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Value Behaviour Norm Theory Approach to Predict Private Sphere Pro-Environmental Behaviour among University Students

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***Abstract* – Despite the fact that university students have significant potential to influence the future state of the environment, few academic researchers have focused on environmental behaviour among university students in less developed and developing countries. In the extant literature, there is a need to assess the significance of value behaviour norm theory in different 'private-sphere' or 'daily life' human behaviours. This paper aimed to assess a possible chain effect between individual values, environmental consciousness and personal norms to promote private sphere Pro-Environmental behaviour among university students. (*N* = 267). Multiple regression analysis results revealed that Altruistic Values (AV), Egoistic Values (EGV), New Ecological Paradigm (NEP), and Ascription of Responsibility (AR) significantly predicted Pro-Environmental Behaviour (PEB). However, Biospheric Values (BV), Awareness of Consequences (AC), and Personal Norm (PPN) do not significantly predict Pro-Environmental Behaviour (PEB). The Value Behaviour Norm Theory (VBN) model explained a significant amount of variance (65.6 %) in predicting Private Sphere Pro-Environmental Behaviour in University Students. Results indicate that University students may benefit from awareness programs on the VBN model which may improve their Pro-Environmental behaviour.**

***Keywords* – Altruistic values; biospheric values; egoistic values; environmental behaviour.**

1. INTRODUCTION

Human existence is challenged by massive depletion of resources, climate changes and many other environmental hazards [1]. Providing relief to the environment is a burning concern and a subject matter of almost all scientific and academic disciplines. Human behaviour has been held responsible for a variety of environmental problems by a number of researchers [2], [3]. Realizing the influence of human action on the environment has marked the necessity for individuals to show increased sensitivity towards the environment and contribute to sustainability solutions [4], [5].

Environmental behavioural is complex and context-specific. Though research has shown increasing awareness and favourable attitude towards the environment [6], [7], there is still a lack of concern for the environment [8]. It therefore becomes imperative to identify the factors which promote environmentally friendly behaviours in individuals [9], [10].

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Pro-Environmental behaviour (PEB) is defined as behaviour that reduces environmental harm while focusing on societal environmental conservation [11]. A lot of research concludes that promotion and acceptance of PEB will significantly contribute towards improving the quality of the environment [12]–[14].

While many researchers have concluded that pro environmental behaviour is a multidimensional construct [15]–[22], Stern [23] divided Pro-Environmental behaviour into private and public sphere behaviour. Private sphere or impact oriented behaviours pertain to day to day personal and household choices which create a direct impact on the environment. Public sphere or intent oriented behaviours refer to environmental activism, and supporting public policies which have an indirect impact via environmental policies and fostering change in the behaviours of others.

In order to motivate individuals to act responsibly towards the environment, a better understanding of the factors that promote pro-environment behaviour is required. Values, attitudes, and beliefs, among other psychological dimensions, can be used to predict Pro-Environmental behaviour. Theoretical models based on a socio-environmental perspective, such as the 'theory of planned behaviour' (TPB) developed by Ajzen [24], [25] and the 'value-belief-norm theory of environmentalism' (VBN theory) [26]. Other well-known models are the 'norm activation model' (NAM) based on the moral and normative evaluation of human behaviour [27]–[30], which has also been modified to explain environmental issues [31].

Although attitudes predict our behaviour, only a moderate relationship can be established between the two [32]. Self-reported intentions are strong predictors of PEB [33], but the relationships between the factors under this study in relation to Pro-Environmental behaviour are not direct. Therefore, more research is necessary to understand the meditational and moderation variables which influence this relationship [34].

Most of the studies on environmental behaviour have been conducted in households or organizational settings [35]–[39]. Despite the fact that university students have significant potential to influence the future state of the environment, few academic researchers have focused on environmental behaviour among university students in less developed and developing countries. Previous research has also shown that education plays an important role in shaping and increasing Pro-Environmental behaviour among individuals [40]. Studying Pro-Environmental behaviour in university students is especially important, firstly, because they are the citizens of the future [41] and secondly, because they can substantially contribute to solutions as they have the requisite knowledge about the environmental problems and possible solutions to them [42]. The university settings can also be effectively utilized to promote environmentally friendly behaviour among young people by providing environmental awareness and a mindset for environmental sustainability [43]. More research on university students can help to provide effective solutions through education [44]–[46].

