

Environmental Consciousness, Environmental Concern, and Pro-Environmental Behaviour among University Students

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Abstract

Pro-environmental behaviour (PEB) usually arises from environmental consciousness and environmental concern. It is based on the implication that the ecological environment should be sustained for future generations. Therefore, the younger generation can make an effort through their PEB to maintain the environment. This study examines the association between environmental consciousness, environmental concern, and PEB among students at the University of Kerala. Additionally, the study evaluates the direct and indirect impact of environmental consciousness on PEB through environmental concern. The study follows a cross-sectional descriptive research design. A sample of 225 students were purposively drawn from among the students. Previously validated measuring instruments were used to measure environmental consciousness, environmental concern, and PEB. The findings demonstrated a significant positive link between environmental consciousness and environmental concern, a moderate relationship between environmental consciousness and PEB and between environmental concern and PEB. It was also revealed that environmental consciousness significantly impacts both environmental concern and PEB. However, environmental concern does not affect PEB. The results also showed a partial mediation effect between these variables. Additionally, the majority of the students indicated a medium-to-low level of PEB. The findings and implications for theory and research were discussed.

Keywords: Environmental Consciousness, Environmental Concern, Pro-environmental behaviour, PEB, University Students

Sustainable growth's primary principle is preserving a bright future for the planet and its neighbours. Pro-environmental behaviour (PEB) is essential for the future because research has shown that human activities are one of the leading causes of environmental problems (Yusliza et al., 2021). PEB can be summed up as any feasible measures to protect the environment or prevent environmental harm (Srinivasan & Borkar, 2021). Environmental consciousness, environmental concern, and PEB are social bases of environmental concern (Liere & Dunlap, 1980; Larson et al., 1981). PEB can be stated as acts conducted to protect the environment from the damaging effects of human activity, whether it be the entire environment or specific ecosystems. PEB is synonymous with sustainable behaviour. However, the original PEB included social and economic pillars (Vasconcelos et al., 2021).

According to Wang et al. (2022), PEB helps to attain the SDGs (Sustainable Development Goals), and UNESCO views students as one of the main contributors. Begum et al. (2021) suggest that, in the face of increased global environmental concerns, environmental moral education will notably impact students' PEB. Some previous studies focussed on PEB in the academic context. Binder et al. (2020) studied the relationship between PEB and individual identity among Spanish university students. Abraham et al. (2015) investigated the predictors of PEB, such as cynicism and self-efficacy among undergraduate students in Jakarta. According to this study, environmental self-efficacy and skepticism can positively predict PEB. By comparing the opinion of entry- and exit-level students, Chakraborty et al. (2017) looked at how universities shape PEB in students at a central university in India that offers

technical education. They have used goal-framing theory to study the link between goals and PEB.

In order to identify the elements that contribute to such behaviour, Fadzil et al. (2021) used the planned behaviour theory to examine the determinants of PEB among students at a public university in Malaysia. The research showed that PEB was positively correlated with motivation, agreeableness, and perceived behavioural control. Mishra & Das (2015) assessed the different parental influences to develop PEB among students. In order to address and reduce greenhouse gas emissions in the school environment, Gberevbie et al. (2022) investigated the impact of green training on students' PEB at Covenant University. In a research by Wang et al. (2021) involving students from China and the Dutch, it was proposed that the importance of individual and group-level aspects in comprehending PEB in both individualistic and collectivistic cultures has significant ramifications for developing global pro-environmental action support methods. Using ideas from the conservation of resource theory, Begum et al. (2021) investigated the interplay between psychological empowerment and Islamic religiosity among university students and how environmental moral education and PEB are related. Environmental moral education was found to relate positively to PEB as per the study. Pasek & Mytskan (2022) assessed PEB among the academy of physical education and sport students who declared stronger attachment to outdoor and indoor physical activity. The validity of using a modified C5.0 decision-tree model to predict PEB was examined by Wang et al. (2022), who also identified the determinants of such behaviour among university students in China's Guangdong Province.

This study established a link between machine learning and PEB.

In a study Thondhlana & Hlatshwayo (2018) explored PEB and its determinants at Rhodes University, South Africa. This study clarified the necessity to encourage the precursors and remove obstacles to promote PEB in university residence situations. Vasconcelos et al. (2021) studied PEB among Portuguese higher education students. The findings showed that achieving PEBs is more challenging than promoting knowledge for sustainable development. According to this study, there was no relationship between age or education and PEB. Chukwuorji et al. (2017) examined the contributions of climate change awareness and PEB to students' subjective well-being at the University of Nigeria. PEB was observed to be positively predicting subjective well-being. Eze (2020) examined climate change awareness and willingness to adopt PEB among senior secondary students and teachers in Nigeria. The study indicated a highly significant positive association between the degree of climate change awareness and the propensity to adopt PEB.

The level of environmental consciousness and PEB among university students of Malang was assessed by Handoyo et al. (2021). Results revealed that despite being highly aware of environmental problems, only a few students practiced PEB. So it was asserted that being aware of the environment does not automatically translate into acting environmentally responsible. Hoffmann et al. (2022) researched the correlation between gender, temporal orientation, and PEB among German students. It was discovered that male students who indicated high on future-negative orientation exhibited greater PEB than males and females who scored lower on future-negative orientation.

