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Locus of Control on Pro-Environmental Behavior: The Role of Attitude toward Pro-Environmental Behavior

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ABSTRAK

Perilaku siswa terkait perlindungan dan pelestarian lingkungan sangat penting untuk didiskusikan. Tindakan pro-lingkungan setiap orang, melalui perubahan kebiasaan dan perilaku sehari-hari, diperlukan untuk mengurangi masalah lingkungan dan mempromosikan lingkungan yang bersih, sehat, dan tidak tercemar. Penelitian ini bertujuan untuk menganalisis pengaruh locus of control dan sikap terhadap pengaruh perilaku pro lingkungan terhadap perilaku pro lingkungan siswa. Penelitian ini menggunakan metode survei online. Sebanyak 386 responden dikumpulkan. Oleh karena itu sampel dalam penelitian berjumlah 386 responden. Kami menggunakan metode pemodelan persamaan kuantitatif dan struktural untuk menguji hipotesis. Data diolah dengan software Amos versi 23. Penelitian ini menemukan bahwa locus of control mempengaruhi sikap terhadap perilaku pro lingkungan. Locus of control dan sikap terhadap perilaku pro lingkungan juga berpengaruh positif terhadap perilaku pro lingkungan siswa. Kami menemukan bahwa sikap terhadap perilaku pro-lingkungan tidak memediasi efek lokus kendali siswa terhadap perilaku pro-lingkungan siswa. Disarankan untuk meningkatkan locus of control dan sikap siswa terkait lingkungan untuk memperoleh dan meningkatkan perilaku peduli lingkungan siswa. Orisinalitas atau nilai kajian ini memberikan wawasan baru dalam memahami interaksi antara locus of control mahasiswa dan sikap terhadap perilaku lingkungan mahasiswa di Indonesia.

ABSTRACT

Students' behavior related to environmental protection and conservation is very important to discuss. Action pro-environmental every people, through the change of daily habits and behavior, is needed to decrease environmental problems and promote a clean, healthy, and unpolluted environment. This study aims to analyze the locus of control's effect and attitude toward pro-environmental behaviours' effect on the students' pro-environmental behavior. This study uses an online survey method. A total of 386 respondents were collected. Therefore, the sample in the study amounted to 386 respondents. We used quantitative and structural equation modeling methods to examine the hypotheses. The data were processed by Amos software version 23. This study found that locus of control affects the attitude toward pro-environmental behavior. The locus of control and attitude toward pro-environmental behavior also positively affect students' pro-environmental behavior. We invented that attitudes toward pro-environmental behavior did not mediate the effect of students' locus of control on the pro-environmental behaviours of the students. The suggestion to improving the students' locus of control and attitude related to the environment to gain and enhance the students' pro-environmental behavior. The originality or value of this study gives a new insight into understanding the interaction between students' locus of control and attitude toward the environmental behavior of the students in Indonesia.

1. INTRODUCTION

The causes of several environmental problems present a threat to environmental sustainability, including urban air pollution, the demise of biodiversity, global warming, environmental noise, and water deficiencies (Colebrook-Claude, 2019; Nazneen & Asghar, 2017). The large population makes Indonesia a

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more complex environmental problem (Wahab et al., 2017). The problem of the environment in Indonesia needs serious attention, based on data from the environmental performance index, which shows that the current rank of Indonesia's environmental performance index is at 133 ranks. The youth generation is an important innovation driver and manages change (Ernsts et al., 2017). Human behavior greatly determines the quality of the environment, and students, as the younger generation, have an important role in preserving the environment (Shafiei & Maleksaeidi, 2020). University students are important people to advance appropriate solutions to change environmental behavior (Shafiei & Maleksaeidi, 2020). The student's concern for the environment still needs to be serious. Can be seen from the previous research found that the level of students' pro-environmental behavior in Indonesia, in general, the pro-environmental behavior at the students were in medium level (Dewi & R, 2018). This research is expected to improve pro-environmental behavior among students in Indonesia. That research also said that the university, as a second home to the students, has an important role in creating a sustainable environment.

