Personality Traits as Predictors of Pro-Environmental Behavior: Evidence from the Philippines

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Abstract

One of the objectives within the 2030 Agenda for Sustainable Development set by the United Nations General Assembly is to enhance global awareness about sustainable development by disseminating precise information to people worldwide and encouraging lifestyles that harmonize with nature. Pope Francis's Laudato Si' is considered by many as a landmark document urging major change because it criticizes the consumer-centered way of life and argues that protecting the Earth requires a complete shift in our priorities. It is believed that pro-environmental behaviors play an important role in achieving the goals of the SDGs, UNESCO, and Laudato Si'. Previous studies have shown relationships between pro-environmental behavior and personality traits. However, these studies were conducted in foreign contexts, and to the best of the researcher's knowledge, there was no published local study that explains the connection between personality traits and pro-environmental behavior among Filipinos, particularly those in the workforce. This is the gap that this study aimed to address. This study determined the link between personality traits and pro-environmental behavior of Filipino workers in the National Capital Region (NCR). This utilized a cross-sectional predictive design. The participants were comprised of 644 Filipino workers from the NCR. In terms of gender, there were 256 (39.8%) males, 374 (58.1%) females, and 14 (2.2%) undisclosed. Two sets of self-report questionnaires were administered online: the Brief HEXACO Inventory and the adapted General Ecological Behavior Scale. Results of the main analysis suggest that only Extraversion, Conscientiousness, and Openness to Experience as personality traits positively predict pro-environmental behavior; while Honesty-Humility,

Emotionality, and Agreeableness did not. This may suggest that individuals who score high on these personality dimensions are more likely to engage in behaviors that benefit the environment. Therefore, strategic interventions aimed at developing these qualities could potentially contribute to a significant shift towards sustainability among Filipino workers.

Background of the Study

Climate change is a notable concern that presents substantial challenges for our society, requiring concerted efforts to address its impacts and ensure a sustainable future (Kesenheimer & Greitemeyer, 2021). Climate change significantly impacts many things essential for the health and survival of humans and other living things. This includes things people need every day, like clean air, water, and food, as well as places to live and the natural world around us (Yu & Yu, 2017). Even though the environment has the capacity to maintain itself, human actions have disrupted the natural balance and pose a threat to the sustainability of our environment (Pavalache-Ilie & Cazan, 2018). One of the major factors behind climate change, as the literature suggests, is the greenhouse gas emissions resulting from human activities, which continue to increase and are currently at their highest levels in history (Doni, Gasperini, & Soares, 2020). Furthermore, a significant number of our current habits are not environmentally sustainable, and the origins of these behaviors can be anticipated through psychological elements like attitudes and personality characteristics (Pavalache-Ilie & Cazan, 2018). There is a wide recognition that human actions are not just the main driver of climate change but also hold the potential to be part of the solution (Bradley et al., 2020). Since individual choices significantly affect climate change, understanding the factors that influence environmentally friendly behaviors is crucial. This knowledge can then be used to develop strategies that encourage such behaviors, ultimately helping to lessen the negative impacts of climate change (Bradley et al., 2020).

Differences in how people relate to environmental issues have been a focus of interest in the field of psychology, leading to questions like, "Who is concerned about ecology?" and "What personality traits define someone as pro-environment?" (Kesenheimer & Greitemeyer, 2021). There is a strong notion that pro-environmental behaviors contribute substantially to reaching the goals set forth by SDGs (Wang, et al., 2022), and Laudato Si', which translates to "Praise be to you, my Lord," (Klein & Laczniak, 2021). Pro-environmental behaviors are actions undertaken by individuals or households that aim to either improve the environment or minimize negative environmental impact (Bradley, et al., 2020; Simpao & Yabut, 2022). People who engage in pro-environmental behaviors are motivated by a mix of factors. Some do it for their own benefit, like saving money on energy bills. Others are driven by a sense of responsibility towards others, future generations, animals, or even the entire natural world (Palupi & Sawitri, 2018). The environmental challenges we face are in a way

connected to how people consume goods. Consumers who make environmentally conscious choices can alter the way they purchase, utilize, and discard products, ultimately creating a more sustainable pattern (Joseph, 2020). Recognizing and promoting pro-environmental behaviors (i.e., actions that benefit the environment) is crucial in safeguarding the environment and minimizing its degradation. By studying these behaviors, we can gain valuable insights into how individuals can contribute to a healthier planet. This knowledge can then be used to develop programs and encourage people to adopt more sustainable practices, ultimately leading to a positive impact on the environment (Simpao & Yabut, 2022).

One of the objectives within the 2030 Agenda for Sustainable Development set by the United Nations General Assembly is to enhance global awareness about sustainable development by disseminating precise information to people worldwide and encouraging lifestyles that harmonize with nature (Tezel, Ugural, & Giritli, 2018). Pope Francis's Laudato Si' is considered by many as a landmark document urging major change because it criticizes the consumer-centered way of life and argues that protecting the Earth requires a complete shift in our priorities (Jacobson, Weis, & Schneider, 2017).

