



The Contribution of Openness to Experience in Establishing Pro-Environmental Behavior

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Abstract

The impact of harmful human behavior on the environment is an important issue. Therefore, it is essential to discuss how humans behave towards their environment. This research objective was to examine the relationship between openness to experience and pro-environmental behavior in students and to see the description of pro-environmental behavior in students. Furthermore, the research subjects comprised 216 undergraduate students, including 58 males (26.85%) and 158 females (73.15%) with an age range of 17 to 24 years old at a university. This research used a convenience sampling technique, and the data collection tools were scales. Besides, this research used two scales: the pro-environment scale and the openness to experience personality scale. The data analysis in this research used Kendall's Tau, resulting in a correlation between openness to experience and pro-environmental behavior in students ($p < 0.01$). It meant that the higher the level of undergraduate students' openness to experience, the higher the pro-environmental behavior they had. In addition, it was also found that the frequency distribution of pro-environment behavior data was mainly in the moderate (88.9%) categorization.

Keyword : pro-environmental behavior; Openness to Experience; undergraduate students

Abstrak

Dampak dari perilaku manusia yang merugikan terhadap lingkungan merupakan isu yang penting sehingga penting untuk membahas bagaimana perilaku manusia terhadap lingkungannya. Penelitian ini bertujuan untuk menguji keterkaitan hubungan openness to experience dengan perilaku pro lingkungan pada mahasiswa dan melihat gambaran perilaku pro lingkungan pada mahasiswa. Sebanyak 216 mahasiswa yang terdiri dari 58 laki laki (26,85%) dan 158 perempuan (73,15%) dengan rentang usia 17 sampai 24 Tahun di sebuah universitas menjadi subjek penelitian ini. Teknik pengambilan sampel menggunakan convenience sampling dan skala sebagai alat pengumpul data. Terdapat dua skala yang digunakan dalam penelitian ini yaitu skala pro lingkungan dan skala kepribadian openness to experience. Analisis data yang digunakan dalam penelitian ini menggunakan kendall's tau dan memberikan hasil bahwa terdapat korelasi antara openness to experience dan perilaku pro lingkungan pada mahasiswa ($p < 0,01$). Artinya semakin tinggi tingkat openness to experience mahasiswa maka semakin tinggi perilaku pro lingkungan yang dimilikinya. Selain itu, juga ditemukan bahwa sebaran frekuensi data perilaku pro lingkungan mayoritas subjek berada pada kategorisasi sedang (88,9%).

Kata Kunci : Perilaku Pro Lingkungan; Openness to Experience; Mahasiswa

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BACKGROUND

The impact of harmful human behavior on the environment is a global issue (Puech et al., 2020). Keraf (in Palupi & Sawitri, 2017) states that environmental problems such as pollution and damage that occur in forests, seas, water, land, and so on are caused by human behavior that is uncaring and irresponsible. It is a crucial moral issue related to human behavior. In fact, Widya et al. (2021) state that humans and their demographic, social, and economic activities are integral parts of the environment, so they will interact with each other.

Humans need the environment as their habitat by utilizing their natural resources and as a place to dispose of various residuals from their activities. However, human production and consumption patterns also affect environmental conditions, and these changes will affect humans in various ways over time (Widya et al., 2021). Therefore, it is important to discuss matters related to human behavior towards the environment.

In the field of Psychology, research related to environmental psychology focuses on the complex interaction between human behavior and the environment, shifting from describing environmental behavior to pro-environmental behavioral determinants (Tamar et al., 2021). Human behavior related to the environment is a closely related concept to pro-environmental behavior. Pro-environmental behavior can be defined as all actions to avoid damage or protect the environment, whether in public or private domains (Balundè et al., 2019).