Students' behavior related to environmental protection and conservation is very important to discuss. Therefore, we are trying to conduct a study on university students in Indonesia. Action pro-environmental every people, through the change of daily habits and behavior, is needed to decrease environmental problems and promote a clean, healthy, and unpolluted environment (Weimer et al., 2017). Based on the environmental psychology perspective, environmental problems are very complex problems between humans' daily activities and the environment (Kollmus & Agyeman, 2002; Tamar et al., 2020). Overall, the attention to the environment is due to the increasing pollution and waste generation from human activities, which can threaten the health of everyone and the environment in assimilating the increase of waste (Ifegbesan & Rampedi, 2018). People's daily activities can negatively affect the environment and generate more environmentally damaging consequences (Osman et al., 2014). Human environmental behavior could be an important and vital solution to the environmental degradation that is happening at present (Oskamp, 2000). Many reasons can influence students' behavior for caring and protecting the environment from damage (individual's pro-environmental behavior). For example, the traits of personality, namely locus of control (Kollmus & Agyeman, 2002). Another opinion also stated that psychological variables, such as locus of control and attitude, are closely correlated to increasing individual positive behavior toward the environment (Kothe et al., 2019; Osbaldiston, 2004). Attitude was a predictor of environmental behavior that was suggested to be examined in future research. Thus, considering the previous discussion, this present study examines from different perspectives, namely from personality factors, i.e., locus of control of the students and students' attitude toward pro-environmental behavior as an antecedent of students' pro-environmental behavior.

Previous research confirmed that positive attitudes toward people's environmental problems have a strong relationship with individual pro-environmental behaviors in daily activities (Bradley et al., 1999). This opinion implies that people's attitude has a very important role in the care and conservation behavior of the environment. The attitude to the environment was a predictor of environmental action (Ernst et al., 2017). The finding was not supported by a research by Osman et al (Osman et al., 2014). Their research found no evidence about the impact of environmental attitudes towards environmental actions in protecting the environment. The previous study regarding the locus of control's influences on a person's pro-environmental behavior was conducted by (Chiang et al., 2019). They concluded that people with a high confidence level that individuals believe would be more good in protecting and environmental conservation behavior. People with strong confidence or locus of control also intend to bring a change (Hines et al., 1987). Besides that, their study also informed that people with a strong locus of control could enhance environmental protection (Nazneen & Asghar, 2017). Thus, in this study, attitude toward people's pro-environmental behavior was an intervening variable and will be tested further in this study.

In summary, many previous research studies have shown that locus of control and an individual's attitude toward pro-environmental behavior has a role as a predictor of pro-environmental behavior. However, there needs to be more attention on examining the locus of control and attitude toward pro-environmental behavior regarding university students' context in Indonesia. Therefore, this present study fills the gap in examining the effect of students' locus of control on students' pro-environmental behavior and examines the mediating role of student attitudes toward environmental behavior. Hence, this study aims to verify the impact of locus of control on pro-environmental behavior, the impact of environmental attitude on pro-environmental behavior, and the impact of locus of control on the attitude toward pro-environmental behavior.

2. METHODS

This research was done with a quantitative approach research. We conducted this research on university students in Indonesia. The sampling technique was carried out by the accidental sampling

method. It means that the questionnaire was distributed using a google form that has been provided through social media networks, and any student who receives the google form link can fill out the questionnaire. Three hundred eighty-nine students have completed filling out and returned the online questionnaires. Three questionnaires were incomplete in filling out the answers, so they were deleted and not included in the research data. Therefore, the participants in our study amounted to 386 respondents. We examined all hypotheses of the study by the structural equation modeling (SEM) methods with AMOS program version 23. Before testing the hypothesis, a measurement model and goodness of fit test were carried out.

We used three variables in this research: students' pro-environmental behavior as an endogenous variable, the students' locus of control, and attitude toward pro-environmental behavior as exogenous variables. Pro-environmental behavior consists of 12 items adopted from previous study (Bamberg & Rees, 2015; Bronfman et al., 2015). Locus of control consists of 7 items that we referred paper performed by (Cleveland et al., 2012) and four items adapted from the paper of (Polonsky et al., 2012) related to attitude toward pro-environmental behavior variables. The instruments were measured on the Likert scale of 1 to 7: 1-strongly disagree to strongly agree (7). Validity testing of the instruments was used by confirmatory factor analysis. Table 1 displays more detail about the measurements of variables.

