* and metacognition. The purpose of this study was to determine the relationship between *self-regulated learning* and metacognition in students receiving academic achievement scholarships. The research method used in this study was quantitative with a correlational research type. Participants in this study were 123 students receiving academic achievement scholarships at Satya Wacana Christian University Salatiga, participants were selected using a *purposive sampling technique* . The data analysis method used for the correlation test in this study used *Spearman's Rho* . The results of this study showed a positive relationship between *self-regulated learning* and metacognition with a *Spearman's Rho correlation coefficient value* of 0.634 and a significance of 0.000. This indicates that the higher the *self-regulated learning ability* of an individual, the higher the metacognition of the individual. This research has significant implications, particularly for students receiving academic achievement scholarships, for improving their metacognition by enhancing *self-regulated learning* . This suggests that students receiving academic achievement scholarships need to focus on self-regulation in learning, evaluate their learning process, and maintain self-motivation. The effective contribution of *self-regulated learning* to metacognition in students receiving academic achievement scholarships is 40.2%.

Keywords: *independent learning* , metacognitive, students, achievement scholarships, academics

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1. Introduction

Learning is an activity carried out by everyone to gain knowledge, especially students. The learning process is one part of the educational process undertaken by students in higher education. However, learning problems are often encountered such as depending on others during class learning, not knowing the goals to be achieved, low learning initiative, difficulty controlling oneself in learning so that students still lack self-awareness to carry out learning starting from themselves [1]. When students achieve the goals of their learning activities, it can be seen from their learning outcomes, one of which can be seen from students' GPA (Cumulative Achievement Index). This is related to a person's understanding of the knowledge they have or is called metacognitive [2].

During their college education, many students apply for scholarships. Some scholarships often have mandatory requirements for registration, including a minimum GPA. Students strive to achieve and maintain a GPA that meets the criteria for their desired scholarship. Satya Wacana Christian University (UKSW) offers a scholarship called the Academic Achievement Scholarship, which requires a minimum GPA of 3.90 for applicants. For some students, a 3.90 GPA is considered high and difficult to achieve. Therefore, scholarship recipients need to manage their studies to maintain their GPA.

If a student who has received a scholarship in the current semester has a GPA that falls below 3.90, they cannot apply for an academic achievement scholarship in the following semester. Therefore, students need to improve their GPA, one way is by training their metacognitive abilities so they can understand the lecture material they are taking. Students in achieving an optimal GPA are certainly influenced by various factors, one of which is the ability and awareness they have to regulate their cognitive activities, which is called metacognition [3].

Metacognition is integrating various metacognitive knowledge and experiences to explain and predict cognitive behavior [4]. Metacognition is also defined as the knowledge that an individual has about one or more processes and cognitive outcomes that an individual has [5]. The ability to understand the knowledge that has been learned becomes a matter for assessing knowledge in students so that good metacognitive abilities are needed to help students achieve their learning goals. Metacognition plays an important role in learning with

Submitted: April 20th, 2026 | Revised: May 1st, 2026 | Accepted: May 25, 2026 | Published: June 30th, 2026

individuals being able to control and regulate their cognitive processes so that learning becomes more effective and efficient [6].

Good metacognition in students can help in dealing with learning anxiety and their metacognitive abilities can make students focus on learning goals with optimal learning achievements [7]. Metacognition plays an important role in the student learning process so that students are able to follow lectures and understand the material explained well. Metacognition is an important ability for educational purposes because this ability helps students have a *self-regulated learning attitude* [8]. Metacognition can be influenced by internal and external factors, one of which is *self-regulation in learning or self-regulated learning.*

Self-regulated learning or self-regulation in learning is a person's ability and independence to regulate themselves in the learning process [1]. *Self-regulated learning* is a learning activity in achieving learning goals carried out by individuals personally by regulating behavior, being able to motivate themselves and using their cognitive abilities in the learning process [9]. In students, *self-regulated learning* helps students to regulate themselves in their learning process so that students can achieve the learning goals that have been set.