In the extant literature, there is a need to assess the significance of value behaviour norm theory in different 'private-sphere' or 'daily life' human behaviours. This paper aims to assess a possible chain effect between individual values, environmental consciousness and personal norms to promote private sphere Pro-Environmental behaviour among university students. There is also a need to investigate psychological factors associated with Pro-Environmental behaviour among drivers of change at collective levels. University students have the potential of bringing about sustainable changes in the ecosystem. The present study focuses on the prediction of pro-environment behaviour of university students within the framework of value behaviour norm theory [26]. This study analysed the private sphere pro environmental behaviour of university students. The following sections discuss the theoretical background as the basis of hypotheses formation.

2. THEORETICAL FRAMEWORK

2.1. Pro Environmental Behaviour (PEB)

Pro-Environmental behaviour promotes conservation, protection, and restoration of the environment. A review of the existing literature shows usage of many terms similar in meaning to PEB, such as responsible environmental behaviour [47] ecological behaviour [48] and environmentally conscious behaviour [49]. Most researchers describe Pro-Environmental behaviour as multidimensional. According to Smith-Sebasto and D'costa [50] it has six dimensions, i.e., educational, civic, financial, legal, physical and persuasive. According to Karp [51], PEB has three dimensions, namely, environmental activism, good citizen behaviour and healthy consumer behaviour.

The most widely used classification was given by Stern [23], who proposed Pro-Environmental behaviour to be impact-oriented and intent-oriented. Impact-oriented behaviours are capable of creating a direct impact on the environment and can alter the ecological balance in a palpable manner. It can also be understood as private sphere behaviour which concerns day-to-day efficiency and curtailment behaviours of the individuals that have a direct impact on the environment. Such behaviours include individual efforts to recycle, reduce and reuse e.g., transportation, household waste management, green consumerism, reduction of resources etc. Intent-oriented behaviours are actions driven by the individual's intention to improve environmental quality. Intent-oriented behaviours can be direct and indirect. Direct intent-oriented behaviours are known as environmental activism and refer to active engagement in public sphere, like organising campaigns and demonstrations to increase sustainable behaviour. Indirect intent-oriented behaviours are non-activist behaviours, which may be any behaviour in public sphere to support action, public policies or contribution aimed at protection of the environment, e.g., donating money to an environmentalist organisation or signing a petition for an environmental cause. The diversity of Pro-Environmental behaviour can be well explained by the basic idea of environmental behaviour in public and private sphere.

2.2. Value Behaviour Norm (VBN) Theory

The value behaviour norm theory [23] draws from the basic value theory [29] and norm activation model. It includes ascription of responsibility, awareness of consequences, and pro environmental personal norms to explain Pro-Environmental behaviour. The constructs are linked in a causal chain and provide an explanatory framework for pro environmental intention and behaviour. Values are defined as 'a desirable trans-situational goal varying in importance, which serves as a guiding principle in the life of a person or other social entity' [29]. There are three types of values which are particularly important to understand Pro-Environmental behaviour. Egoistic values refer to importance of self-interest within the society through wealth and power [23]. Altruistic values are concern for others and living organisms which promotes Pro-Environmental behaviour, biospheric values (BV) refers to the perceived importance of the biosphere, environment and the ecological balance, and an individual with egoistic value orientation would act Pro-Environmentally only if the perceived benefits of doing so outweigh the perceived costs [23]. Thus, people with altruistic and biospheric values are more inclined to exhibit Pro-Environmental behaviour as compared to people with egoistic values [52], [53]. Value structure is complex and may differ across individuals and cultures. Understanding values can provide an insight into the Pro-Environmental behaviour of individuals.