Previous studies have shown positive relationships between pro-environmental behavior and personality traits (Fitriana, Miyarsah, and Rusdi, 2019; Hirsh, 2010; Hirsh, 2014; Kesenheimer & Greitemeyer, 2021; Kvasova, 2015; Markowitz et al., 2012; Pavalache-Ilie & Cazan, 2018; Simpson et al., 2021; Soto & John, 2009; Soutter & Mõttus, 2021). It is important to note that these studies were conducted in foreign contexts. In the Philippines, several studies have explored pro-environmental attitudes and behaviors. For instance, Reyes (2014) identified significant predictors of public and private behaviors related to the environment. Simpao and Yabut (2022) investigated whether environmental knowledge and a positive attitude toward conservation predict how likely university students are to engage in conservation behaviors. A study by De Vera et al. (2023) investigated what influences the willingness of riverside communities in Cotabato City, Mindanao, to engage in pro-environmental behaviors. Another study by dela Peña, Macale, and Largo (2018) assessed the impact of science-related courses on the environmental awareness and behavior of third-year high school students. Additionally, Gumasing, Bayola, Bugayong, and Cantona (2023) investigated the factors influencing the acceptance of renewable energy utilization by Filipinos. However, to the best of the researcher's knowledge, there was no published local study that explains the connection between personality traits and pro-environmental

behavior among Filipinos, particularly those in the workforce. This research gap is what this study aimed to address.

Conservation Psychology. Conservation psychology is a field of study concerned with understanding the factors that influence pro-environmental behaviors and developing strategies to encourage them (Clayton & Brook, 2005; Clayton & Myers, 2015). It is also termed the psychology of sustainability (Corral-Verdugo, Aguilar-Luzón, & Hernández, 2019). It is a branch of environmental psychology that grew from social psychology in the 1950s, and focuses on the human element of environmental conservation; while environmental psychology broadly examines people-environment interactions, conservation psychology emerged specifically to address conservation issues; despite some overlap, the fields often go hand-in-hand (Selinske et al., 2018).

According to Wallen and Landon (2020), conservation efforts are influenced by people's attitudes, values, identities, motivations, beliefs, and how they conform to social norms; hence, understanding these factors helps predict and influence behavior for successful conservation outcomes. Succinctly, conservation psychology centers on two key variables: pro-environmental attitudes and behaviors. Pro-environmental attitudes can be broadly defined as an individual's disposition to express favorability towards the natural environment (Hawcroft & Milfont, 2010). Whereas, pro-environmental behaviors encompass a range of concrete actions, deliberate or unintentional, that contribute positively to the health and well-being of the natural environment (Soutter & Mõttus, 2021). The assumption that environmental attitudes represent the actions people take based on their beliefs suggests a strong correlation between a person's attitude and their subsequent behavior. By systematically examining a person's behavioral patterns, researchers might be able to infer the underlying environmental attitude that is believed to motivate those behaviors (Kaiser, Oerke & Bogner, 2007).

In environmental psychology, research primarily centers on pro-environmental behaviors, also known as environmentally friendly behaviors. Kaiser and Wilson (2004) argue that environmental psychology's scope should be limited to studying goal-directed pro-environmental behaviors (Gatersleben, 2013). *Goal-directed pro-environmental behavior* is a "behavior which people adopt with an explicit goal of doing something beneficial for the environment" (Gatersleben, 2013, p. 132). Goal-directed behavior theory proposes that a person's intention to act, the strongest predictor of actual behavior, results from several factors. These include motivation (desire to perform the behavior), attitudes and social norms

regarding the behavior, perceived ability to perform it, anticipated emotions (positive and negative), and past behavior frequency (Han, 2021).

Kaiser and Wilson (2004) created a unidimensional measure to assess people's goal-oriented behaviors that benefit the environment. Their approach follows the Campbell paradigm. This theory suggests that actions related to a specific goal, like protecting the environment, can be ranked by difficulty. The more difficult behaviors someone does, the stronger their environmental concern is likely to be (Gatersleben, 2013). The idea behind this unidimensional measure is that people usually prefer easier actions over those that require more effort or sacrifice. The more challenges someone overcomes and the harder they try to achieve their goal (like protecting the environment), the stronger their commitment to that goal is likely to be. On the other hand, if someone easily gives up after starting simple actions, their dedication to environmental goals is probably weak (Gatersleben, 2013).

Personality. The APA Dictionary of Psychology (VandenBos, 2015, p. 782) defined personality as "the enduring configuration of characteristics and behavior that comprises an individual's unique adjustment to life, including major traits, interests, drives, values, self-concept, abilities, and emotional patterns." The fundamental building blocks of personality are personality traits. These traits are defined as "relatively enduring characteristic patterns of thoughts, feelings, and behaviors" (Edmonds et al., 2008, p.400). Personality traits can serve a dual purpose: describing individual behaviors or behavioral patterns and offering explanations for the causes of these actions (Kressel & Uleman 2010).

Psychologists often use a framework called the 'Big Five' (John & Srivastava, 1999) to categorize personality traits. This model identifies five broad dimensions that capture most aspects of human personality; these are *extraversion*, *agreeableness*, *conscientiousness*, *neuroticism*, and *openness to experience* (Edmonds et al., 2008). Personality traits are multifaceted characteristics used to understand human behavior. These can depict a single act or a person's habitual behaviors. These traits can provide a snapshot of someone's personality at a particular time or how it evolves over the course of their life. Furthermore, personality traits can offer clues as to why someone behaves in a certain way (Kressel & Uleman, 2010).

