The relationship between personality and environmentally responsible behavior in Green High School

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Abstract

Many schools carry out mitigation and adaptation action programs through changing student behavior. This is due to the fact that green schools with sustainable environmental programs are expected to produce individuals with environmentally responsible behavior. Therefore, this study was designed to analyze the environmentally responsible behavior (REB) in schools with an environmental culture based on the personality possessed by the high school students. This paper presented descriptive correlation metode. The green high school students used as respondents were selected through multiple random sampling techniques. The results showed that agreeableness and consciousness played an important role in shaping the environmental management and persuasive actions of the students. It was also discovered that agreeableness was very important to economic actions. Stakeholders need to consider on individuals with high conscientiousness and agreeableness personality traits in implementing environmentally responsible activities

Keywords: Agreeableness; Conscientiousness; Environmentally responsible behavior; Green School.

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1. Introduction

1.1. Theoretical Framework

The protection of the environment requires changing individual behavior and this means people need to develop behaviors that promote environmental sustainability (Kazdin, 2009). The public is aware of climate change and its consequences but prioritizes social aspects such as health, job creation, as well as public safety over the investment in climate change mitigation (Lima, 2021). Meanwhile, several initiatives are observed to be contributing to the increasing environmental awareness in schools such as relevant academic projects, the celebration of Earth Day and World Environment Day by planting trees, and several other activities (Freije et al., 2017). It is important to note that the environmental education programs usually conducted in green schools are different from those in general schools, especially due to their competence in pro-environmental actions. Some of the factors reported to be influencing the achievement of pro-environmental behavior in green schools include gender and eco-team membership (Cincera & Krajhanzl, 2013).

Moreover, Indonesia has played a role in developing an environmentally friendly school program called the Adiwiyata Program in 2006 (Rahmadiani et al., 2019). The program is aimed at realizing the integration of environmental culture including physical activities and student attitudes into schools. The level of knowledge and awareness concerning the environment for students in Adiwiyata schools is observed to be higher than those in non-Adiwiyata schools (Iswari & Utomo, 2017). Moreover, these programs were also found to be influencing pro-environmental behavior (Tompodunga et al., 2018).

This means one of the ways to achieve environmentally responsible behavior is through education by integrating relevant and appropriate learning concepts and strategies into the school curriculum (De & Durage, 2020).The students in a high school with an environmental culture have the potential to behave responsibly towards the environment.This is usually reflected in the activities conducted to achieve the conservation of nature, respond to climate change, and support sustainable development (Han et al., 2016). Green school in this research has a mission to increase a caring passion in maintaining the school environment and also has several programs that support conservation and climate change action. Discipline is applied in the form of punishment for students who disobey the rules, so that will develop responsible behavior towards the environment in which they are living. Existing program that has been implemented is the establishment of extracurricular related to environment which involved teachers as coordinator.Furthermore, it is important to note that environmental problems are caused by a low sense of responsibility towards the environment, thereby leading to environmentally destructive behavior (Gifford & Nilsson, 2014). There are five dimensions to assessing environmentally responsible behavior and these include environmental management or physical action, consumer or economic action, persuasion, political action, and legal action (Hsu, 1997).

The personality observed in a situation to have the ability of explaining some differences in the response to individual actions can be used as the predictor of the person's behavior. Several studies on personality have used "The Big-Five" framework as a model (Gosling et al., 2003). This framework has five dimensions which include (1) neuroticism to assess individuals prone to psychological stress, unrealistic ideas, excessive desires or urges, and maladaptive coping responses, (2) extroversion to evaluate the quantity and intensity of interpersonal interactions, level of activity, need for stimulation, and capacity for excitement, (3) openness which values the proactive search and appreciation of experience for its own sake, and ensures the tolerance for and exploration of foreign ideas, (4) agreeableness to assess the quality of an individual's interpersonal orientation from affection to

antagonism, in their thoughts, feelings and actions, and (5) conscientiousness to determine an an individual's level of organization, (McCrae & Costa, 1990).

1.2. Related Research

Most of the previous studies on this concept focus on nature conservation in the tourism sector while several others were conducted in residential and school environments. The tourist behaviors were reported to be influenced by experience, conservation commitment, place attachment, perception of value, and destination image (Han et al., 2016). Moreover, several factors were also discovered to be affecting environmentally responsible behavior and an example is personality (Hines et al., 1987). This led to the implementation of certain strategies in schools to produce students with personalities related to environmental responsibility. It has also been previously stated that the development of interactive training methods in secondary schools has the ability to enhance cognitive development and stimulate the emergence of environmentally responsible personalities for the students (Yelena et al., 2016).