Self-regulated learning is an individual's ability to actively carry out and control cognition, behavior, and motivation systematically, focused on achieving learning goals [10]. When individuals can carry out *self-regulated learning* , individuals can better understand themselves and their learning methods [11]. Students who have *self-regulated learning* can make it easier for individuals in the lecture process, especially in understanding the material and facing existing exams. The ability of *self-regulated learning* can make individuals aware of their own metacognitive knowledge regarding strategies and tasks, so that *self-regulated learning* and metacognition are necessary for individuals, especially students [6].

The learning process will run optimally when self - *regulated learning* has been formed, because the drive and ability to organize and manage become a pattern that will adapt to the needs that arise due to the learning process [12]. The existence of *self-regulated learning* helps individuals to process information more easily in learning activities, thereby influencing the metacognition that individuals have. In addition, students who are proficient in using their metacognitive skills to control tasks in problem solving are significantly influenced by the level of their learning independence [13]. Research conducted by Syukri found a correlation between metacognition and self-regulation in learning with learning outcomes [7]. Other researchers also found a correlation between *self-regulated learning* and students' metacognition in biology lessons [6].

Researchers conducted interviews with 10 students who received academic achievement scholarships at UKSW, to see the students' efforts in maintaining their GPA in order to continue receiving academic achievement scholarships. Based on the interviews, 9 out of 10 informants said that the GPA requirement of 3.90 on the scholarship was too high and difficult to obtain so that efforts were needed to maintain it. In addition, 8 out of 10 informants said that understanding the lecture material well and being active in class helped informants to get good grades to maintain their GPA. Information was obtained that 8 out of 10 informants also carried out self-regulation in learning such as making study schedules and studying with friends so that lecture material could be more easily understood. Based on the description that has been explained above, in this study the researchers were interested in conducting research that aims to determine the Relationship between *Self-Regulated Learning* and Metacognition in Students Receiving Academic Achievement Scholarships at Satya Wacana Christian University.

2. Research methodology

The design used in this study was quantitative with a correlational approach. The variables used in the study were *Self-Regulated Learning* as the independent variable (X) and Metacognition as the dependent variable (Y).

2.1. Research Participants

The sampling technique used in this study was *non-probability sampling* with a *purposive sampling technique* , where the sampling determination technique was based on certain considerations [14]. The sample in this study consisted of 123 active students receiving academic achievement scholarships at Satya Wacana Christian University.

2.2. Research Instruments

The data collection used in this study was by distributing questionnaires via *Google Form* . The scale used to measure *self-regulated learning* and metacognitive variables was compiled using a *Likert scale* with 4 categories of answer choices: Strongly Disagree (STS), Disagree (TS), Agree (S), and Strongly Agree (SS) for each statement. The *self-regulated learning* scale was measured using *the Self-Regulated Learning Scale* (SRLS) [15]. The metacognitive scale used in this study was measured using *the Metacognitive Awareness Inventory* (MAI) [16].

The validity test in the study used content validity while to measure reliability using *Alpha Cronbach* with the help of *SPSS software program.* Reliability is used to measure a level of consistency in the measuring instrument and to see the extent to which a measuring instrument can measure what is intended to be measured [17]. The *Alpha Cronbach value* on the *self-regulated learning scale* was 0.892 with 21 items passing the item

selection test results and the *Alpha Cronbach value* on the metacognitive scale was 0.957 with the results of the item selection test obtained 49 items passing.

2.3. Data Analysis Methods

Data analysis in this study was conducted using *IBM SPSS version 24.0 for Windows software* . The data analysis stage began with an assumption test consisting of a normality test analyzed using *the Kolmogorov-Smirnov test* and continued with a linearity test analyzed using the *One-Way ANOVA test.* Hypothesis testing used the *Spearman's Rho correlation test. The Spearman's Rho* correlation test was used because this technique does not require normally distributed data and is more robust for use on non-normally distributed data [18].