Environmental consciousness relies on an environmentalism ideology that emphasizes protecting environmental rights (MetGroup, n.d.). Environmental consciousness refers to particular psychological aspects of a person's assessment of or attitude toward the environment and its protection (Huang et al., 2014). Environmental consciousness is a psychological component associated with an individual's inclination to engage in ecologically friendly behaviour (Kim & Lee, 2023). Huang et al. (2014) studied the impact of hotel visitors' attitudes toward environmental protection on their behaviour as green consumers. The findings indicated that environmental protection awareness influences green consumer behaviour favourably. The impact of environmental commitment, a green lifestyle, environmental consciousness, and green self-efficacy on PEB among students at a Malaysian training facility was investigated by Yusliza et al. (2020). According to the findings, all these antecedents favourably influenced PEB. Foster et al. (2022) examined the determinants of PEB among employees

of an organization in Terengganu. It was discovered that environmental commitment, self-efficacy, and green human resource management do not impact PEB.

Jung & Cho (2015) observed the effect of environmental experience and consciousness on the PEB in terms of consumption among high school students in Korea. The study found a positive association between environmental experience, consciousness, and pro-environmental consumption behaviour. Rantanen (2009) explored how humans' direct nature experiences can impact more pro-environmental consciousness and behaviour. Espina (2018) surveyed the effect of demographic factors, consumer motivation, and environmental knowledge on pro-environmental consumer behaviour among public and private high school students. It was observed that PEB in terms of consumption is linked to an individual's environmental consciousness during buying process which will help to build situations that are harmless to the ecology. Sehwa (2005), in a study, found that environmental education experiences, recognition of the environment, and pro-environmental consciousness in term of housing significantly contribute to PEB. As Shiu et al. (2019) reported that the increase in environmental education learning experience make them more interested in environmental problems and make them active participants in related activities, affecting their PEB.

An individual's assessment of the environmental effects of their behaviour is referred to as environmental concern. Environmental concern is linked to PEB as part of environmental awareness. According to research, people who believe their actions contribute to environmental issues are more likely to involve in PEB (Minelgaité & Liobikienė, 2021). The moderating effects of sociocultural contexts were examined by Lou & Li (2022) as they assessed the relationship between environmental concern and public and private PEBs. Public and private PEB were found to be positively connected with environmental concern. Chung et al. (2019) studied employees' PEB in the workplace in a Chinese context based on a model which states that the employees' PEB results from multiple social and individual psychological factors, including environmental concern. Mergelmeyer (2019) observed that when some millennials from different educational backgrounds in the Netherlands turned their environmental concern into active PEB because of their awareness in climate change contribution, the remaining sample reported low PEB.

Gifford & Nilsson (2014) reviewed the personal and social effects of pro-environmental concern and PEB. It was confirmed that non-environmental aims, such as reducing costs or enhancing one's health, rather than personal and social factors, are often the driving forces behind PEB. Holbert et al. (2003) examined the association between environmental concern, five types of television viewing, and PEB. The results

revealed that watching television news and documentary relating to nature impact environmental concern and contributed to PEB. Tam & Chan (2018) hypothesised that the association between concern and behaviour is highest among people with higher levels of trust. The findings not only elucidated the concern-behaviour gap but also suggested how environmental campaigns can be improved. Kulin & Sevä (2021) studied the environmental concern-PEB relationship by focusing on the quality of government. It has been proven that citizens who care about the environment are more inclined to take environmental action in nations with fair governments. It was also found that people are generally more likely to engage in PEB in both the private and public spheres in countries where the quality of government is high. Zeng et al. (2023) measured the influence of environmental knowledge and risk perception on the environmental concern among university students in China. The moderating role of environmental attitudes in this relationship was also considered in the study.

When Aman et al. (2023) researched the environmental awareness-behaviour gap among tourists, they found that travellers' environmental awareness was higher than PEB. According to the findings, environmental attachment, concern, and awareness all favour and significantly impact PEB. Saifulina et al. (2023) studied how employee's engagement in PEB impact firm's environmental footprint and green performance using a sample of bank employees in Kazakhstan and Ecuador. It was found that the values and attitudes in regards to environment intervene in personal environmental awareness-environmental concern relationship and impact employees' voluntary PEB. Karami et al. (2021) examined how people in Kermanshah cities and villages felt about the environment and whether they intended to buy green goods. Environmental concerns and intention to buy green products positively affected PEB. Tam & Chan (2017) demonstrated the relationship between environmental concern and PEB. It was noted that in civilizations with higher degrees of mistrust, confidence in outside control, and present-oriented behaviour, the relationship between concern and behaviour was less. Some studies have reported PEB in an academic context. However, there is a research gap in studying environmental consciousness and environmental concern in the same context. Even though numerous studies on PEB were undertaken earlier, there is a research gap to study the relationship and the direct effect between environmental consciousness, environmental concern, and PEB. The studies envisaging environmental concern's mediating role in the environmental consciousness-PEB relationship is also meager. The younger generation is responsible for the future of the ecological environment's sustenance which also include the students. Therefore, the present study aims to study the

environmental consciousness, environmental concern, and PEB among students at the University of Kerala, and based on empirical evidence following hypotheses were developed (See Figures 1 & 2):

Hypotheses

H₁: There is a significant positive relationship between environmental consciousness, environmental concern, and PEB among students at the University of Kerala.