Previous research has successfully linked several factors that could affect pro-environmental behavior, such as moral responsibility, social norms, self-efficacy, attitudes, and intentions to perform pro-environmental behavior (Bamberg & Moser in Puech et al., 2020). Ambarfebrianti & Novianty (2021), in their research with adolescent subjects, found that the value orientation adolescents possessed could predict pro-

environmental behavior by 14%. Another research found that authenticity significantly correlated with pro-environmental behavior (Yang et al., 2021). Other research has also found that injunctive norms and normative goals could be relied on in encouraging environmental care behavior (Chakraborty et al., 2017; Pambudi & Wisuantari, 2021).

Cognitive and situational factors related to pro-environmental behavior such as beliefs, social norms, moral norms, or values are some of the factors that become the center of attention of researchers in answering the question of why some people care more about the natural environment than others (Poškus, 2020). Biosphere, altruistic, collectivity values, and subjective and objective knowledge of individuals positively influenced attitudes and intentions in carrying out environmentally friendly behavior (Wang et al., 2020).

More specifically, individual traits or personalities also reflect characteristic patterns of thoughts, feelings, and behaviors that are significant antecedents of pro-environmental attitudes and behaviors (Soutter et al., 2020). Some researchers have found that psychological factors related to attitudes and personality traits could predict individual attitudes towards the environment (Markowitz et al., 2012; Pavalache-Ilie & Cazan, 2018; Soutter et al., 2020). Park & Ha (2012) found that psychological factors such as cognitive attitudes, affective attitudes, social norms, and personal norms were significantly correlated to recycling.

Soutter et al. (2020), through his meta-analysis of 38 sources from 19 countries on four continents, found that openness to experience had a reasonably significant relationship with pro-environmental attitudes and behavior among the five Big Five personality concepts. Meanwhile, a weaker relationship appeared in agreeableness, conscientiousness, and extraversion personalities. On the other hand, neuroticism personality did not have a significant relationship with pro-environmental attitudes or behavior. Another research also

found that only four of the five Big Five personality factors, namely openness to experience, conscientiousness, extraversion, and agreeableness, affected the emergence of actions to protect environmental quality (Ojedokun, 2018). It was also supported by research by Markowitz et al. (2012), which found a positive relationship between openness to experience and pro-environmental activities in both the community and undergraduate student samples. Openness to experience was one of the factors in personality theory that most influenced an individual's attitude towards the environment.

Individuals with high openness to experience tend to have high cognitive abilities, especially those related to crystallized intelligence, which is intelligence obtained through learning and experience. These individuals tend to be better aware of the consequences of each behavior, including matters related to their environment (Soutter et al., 2020). In addition, individuals with high openness to experience will also be more able to accept and adopt new ideas, including adapting to pro-environmental behavior. The aesthetic aspect of the openness to experience personality is also possibly related to a more extraordinary aesthetic appreciation of nature to motivate the individual's desire to preserve it (Soutter et al., 2020).

Puech et al. (2020), in their research of several pairs of siblings residing in 14 different countries, also confirmed this. Their research found that more open individuals tended to engage in pro-environmental behavior more than environmental and genetic factors could confound the behavior.

However, the research conducted by Duong (2021) in Vietnam yielded different results. It was found that openness to experience had a negative relationship with attitudes towards environmentally friendly products but was not significantly involved in the intention to purchase them. According to Duong (2021), it can be explained by the fact that the collective values of Confucian culture

found in many Asian countries such as Vietnam, China, and Korea limited individual creativity and innovation so that then individuals in these cultures might feel hesitant to accept new things and adapt to unusual experience.

Hence, in this research, researchers attempted to examine the relationship between openness to experience and pro-environmental behavior on the subject of undergraduate students from a university in Indonesia who also had similar collective values to other Asian countries. The hypothesis proposed in this research was a correlation between openness to experience and pro-environmental behavior in students. In addition, researchers also aimed to see how the representation of pro-environmental behavior in students nowadays.