Belief refers to one's thoughts about something. Beliefs in VBN fall into three categories: general environmental worldviews, an awareness about the consequences (AC) and a sense of responsibility (AR) for the environment. General environmental worldviews and basic beliefs concerning the interaction between the humans and the environment is tapped by New Ecological Paradigm (NEP) [54]. NEP is a 'belief about humanity's ability to upset the balance of nature, the existence of limits to growth for human societies, and humanity's right to rule over the rest of nature' [55]. NEP highlights the difference between the anthropocentric perspective in which humans have the right to use the natural environment, and the ecocentric view, in which people are merely a part of the natural world. AC refers to 'a belief that environmental well-being can enhance or threaten other people, other species and the biosphere' [23] AR refers to a belief 'that human actions can either prevent or escalate potential negative consequences' [26] AC and AR have been found positively associated with PEBs such as the acceptance of energy policies [56] recycling behaviour [57], and the reduction of car usage [58].

The third construct of VBN is PPN, which may be understood as personal moral obligation to engage in PEB. Personal norms are direct antecedents of behaviour and are shaped by values and resulting beliefs [23]. The last part of the VBN model, PPN, is the attitudinal factor that is the most closely related to actual behaviours [23]. When people believe that it is critical to safeguard the environment, Pro-Environmental emotions become personal standards for them [59]. Individuals fell morally obliged to be willing to behave in a Pro-Environmental manner. Personal norms have been found to be a successful antecedent of Pro-Environmental behaviours in many contexts. For example, it affects people's willingness to pay higher costs for environmentally friendly food [60], which has a beneficial impact on the usage of environmentally friendly means of transportation [52].

3. Research Model And Hypothesis

VBN has emerged as a dominant model for describing various environmental attitudes and behaviour [56], [53], [61]–[64]. However, the VBN has only been applied to environmental behaviour in non-Western cultural contexts. Except a few researches in Taiwan [62] and Japan [65], which lend support to the basic causal structure of VBN, the model has not been used in Indian samples. In the context of Pro-Environmental behaviour, VBN is the most applicable model. The model has been applied to many settings to understand environmental citizenship [66], support for energy policy [67], consumption of organic food [68], use of energy by employees [69], eco-consumer behaviour [70], fuel choice and selection [66], commitment to biodiversity [71], and environmental risk assessment [72]. However, very few studies have applied the VBN framework to investigate Pro-Environmental behaviour among university students within the campus. Campus setting is a unique context, which promotes complex participatory activities which are important for focus and maturity [73]. Also, it is assumed that university education might bring about changes in values, beliefs and aspirations [74]–[75]. Hence, VBN has a high potential to explain Pro-Environmental behaviour of university students.

Based on the existing literature, the major objective of this research was to verify VBN in predicting private sphere PEB in university students. PEB is a conscious choice made by an individual and is influenced by a number of factors. The current research utilizes VBN to predict PEB among university students.

According to the research model conceptualized given in Fig. 1, all constructs of VBN will predict PEB in private sphere.

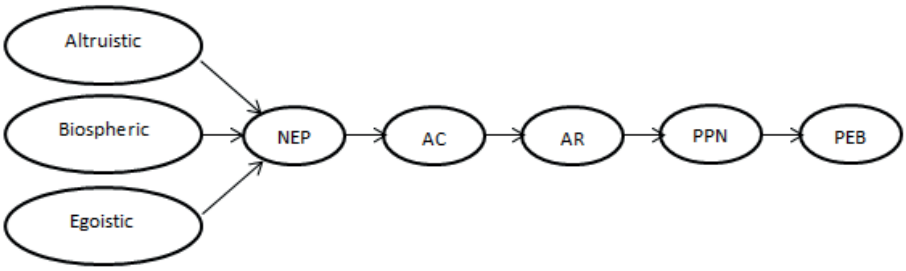


Fig. 1. Proposed research model.