H₂: Environmental consciousness significantly impact the environmental concern of students at the University of Kerala.

H₃: Environmental concern significantly impact the PEB of students at the University of Kerala.

H₄: Environmental consciousness directly impact the PEB of students at the University of Kerala.

H₅: Environmental concern acts as a mediator in environmental consciousness-PEB relationship.

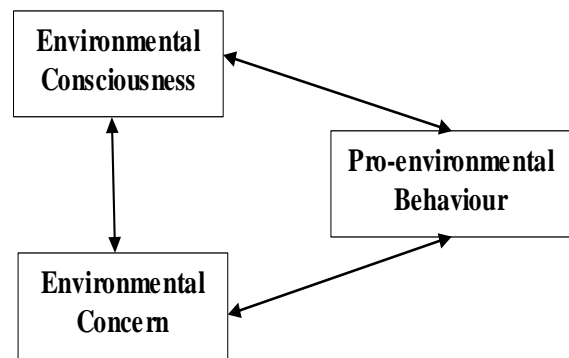


Figure 1: A hypothesised model of environmental consciousness, environmental concern, and PEB relationship

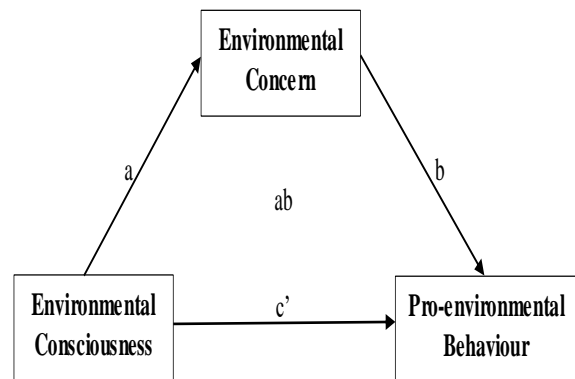


Figure 2: A simple mediation model on the indirect effect of environmental concern

Objectives

1. To study the relationship between environmental consciousness, environmental concern, and PEB among students at the University of Kerala.
2. To evaluate the impact of environmental consciousness on environmental concern among students at the University of Kerala.
3. To evaluate the impact of environmental concern on PEB among students at the University of Kerala.

4. To evaluate the direct influence of environmental consciousness on PEB among students at the University of Kerala.
5. To analyse the indirect influence of environmental consciousness on PEB through environmental concern among students at the University of Kerala.

Design

A cross-sectional descriptive research method was administered in this study.

Sample

This study focuses on environmental consciousness, environmental concern, and PEB among postgraduate and other higher-degree students at the University of Kerala, Kariavattom Campus, Thiruvananthapuram, Kerala, India. A sample of 225 students were randomly drawn from among the students using purposive sampling method. The period of study is from April 2023 to June 2023.

Measures

Previously validated measuring instruments were used to measure environmental consciousness, environmental concern, and PEB in this study. Environmental consciousness was evaluated using an 8-item scale produced by Huang et al. (2014). Environmental concern was assessed using a 5-item scale by Abdul-Muhmin (2007). The items regarding both environmental consciousness and concern were measured using 5 point Likert scale. The PEB scale was reproduced from Markle (2013) and Blok et al. (2015). In Markle’s (2013) scale, the questions were asked about behaviour choice and consumer choice, which include questions on conservation, environmental citizenship, food, and transportation. The behaviours included in this measure are those recognized by environmental scientists for their most significant impact on the environment. Furthermore, the variables relating to food habits and transportation were considered in this study as these are the major contributors of greenhouse gas emissions into the natural environment. Frequency tables, descriptive statistics, Pearson’s correlation, and mediation analysis using Andrew F Haye’s Process Macros (2012) in SPSS were the primary data analysis tools adopted in the study.

Results and Discussion

Table 1 outlines the demographics of the study respondents. The majority of the students were females (71%). It should be noted that most students pursuing postgraduate or other higher degrees at the University of Kerala are females. The average age of the students is 23.22 years (See Table 2), where the majority belong in the age group below 29 years (94%), and only 6% of them belong to 29 years and above age group. In terms of place of residents of students, 40% of them reside in rural areas (40%), followed by semi-urban (31%) and urban areas (29%). The majority of them are unmarried (90%). Most students use warm water to wash their clothes (45%). Most of them do not possess membership in

any environmental group (74%) and are not contributing money to any such group (70%). In regards to their food habits, most of them reported no reduction in their consumption of beef (41%) and poultry (48%); however, half of them do not consume pork (50%). Regarding transportation, most of them do not own any vehicles such as cars, bikes, or scooters (51%), and only 27% of the students occasionally share their vehicles. Most of them frequently use public transportation (70%) and occasionally prefer walking or cycling instead of driving (52%).

As per Table 2, the mean score of the significant study variables such as environmental consciousness, environmental concern, and PEB are 4.15, 4.23, and 2.74, respectively. That is, the highest mean score is for the environmental consciousness variable and the lowest mean score is for PEB.

The reliability of measures is evaluated using Cronbach's alpha, and the results supported the reliability of all the scales ($\alpha > 0.70$) used to measure the proposed constructs in this study (See Table 3).