Another study also showed that certain personality characteristics and attitudes that detest littering have the tendency to instill environmentally responsible behavior in people (Ojedokun, 2011). It was also discovered that personality has an indirect positive effect on environmentally responsible behavior due to long-term accumulation (Kvasova, 2015). The modeling by (Zhao et al., 2018) also showed that the most important factor influencing environmentally responsible behavior is a personality trait.

Several studies used to link these five characteristics to environmentally responsible behavior showed different results. It was reported that the nature of openness positively influenced satisfaction and environmentally responsible behavior (Zhao et al., 2018). Another study established a relationship between behavioral psychology aspects in the form of emotions and environmentally responsible behavior. Moreover, positive emotions were found to have a significant and positive effect on the satisfaction, memory, and environmentally responsible behavior of travelers. Tourist satisfaction is believed to be a form of experience and the emotional aspect is very important in shaping behavior (Hsu, 1997). Other studies also showed that extraversion and agreeableness have a positive relationship with gene Y's attitude towards selecting and paying for environmentally friendly hotels (Tang & Lam, 2017).

(Milfont & Sibley, 2012) found that energy-saving behavior and environmental commitment are associated with friendliness and conscientiousness. Furthermore, (Hirsh, 2010) reported that friendliness, conscientiousness, stability, and openness had a significant relationship with environmental concern while extraversion had none. A study in Britain also showed a positive correlation between agreeableness, conscientiousness, and attitudes toward recycling (Swami et al., 2011). (Datau et al., 2019) found consciousness to have the highest relationship with pro-environmental behavior. Several other researchers also demonstrated that conscientiousness is related to environmentalism (Markowitz et al., 2012). Moreover, the differences in the types of personality affecting environmentally responsible behavior have been studied. This study was conducted to determine the relationship of agreeableness and conscientiousness personality traits to the five dimensions of environmentally responsible behavior.

1.3. Purpose of the Study

The purpose of this paper is to determine the correlation level between Agreeableness and Conscientiousness with each dimention of Environmentally Responsible Behavior. The formulations of sub-objectives are determine the correlation between:

1. Agreeableness and Conscientiousness traits and environmental management/physical actions.

2. Agreeableness and Conscientiousness traits with consumer/economic actions,

3. Agreeableness and Conscientiousness traits and Act of Persuasion

4. Agreeableness and Conscientiousness traits and political actions

5. Agreeableness and Conscientiousness traits and legal action

2. Method and Materials

2.1. Research Model

This research used descriptive correlational study, conducted in April-September 2020 of v Green high school students in the Province of West Java, Indonesia

2.2. Participants

Data were collected from a total of 101 students in 4 class XI high schools.Data were selected through multiple random sampling as the participants.

2.3. Data Collection Tools

The data were collected using 2 sets of questionnaire instruments for each variable. The dimensions used to represent the environmentally responsible behavior include environmental management/physical action, consumer/economic action, persuasion, political action, and legal action (Hsu, 1997 and Erdogan et al., 2012).

2.4. Data Collection Process

All the question items for the two variables were tested on 30 students from second grade XI SMA/high school followed by validity and reliability tests. This led to the use of 36 items consisting of 6 items for environmental management/physical action, 4 items for consumer/economic actions, 14 items for persuasion, 1item for political action, and 1 item for legal action in relation to the environmentally responsible behavior variable. Meanwhile, the personality trait had 12 items which include 6 items for agreeableness and 6 items for conscientiousness. The confidentiality of the respondents was maintained to reduce the tendency of providing socially bound responses.

2.5. Data Analysis

The data were analyzed quantitatively using multiple regression analysis. SPSS version 25 software was used for the analysis after the ordinal data were converted into interval data using the MSI (Method of Successive International) application. The data we analyzed normally distribution, homogeneous and liniearity before test the hypothesis.