The study of personality traits using a lexical approach began with research on the English language (Ashton & Lee, 2007). Early limitations in statistical computations restricted researchers to using smaller sets of words, representing only a fraction of all personality-related words in English (Ashton & Lee, 2007). Despite this, these studies consistently identified a common set of five key factors, known as the Big Five. These

factors are: *Extraversion*: This describes someone who is talkative and outgoing, *vs.* quiet and shy.; *Agreeableness*: This describes someone who is gentle and sympathetic, *vs.* harsh and cold-hearted.; *Conscientiousness*: This describes someone who is organized and disciplined, *vs.* sloppy and lazy.; *Emotional Stability*: This describes someone who is relaxed, *vs.* moody and anxious.; and *Intellect/Imagination*: Originally termed *Culture*, but this is now commonly referred to as *Openness to Experience* (Ashton, 2018; Ashton & Lee, 2007). This describes someone who is intellectual and imaginative, *vs.* shallow. (Ashton & Lee, 2007).

HEXACO Model of Personality Structure. The term HEXACO reflects both the number of factors ("hexa" meaning six in Greek) and their initials: Honesty-Humility (H), Emotionality (E), Extraversion (X), Agreeableness (A), Conscientiousness (C), and Openness to Experience (O) (Ashton, 2018; Ashton & Lee, 2007). The HEXACO model offers a more comprehensive framework for describing personality compared to the FFM, encompassing an additional domain (Honesty-Humility) to capture a wider range of individual differences (Ashton & Lee, 2020).

Building upon findings in lexical personality research, Lee and Ashton (2004) constructed the HEXACO Personality Inventory (HEXACO-PI). This questionnaire operationalizes the HEXACO model, a framework comprised of six core personality domains: Honesty–Humility, Emotionality, eXtraversion, Agreeableness, Conscientiousness, and Openness to experience. Within the HEXACO model, each broad domain scale is further delineated by four facets. These facets capture interrelated, yet empirically distinct, behavioral manifestations (De Vries, 2013). Within the HEXACO model framework, the 24-item Brief HEXACO Inventory (BHI) is derived from a recently developed instrument, the HEXACO Simplified Personality Inventory (De Vries, 2013).

In their paper, Zettler and colleagues (2020, p.725) describe the six key dimensions of the HEXACO personality model. These dimensions are: *Honesty-humility* refers to the disposition towards fairness and genuineness in social interactions. This includes a willingness to cooperate with others, even if there's a potential for them to take advantage without consequences. The common defining adjectives include the following: "Faithful/loyal, fair-minded, honest, modest/ unassuming, sincere *vs.* Boastful, deceitful, greedy, hypocritical, pompous, pretentious, sly."; *Emotionality* focuses on behaviors that benefit relatives (kin). It includes feeling empathy and emotional closeness towards them, but also behaviors to avoid harming them and seeking help for them. These behaviors show investment in the well-being of relatives. The common defining adjectives include the

following: "Anxious, emotional, fearful, oversensitive, sentimental, vulnerable *vs.* Brave, independent, self-assured, stable, tough."; *Extraversion* refers to actively interacting with others in social settings. The common defining adjectives include the following: "Active, cheerful, extraverted, lively, outgoing, sociable, talkative *vs.* Introverted, passive, quiet, reserved, shy, withdrawn."; *Agreeableness* pertains to a disposition toward forgiveness and understanding in social interactions. This includes a willingness to overlook occasional missteps or unfair treatment from others and to continue cooperating for the sake of maintaining the relationship or achieving a common goal, even if there's a risk of being taken advantage of. The common defining adjectives include the following: "Agreeable, gentle, lenient, mild, patient, peaceful, tolerant *vs.* Choleric, ill-tempered, quarrelsome, stubborn."; *Conscientiousness* demonstrates a strong focus on completing tasks and achieving goals. This includes actively engaging in activities like working on assignments, planning projects, and organizing schedules to ensure efficient progress. The common defining adjectives include the following: "Careful, diligent, disciplined, organized, precise, thorough *vs.* Absent-minded, irresponsible, lazy, negligent, reckless, sloppy."; *Openness to experience* dedicates time and effort to activities that stimulate the mind, such as learning new things, using imagination, and engaging in deep thought. The common defining adjectives include the following: "Creative, innovative, intellectual, ironic, unconventional *vs.* Conventional, shallow, unimaginative"

Cybernetic Big Five Theory. One theory that explains the influence of personality on behavior is the Cybernetic Big Five theory or CB5T (DeYoung 2015), which draws its foundation from cybernetics that studies how systems with goals can regulate themselves using feedback to achieve those goals (DeYoung, & Tiberius, 2023). This is also termed *control theory* (DeYoung, & Tiberius, 2023). This posits that "traits causally influence life outcomes and characteristic adaptations, they describe the typical functional level of the underlying psychological processes that generate emotional, motivational, cognitive, and behavioral states associated with these traits" (Pavalache-Ilie & Cazan, 2018, p.2). The core idea behind the Cybernetic Big Five Theory is that people function like complex systems with built-in goals. These goal-oriented systems rely on feedback loops to adjust their behavior (Hanley & Garland, 2017). Further, this considers behavior as "emergent, dynamic, and iterative" (Hanley & Garland, 2017, p. 2).