As per Table 4 and Figure 3, depicting the relationship between the significant study variables such as environmental consciousness, environmental concern, and PEB, a significant positive correlation was found between environmental consciousness and environmental concern ($r = 0.775$). A moderately positive association exists between environmental consciousness and PEB ($r = 0.339$). Also, a moderate positive relationship exists between environmental concern and PEB ($r = 0.300$). Therefore, the hypothesis H_1 stating that there is a significant positive correlation between these variables are supported.

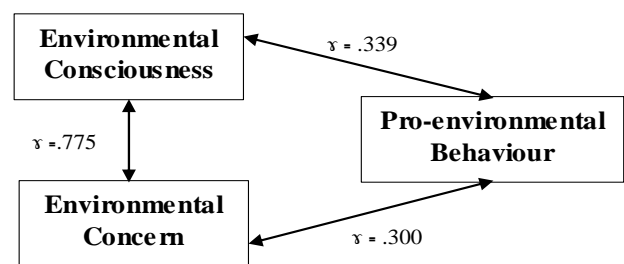


Figure 3: Statistical model of environmental consciousness, environmental concern, and PEB relationship

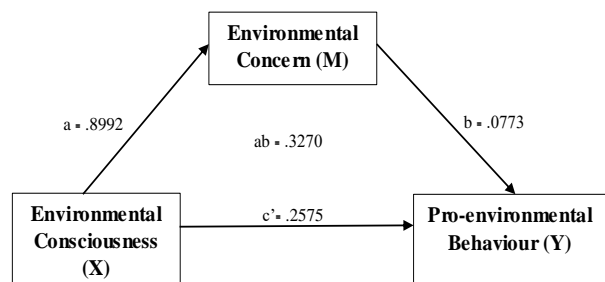


Figure 4: Statistical model for environmental consciousness-PEB with environmental concern

Next, the regression result reveals that environmental consciousness has a significant impact on hypothesis H₄ is supported. Whereas, environmental concern (b = 0.0773, t = 0.0827, p > 0.01) do not

Table 1 Demographics of students

Characteristics		Frequency	Percent
Gender	Male	66	29.3
	Female	159	70.7
Age group	Below 29 years	211	93.8
	29 years & above	14	6.2
Place of residence	Urban area	66	29.3
	Semi-urban area	70	31.1
	Rural area	89	39.6
Marital status	Married	23	10.2
	Unmarried	202	89.8
Temperature at which most of the cloths are washed	Hot	50	22.2
	Warm	102	45.3
	Cold	73	32.4
Membership in environmental, conservation, or wildlife protection group	No	167	74.2
	Yes	58	25.8
Money contribution to an environmental, conservation, or wildlife protection group	No	158	70.2
	Yes	67	29.8
Decreased the amount of beef consumed	I do not eat beef	67	29.8
	No	94	41.8
	Yes	64	28.4
Decreased the amount of pork consumed	I do not eat pork	112	49.8
	No	53	23.6
	Yes	60	26.7
Decreased the amount of poultry consumed	I do not eat poultry	46	20.4
	No	107	47.6
	Yes	72	32.0
Frequency of car-pooling	No vehicle	114	50.7
	Never	33	14.7
	Occasionally	61	27.1
Frequency of using public transportation	Never	7	3.1
	Occasionally	61	27.1
	Frequently	157	69.8
Frequency of walked or cycled instead of driving	Never	29	12.9
	Occasionally	118	52.4
	Frequently	78	34.7

Source: Survey data

environmental concern (a = 0.8992, t = 18.2868, p < 0.001) (See Table 5 & 6 and Figure 4). Therefore, the hypothesis H₂ is supported in this case.

The result of the regression analysis indicating the comparison of the impact of both the antecedents such as environmental consciousness and environmental concern on PEB reveals that environmental consciousness (c' = 0.2575, t = 2.6819, p < 0.01) directly impacts PEB, where

impact PEB where the hypothesis H₃ is rejected (Table 7 & 8 and Figure 4).

The result of the regression analysis indicating the impact of environmental consciousness on PEB reveals that environmental consciousness (c' = 0.3270, t = 5.3862, p < 0.01) significantly and directly impacts PEB which further supports the study hypothesis H₄ (Table 9 & 10 and Figure 4).

Table 2 Descriptive Statistics

Variables	N	Minimum	Maximum	Mean	SD
Age	225	18	53	23.22	3.412
Environmental Consciousness	225	1.25	5.00	4.15	0.625
Environmental Concern	225	1.20	5.00	4.23	0.726
PEB	225	1.36	3.59	3.61	0.603

Source: Survey data

Table 3 Reliability of Measures

Variables	Cronbach's Alpha	No. of Items
Environmental Consciousness	0.862	8
Environmental Concern	0.837	5
PEB	0.740	22

Source: Survey data

Table 4 Correlations between Environmental Consciousness, Environmental Concern and PEB

Variable		Environmental Consciousness	Environmental Concern	PEB
Environmental Consciousness	Correlation Coefficient	1.000	-	-
	Sig. (1-tailed)	-	-	-
Environmental Concern	Correlation Coefficient	0.775**	1.000	-
	Sig. (1-tailed)	0.000	-	-
PEB	Correlation Coefficient	0.339**	0.300**	1.000
	Sig. (1-tailed)	0.000	0.000	-

Source: Survey data, **Correlation is significant at 1% level.