4. METHODOLOGY

The main objective of this research is to predict private sphere PEBs of university students using the VBN model. This section describes the methodology of the empirical study undertaken to fulfil the objective.

4.1. Sample and Procedure

The target population for the current research includes undergraduate and postgraduate students of private universities of India. University students are the citizens of future and have the educational exposure to understand the environmental information. Main criterion for the sample was to be pursuing a regular course in a private university. Cross-sectional survey design was used to collect data through anonymous Google Forms. The online survey was advertised on social networking platforms (Facebook, LinkedIn, WhatsApp) and shared through emails. Prior to the participation, the respondents read the cover letter which informed them about the purpose of the research and informed consent was implied through their completion of the survey. Participation was voluntary and anonymous. The form was designed in such a manner that only participants who fulfilled the inclusion criterion were able to fill the responses. The questionnaire was filled by 415 people. 55 questionnaires were excluded from the sample due to missing and incomplete data. The remaining 360 responses were further screened for alertness. The questionnaire had an embedded item which read 'This item checks whether you are reading the items carefully before answering. Please choose 'do not agree' as your answer to this question'. 93 responses failed this check and were excluded from the final sample. Researcher was left with 267 responses for further analysis.

4.2. Tools

The survey method was used to test the hypotheses. The questionnaire had three sections. Section one consisted of filter questions to ensure the appropriateness of the sample. Section two obtained information based on socio-demographic details and Pro-Environmental behaviour. Section three measured the constructs of values, beliefs and personal norms. There were two parts to the questionnaire. In the first part, participants were required to provide their socio-economic information. The second part dealt with measurement of values, Pro-Environmental behaviour in private sphere, new ecological paradigm, awareness of consequences, ascription of responsibility and personal norms.

4.2.1. Values

Values were measured using the adapted version of Schwartz's Value Scale [53], [76]. Orientation for EGV, AV and BV were assessed by asking the respondents to rate the importance of value statements as guiding principles in their lives (on a 7-point Likert scale ranging from 1 = not important at all to 7 = very important [77]. Mean scores were computed on items included in each scale.

4.2.2. New Ecological Paradigm Scale (NEP) [55]

This 15-item questionnaire is designed to test environmental awareness. The items of the study focused on raising awareness of people's effect on the ecosystem and their capacity to disrupt the ecological equilibrium.

4.2.3. Awareness of Consequences (AC), Ascription of Responsibility (AR) and Personal Norms (PN)

Items to measure AC, AR and PN were adapted from past studies [26], [56], [61], [63]–[78]. AC, AR and PPN were measured through 4 items each.

4.2.4. PEB in Private Sphere

The participants of the study were asked to indicate how often they engaged in 12 self-reported PEBs pertaining to recycling activities, purchase behaviour, personal transport choices, conservation of energy and water. Likert-type response options were 1 (never), 2 (occasionally), 3 (frequently), and 4 (always). These items were based on previous studies measuring PEB in private sphere [39], [46], [79]–[83].

5. RESULTS

5.1. Data Analytic Strategy

Data analysis of the study followed two steps and was done using SPSS 21. Firstly, THE exploratory factor analysis (EFA) was performed to identify factor loadings. Sampling adequacy was tested using the Kaiser-Meyer-Olkin (KMO) test. KMO measures sampling adequacy for each variable in the model and for the complete model. Bartlett's test of Sphericity was used to evaluate redundancy between the variables. If the Bartlett's test is not significant, the correlation matrix is not suitable for factor analysis because the variables show too little covariance [84]. Secondly, hierarchical multiple regression was performed. The dependent variable was PEB. Values (AV, BV and EV) were entered at the first step, beliefs (NEP, AC and AR) were entered at second step, and PN was entered at the third step. Results have been presented in detail.