RESEARCH METHODS

Research Subject

This research was quantitative correlational research with student subjects. Two hundred sixteen students consisting of 58 men (26.85%) and 158 women (73.15%) with an age range of 17 to 24 years were selected as research respondents. Researchers used Google Form to help spread the scale from July 1, 2020, to July 3, 2020, by collecting data using the convenience sampling technique.

Data Collection Method

This research used a measuring instrument in the form of a psychological scale to collect data. There were two psychological scales, the pro-environment scale, and the openness to experience personality scale. The pro-environmental behavior scale was based on the Pro-Environmental Behavior (PEB) concept by Kaiser et al. (2007) with five aspects: energy conservation, avoiding waste, recycling, consumerism, and model behavior towards conservation.

The scale consisted of 22 valid items with Cronbach's alpha reliability of 0.828 and an item discriminatory index that ranged from 0.258 to 0.555.

Meanwhile, the openness to experience personality scale in this research used a scale tested by Satwika & Himam (2014) based on the aspects proposed by McCrae & Costa (2003): ideas, fantasy, aesthetics, action, feelings, and values.

The openness to experience scale consisted of 15 items with a Cronbach's alpha reliability of 0.884 with a range of item discriminatory indexes ranging from 0.327 to 0.716.

Data Analysis Technique

The collected data was then analyzed with the help of the IBM SPSS Statistic 23 for

Windows program using Kendall's Tau analysis test. This technique was preferred because after the normality test. It was found that the research data were not normally distributed ($p < 0.05$).

RESEARCH RESULTS

Descriptive statistical analysis of research data from 216 respondents found that the empirical mean of pro-environmental behavior variables was 72.91 and the openness to experience variable was 61.43 (see Table 1).

Table 1. Descriptive Statistical

| | N | Empirical Mean | SD Empirical | Hypothetical Mean | SD Hypothetical |
|-----------------------------------|-----|----------------|--------------|-------------------|-----------------|
| <i>Pro-Environmental Behavior</i> | 216 | 72,91 | 8,663 | 81 | 18 |
| <i>Openness to Experience</i> | 216 | 61,43 | 5,900 | 45 | 10 |

Based on the measurement results through the pro-environmental behavior scale and the openness to experience scale, it was found that the frequency distribution of pro-environment behavior data was mainly in the

moderate categorization (88.9%). Meanwhile, the openness to the experience level of the research subjects was in the high categorization (86.6%) (see Table 2).

Table 2. The Frequency Distribution (N=216)

| | Categorization | | F | % |
|-----------------------------------|------------------|----------|-----|-------|
| <i>Pro-Environmental Behavior</i> | $99 < x$ | High | 1 | 0,46% |
| | $63 < x \leq 99$ | Moderate | 192 | 88,9% |
| | $X \leq 63$ | Low | 23 | 10,7% |
| <i>Openness to Experience</i> | $55 < x$ | High | 187 | 86,6% |
| | $35 < x \leq 55$ | Moderate | 29 | 13,4% |
| | $X \leq 35$ | Low | 0 | 0% |

The results of the analysis test showed that the personality of openness to experience was significantly correlated with pro-environmental behavior in students ($p < 0.05$) with a correlation value of 0.368 (see Table 3). It meant that it could be seen that the more students had the personality characteristics of

openness to experience, the higher their pro-environmental behavior.

The categorization of pro-environmental behavior in students in each aspect can be seen in Table 4. Most research subjects were moderately categorized in all aspects of pro-environmental behavior.

Table 3. Kendall's tau_b Correlation Test

| | | Openness to Experience |
|----------------------------|-------------------------|-------------------------------|
| Pro-Environmental Behavior | Correlation Coefficient | .368** |
| | Sig. (2-tailed) | .000 |
| | N | 216 |

However, there were different dynamics of categorization in aspects of pro-environmental behavior. In the energy conservation aspect, 66 subjects (30.5%) were in the high categorization. Meanwhile, in the

consumerism aspect, it was found that 97 students or around 44.9% were in the low categorization, and 79 research subjects (36.57%) were also found to be still low in the recycling aspect.