3. Result and discussion

The results of the descriptive statistics are presented in the following Table 1

Table 1. Descriptive statistics

REB construct	Normality	Personality Construct	Deviation from linearity
Management	0.940	Agreeableness	0.795
		Conscientiousness	0.058

Economic action	0.741	Agreeableness	0.494
		Conscientiousness	0.053
Political action	0.000	Agreeableness	0.894
		Conscientiousness	0.111
Legal action	0.000	Agreeableness	0.290
		Conscientiousness	0.136
Persuasive action	0.537	Agreeableness	0.367
		Conscientiousness	0.146

The findings showed that the environmentally responsible behavior data not normally distributed are those related to political and legal actions (sig < 0.05). The level of correlation and the regression model was further analyzed and presented in the following Table 2.

Table 2. Correlation and regression model

Construct	Sig	R square	Model
Y Management (towards X_1&X_2)	0.000		
X_1 Agreeableness	0.037	16.5%	Y= 0.204 X_1 + 0.2 X_2 + 1.157
X_2 Conscientiousness	0.033		
Y Economic action (towards X_1&X_2)	0.000		
X_1 Agreeableness	0.003	19.1%	Y= 0.247 X_1 + 0.126 X_2 + 1.149
X_2 Conscientiousness	0.113		
Y Political action(towards X_1&X_2)	0.010		
X_1 Agreeableness	0.000	13.2%	Y= 0.625 X_1 − 0.401 X_2 + 0.949
X_2 Conscientiousness	0.120		
Y Legal action(towards X_1&X_2)	0.243		
X_1 Agreeableness	0.093	2.90%	Y = -0.277 X_1 +0.132 X_2 +1.927
X_2 Conscientiousness	0.402		
Y persuasive action(towards X_1&X_2)	0.000		
X_1 Agreeableness	0.000	29.0%	Y = 0.345 X_1 + 0.174 X_2 + 0.563
X_2 Conscientiousness	0.039		

The data exploration showed there was no multicollinearity as indicated by the value 0.528. Interventions were implemented on the abnormally distributed political and legal actions data by removing the outliers through Kolmogorov Smirnov and Shapiro-Wil formula, but they were still not normal. This means it is impossible to apply a regression model with political and legal actions variabel. The highest correlation 29% recorded for the persuasive action dimension. Environmental management was also observed to have a significant correlation to agreeableness and conscientiousness but the model was lower compared to the relationship for economic and persuasive measures. It was also discovered that the economic action regression model was 19.1% while the economic measures correlated with only agreeableness at 13,2%. The three models have a very significant correlation as indicated by the 0.01 value.

This study was conducted to support environmentally friendly school programs and the results showed a variation in the correlation of agreeableness and conscientiousness traits to management, economic, and persuasive Actions. Meanwhile, political and legal actions did not show any correlation because very few valid data were produced after several trials. The observations of these dimensions showed that 95% of the students answered "never" and "rarely" to conducting activities to prevent and resolve environmental problems, enforce regulations, and report environmental violations. This is consistent with several studies that people in the education sector tend to refuse to integrate politics into school and campus subjects. The school does not

examine complex environmental issues in the public sphere based on the perception that their priority is the value of learning outcomes (Dunlop et al., 2021). It was also discovered that there is a tendency to depoliticize and present only the facts of knowledge and skills not related to political life focused on certain issues and with the potential to trigger apathy (Wood & Matthew, 2014).

4.1 Agreeableness and Conscientiousness with Environmental Management Action

Pro-environmental behavior is implemented in green schools through curricular activities integrated into subjects as well as extra-curricular. The caring and cultured environmental movement were regulated in the Regulation of the Minister of the Environment of Indonesia No. 53 of 2013 concerning awards for Adiwiyata schools (Fadlilah & Ngabekti, 2018). The success of this behavior is believed to be influenced by the responses of the students based on their personality traits. It was discovered from the results that agreeableness and conscientiousness are correlated to environmental management actions by 16.5% while none was specifically found for environmental management behavior. A similar trend was observed with the addition of the honesty-humility factor to the agreeableness and conscientiousness traits associated with pro-environmental behavior (Ashton & K Lee, 2009).

Previous studies showed that good citizens tend to relate agreeableness, conscientiousness, and honesty-humility with pro-environmental behavior (Markowitz et al., 2012). It was also reported that agreeableness, conscientiousness, extraversion, and neuroticism are positively associated with pro-environmental behavior (Kvasova, 2015). Moreover, openness was also found to have a positive relationship with green behavior while extraversion had a negative influence (Gordon-Wilson & Modi, 2015). Another study partially related agreeableness to environmentalist behavior due to its trait of showing a higher likelihood of warmth, altruism, and high respect for others (Hirsh & Dolderman, 2007). Conscientiousness was also found to have a significant relationship with the environment (Fraj & Martinez, 2007).Milfont & Sibley, 2012) found that this is due to the fact that conscientious individuals are usually careful with any kind of action and follow social guidelines. They have the 'to do the right thing' behavior and a higher level of agreeableness towards the environment (Hirsh, 2010).