3. Results and Discussion

Data from 123 active students receiving academic achievement scholarships at Satya Wacana Christian University were obtained and processed in this study. The results of descriptive statistical tests on the *self-regulated learning* and metacognitive scales are shown in Table 1.

Table 1Statistical Test

Variables	N	*minute*	*Maximum*	*Means*	*Standard Deviation*
Self-Regulated Learning	123	38	84	63.78	8,757
Metacognitive	123	95	196	158.00	19,344

Based on the descriptive test results above, it shows that in *self-regulated* learning, the minimum score was 38 and the maximum score was 84 with an average of 63.78. In metacognitive, the minimum score was 95 and the maximum score was 196, while the average score was 158.00. The results of the subject data categorization grouping for each variable can be seen in Table 2.

Table 2. Categorization of *Self-Regulated Learning* and Metacognitive Data

Variables	Hose	Category	N	Percentage
Self-Regulated Learning	21-41	Low	2	1.6%
	42-62	Currently	62	50.4%
	63-84	Tall	59	48%
Metacognitive	49-97	Low	1	0.8%
	98-146	Currently	38	30.9%
	147-196	Tall	84	68.3%

Based on the data obtained in the table above, it shows that the level of *self-regulated learning* in most participants is in the medium category. There are 2 students (1.6%) categorized as having low *self-regulated learning , 62 students (50.4%) have self-regulated learning* in the medium category and 59 students (48%) have *self-regulated learning* in the high category. Meanwhile, based on the data results, it shows that the metacognitive level of most participants is in the high category. There is 1 student (0.8%) who has low metacognition, 38 students (30.9%) who have medium metacognition and 84 students (68.3%) who have high metacognition.

3.1 . Normality Test

The normality test in this study used *the One-sample Kolmogorov-Smirnov test* with the help of a *software program. IBM SPSS version 24.0 for Windows.* If the significance value obtained is P > 0.05, the data is normally distributed, but conversely, if the significance value obtained is P < 0.05, the data is not normally distributed, then the results of the normality test data are obtained which can be seen in Table 3.

Table 3. Normality Test of *Self-Regulated Learning* and Metacognitive Scales

Variables	N	KSZ	P	Distribution
Self-Regulated Learning	123	0.121	0.050	Abnormal
Metacognitive	123	0.110	0.094	Normal

The results of the normality test in the table above for the *self-regulated learning variable* obtained a KSZ value of 0.121 with a sig. value of 0.050 (p = 0.05) which indicates that the *self-regulated learning variable* is not normally distributed. For the metacognitive variable, the KSZ value was obtained at 0.110 with a sig. value of 0.094 (p>0.05) so that the metacognitive variable is said to be normally distributed.

3.2 . Linearity Test

A linearity test is performed to determine the linear relationship between variables. A linear relationship is defined as a relationship between variables if a significance value of p <0.05 is obtained. A significance value of p >0.05 indicates a non-linear relationship between the variables. The results of this study's linearity test can be seen in Table 4.

Table 4. Linearity Test of *Self-Regulated Learning Scale* with Metacognitive

N	*df*	*Mean Square*	*F*	*Signature.*
123	1	23814.402	137,604	0.000

The results of the linearity test between the *self-regulated learning scale* and metacognition obtained an F value of 137.604 with a sig. value of 0.000 (p<0.05) which indicates that *self-regulated learning* and metacognition in students receiving academic achievement scholarships are linear.

3.3 . Hypothesis Testing

The hypothesis test conducted in this study used a correlation test to determine the correlation between *self-regulated learning* and metacognition. The correlation test used *Spearman's Rho* because one of the variables, namely *self-regulated learning,* was not normally distributed in the normality test. *The Spearman's Rho correlation test* is said to be protective

if the significance value is p <0.01. If the significance value is >0.01, the relationship between the variables is not protective. The results of the hypothesis test in this study can be seen in Table 5.