Table 4. Categorization of Pro-Environmental Behavior in Each Aspect (N=216)

| Aspects | High | Moderate | Low |
|-------------------------------------|-------------|-----------------|------------|
| Energy conservation | 66 | 134 | 16 |
| Avoiding waste | 5 | 190 | 21 |
| Recycling | 2 | 135 | 79 |
| Consumerism | 2 | 117 | 97 |
| Model behavior towards conservation | 7 | 190 | 19 |

In addition, the researchers also conducted a different test of pro-environmental behavior and its aspects based on gender. They found that pro-environmental behavior was not significantly different

between male and female students ($p > 0.05$). However, in the aspect of avoiding waste, there were significant differences between male and female students ($p < 0.05$) (see Table 5).

Table 5. The Different Test of Pro-Environmental Behavior Based on Gender

| | Mann-Whitney U | Wilcoxon W | Z | Asymp. Sig. (2-tailed) |
|-------------------------------------|-----------------------|-------------------|----------|-------------------------------|
| Pro-environmental behavior | 4258.000 | 5969.000 | -.797 | .426 |
| Energy conservation | 4255.500 | 5966.500 | -.831 | .406 |
| Avoiding waste | 3560.000 | 5271.000 | -2.539 | .011 |
| Recycling | 4215.000 | 5926.000 | -.911 | .362 |
| Consumerism | 3861.000 | 16422.000 | 1.789 | .074 |
| Model behavior towards conservation | 4558.000 | 6269.000 | -.059 | .953 |

a. Grouping Variable: Gender

DISCUSSION

Based on the analysis that has been done, it was found that the hypothesis proposed in this research was accepted, namely that there was a correlation between openness to experience and pro-environmental behavior in students ($p < 0.05$) with a correlation value of 0.368 (see Table 3). It meant that it could be seen that the more students had the personality characteristics of openness to experience, the higher their pro-environmental behavior. Individuals with high levels of openness to experience tended to have high

curiosity and were very open to new information. They also had a high sensitivity, especially those related to artistic things.

Individuals with these characteristics are always ready to re-examine the values that exist in their environment and can provide ideas about concepts that are more open and broader. One is pro-environmental behavior, where information about the current environmental situation increasingly requires attention. The nature of openness and general intelligence possessed by individuals with high openness to experience allows them to face

new situations and accept pro-environmental values more openly (Ojedokun, 2018; Poškus, 2020). Individuals with high openness to experience are more critical and open to information and understanding to display behaviors that at least avoid damage or protect their environment both in public and in their domain.

Soutter et al. (2020) stated that high cognitive abilities in individuals with openness to experience personalities made them more aware of the consequences of each behavior, including matters related to their environment.

Brick & Lewis (2016) add that individuals with high openness to experience are characterized by flexible and abstract thinking, which is precisely what is required in imagining long-term and long-range environmental consequences such as those associated with climate change. In addition, the critical nature that individuals possess with openness to experience becomes a match against the status quo that develops in society regarding their environmentally destructive behavior. Being concerned about the environment means rejecting the mistaken notion that current circumstances should reflect what should be. According to Brick & Lewis (2016), this step requires intelligence and alternative thinking possessed by individuals with an openness to experience personality.

It was also considered in this research that most of the undergraduate students as the research subjects had a moderate level of pro-environmental behavior (88.9%). It became a challenge that some behaviors to protect the environment and avoid damage still required to be improved among undergraduate students.

Based on a descriptive analysis of the aspects of pro-environmental behavior, it was known that overall, most students were in moderate categorization in each aspect of pro-environmental behavior. However, it was slightly different in the energy conservation aspect that as many as 66 subjects (30.5%) were in high categorization. It indicated that behaviors related to energy conservation, such

as turning off or unplugging electrical equipment when not in use, were behaviors that have been understood and implemented by undergraduate students.