Table 5 Model Summary

R	R-sq	MSE	F	df1	df2	P
0.7746	0.5999	0.2117	334.4053	1.0000	223.0000	0.0000

Source: Survey data

Table 6 Model – Impact of Environmental Consciousness on Environmental Concern

Variable	Coeff	se	t	p	LLCI	ULCI
Constant	0.5062	0.2061	2.4557	0.0148	0.1000	0.9124
Environmental consciousness	0.8992	0.0492	18.2868	0.0000	0.8023	0.9961

Source: Survey data

Table 7 Model Summary

R	R-sq	MSE	F	df1	df2	p
0.3444	0.1186	0.3229	14.9342	2	222	0.000

Source: Survey data

Table 8 Model – Impact of environmental consciousness and environmental concern on PEB

Variable	Coeff	se	t	p	LLCI	ULCI
Constant	2.2158	0.2580	8.5883	0.0000	1.7074	2.7243
Environmental consciousness	0.2575	0.0960	2.6819	0.0079	0.0683	0.4467
Environmental concern	0.0773	0.0827	0.9347	0.3510	-0.0857	0.2403

Source: Survey data

As per Table 11, 12, & 13, indicating the direct, indirect, and total effect of the significant study variables, where environmental consciousness is the

antecedent, environmental concern is the mediator; and PEB is the primary outcome variable, it was revealed that there is a partial mediation effect

between these variables since both total and direct effects are significant ($p < 0.01$). That is, PEB of first-year undergraduate students was medium. The result shows a moderate positive

Table 9 Model Summary

R	R-sq	MSE	F	df1	df2	p
0.3393	0.1151	0.3227	29.0112	1	223	0.000

Source: Survey data

Table 10 Model – Impact of Environmental Consciousness on PEB

Variable	Coeff	se	t	p	LLCI	ULCI
Constant	2.2550	0.2545	8.8598	0.0000	1.7534	2.7565
Environmental consciousness	0.3270	0.0607	5.3862	0.0000	0.2074	0.4466

Source: Survey data

Table 11 Direct Effect of Environmental Consciousness on PEB

Effect	se	t	p	LLCI	ULCI
0.2575	0.0960	2.6819	0.0079	0.0683	0.4467

Source: Survey data

Table 12 Indirect Effect(s) of Environmental Consciousness on PEB

Effect	BootSE	BootLLCI	BootULCI
0.0721	0.1068	-0.1525	0.2668

Source: Survey data

Table 13 Total Effect of environmental Consciousness on PEB

Effect	se	t	p	LLCI	ULCI
0.3270	0.0607	5.3862	0.000	0.2074	0.4466

Source: Survey data

environmental consciousness directly impacts the principal outcome variable, PEB ($b = 0.2575$, $p < 0.001$), and indirectly impacts PEB through environmental concern ($b = 0.0721$). Thus, the hypothesis H_5 stating that environmental concern mediates the relationship between environmental consciousness and PEB is supported. The result also indicates that as both the direct effect and indirect effect are positive, the mediation is complimentary in nature. The summary of mediation analysis in presented in Table 14.

Table 15 depicts the PEB level among the University of Kerala students. Most students indicated PEB at a medium level (49%) and low level (32%), respectively.

Implications

This paper is the first to report the link between environmental consciousness, environmental concern, and PEB and the direct and indirect effect of environmental consciousness on PEB among students at the University of Kerala. The mean score indicated higher environmental consciousness among students; however, most of them have reported only medium to low levels of PEB. This result supports the finding of Dewi & Dian (2018) in their study that the level of

association between environmental consciousness and PEB in this study which partly supports the findings of Wuertz (2015). Furthermore, it is also revealed that environmental consciousness directly influences PEB; environmental consciousness influences PEB indirectly through environmental concern, whereas, environmental concern does not impact PEB. However, as per Si et al. (2022), that concern for the environment has a direct impact on PEB. According to them, individuals are more likely to engage in PEB when they are aware of environmental issues and comprehend the influence of their activities on the environment. Mateen et al. (2023) have rightly observed that an individual's approaches about environmental risks can be molded by environmental consciousness, influencing their behaviour towards the environment. As per Harding et al. (2018), students' environmental education is crucial because it serves as the foundation for developing a green ethic over time. As suggested by Handoyo et al. (2021), university students must be thoroughly aware of current pressing environmental challenges through official and informal education and become role models and environmental advocates. In order to build sustainable efforts both on campus and off,

there is a need to promote increasing awareness and improve university students' engagement in sustainability activities. Eze (2020), in a study, suggested a need for increased dissemination of

curriculum, conduct awareness campaigns, promote sustainable practices, encourage experiential learning, establish eco-clubs or environmental committees, invite role models and inspirational figures, engage

Table 14 Mediation Analysis Summary

Relationship	Total Effect	Direct Effect	Indirect Effect	Confidence Interval		Conclusion
				Lower Bound	Upper Bound	
Environmental consciousness → Environmental concern → PEB	0.3270 (0.000)	0.2575 (0.000)	0.0721	0.2074	0.4466	Partial Mediation

Source: Survey data

Table 15 PEB Level

		Frequency	Percent
Level of PEB among students	High	41	18.2
	Medium	111	49.3
	Low	73	32.4
	Total	225	100.0