It was also discovered that the environmental culture implemented through an eco-management program in SMA 7 Bekasi high school includes turning organic waste into compost, learning outside the classroom, class cleaning competitions, as well as bringing and planting plants at school. This culture is expected to be transferred into the respective homes of the students. Some of the environmental management behavior observed among the students includes waste management, energy conservation, water conservation, transportation, and biodiversity. This is in line with the findings of (Bechtel & Churchman, 2002) that environmentally friendly behavior focuses on natural resources and the surrounding environment such as conservation of water, air and soil resources, energy conservation, waste management, and maintaining the life of plants and animals.

The behavior is also reflected in the attitudes and concerns of individuals towards environmental issues such as their disposition to energy conservation and waste recycling activities (Iwata, 2001). It was also observed that the environmental and cultural factors applied in the form of rules in the school are social norms correlated with conscientious traits. This means the two predictors ultimately affect environmentally friendly behavior and this is in line with the findings of (Milfont & Sibley, 2012) that tourists with high compliance, self-discipline, and goals tend to exhibit environmentally friendly behavior as indicated by the adherence to social rules and norms (including environmental), concern for future outcomes, feelings of responsibility, and obligation to encourage pro-environmental actions.

4.2 Agreeableness and Conscientiousness with Economic Action

The economic action variable refers to all activities related to the provision of monetary or financial support to assist in preventing or solving environmental problems (Hsu, 1997). The responses of the students to this action were observed to be influenced by their personality traits. This is in line with the findings of a previous study that sustainable consumer behavior is influenced by personality (Luchs & Mooradian, 2012). Another study also reported significant positive relationships between four personality traits of openness to experience, conscientiousness, extraversion, and agreeableness with green purchasing behavior (Fatoki, 2020). It was,

however, discovered in this study that only the agreeableness trait correlated with economic actions by 19.1%. The observation also showed that the behavior of the students towards economic actions is related to energy conservation by focusing on lower electric power when buying electronics, waste management by purchasing recycled products and drinks in single-use packaging, and biodiversity through the consumption of drugs from natural ingredients.

   The individuals with agreeableness attribute tend to be good citizens, pleasant, and friendly to the environment. They assume their actions need to be socially acceptable and serve as a contribution to the welfare of society (Markowitz et al., 2012). This is the reason students with high agreeableness tend to act environmentally friendly when making decisions. This is observed from their preference for goods with low electrical power and not buying drinks in single-use plastic cups. A similar result was also discovered in a study related to the tourism sector where the nature of agreeableness was found to have a positive significant relationship with the purchase of green products (Kvasova, 2015). Meanwhile, some studies indicated an inconsistent correlation between personality traits and economic measures. For example, (Tang & Lam, 2017) showed that green hotel users are customers with high extraversion and agreeableness. It was also reported that conscientiousness has a greater relationship with sustainable consumption behavior (de Almeida Ribeiro et al., 2016).

4.3 Agreeableness and Conscientiousness with Persuasive Action

   Persuasive action includes environmental activities used in attracting individuals or groups to assist in preventing or solving environmental problems (Hsu, 1997). It is conscious social effort moving people step by step to a solution, helping them appreciate why the advocated position solves the problem best. (Perloff, 2014). Some of the areas where persuasive behavior is observed include waste management, energy conservation, water conservation, transportation, and biodiversity.

   The results showed that agreeableness and conscientiousness have the highest correlation with persuasive actions compared to the other dimensions of environmentally responsible behavior as indicated by the 29% value. The students were observed to be hardworking, ambitious, careful, conscientious, and organized but this manner and style can be counter-productive because they are often perceived as boring (Helweg-Larsen & Collins, 1994). However, these traits are needed to be an example for other students in managing the school environment. It is important to note that the basic measure of agreeableness is extraordinary communality (Graziano & Eisenberg, 1997). Meanwhile, the provision of an adequate solution to problems in communal areas requires prioritizing social interests which are to be realized in the form of traits such as cooperation and empathy and avoiding selfishness. This is in line with the psychoanalytic approach to attachment (Graziano & Eisenberg, 1997) which relates being positive to other people in the community as part of the responses to feelings of inadequacy. This means people with personalities associated with persuasive actions are needed in leadership positions in a community.