Table 1. Construct and Measurements

Variables		Item	Factor Loadings	Measurement Errors	CR	AVE
Pro-Environmental Behavior	PEB2:	I prefer to make the most use of natural light	0.733	0.463	0.916	0.617
	PEB3:	I prefer to buy organic products that used at work	0.745	0.445		
	PEB4:	I prefer to buy energy-efficient light bulbs at work	0.735	0.460		
	PEB5:	I always keep the cleanliness of the environment around our firm	0.832	0.308		
	PEB6:	I always maintain the sustainability of plants, seeds, and organic matter.	0.847	0.283		
	PEB7:	We try to repair leaky faucets quickly	0.773	0.402		
	PEB8:	We save water use at the workplace	0.823	0.323		
Locus of Control	Loc2:	By buying green products, the more I can help to persuade people	0.762	0.419	0.898	0.598
	Loc3:	Any donation that we give to the group of environmental, for example, the group Greenpeace, I think can help to attain its goals	0.742	0.449		
	Loc4:	By giving money to the groups of environmental, I can help the increasing their probability of success	0.709	0.497		
	Loc5:	I can convince my friend to change their conservation habits.	0.703	0.506		
	Loc6:	By recycling activities, I am helping to reduce pollution	0.844	0.288		
	Loc7:	By recycling, I can save valuable natural resources	0.863	0.255		
Attitude toward Pro-Environmental Behavior	AtEB1:	I think every people have to contribute to environmental protection	0.772	0.404	0.852	0.591
	AtEB2:	The issue of the environment is very important to be discussed	0.754	0.431		
	AtEB3:	I realize that every people must have a sense of responsibility to maintain and protect the environment every day	0.832	0.308		
	AtEB4:	The issues related to the environment is a very important issue today	0.712	0.493		

3. RESULTS AND DISCUSSIONS

Results

Measurement Model

The measurement model intends to test whether the indicators can measure the variables. One of the tests applied is by testing confirmatory factor analysis. Confirmatory factor analysis was done to determine whether the manifest or observed variables can measure the latent variables (unobserved variables). The results of the confirmatory Factor analysis are presented in Table 2.

Table 2. Confirmatory Factor Analysis

			Estimate	Decision
Loc7	<---	Locus_of_Control	0.833	Valid
Loc6	<---	Locus_of_Control	0.824	Valid
Loc5	<---	Locus_of_Control	0.708	Valid
Loc4	<---	Locus_of_Control	0.725	Valid
Loc3	<---	Locus_of_Control	0.776	Valid
Loc2	<---	Locus_of_Control	0.780	Valid
Loc1	<---	Locus_of_Control	0.693	Excluded
AtEB1	<---	Attitute_toward_Pro_Environmental_Behavior	0.826	Valid
AtEB2	<---	Attitute_toward_Pro_Environmental_Behavior	0.883	Valid
AtEB3	<---	Attitute_toward_Pro_Environmental_Behavior	0.878	Valid
AtEB4	<---	Attitute_toward_Pro_Environmental_Behavior	0.802	Valid
PEB1	<---	Pro_Environmental_Behavior	0.664	Excluded
PEB2	<---	Pro_Environmental_Behavior	0.764	Valid
PEB3	<---	Pro_Environmental_Behavior	0.752	Valid
PEB4	<---	Pro_Environmental_Behavioro	0.747	Valid
PEB5	<---	Pro_Environmental_Behavior	0.812	Valid
PEB6	<---	Pro_Environmental_Behavior	0.835	Valid
PEB7	<---	Pro_Environmental_Behavior	0.764	Valid
PEB8	<---	Pro_Environmental_Behavior	0.818	Valid
PEB9	<---	Pro_Environmental_Behavior	0.639	Excluded
PEB10	<---	Pro_Environmental_Behavior	0.512	Excluded
PEB11	<---	Pro_Environmental_Behavior	0.602	Excluded
PEB12	<---	Pro_Environmental_Behavior	0.507	Excluded

The confirmatory factor analysis testing showed that six indicators were not valid to measure the research variables. It is due to the factor loading value <0.70. Invalid indicators include Loc1 (0.693 <0.70) on the locus of the control variable. PEB1 (0.664 <0.70), PEB9 (0.639 <0.70), PEB10 (0.512 <0.70), PEB11 (0.602 <0.70), PEB12 (0.507 <0.70) on pro-environmental behavior variables. Therefore, the six indicators were excluded from the model of this research. The composite reliability value is recommended to be> 0.70, and the criteria of the Average Variance Extracted (AVE) value should be > 0.50 (Hair et al., 2017). Table 3 shows that the data in this research are valid and reliable. We can see from the Construct Reliability (CR) have a value of> 0.70, and all values of AVE have a value of> 0.5. Thus, the questionnaire used in this research was suitable for measuring the variables.

