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Exploring the Influence of Openness on Pro-Environmental Behavior Adoption

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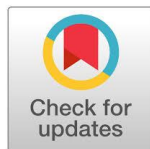
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Abstract: *This study explored the relationship of openness with the adoption of pro environmental behavior. Data collection was conducted through an online survey platform, with links to the questionnaires distributed to the respondents. To test the hypothesis, firstly the participants were divided into two groups based on their level of openness. This division was done using the median level of openness, with participants above the median being categorised as having high openness and those below the median categorised as having less openness. Then the data was analysed and results concluded that individuals higher in openness will exhibit a greater inclination towards pro-environment behaviour compared to those with lower levels of openness.*

Keywords— *personality, pro environmental behavior, openness, environment*

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Introduction

Personality traits play a fundamental role in shaping an individual's beliefs, attitudes, and values, which, in turn, influence their behaviors and decisions (Markowitz et al., 2012; Soutter et al., 2020). Human behavior is considered one of the main factors responsible for environmental problems (Steg and de Groot, 2012; Cook et al., 2016; Vicedo-Cabrera et al., 2021). Therefore, pro-environmental behavior (PEB) is defined as behavior that protects the environment (Stern, 2000; Kollmuss and Agyeman, 2002) or at least does not harm it (Lange and Dewitte, 2019). Openness or openness to experience can be defined as a personality trait in which a person is receptive to new ideas and is not rigid about them. Climate change denial in all its forms must be understood because of its relevance to environmentally sustainable behaviour, and because people who hold these beliefs will be more likely to hinder climate change mitigation initiatives (Hornsey et al., 2016). Openness has consistently demonstrated a positive association with a range of pro-environmental constructs including environmental concern, behavioural intentions, emissions reduction behaviours, environmental engagement, and nature relatedness, a measure of a self-concept that is integrated with the natural world (Soutter et al., 2020). Researchers have generally assumed that people who believe in anthropogenic climate change should be most likely to have pro-environmental attitudes and engage in pro-environmental behaviours (Hornsey et al., 2016). Individuals differ on stable psychological features (Eysenck & Eysenck, 1985). These differences have been conceptualized at many levels, from broad temperaments of approach and avoidance motivation (Elliot & Thrash, 2002; Gray, 1981) to various taxonomies of personality traits. A vast literature on personality structure and assessment supports a descriptive theory of five broad and replicable personality traits, often labeled: Openness, Conscientiousness, Extraversion, Agreeableness, and Neuroticism, and referred to as the 'Big Five' (John & Srivastava, 1999). Openness reflects rich, abstract thinking and an appreciation for variety and unusual experiences. Conscientiousness is indicated by high levels of self-discipline, respect for duty, and desire for achievement. Extraversion is characterized by an energetic engagement with the world, sociability, and breadth of activities. Agreeableness is the tendency to value social harmony and getting along with others. Finally, Neuroticism is the tendency to experience negative emotions, such as anger, anxiety, and depression (McCrae & Costa, 1997). Since human behavior plays a major role in environmental issues, psychologists must devote substantial attention to studying pro-environmental behavior. Given this, it is imperative to comprehend the pro-environmental conduct of adolescents, as they are essential in promoting long-term shifts in environmental awareness and motivating policymakers to act. On the other hand, not much is now understood about adolescent environmental behavior. (Lisboa et al., 2024). Pro-environmental behavior (PEB) defines any behavior that has a positive impact on the natural environment, such as recycling, buying seasonal and regional food, a vegetarian or vegan diet, and reducing water and energy consumption (Steg and Vlek, 2009).

Literature Review

Encouraging eco-friendly behaviour is crucial for tackling global environmental issues. Research into established psychological traits, particularly Openness from the Five-Factor Model, consistently links it to pro-environmental actions. However, causality in this connection remains unclear. Nonetheless, individuals higher in Openness tend to engage in eco-friendly behaviour, even when controlling for shared and unshared factors among siblings. (Puech, C., Dougal, J., Deery, C., Waddell, C., & Möttus, R., June 2019)

Undergraduate students who were more receptive to new experiences also exhibited more pro-environmental behaviour. Furthermore, it was discovered that the majority of the pro-environment behaviour data's frequency distribution fell into the moderate (88.9%) category. A major concern is

the effect that destructive human behaviour has on the environment. ([Yudi Ariana](#) and [Pratista Arya Satwika](#), September 2022).