Source: Survey data

climate change information and its impact on prevalent environmental conditions among students. According to Vasconcelos et al. (2021), before adjusting PEB routines, we must assess knowledge, attitudes, and behaviours for sustainable development. Gbervobie et al. (2022) also suggested that to improve environmental behaviour, institutions are required to offer green-related skills as a specific course or curricular activity among students and enhance their commitment towards minimising greenhouse gas emissions in the environment. As concluded by Mergelmeyer (2019), the awareness on involvement in climate change and higher level of knowledge on sustainable behaviour acts as an indicator for their engagement in PEB. On the contrary, the unawareness and restricted knowledge about the same results in lack of PEB in millennial generation members. To summarize, most of the previous literature also suggests encouraging environmental consciousness and concern to impact PEB among the students. Therefore, the results and the consequent suggestions may be used by all educational settings, environmental agencies and the government to enhance environmental consciousness, environmental concern, and PEB among students by including environmental education and awareness in their curriculum. Education on PEB is crucial for several reasons, including raising environmental awareness, shaping behaviour formation, empowering students, fostering sustainable citizenship, conserving biodiversity, promoting sustainable development, fostering critical thinking and problem-solving, promoting well-being and health, fostering global perspective, and equipping students with future-ready skills.

To improve PEB, educational institutions should incorporate environmental education into their

parents and families, foster partnerships with local communities, NGOs, and environmental organizations, use technology to enhance environmental education and recognize and reward students for their efforts. By integrating environmental education, experiential learning, and student involvement, educational institutions can play a crucial role in nurturing environmentally conscious individuals who will positively impact the planet. By incorporating these strategies, educational settings can foster a more environmentally conscious and responsible generation of individuals who will drive positive change, contribute to sustainable development, and safeguard the planet for future generations.

Limitations and Scope for Future Research

As the study was limited to only university students, the generalizability of the results to various other educational settings may not be possible. A study can be done by generalizing environmental consciousness, environmental concern, and PEB among students in schools and other higher educational institutions.

Conclusion

This study examined the correlation between environmental consciousness, environmental concern, and PEB of students at the University of Kerala. The direct and indirect effect of environmental consciousness on PEB was also evaluated. The results revealed a significant positive correlation between environmental consciousness and environmental concern and a moderate positive relationship between environmental consciousness and PEB. Moreover, there is a moderate positive association between environmental concern and PEB. It was also revealed that environmental consciousness significantly impacts both environmental concern and PEB.

However, environmental concern does not impact PEB. The result revealed that environmental consciousness directly impacts PEB and indirectly impacts PEB through environmental concern. The majority of the students indicated a medium to low level of PEB.

References

- Abdul-Muhmin, A.G. (2007). Explaining Consumers' Willingness to Be Environmentally Friendly. *International Journal of Consumer Studies*, 31, 237-247. <https://doi.org/10.1111/j.1470-6431.2006.00528.x>
- Abraham, J., Pane, M., & Chairiyani, R. (2015). An investigation on cynicism and environmental self-efficacy as predictors of pro-environmental behaviour. *Psychology*, 6, 234-242.
- Aman, S., Hassan, N. M., Khattak, M. N., Moustafa, M. A., Fakhri, M., & Ahmad, Z. (2023). Correction: Aman et al. Impact of Tourist's Environmental Awareness on Pro-Environmental Behaviour with the Mediating Effect of Tourist's Environmental Concern and Moderating Effect of Tourist's Environmental Attachment. *Sustainability* 2021, 13, 12998. *Sustainability*, 15(4), 3171.
- Begum, A., Jingwei, L., Haider, M., Ajmal, M. M., Khan, S., & Han, H. (2021). Impact of environmental moral education on Pro-environmental behaviour: do psychological empowerment and Islamic religiosity matter?. *International Journal of Environmental Research and Public Health*, 18(4), 1604.
- Binder, M., Blankenberg, A. K., & Guardiola, J. (2020). Does it have to be a sacrifice? Different notions of the good life, pro-environmental behaviour and their heterogeneous impact on well-being. *Ecological Economics*, 167, 106448.
- Blok, V., Wesselink, R., Studynka, O. and Kemp, R. (2015), "Encouraging sustainability in the workplace: a survey on the pro-environmental behaviour of university employees", *Journal of Cleaner Production*, 06, pp. 55-67.
- Chakraborty, A., Singh, M. P., & Roy, M. (2017). A study of goal frames shaping pro-environmental behaviour in university students. *International Journal of Sustainability in Higher Education*, 18(7), 1291-1310.
- Chukwuorji, J. C., Iorfa, S. K., Nzeadibe, T. C., & Ifeagwazi, C. M. (2017). Role of climate change awareness and pro-environmental behaviour in subjective wellbeing. *Nigerian Journal of Social Sciences*, 13(1).
- Chung, H. F., Shi, J. W., & Sun, K. J. (2019). Why employees contribute to pro-environmental behaviour: the role of pluralistic Ignorance in Chinese society. *Sustainability*, 12(1), 239.
- Dewi, W., & Dian R, S. (2018). Undergraduate Students' Pro-Environmental Behaviour in Daily Practice. *E3S Web of Conferences*, 31, 09025. <https://doi.org/10.1051/e3sconf/20183109025>
- Espina, M. R. S. (2018). Effects of Demographics, Environmental Knowledge, and Consumer Motivation on High School Students' Pro-Environmental Consumer Behaviour. *Alipato: A Journal of Basic Education*, 9.
- Eze, E. (2020). Sociographic analysis of climate change awareness and pro-environmental behaviour of secondary school teachers and students in Nsukka Local Government Area of Enugu State, Nigeria. *International Research in Geographical and Environmental Education*, 29(1), 89-105.
- Fadzil, D. H., Yusliza, M. Y., & Ngah, A. H. (2021). Determinants of Pro-Environmental Behaviour Among Students. *Universiti Malaysia Terengganu Journal of Undergraduate Research*, 3(2), 89-98.
- Foster, B., Muhammad, Z., Yusliza, M. Y., Faedah, J. N., Johansyah, M. D., Yong, J. Y., ... & Fawehinmi, O. (2022). Determinants of pro-environmental behaviour in the workplace. *Sustainability*, 14(8), 4420.
- Gberegbe, M. A., Adeniji, A. A., Oyewunmi, O. A., & Onayemi, O. O. (2021). Green Training a Catalyst for Students' Pro-Environmental Behaviour in Higher Institutions in Nigeria. *Proceedings of ADVED, 2021(7th)*.
- Gifford, R., & Nilsson, A. (2014). Personal and social factors that influence pro-environmental concern and behaviour: A review: Personal and Social Factors that Influence Pro-Environmental Behaviour. *International Journal of Psychology*, n/a-n/a. <https://doi.org/10.1002/ijop.12034>
- Handoyo, B., Astina, I. K., & Mkumbachi, R. L. (2021, March). Students' environmental awareness and pro-environmental behaviour: preliminary study of geography students at state university of malang. In *IOP Conference Series: Earth and Environmental Science* (Vol. 683, No. 1, p. 012049). IOP Publishing.
- Harding, D., Kadiyono, A. L., Hafiar, H., & Wibowo, H. (2018). Mind the Gap: What are the Barriers to Pro-Environmental Behavior among Students? *Journal of Business and Social Review in Emerging Economies*, 4(1), 1-6. <https://doi.org/10.26710/jbsee.v4i1.351>
- Hayes, A. F. (2012). PROCESS: A versatile computational tool for observed variable mediation, moderation, and conditional process modeling [White paper]. Retrieved from <http://www.afhayes.com/public/process2012.pdf>
- Hoffmann, C., Hoppe, J. A., & Ziemann, N. (2022). Who has the future in mind? Gender, time perspectives, and pro-environmental behaviour. *Environmental Research Letters*, 17(10), 104026.
- Holbert, R. L., Kwak, N., & Shah, D. V. (2003). Environmental concern, patterns of television viewing, and pro-environmental behaviours: Integrating models of media consumption and effects. *Journal of Broadcasting & Electronic Media*, 47(2), 177-196.
- Huang, H. C., Lin, T. H., Lai, M. C., & Lin, T. L. (2014). Environmental consciousness and green customer behaviour: An examination of motivation