In the field of cybernetics, according to DeYoung and Weisberg (2018), any system that sets and achieves goals while adjusting itself needs three things: First, there should be a clear idea of what it's trying to achieve (i.e., goal representations). Second, there must be a way to check its progress

(i.e., feedback mechanisms) and see if it is on track based on what's happening around it (i.e., the current state of the world). Lastly, the ability to take action (i.e., operators) to change itself or its surroundings (i.e., environment) to get closer to its goals.

Conceptual Model and Operational Framework

This study aimed to explore how personality traits are linked to environmentally friendly behaviors among Filipino workers in the National Capital Region (NCR) of the Philippines. This research is grounded in the *Cybernetic Big Five theory* CB5T (DeYoung 2015) or *control theory* (DeYoung, & Tiberius, 2023), a framework that suggests that personality traits impact a person's experiences in life and how they adjust to situations. These traits reflect how a person typically thinks, feels, and behaves because of underlying psychological processes.

Conservation psychology, or psychology of sustainability (Corral-Verdugo, Aguilar-Luzón, & Hernández, 2019), and environmental psychology mainly focus on understanding and promoting environmentally friendly behaviors, where people consciously aim to help the environment (Clayton & Brook, 2005; Clayton & Myers, 2015; Gatersleben, 2013).

Krajhanzl, (2010) suggests that underlying personality characteristics can exert a subtle yet significant influence on environmental behaviors, often without conscious awareness. This implies that individuals with certain personality profiles may be more predisposed to engage in pro-environmental actions, even if they aren't explicitly thinking about the impact on the environment. However, Kaiser and Wilson (2004) suggest a narrower focus. They believe the field should primarily study behaviors where people consciously aim to help the environment (Gatersleben, 2013). Kaiser and Wilson (2004) argue that this *goal-directed pro-environmental behavior* should be the core area of study (Gatersleben, 2013). These behaviors involve an explicit goal, like using less water to conserve resources. Goal-directed behavior theory suggests several factors influencing a person's intention to act, which is the strongest predictor of their actual behavior. These factors include wanting to do the behavior (i.e., motivation), beliefs and social pressures surrounding it (i.e., attitudes and social norms), and feeling capable of doing it (i.e., perceived ability), emotions they expect to feel (i.e., positive or negative), and how often they've done similar things in the past (i.e., past behavior frequency).

According to Pavalache-Ilie and Cazan (2018), personality traits can not only reflect a person's individual behaviors or how they tend to act in general, but they can also explain why someone behaves in a certain way.

Fitriana, Miyarsah, and Rusdi (2019) suggest that personality traits influence the development of character, which in turn guides behavior. Their study involving 200 Indonesian high school students found a positive direct effect of personality on pro-environmental behavior.

Studies that looked at personality traits using the HEXACO model (Ashton & Lee, 2009) found connections between these traits and people's concerns and actions for the environment. A body of research suggested that "pro-environmental attitudes and behaviors were robustly associated with the domains of *Honesty-Humility*, *Openness to Experience*, and, to a lesser extent, *Agreeableness*, *Conscientiousness*, and *Extraversion*" (Soutter & Mõttus, 2021, p.204).

Pavalache-Ilie & Cazan (2018) suggest that personality traits like *Agreeableness*, *Conscientiousness*, and *Honesty-Humility* are likely to be connected to taking actions that help the environment. However, the evidence is less clear for *Extraversion*, with no consistent link found in studies so far. *Honesty-Humility* also shows mixed results, with some studies finding a connection and others not. Moreover, *Conscientiousness* and environmental behavior have shown mixed results. Some found a weak connection, while others found none at all.

A study by Hirsh (2010) involving over 2,600 German adults found that people who scored higher on *Agreeableness* and *Openness to Experience* also tended to have a stronger concern for the environment. The study also showed weaker positive associations between environmental concern and *Neuroticism* and *Conscientiousness*. The relationship of personality, particularly "*Openness to Experiences* and *Honesty-Humility* with PEB was unaffected by the participant's helping behavior, suggesting that pro-environmental people mainly care about the environment and are not necessarily more pro-social in general." (Kesenheimer & Greitemeyer, 2021, p. 1). In Hirsh's 2014 study suggests a link between a country's national personality and its environmental practices. The study found that countries with citizens who scored higher on *Agreeableness* and *Openness to Experience* tended to have better scores on a sustainability index. Similarly, Simpson et al. (2021) found two specific personality traits, *Agreeableness* and *Openness to Experience*, are consistently linked to people being more environmentally friendly.