Each of the environmental constructs was significantly predicted by the Openness/Intellect domain at the domain level, while the Agreeableness domain predicted the acceptance of climate change and an ecological self-concept. For every construct, the main personality predictor at the aspect level was the Openness component. Our findings show that because aspect level analyses have more specificity and explanatory power than domain level studies, they may be more effective. (Eamon Gibbon and Heather E. Douglas. October 2021)

The findings of two investigations in which researcher's looked at the connections between general personality qualities and activities that support the environment. In both community a sample and an undergraduate student sample was consistently observed somewhat positive connections between Openness to Experience and pro-environmental behaviours using a wide range of behaviour and personality indicators. Results imply that the respondents' pro-environmental behaviour may have been driven by high levels of creativity, artistic appreciation, and curiosity rather than by personality qualities linked to altruism. (Ezra M. Markowitz et al., February 2012).

Personality traits have a significant impact on individuals' pro-environmental behaviors and this means that an individual's inherent personality traits also play a crucial role in shaping their environmental attitudes and actions. (J. Hidalgo-Crespo et al., August 2023)

Methodology

This study was conducted to explore the relationship of openness with the adoption of pro environmental behavior. There were two questionnaires used in this study, one of them was Pro-environmental behavior scale (PEBS) which was used to assess pro environmental behavior of the respondent. it has 19 items. It was developed by Gail L. Markle and was published in 2013. Another questionnaire which was used was NEO-FFI to assess openness. NEO-FFI is a shorter version of NEO-PI. It has 60 items. It's a personality inventory developed to measure the five personality traits: Neuroticism, Extraversion, Openness to experience, Agreeableness and Conscientiousness. Initially original questionnaires were converted into forms and links to those forms were sent to the respondents. Then data was collected through an online survey platform, with links to the questionnaires distributed to the respondents. For the testing of hypothesis, firstly the participants were divided into two groups based on their level of openness. Sample of hundred respondents was included. All of them were above eighteen years of age. This division was done using the median level of openness, in which participants above the median were categorised as having high openness and those below the median were categorised as having less openness. Then the data was analysed and results were concluded.

Hypothesis

Individual higher in openness will experience stronger tendency towards pro-environment behaviour compared to those with lower level of openness.

Results

For the analysis of the alternate hypothesis, we used few statistical methods. Firstly we calculated Median to separate less openness and high openness group. Median is a measure of central tendency that divides a distribution of values into two equal portions. Further data was analysed with the help of Mean and SD. Mean is the arithmetic average of a set of given numbers. Standard Deviation or SD is a measure of the variability of a set of scores or values within a group. After that T-ratio was calculated to compare the pro- environmental behaviour of low openness individuals and high openness individuals.

Table 1

S.No.	Variable	T-ratio
1	High Openness	6.34
2	Low openness	

Fig.1. Showing variables and T-ratio

Discussion

“OCEAN” is an acronym used to represent the Big Five personality traits, which include openness, conscientiousness, extroversion, agreeableness and neuroticism. The five OCEAN personality traits make up a model that can be used to better understand an individual's overall personality and behaviour by ranking each trait through a series of interconnected scales.

The hypothesis proposes that individuals higher in openness will exhibit a greater inclination towards pro-environment behaviour compared to those with lower levels of openness. To examine alternate hypotheses, the median was calculated to divide participants into "less openness" and "high openness" groups. Subsequently, the data was analysed using mean, standard deviation, and t-ratio to compare the pro-environmental behaviour between these groups. The statistical analysis aimed to determine whether there exists a significant difference in pro-environmental behaviour between individuals with varying levels of openness. A significant difference, indicated by the t-ratio and associated p-value, suggested that openness indeed influences the tendency towards pro-environment behaviour. It was concluded that people who scored high on openness have more tendency to behave pro environmentally as compared to those who scored less on openness. People high on openness are more likely to work towards environment. They care for the environment and are open to the ideas of protecting the it in different ways and maintaining a sustainable environment.

However, it's important to interpret the findings cautiously. While statistical significance may indicate a relationship between openness and pro-environment behaviour, it does not necessarily imply causation. Other factors, such as personal beliefs, values, or environmental attitudes, could also influence pro-environmental behaviour. Additionally, the method of using the median to divide participants into groups may have limitations. It may overlook individual differences within each group and may not accurately capture the full range of openness levels. Utilising standardised measures of openness could provide more precise results.

In summary, while the statistical analysis provides insights into the relationship between openness and pro-environment behaviour, it's essential to consider the methodological limitations and potential confounding variables when interpreting the results. Further research employing more

robust methodologies and considering additional influencing factors may offer a deeper understanding of the relationship between openness and pro-environment behaviour.

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