Table 3. The Measurement Model

Variables	Item		Factor Loadings	Measurement Errors	CR	AVE
Pro-Environmental Behavior	PEB2:	I prefer to make the most use of natural light	0.733	0.463	0.916	0.617
	PEB3:	I prefer to buy organic products that used at work	0.745	0.445		
	PEB4:	I prefer to buy energy-efficient light bulbs at work	0.735	0.460		

Variables		Item	Factor Loadings	Measurement Errors	CR	AVE
Locus of Control	PEB5:	I always keep the cleanliness of the environment around our firm	0.832	0.308	0.898	0.598
	PEB6:	I always maintain the sustainability of plants, seeds, and organic matter.	0.847	0.283		
	PEB7:	We try to repair leaky faucets quickly	0.773	0.402		
	PEB8:	We save water use at the workplace	0.823	0.323		
	Loc2:	By buying green products, the more I can help to persuade people	0.762	0.419		
	Loc3:	Any donation that we give to the group of environmental, for example, the group Greenpeace, I think can help to attain its goals	0.742	0.449		
	Loc4:	By giving money to the groups of environmental, I can help the increasing their probability of success	0.709	0.497		
	Loc5:	I can convince my friend to change their conservation habits.	0.703	0.506		
	Loc6:	By recycling activities, I am helping to reduce pollution	0.844	0.288		
	Loc7:	By recycling, I can save valuable natural resources	0.863	0.255		
Attitude toward Pro-Environmental Behavior	AtEB1:	I think every people have to contribute to environmental protection	0.772	0.404	0.852	0.591
	AtEB2:	The issue of the environment is very important to be discussed	0.754	0.431		
	AtEB3:	I realize that every people must have a sense of responsibility to maintain and protect the environment every day	0.832	0.308		
	AtEB4:	The issues related to the environment is a very important issue today	0.712	0.493		

The Goodness of Fit Test of the Model

Conducting the goodness of fit test was one of the steps in performing the structural equation modeling. The criteria for evaluating the feasibility of the model consists of Adjusted GFI (AGFI)>0.90, the value of Goodness of Fit Index (GFI) must have > 0.90, the value of CFI must have > 0.90, TLI value must have > 0.90, RMSEA must have < 0.08, and RMR must have <0.05 (Schumacker & Lomax, 2010). The results of the goodness test have been obtained, as shown in Table 4.

Table 4. The Goodness of Fit Test of the Model

The Goodness of Fit Index	Result	Decision
Adjusted Goodness of Fit (AGFI)	0.830	Not Good fit
The goodness_of_Fit Index (GFI)	0.871	Good Fit
Comparative_Fit_Index (CFI)	0.935	Good Fit
Tucker Lewis_Index (TLI)	0.923	Good Fit
Root Mean Square Error of Approximation (RMSEA)	0.085	Not Good Fit
Root Mean Square Residual (RMSR)	0.039	Good Fit

Two goodness-of-fit indexes needed to be in better-fit criteria. Therefore, modifications were made. The index modification aims to obtain a relevant value of the structural model. The results of modification indices showed that the error value of e6 (Loc6 indicator) and e7 (Loc7 indicator) have the greatest MI (Modification Indices) values. Therefore, these indicators were removed from the research model. Table 5 above shows that all criteria of the goodness of fit index are in good fit criteria.

Table 5. The Goodness of Fit Test of the Model after Modification

The Goodness of Fit Index	Result	Decision
Adjusted Goodness of Fit (AGFI)	0.896	Marginal Fit
The goodness_of_Fit Index (GFI)	0.924	Good Fit
Comparative_Fit_Index (CFI)	0.965	Good Fit
Tucker Lewis_Index (TLI)	0.957	Good Fit
Root Mean Square Error of Approximation (RMSEA)	0.066	Good Fit
Root Mean Square Residual (RMSR)	0.033	Good Fit

The Results of Hypothesis Testing

The hypothesis testing was done to test exogenous variables' effect on endogenous variables. In this case, we tested the locus of control's effect on student's attitudes toward the pro-environmental behavior of the students in Indonesia. Next hypothesis, we tested the influence of the student's attitude toward pro-environmental behavior in Indonesia on the pro-environmental behavior of the students. Last we also tested the locus of control's effect on the pro-environmental university students in Indonesia. The criteria for testing the hypotheses is that the value of the critical ratio must have > 1.96, and a probability level must have 0.05 (Byrne, 2010).