   Moreover, agreeableness has an overall positive relationship with charismatic leadership (Bono & Judge, 2004). This is observed in the fact that a structured community such as schools conducting environmental management activities usually has a driving team including a teacher as the leader and a group of students interested and voluntarily involved in environmental management. The ability of students to influence their colleagues to care about the environment program in the school requires a charismatic approach and this is also expected to be extended to their homes. Some of the persuasive actions observed among the students are related to waste management by inviting others to separate organic and organic waste at home, urging their colleagues not to burn garbage, and inviting their friends to make and maintain compost at school. Those related to energy conservation include reminding their friends to close the door when the air conditioner is on and reminding their family to turn off the TV when no one is watching. In relation to water conservation, they prompt their friends to close the running faucet when not in use while the transport aspect involves reminding their friends and relatives to use public transportation when traveling. Lastly, biodiversity is indicated by the invitation provided

to their friends and relatives to take care of plants and participate actively in environmental activities related to animal protection.

4.4 Agreeableness and Consciousness with Legal Action

The legal action in this study is aimed at enforcing environmental laws against illegal behaviors. The results showed that there was no significant correlation between agreeableness and consciousness with legal actions related to environmental destruction and pollution. Meanwhile, Huang et al. (2017) reported a positive relationship between conscientiousness and agreeableness with their perception of justice. Previous studies also showed that workers tend to respond positively in the form of effective attitudes and work behaviors when they are treated fairly (Colquitt, Conlon, Wesson, Porter, & Ng, 2001; Rupp, Shao, Jones, & Liao, 2014).

It is important to note that compliance with environmental laws in the community can be hampered by several conditions. This is indicated by the fact that there is no clear statement on the activities considered illegal from the psychosocial perspective according to the environment law. Meanwhile, there are behaviors causing harm to the environment and humans but not universally considered illegal or even reprehensible (Korsell, 2001). This lack of social reproach for unlawful behavior is possibly making it easy for others to act irresponsibly to the environment. Another factor is the inadequate and disproportionate punishment for the activities causing severe ecological damage to the environment in the long term. Moreover, the consequences of environmental violations are also not directly and clearly addressed and severe penalties for environmental violations are rarely imposed (Korsell 2001; Watson, 2005).

4.5 Agreeableness and Consciousness with Political Action

The political actions include the values held by individuals in the form of lobbying, voting, and persuading legislators or government agencies to support certain activities related to environmental destruction and pollution. According to Dieter Op (2010), political opportunities depend in part on personality traits. For example, consciousness is a general tendency to act submissively. It is important to note that some of the conventional methods usually applied include non-disruptive protests such as the signing of petitions and collecting signatures.

Moreover, political opportunities also have the ability to trigger certain aspects of "agreeableness" personality to achieve political goals. It was observed that school policies do not support political activities. This was confirmed by Dunlop (2012) that there is a tendency for the curriculum to reject incorporating politics in high school science education and prioritizing outcome-based learning. The teachers are considered to lack the ability and trust to deal with sensitive issues and their role in teaching facts and science is perceived to be value-free (Levinson and Sheila Turner, 2001). This situation makes students not to be interested in entering the political realm to voice environmental issues.

5. Conclusions

This study examines the relationship between agreeableness and conscientiousness with each dimension of environmentally responsible behavior which includes environmental management/physical action, consumer/economic action, persuasion, political action, and legal action. It is the first study to link personality traits to these dimensions and the results showed that agreeableness and conscientiousness are very important in shaping environmental management actions. This is indicated by the ability of agreeableness to significantly influence economic and persuasive actions in green school high school students. The findings expand the knowledge on the influence of the personality traits profile of green school students in exhibiting environmentally responsible behavior and also have important implications for environmental drivers including the government, school and college institutions, and non-profit organizations/NGOs.

5. Recommendations

It is recommended that these stakeholders focus mainly on individuals with high conscientiousness and agreeableness personality traits in implementing environmentally responsible activities. For example, the local government is expected to select a cadre of environmental awareness mobilizers with high agreeableness to

persuade other people in the community. Environmental activist teachers in high schools also need to specially encourage students with these traits to become examples

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