Markowitz and colleagues (2012) examined the link between personality and environmentally friendly actions. They found that people who score high on *Openness to Experience* tend to participate more in activities that help the environment. This openness might be linked to an appreciation for nature's beauty, which itself can encourage people to care

for the environment. Lastly, Kvasova's (2015) research showed that people who score high on *Agreeableness*, *Conscientiousness*, *Extraversion*, and even *Neuroticism* (tendency to worry) tend to engage more in behaviors that help the environment.
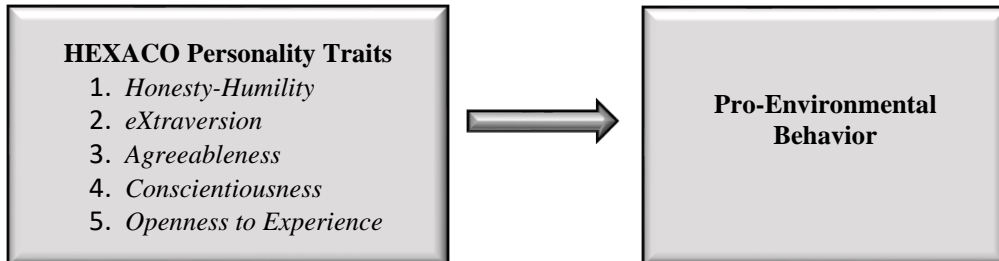
In conclusion, these studies suggest that personality traits, particularly, *Honesty-Humility*, *Extraversion*, *Agreeableness*, *Conscientiousness*, and *Openness to Experience* are significant factors to consider when studying how people think and act toward the environment. Hence, this study was guided by the following research hypotheses:

Hypothesis 1: There is a significant positive correlation between personality traits (i.e., *Honesty-Humility*, *Extraversion*, *Agreeableness*, *Conscientiousness*, and *Openness*) and *Pro-Environmental Behavior*.

Hypothesis 2: Personality traits (i.e., Honesty-Humility, Extraversion, Agreeableness, Conscientiousness, and Openness) significantly predict Pro-Environmental Behavior.

Figure 1.

Operational Framework

HEXACO Personality Traits
1. *Honesty-Humility*
2. *eXtraversion*
3. *Agreeableness*
4. *Conscientiousness*
5. *Openness to Experience*

→

Pro-Environmental Behavior

The paradigm of this research is presented in Figure 1., where personality traits particularly *Honesty-Humility*, *Extraversion*, *Agreeableness*, *Conscientiousness*, and *Openness to Experience* serve as the independent variables or the predictor variables while *Pro-Environmental* Behavior serves as the dependent variable or the criterion variable.

Statement of the Problem

The purpose of this study was to determine the link between personality traits and pro-environmental behavior of Filipino workers in the NCR. Specifically, this aimed to answer the following specific research questions:

1. What personality traits have a significant positive correlation with the participant's pro-environmental behavior?
2. What personality traits predict participants' pro-environmental behavior?

Statement of Specific Objectives

1. To identify which personality traits are associated with a statistically significant positive increase in participants' pro-environmental behavior.
2. To determine which personality traits can be used to predict a statistically significant increase in participants' pro-environmental behavior.

Methodology

Research Design

This study utilized a cross-sectional, predictive design in terms of its time dimension as well as its research objective because the research aimed to predict how personality traits influence pro-environmental behavior without experimental manipulation. Cross-sectional as a research dimension means that data were collected from participants only once, at a single point in time, while prediction as a research objective aimed to forecast future events or behaviors by analyzing patterns within the collected data (Johnson, 2001; Johnson & Christensen, 2014; Nieva, 2022).

Participants

The participants of this study were comprised of 644 Filipino workers from both public and private business institutions in the NCR. This sample size aligns with the common rule of thumb for conducting regression analysis, which recommends having at least 10 to 15 data cases per predictor (Field, 2009). In terms of gender, there were 256 (39.8%) males, 374 (58.1%) females, and 14 (2.2%) undisclosed. Their ages ranged from 16 to 62 years old, with a mean of 32 and a standard deviation of 9.66.

Specifically, the inclusion criteria used in this study were as follows: 1). Male or female; 2). 18 years old and above. 3). Working within the NCR. These participants were selected using convenience sampling. This sampling method invited potential participants to participate voluntarily; those who agreed to participate provided informed consent to complete the questionnaires after receiving a full explanation of the study's purpose, procedures, and potential risks and benefits (Nieva & Prudente, 2022).

Measures

This research utilized two sets of self-report questionnaires specifically the Brief HEXACO Inventory (De Vries, 2013) and General Ecological Behavior Scale (Kaiser, 2020). The descriptions of the scales are given below:

The Brief HEXACO Inventory (BHI). This 24-item scale developed by De Vries (2013), was used to measure participants' personality traits across six broad domains: Honesty-Humility, Emotionality, Extraversion, Agreeableness, Conscientiousness, and Openness to Experience. Each dimension is measured by four items. The response format uses a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree) with 3 being neutral (neither agree nor disagree).