Table 5. Results of the Correlation Test Between *the Self-Regulated Learning* and Metacognitive Scales

N	Signature.	*Correlation Coefficient*	Conclusion
123	0.000	0.634	Hypothesis accepted

Based on the correlation test data in the table above, a total of 123 research participants obtained a correlation coefficient value between the *self-regulated learning* and metacognitive scales of 0.634 with a significance value of 0.000 (p < 0.01). This indicates a significant and positive relationship between *self-regulated learning* and metacognitive. Significant and positive results indicate that the higher *the self-regulated learning* , the higher the metacognitive possessed by students receiving academic achievement scholarships.

Based on the results of the correlation test, the effective contribution of *the self-regulated learning variable* to metacognition was also obtained. The effective contribution of the self-regulated learning variable to metacognition was 40.2%. This indicates that *self-regulated learning* is one of the factors associated with increased metacognition in students receiving academic achievement scholarships at Satya Wacana Christian University. The remaining 59.8% can be attributed to other factors related to metacognition.

3.4. Discussion

The results of the research conducted by the researcher indicate that the hypothesis of this study is accepted, namely there is a significant positive relationship between *self-regulated learning* and metacognition in students receiving academic achievement scholarships. Based on the results of the correlation analysis that has been carried out, the correlation coefficient was found to be 0.634 with a sig. level of 0.000 (p <0.01) meaning that the higher a person's *self-regulated learning ability* , the higher their metacognition, and vice versa, the lower their *self-regulated learning ability* , the lower their metacognition. The results of the research conducted by the researcher are in line with research conducted by other researchers that *self-regulated learning* is related to metacognitive abilities, where the higher *the self-regulated learning* , the higher the metacognitive abilities they have [6].

Individuals who have *self-regulated learning abilities* can increase their knowledge related to metacognition so that it can support their academic process. *Self-regulated learning* is the most important part of learning and academic success, especially students with high *self-regulated learning abilities are able to succeed in their academic achievements [* 19]. For students receiving academic achievement scholarships with GPA scholarship requirements, it is a challenge to maintain their GPA where a value is the result of metacognition owned and related to knowledge and understanding of the subjects studied, so *self-regulated learning* is needed in students to help improve their metacognition in order to maintain their GPA.

Students who have a high level of self-regulation strategies in learning will also get a higher cumulative grade point average (GPA) [20]. Good self-regulation in learning helps students to get good grades in lectures. This is supported by research conducted by other researchers that *self-regulated learning* in students with a GPA > 3 is higher than the *self-regulated learning ability* of students with a GPA < 3 [21].

In addition, students who have motivation within themselves are able to improve their metacognition, with self-confidence in their abilities, students can focus on learning. Students who have motivation in the learning process will be more likely to use their metacognitive abilities so that it influences individual understanding in learning something [22]. Students also need the ability to search for various information to obtain new knowledge based on their metacognitive abilities [23]. The activeness of the learning process such as asking or answering questions is one of the roles of metacognition that is owned and related to their knowledge, while *self-regulated learning* influences metacognition that is owned by planning, organizing and rotating the individual's self-learning process. Therefore, *self-regulated learning* is related and has a role in improving metacognition that is owned by students who receive academic achievement scholarships.

4. Conclusion

Based on the research results that have been conducted, it can be concluded that the results of this study indicate a positive and significant relationship between *self-regulated learning* and metacognition in students receiving academic achievement scholarships at Satya Wacana Christian University Salatiga. This shows that the higher the *self-regulated learning ability* possessed by students receiving academic achievement scholarships, the higher their metacognition. The effective contribution provided by *self-regulated learning* to metacognition in students receiving academic achievement scholarships is 40.2% and the remaining 59.8% is the influence of other factors not examined in this study.

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