- crowding effect. *International Journal of Hospitality Management*, 40, 139-149.
- Jung, J. W., & Cho, S. Y. (2015). The Relationship among Adolescents' Environmental Experience, Environmental Consciousness and Pro-environmental Consumption Behaviour. *Journal of Environmental Science International*, 24(3), 329-337.
- Karami, J., Dehghan, F., & Yazdanbakhsh, K. (2021). The Impacts of the Theory of Planned Behaviour, Environmental Concern and Intention to Buy Green Products on Pro-Environmental Behaviour (Kermanshah, West of Iran). *Environmental Education and Sustainable Development*, 9(4). <https://doi.org/10.30473/ee.2021.58502.2355>
- Kim, N., & Lee, K. (2023). Environmental Consciousness, Purchase Intention, and Actual Purchase Behavior of Eco-Friendly Products: The Moderating Impact of Situational Context. *International Journal of Environmental Research and Public Health*, 20(7). <https://doi.org/10.3390/ijerph20075312>
- Kulin, J., & Johansson Sevä, I. (2021). Quality of government and the relationship between environmental concern and pro-environmental behaviour: a cross-national study. *Environmental Politics*, 30(5), 727-752.
- Larson, M. A., Forrest, M., & Bostian, L. (1981). Participation in pro-environmental behaviour. *The Journal of Environmental Education*, 12(3), 21-24.
- Liere, K. D. V., & Dunlap, R. E. (1980). The social bases of environmental concern: A review of hypotheses, explanations and empirical evidence. *Public opinion quarterly*, 44(2), 181-197.
- Lou, X., & Li, L. M. W. (2023). The relationship of environmental concern with public and private pro-environmental behaviours: A pre-registered meta-analysis. *European Journal of Social Psychology*, 53(1), 1-14.
- Markle, G. L. (2013). Pro-environmental behaviour: Does it matter how it's measured? Development and validation of the pro-environmental behaviour scale (PEBS). *Human ecology*, 41, 905-914.
- Mateen, A. ul, Nisar, Q. A., & Nasir, N. (2023). Fostering pro-environmental behaviors in the healthcare organizations: An empirical analysis of psychological and strategic factors. *Asia Pacific Management Review*, 28(1), 13-23. <https://doi.org/10.1016/j.apmr.2022.01.004>
- Mergelmeyer, J. (2019). "Last week I was on a climate march in New York" The discrepancy between environmental concern and pro-environmental behaviour within the millennial generation (Bachelor's thesis, University of Twente).
- MetGroup. (n.d.). *Environmental consciousness: Definition and trends*. Retrieved August 1, 2023, from <https://group.met.com/en/mind-the-fyouture/mindthefyouture/environmental-consciousness>
- Minelgaitė, A., & Liobikienė, G. (2021). Changes in pro-environmental behaviour and its determinants during long-term period in a transition country as Lithuania | SpringerLink. *Environment, Development and Sustainability*, 23, 16083-16099.
- Mishra, B., & Das, S. (2015). A Study on the Parental Influence on the Development of Pro-Environmental Behaviour Among Secondary Students in Malda District. *International Journal of Informative & Futuristic Research*, 2(7), 2125-.
- Pasek, M., & Mytskan, T. (2022). Outdoor and indoor sports preferences of students in relation to their pro-environmental behaviour. *Physical Education of Students*, 26(2), 98-104.
- Rantanen, J. (2009). *Reconnecting with Nature and Pro-environmental Consciousness & Behaviour*. <https://www.semanticscholar.org/paper/Reconnecting-with-Nature-And-Pro-environmental-%26-Rantanen/a25ca7d1817ee97e5da1dfb45d99b3effbe64942>
- Saifulina, N., Carballo-Penela, A., & Ruza-Sanmartín, E. (2023). Effects of personal environmental awareness and environmental concern on employees' voluntary pro-environmental behaviour: a mediation analysis in emerging countries. *Baltic Journal of Management*, 18(1), 1-18.
- Sehwa, Y. (2005). *Pro-Environmental Housing Consciousness and Behavior of Housewives in Ulsan*. <https://www.semanticscholar.org/paper/Pro-Environmental-Housing-Consciousness-and-of-in-Sehwa/d937ae8cba4efbb808c35cd75c66e540507a9a20>
- Shiu, R., Ito, M., & Okamura, K. (2019). The Environmental Consciousness of Young Children and Students in Taiwan. *Japanese Journal of Environmental Education*. https://doi.org/DOI:10.5647/jsoee.29.1_2
- Si, W., Jiang, C., & Meng, L. (2022). The Relationship between Environmental Awareness, Habitat Quality, and Community Residents' Pro-Environmental Behavior—Mediated Effects Model Analysis Based on Social Capital. *International Journal of Environmental Research and Public Health*, 19(20), 13253. <https://doi.org/10.3390/ijerph192013253>
- Srinivasan, R., Ms., & Borkar, U., Dr. (2021). A Study of Pro-environmental Behaviour as a Component of Naturalistic Intelligence amongst In-Service School Teachers. *International Journal of Scientific Research*, 25-29. <https://doi.org/10.36106/ijer/8324035>
- Tam, K. P., & Chan, H. W. (2017). Environmental concern has a weaker association with pro-environmental behaviour in some societies than others: A cross-cultural psychology perspective. *Journal of Environmental Psychology*, 53, 213-223.
- Tam, K. P., & Chan, H. W. (2018). Generalized trust narrows the gap between environmental concern and pro-environmental behaviour: Multilevel evidence. *Global Environmental Change*, 48, 182-194.