To score the BHI, reverse the codes for items ending with "R" according to the following instructions: Change 5 to 1, 4 to 2, 2 to 4, and 1 to 5 before calculating the average scores for each dimension. The BHI items are grouped according to the six dimensions below (De Vries, 2013, p. 897):

1. *"Honesty–Humility*: 6 (Sincerity), 12R (Fairness), 18R (Greed Avoidance), 24R (Modesty)"
2. *"Emotionality*: 5 (Fearfulness), 11R (Anxiety), 17R (Dependence), 23 (Sentimentality)"
3. *"eXtraversion*: 4R (Social Self-esteem), 10 (Social Boldness), 16 (Sociability), 22R (Liveliness)"
4. *"Agreeableness*: 3R (Forgiveness), 9R (Gentleness), 15 (Flexibility), 21 (Patience)"
5. *"Conscientiousness*: 2 (Organization), 8R (Diligence), 14 (Perfectionism), 20R (Prudence)"
6. *"Openness to Experience*: 1 (Aesthetic Appreciation), 7R (Inquisitiveness), 13 (Creativity), 19 (Unconventionality)"

Research has shown that the BHI is a valid measure; previous studies have also demonstrated that the BHI produces consistent test-retest reliability and people's scores tend to align with how others perceive them (De Vries, 2013; Sijtsma, et al., 2023).

The reliability of the Brief HEXACO Inventory (BHI) based on McDonald's omega and Cronbach's alpha are as follows: Honesty-Humility ($\omega = .47$; $\alpha = .46$); Emotionality ($\omega = .32$; $\alpha = 0.29$); eXtraversion ($\omega = .48$; $\alpha = .47$); Agreeableness ($\omega = .30$; $\alpha = .28$); Conscientiousness ($\omega = .53$; $\alpha = .53$); Openness to Experience ($\omega = .55$; $\alpha = .54$)

General Ecological Behavior Scale (GEB). To assess pro-environmental behavior, an updated version of a self-report questionnaire consisting of 50 items was adapted from Kaiser (2020). The GEB scale is a widely recognized self-report instrument created by Kaiser and associates (2003; Gatersleben & Murtagh, 2023). In this research, only the 32 items with a 5-point Likert response format ranging from 1 (strongly disagree) to 5 (strongly agree) were used, following the procedure employed by Davis, Green, and Reed (2008). Because of the difference in cultural context, some items were excluded and some were revised prior to the data collection. Two items were outrightly deleted because of differences in climate. These were item number 7, "*In the winter, I air rooms while keeping on the heat and leaving the windows open, simultaneously,*" and item number 30, "*In winter, I turn down the heat when I leave my apartment for more than 4 hours.*" Item number 17, *"I buy bleached or colored toilet paper,"* was also deleted because it was not relevant to the Filipino context. Filipinos generally prefer using a tabo (dipper) with soap and water for personal hygiene purposes in the bathroom." Five items were revised to simple English to be easily understood by the participants in general. For example, item 22, from the original wording: "*I buy seasonal produce"* was changed to *"I buy fruit and vegetables according to the season."* Another example is item 32, from "*I shower (rather than to take a bath)*" was revised to "*I use shower instead of bathtub.*" Nieva (2023, p. 322) explains that a test validation is needed "to ensure that the participants fully understand the questions and provide accurate responses." This is particularly important because the GEB, as Kaiser suggests, aims to capture a broad range of environmentally friendly behaviors. It should not be limited or fixed, needing to adapt to encompass various actions over time.

Upon checking the reliability of the GEB using McDonald's omega and Cronbach's alpha from the initial 29 items, 13 item questions were excluded due to their negative correlation with the scale. Therefore, only 16 items, specifically items numbers: 2, 5, 8, 9, 12, 13, 14, 15, 16, 19, 20, 21,

22, 24, 25, and 32 (please note that this numbering is based on the original numbering of the GEB) were retained and used in the main analysis. Because all the remaining questions are positively worded and encourage environmentally friendly behavior, the GEB score is calculated by averaging the responses to all these questions. This creates a single overall score, with higher scores indicating a greater tendency to engage in pro-environmental behaviors. The reliability of General Ecological Behavior Scale (GEB) based on McDonald's omega and Cronbach's alpha is as follows: ($\omega = .68$; $\alpha = 0.71$). The final form of the adapted *General Ecological Behavior Scale* (GEB) is presented in Appendix A.

Procedure

To ensure the research adhered to ethical principles, approval was first obtained from the university's Institutional Review Board (IRB). The data collection process involved an online survey administered through a secure platform, specifically Microsoft Forms. Before participating, all potential participants were presented with a written informed consent form. This form explained the study's purpose, procedures, and how their data would be kept confidential and anonymous. Only those who voluntarily provided their informed consent were asked to complete two sets of questionnaires. The data collected from these questionnaires was then analyzed using JASP software (version 0.18.1).

Data Analysis

Data analysis involved both descriptive analyses (i.e., skewness, kurtosis, mean, and standard deviation) and bivariate correlations. The reliability of the scales was assessed using McDonald's omega and Cronbach's alpha. For the main analysis, a forced-entry multiple regression analysis was used. According to Field (2009), the forced entry method is the only appropriate method for theory testing.

Results and Discussion

The purpose of this study was to determine the connections between personality traits and pro-environmental behavior of Filipino workers in the National Capital Region. Prior to the main analysis, a preliminary analysis of the data was undertaken. This involved descriptive statistics such as mean, standard deviation, and normality tests based on skewness and kurtosis; reliability estimates such as McDonald's omega and Cronbach's

alpha; bivariate correlations; and other analyses such as standard residuals and Durbin-Watson.