Table 6. Hypotheses Testing Result

The Relationship			Stand. Est.	CR.	P	Decision
Attitute_toward_Pro_Environmental Behavior	<---	Locus_of_Control	0.772	13.195	0.000	Accepted
Pro_Environmental_Behavior	<---	Attitute_toward_Pro_Environmental_Behavior	0.272	4.004	0.000	Accepted
Pro_Environmental_Behavior	<---	Locus_of_Control	0.605	7.787	0.000	Accepted

Hypotheses testing was performed, as shown in Table 6 shows that all the hypotheses we have developed were all proven and accepted. The result of the hypothesis about the relationship between locus of control on students' attitude toward pro-environmental behavior has a CR or critical ratio value of 13.195> 1.96 and a Probability value of 0.000. It means a positive and significant effect was found between locus of control and attitude toward pro-environmental behavior. Next, the second hypothesis examines the relationship between students' attitudes toward pro-environmental behavior on the individual pro-environmental of the students.

The result shows that the value of the critical ratio was 4.004> 1.96, and we found the probability value was 0.000. It means that there was a significant and positive influence between attitudes toward pro-environmental behavior on pro-environmental. The hypothesis is that the locus of control positively and significantly affects pro-environmental behavior. The critical ratio was 7,787 <1.96, and the probability value of 0.00. It means the locus of control significantly affects pro-environmental behavior. The structural model is presented in Figure 1.

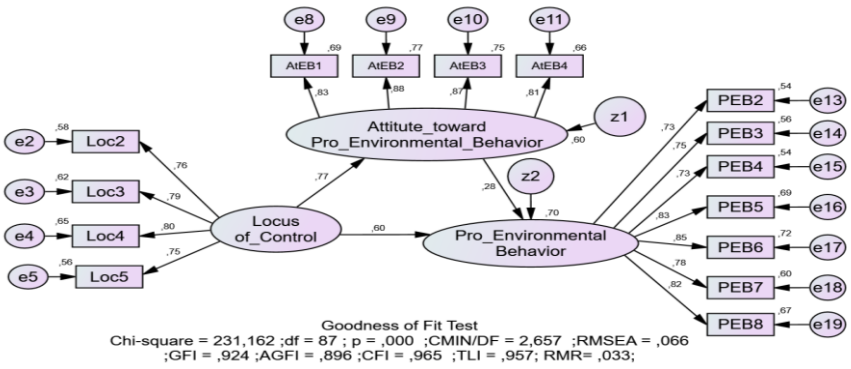

Figure 1. Structural Model

Discussion

The important point in our research is to conduct a study from a behavioral perspective, in this case, of the behavior of university students in Indonesia in terms of environmental protection and conservation behavior. In this present study, we discuss the effect of locus of control on university students' pro-environmental behavior via attitude toward pro-environmental behavior of the university students in Indonesia as a mediating or intervening variable. We developed four hypotheses, namely: (1) locus of control directly predicts pro-environmental behavior; (2) attitude toward pro-environmental university students directly affects pro-environmental behavior; (3) locus of control directly predicts pro-environmental behavior, and (4) attitude toward pro-environmental behavior can mediate locus of control's effect on students' pro-environmental behavior.

First, we begin to discuss the first hypothesis. Can students' locus of control influence attitude toward the pro-environmental behavior of university students positively and significantly in Indonesia? The research results can be informed that a positive and significant effect was found between students' locus of control at universities in Indonesia on attitude toward pro-environmental behavior. Statistically, we can see from the critical value of 13.195 and the significance value of 0.000. The critical ratio value was > 1.96, and the p-value result was < 0.05. The p-value and critical ratio have values by the recommended value. It means it can be explained that the locus of control of university students in Indonesia predicted attitude toward pro-environmental behavior positively and significantly. In other terms, the higher locus of control from university students in Indonesia concerning the environment will encourage the improvement of attitude toward pro-environmental behavior. Conversely, if students have a low locus of control, this will lead to a low attitude of the students toward the environment. This study was relevant to an opinion stated that people with a strong locus of control tend to be more have a strong belief that their actions toward the environment will bring a change and will be a more positive attitude towards the environment (Colebrook-Claude, 2019). The previous research finding found that the people with a moderate locus of control had a significantly better attitude towards cleanliness, conservation, and behavior towards wildlife, while the people with an external locus of control had a better attitude towards energy resources (Nazneen & Asghar, 2017). Attitudes could be explained by the sense of human responsibility toward the environment (Pavalache-Ilie & Unianu, 2012). They control their activity and are responsible for a clean and healthy environment. They have confidence that the power is in their hands and that support and implementation strategies to solve existing environmental problems can be given. The previous findings showed that an individual's locus of control affects attitudes toward pro-environmental behavior.