Meanwhile, in the consumerism aspect, it was found that 97 students, or around 44.9% of the research subjects, still lacked awareness about the importance of buying environmentally friendly goods such as packaging marked environmentally friendly, organic products, or products whose containers could be used or returned.

In the recycling aspect, it was also found that 79 research subjects (36.57%) were still low in making efforts to recycle or support recycling efforts from some of the goods they owned, such as separating waste according to its category, sorting clothes or tools that were still worth using and so on. Dixon & Parker (2022) also found the same thing in their research on undergraduate students at a university in South England. Students still limited their recycling behavior due to their perceived lack of ability, facilities, knowledge, and self-confidence, thereby limiting this behavior.

Based on this, it could be seen that the research subjects, namely undergraduate students, were still required to increase their awareness of the environment with a more substantial effort to be able to carry out pro-environmental behavior such as those related to purchasing environmentally friendly goods and efforts to recycle environmentally friendly goods. Rifayanti et al. (2018), in their research, revealed that role models were needed to be able to influence someone in carrying out pro-environmental behavior.

In addition, the researcher also conducted a different test of pro-environmental behavior and aspects in it based on gender and found that pro-environmental behavior was not significantly different between male and female students ($p > 0.05$). However, in the avoiding waste aspect, a significant difference was found between male and female students ($p < 0.05$) (see Table 5).

Women were more involved in avoiding waste (mean=114,97), such as using their bags when shopping, bringing their drink bottles, and other behaviors than men (mean=90,88).

Duong (2021) also found in his research that there were significant differences between men and women in attitudes and purchase intentions towards environmentally friendly products. Women were more likely to express a higher concern for technology and the environment than men, but this tendency was not universal (Davidson & Freudenburg, 1996). Zelezny et al. (2000) added that compared to men, women had a higher level of socialization to be other-oriented and socially responsible. Although this research could not prove pro-environmental behavior as a whole, specifically on the aspect of avoiding waste, female students had more awareness and effort to be responsible for their environment compared to male students.

Additionally, Eagly (in Park & Ha, 2012) provides a theoretical idea that states that different groups of individuals driven by different roles will display different behaviors. Through social norms, people establish their lifestyle, which is partly represented in their consumption behavior (Wut et al., 2021). Women's pro-environmental behavior is more influenced by their lifestyle and social norms, while men's lifestyles are more influenced by their attitudes towards policies which are not significantly correlated with pro-environmental behavior (Wut et al., 2021). Furthermore, Wut et al. (2021) explain that perhaps it happens because some women have more household experience and are aware of the benefits of disposing of waste properly.

CONCLUSION

Based on the research that has been done, it is answered that the hypothesis proposed in this research, namely, there was a correlation between openness to experience and pro-environmental behavior in students, was accepted. It meant that it could be seen that the more students had the personality

characteristics of openness to experience, the higher their pro-environmental behavior. In addition, it was also found that the frequency distribution of pro-environment behavior data was mainly in the moderate categorization (88.9%). In the consumerism and recycling aspects, many students were still in the low category (44.9% and 36.57%). The different tests also found that pro-environmental behavior was not significantly different between male and female students ($p > 0.05$). However, in the aspect of avoiding waste, a significant difference was found between male and female students ($p < 0.05$). Women were more involved in avoiding waste (mean=114,97), such as using their bags when shopping, bringing their drink bottles, and other behaviors than men (mean=90,88).

Suggestions that can be given are to promote pro-environmental behavior among students, especially those related to consumerism and recycling more massively. In addition, strict rules are also followed against actions that can damage the environment.

It is hoped that these results can be the basis for further research to be able to provide certain interventions such as psychoeducation or socialization regarding pro-environmental behavior, especially those related to these two aspects in order to increase pro-environmental behavior in students.

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