Based on the normality tests, the values of the skewness in all variables ranged from 0.013 to -0.039, while the values of the kurtosis in all variables ranged from 0.127 to 0.0489. These values suggest that the data distribution is normal, as Geroge and Mallery (2019) explain that values between -2 and +2 of skewness and kurtosis are considered within the acceptable limits.

Table 1.

Descriptive Statistics, Internal Consistencies, and Bivariate Correlations

Variable	1	2	3	4	5	6	7
1. Honesty-Humility	—						
2. Emotionality	-0.035	—					
3. eXtraversion	0.042	-0.196***	—				
4. Agreeableness	0.027	-0.113**	0.084*	—			
5. Conscientiousness	0.318***	-0.150***	0.202***	0.035	—		
6. Openness to Experience	0.045	-0.098*	0.210***	0.016	0.211***	—	
7. General Ecological Behavior	0.040	-0.040	0.208***	0.030	0.172***	0.273***	—
Mean	3.705	2.951	3.468	3.024	3.679	3.707	2.905
Standard Deviation	0.621	0.567	0.565	0.501	0.570	0.566	0.491
McDonald's ω	0.470	0.315	0.478	0.298	0.529	0.548	0.684
Cronbach's α	0.457	0.291	0.465	0.278	0.528	0.543	0.707

Note: N=644; * $p < .05$, ** $p < .01$, *** $p < .001$

Table 1 presents the results for mean scores and standard deviations. Looking at these mean scores, Openness to Experience (3.707) has the highest score, while General Ecological Behavior has the lowest (0.491). In terms of standard deviation, General Ecological Behavior (0.491) has the highest value, while Honesty-Humility (0.621) has the lowest.

Scores on the *Honesty-Humility* scale suggest that participants generally display strong moral character. They are less likely to cheat or exploit others, content with a simpler lifestyle, and don't feel a need for special privileges based on social status. Regarding *Emotionality*, participants tend to be more sensitive to their emotions. They might experience fear of physical dangers or anxiety in stressful situations. Additionally, they often seek emotional support from others and feel strong empathy and emotional connections with those around them. *Extraversion* scores further indicate that they are typically outgoing and have a positive

self-image. They feel comfortable leading or speaking in front of others and enjoy social activities. They also tend to be energetic and enthusiastic. Concerning their scores in *Agreeableness*, this revealed that they tend to be forgiving, understanding, and easy to get along with. They are willing to compromise and cooperate with others, and they are good at controlling their anger. In terms of scores in *Conscientiousness*, the participants tend to be well-organized and disciplined. They work hard towards their goals, aiming for accuracy and excellence in their tasks. Additionally, they take their time and consider things carefully before making decisions. Finally, with regard to their scores in *Openness to Experience*, these scores suggest that they tend to be curious and have a strong appreciation for beauty, both in art and nature. They enjoy using their imagination and are open to new ideas and experiences, even those that might seem strange or unusual. Meanwhile, an analysis of participants' scores on the General Ecological Behavior scale suggests a moderate tendency towards pro-environmental behaviors. In other words, while they might not be the most dedicated environmentalists, they are generally willing to engage in some actions that benefit the environment.

Reliability estimates based on both McDonald's omega and Cronbach's alpha indicate that General Ecological Behavior meets the criteria for satisfactory reliability set by Taber (2018, as cited in Nieva, 2023). In contrast, for the BHI, all six factors yield low reliability estimates. However, De Vries (2013) argues that low alpha reliability does not necessarily translate to major validity issues. De Vries (2013) had this explanation in his paper, the Big Five Honesty-Humility Inventory (BHI) offers valuable insights into personality, but it's not without limitations. While its overall reliability score (alpha) might be lower than ideal, individual BHI scales demonstrate positive qualities. Scores on these scales tend to be consistent when measured again at a later time (test-retest stability), and they show agreement between a person's self-assessment and how others perceive them (self-other agreement). Notably, BHI scales show strong correlations with another well-established personality measure, the HEXACO Personality Inventory-Revised (HEXACO-PI-R), even when assessments in a community sample were spaced 3.5 years apart. This suggests the BHI retains its validity over time. Furthermore, the decrease in validity typically falls within a manageable range (.20-.40). Finally, even after accounting for potential biases in reliability, the BHI and HEXACO-PI-R correlations with external variables show high convergence. This signifies that both measures capture similar aspects of personality that influence how people interact with the world around them.

The results of the bivariate correlations between the six personality traits and General Ecological Behavior, shown in Table 1, indicate that only Extraversion, Conscientiousness, and Openness to Experience have a significant positive relationship with General Ecological Behavior. The research findings illuminate a significant correlation between specific personality traits and pro-environmental behaviors. Individuals characterized by Extraversion, often exhibiting outgoing, enthusiastic, and sociable tendencies, appear more inclined to participate in environmentally beneficial activities. Those who demonstrate high levels of Conscientiousness, marked by their meticulous, organized, and goal-oriented nature, are more likely to adopt and maintain sustainable practices. Additionally, individuals high in Openness to Experience, characterized by their curiosity, imagination, and appreciation for diversity, tend to be more receptive to novel and environmentally friendly ideas.

Because regression is sensitive to outliers, standardized residuals are used to identify them. The standardized residuals in this study range from -2.747 to 2.805, suggesting no outliers based on the common criterion of absolute values exceeding 3. Lastly, the model has an acceptable independence of errors, Durbin-Watson = 1.889.