The second hypothesis examines the effect of the university students' attitude toward pro-environmental behavior on university students' pro-environmental behavior in Indonesia. The hypothesis testing showed that the value of CR (critical ratio) was 4.004 and a probability value of 0.000. It shows that the critical ratio value is> 1.96 and a probability value <0.05 (0.000 <0.05). Therefore, the second hypothesis in the study was accepted. It means that attitude toward pro-environmental behavior predicted students' pro-environmental behavior positively and significantly. In other terms, the higher the attitude toward the pro-environmental values of students, the higher the pro-environmental behavior of university students in Indonesia. The result of this study was supported by previous found that employee behavior was predicted by attitude toward the environment (Hines et al., 1987; Tian et al., 2019). The people with a highly positive attitude were more highly responsive to environmental behaviors than individuals with less positive attitudes to environmental health.

Therefore, we can explain that attitude influences student behavior toward the environment. Good attitude of students towards the environment, increasing student behavior that is pro to a clean and healthy environment. Furthermore, testing hypothesis three, namely locus of control, had a positive and significant effect on students' pro-environmental behavior. Our research confirms a positive relationship between university students' locus of control on pro-environmental behavior in Indonesia. It can be checked from the critical ratio of 7,787 and a probability value of 0,000. Critical ratio value <1.96 and the probability value <0.005 (0,000 <0.05) It informs that the variable locus of control of the students positively and significantly affects the pro-environmental behavior in Indonesia. It gives understanding that the higher a person's belief in his actions will increase his concern for the environment. The results of this study were supported by previous research, which showed that locus of control could predict pro-environmental behavior (Chiang et al., 2019; Cleveland et al., 2005).

Based on the examination of direct and indirect effects results, it was known that the locus of control had the most prominent effect and contribution to students' pro-environmental behavior, namely 0.605 (60.5%). In contrast, the student's attitude toward pro-environmental behavior towards students' pro-environmental behavior had an impact of 0.277 (27.7%). Meanwhile, the indirect effect between locus of control through attitude toward pro-environmental behavior towards pro-environmental behavior was 0.214 (21.4%). It shows that the direct influence has the most influence compared to the indirect effect on

students' pro-environmental behavior. It implies that the attitude of students toward pro-environmental behavior was not significantly mediate the effect of locus of control on students' pro-environmental behavior. It means that increasing students' pro-environmental action or behavior is influenced by students' locus of control.

This research has implications both theoretically and also practically. Theoretically, this present research contributes to scientific development and enriches the existing literature. The previous study was recommended to test attitude as a predictor of environmental behavior (Kothe et al., 2019). Their research confirmed that people's attitude was a predictor that could affect people's pro-environmental behavior. This research can also be a reference for future researchers who want to research the locus of control, attitude, and individual's pro-environmental behavior. Practically, this research has implications for universities in Indonesia to increase the students' locus of control and attitude toward pro-environmental behavior to improve positive environmental action habits in Indonesia. Future research is expected to next the researcher to test or add other variables related to psychological factors or personality traits to enrich the literature or knowledge related to an individual's pro-environmental behavior antecedents. Testing can also be done outside of students, for example, lecturers in Indonesia.

4. CONCLUSION

The locus of control of the students and attitude toward pro-environmental behavior of the student can increase the attention and concern of students to do pro-environmental actions in Indonesia. This study also found that students' locus of control directly has the greatest effect on students' pro-environmental behavior. Meanwhile, the student's locus of control, indirectly influenced by their attitude toward pro-environmental behavior, was quite weak. It means that if we want to improve the pro-environmental behavior of university students in Indonesia, first of all, it is necessary to increase the students' locus of control. Therefore, the student's attitude toward the pro-environment has no role as mediation between locus of control on students' pro-environmental behavior.

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