- Thondhlana, G., & Hlatshwayo, T. N. (2018). Pro-environmental behaviour in student residences at Rhodes University, South Africa. *Sustainability*, 10(8), 2746.
- Vasconcelos, C., Silva, J., & Ribeiro, T. (2021). Pro-Environmental Behaviours for Sustainable Development: A Survey with Higher Education Students. In *ICERI2021 Proceedings* (pp. 541-547). IATED.
- Wang, Q., Kou, Z., Sun, X., Wang, S., Wang, X., Jing, H., & Lin, P. (2022). Predictive Analysis of the Pro-Environmental Behaviour of College Students Using a Decision-Tree Model. *International Journal of Environmental Research and Public Health*, 19(15), 9407.
- Wang, X., Van der Werff, E., Bouman, T., Harder, M. K., & Steg, L. (2021). I am vs. we are: how biospheric values and environmental identity of individuals and groups can influence pro-environmental behaviour. *Frontiers in Psychology*, 12, 618956.
- Wuertz, T. (2015). *Personality traits associated with environmental concern* (Doctoral dissertation, Walden University).
- Yang, S. (2005). Pro-environmental housing consciousness and behaviour of housewives in Ulsan. *Journal of the Korean Home Economics Association*, 43(1), 191-201.
- Yusliza, M. Y., Amirudin, A., Rahadi, R. A., Nik Sarah Athirah, N. A., Ramayah, T., Muhammad, Z., Dal Mas, F., Massaro, M., Saputra, J., & Mokhlis, S. (2020). An Investigation of Pro-environmental Behaviour and Sustainable Development in Malaysia. *Sustainability*, 12(17), 7083. <https://doi.org/10.3390/su12177083>
- Yusliza, M. Y., Faezah, J. N., Mat, N. H. N., Saputra, J., Muhammad, Z., Muhamad, A. S., & Ramayah, T. (2021). Modelling Pro-environmental Behaviour in the Workplace: A Preliminary Study. In *Proceedings of the 11th Annual International Conference on Industrial Engineering and Operations Management* (pp. 3953-3963).
- Zeng, Z., Zhong, W., & Naz, S. (2023). Can Environmental Knowledge and Risk Perception Make a Difference? The Role of Environmental Concern and Pro-Environmental Behaviour in Fostering Sustainable Consumption Behaviour. *Sustainability*, 15(6), 4791.