Table 2.

Multiple Regression

	b	**SE b**	**β**
(Constant)	1.335	.258	
Honesty-Humility	-.006	.031	-.008
Emotionality	.024	.033	.027
eXtraversion	.126	.034	.145***
Agreeableness	.014	.037	.014
Conscientiousness	.087	.035	.102*
Openness to Experience	.195	.034	.224***

Note: R^2=.108, $F(6,637)$=12.843; *$p < .05$, **$p < .01$, ***$p < .001$.

Table 2 summarizes the results of the regression analysis. The model is statistically significant ($F(6,637) = 12.843$, p-value < 0.001), explaining 10.8% of the variance in the dependent variable. Results of the main analysis suggest that only *Extraversion*, *Conscientiousness*, and *Openness to Experience* as personality traits positively predict pro-environmental behavior. While, *Honesty-Humility*, *Emotionality*, and *Agreeableness* did not.

This result suggests a link between three personality traits and pro-environmental behavior of the Filipino workers in the NCR. Individuals who exhibit high levels of *Extraversion*, *Conscientiousness*, and *Openness to Experience* tend to demonstrate a greater propensity for engaging in actions that positively impact the environment. In essence, those who are characterized by outgoing and sociable tendencies, coupled with a strong sense of responsibility and organization, as well as a curious and receptive mindset towards new ideas, are more likely to adopt environmentally friendly practices.

Building upon the work of Fuller and Marler (2009), who identified *Extraversion*, *Openness to Experience*, and *Conscientiousness* as essential components of the proactive personality, this study supports the link between these personality traits and pro-environmental behavior. As defined by Bateman and Crant (1993), the proactive personality is characterized by individuals who demonstrate initiative and a tendency to act independently. In other words, they actively seek to shape their environment and are driven to make positive changes. We can say that these individuals do not just accept their surroundings as they are. Instead, they try to change or influence their environment to fit their needs or preferences. They take action to make things happen, rather than just waiting for things to change on their own. For example, someone who actively seeks to shape their environment might start a community garden to improve their neighborhood or even volunteer for a local organization to address a community issue. Hence, this present research suggests that individuals scoring high on these personality dimensions might be more likely to engage in behaviors that benefit the environment.

Conclusion and Recommendations

This research supports the hypothesis that personality traits, particularly *Extraversion*, *Conscientiousness*, and *Openness to Experience*, predicted *Pro-Environmental Behavior* among Filipinos working in the NCR, while *Honesty-Humility* and *Agreeableness* did not. According to Fuller and Marler (2009) *Extraversion*, *Openness to Experience*, and *Conscientiousness* are building blocks of the Proactive personality. The proactive personality is defined by a person's ability to act independently and make positive changes to their surroundings, they are self-driven and create change in their environment (Bateman and Crant 1993).

This research suggests a potential pathway towards a more environmentally conscious Philippine society. By cultivating personality traits such as Extraversion, Conscientiousness, and Openness to Experience, we may be able to foster a population of Filipino workers that is more inclined to engage in environmentally beneficial behaviors. These traits, characterized by social engagement, diligence, and intellectual curiosity, respectively, appear to correlate with pro-environmental actions. Therefore, strategic interventions aimed at developing these qualities could potentially contribute to a significant shift towards sustainability.

Because the researcher collected data at one point in time (i.e., cross-sectional design), this study could not explore how the variables might influence each other over time or identify factors that might explain these relationships (mediation processes). The use of self-reported environmental behavior introduces another limitation. Participant's reports may not always reflect their true behavior, potentially due to social desirability bias. Nevertheless, examining the influence of personality traits on the pro-environmental behavior of Filipino workers in the NCR contributes to a comprehensive understanding of the field. It both extends previous research and sheds light on areas that have not received extensive analysis.

To comprehensively understand the intricate interplay between personality and pro-environmental behaviors, future research should delve into additional factors that might influence or mediate this relationship. For instance, a closer examination of how age and gender might shape the connection between personality traits and environmentally responsible actions among Filipinos is warranted. By exploring these variables, researchers can uncover nuanced patterns and potentially identify specific demographic groups that are particularly responsive to personality-based interventions aimed at promoting sustainability.

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Appendix A.

List of the 16 Items Adapted from the General Ecological Behavior Scale (Kaiser, 2020)

1. "I buy organic food from certified farms."
2. "I wait until I have a full load before doing my laundry."
3. "I wash dirty clothes without prewashing."
4. "I drive on highways at speeds under 100kph (= 62.5 mph)."
5. "I collect and recycle used paper."
6. "I bring empty bottles to a recycling bin."
7. "I have pointed out unecological behavior to someone."
8. "I contribute financially to environmental organizations."
9. "I buy beverages and other liquids in returnable bottles."
10. "I buy products in refillable packages."
11. I buy furniture made from local wood.
12. "I boycott products from companies that are proven to be environmentally damaging."
13. I buy fruit and vegetables according to the season.
14. "I read about environmental issues."
15. "I talk with friends about environmental pollution, climate change, and/or energy consumption."
16. I use shower instead of bathtub.