5.2. Construct Reliability and Validity

The developed questionnaire was reviewed by a panel of five experts who provided constructive suggestions on the face validity of the questionnaire. Based on their feedback, the questionnaire was modified to the current form used in the study. EFA was employed to find out the factor loadings of the items. KMO value of 0.895 is acceptable [85] and confirms suitability of data for factor analysis. Bartlett's Test of Sphericity was significant ($p < 0.001$), indicating adequate correlation between items to run factor analysis. EFA was performed using the principal component analysis with varimax rotation. Reliability and validity of the

constructs was established using Cronbach's alpha, Average Variance Extracted (AVE) and correlation among constructs. All obtained reliability values are above 0.7 and acceptable [86]. Factor loadings are above the acceptable value of 0.5 [87]. Table 1 shows the results.

TABLE 1. SCALE CHARACTERISTICS

	No. of Items	**Factor Loadings (Range)**	**Cronbach's Alpha**	**AVE**
PEB	12	0.638–0.847	0.839	0.663
AV	4	0.662–0.902	0.814	0.645
BV	4	0.598–0.854	0.839	0.678
EGV	4	0.619–0.787	0.784	0.598
NEP	15	0.672–0.884	0.905	0.623
AC	5	0.631–0.821	0.883	0.615
AR	3	0.586–0.813	0.841	0.587
PPN	4	0.582–0.891	0.912	0.663

Mean, standard deviation and correlation among the constructs was calculated for the study sample. Results are shown in Table 2.

TABLE 2. DESCRIPTIVE STATISTICS

	Mean	**SD**	**PEB**	**AV**	**BV**	**EGV**	**NEP**	**AC**	**AR**	**PPN**
PEB	33.96	6.62	1	0.745**	0.496**	−0.636**	0.576**	0.540**	0.511**	0.611**
AV	12.42	3.12	–	1	0.544**	−0.534**	0.515**	0.552**	0.537**	0.584**
BV	12.79	3.39	–	–	1	−0.556**	0.590**	0.655**	0.588**	0.568**
EGV	10.91	3.57	–	–	–	1	−0.685	−0.579**	−0.766	−0.831**
NEP	51.07	9.28	–	–	–	–	1	0.804**	0.803**	0.762**
AC	10.73	2.61	–	–	–	–	–	1	0.733**	0.650**
AR	9.86	2.95	–	–	–	–	–	–	1	0.874**
PPN	11.56	3.12	–	–	–	–	–	–	–	1

Table 2 shows the correlations among the variables of the study. Correlation analysis shows significant relationships between all variables.

Hierarchical regression analysis was conducted to test the proposed model. Pro environmental behaviour in private sphere was the dependent variable and was regressed onto the VBN constructs. Results are presented in Table 3. Values were entered at first step and accounted for a significant proportion of variance in PEB ($R^2 = 0.535$, $p < 0.001$). Addition of NEP, AC and AR at the second step significantly increased the proportion of variance accounted for ($R^2 = 0.656$). Total variance accounted for at step 3 was 69.7 % ($R^2 = 0.697$).

BV and EGV emerged as significant predictors of PEB in step 1, but their effect was reduced when NEP, AC and AR were added at step 2, indicating the mediating impact of belief constructs of VBN. NEP and AR emerged as beliefs having a significant impact on

PEB. Although PPN did not show a significant contribution in the prediction of PEB, the addition of this construct at step 3 increased the predictive power of the model.

TABLE 3. STEPWISE REGRESSION ANALYSIS

Step	Predictor	R Square	Adjusted R Square	R Square Change	F Change	Step 1β	Step 2β	Step 3β
1	BV	0.535	0.529	0.535	152.031***	0.566**	0.262*	0.221*
	AV					0.023	−0.020	−0.019
	EGV					–0.388**	−0.201*	−0.198*
2	NEP	0.664	0.656	0.129	12.032**		0.333**	0.213**
	AC						0.051	0.065
	AR						–0.301**	−0.247*
3	PPN	0.697	0.684	0.013	2.74*			0.147

6. DISCUSSION AND CONCLUSION

The aim of the present study was to predict Pro-Environmental behaviour in private sphere of university students within the framework of VBN. Correlation results revealed that significant relationships exist between all variables. Therefore, multiple regression analysis was employed to see whether all variables namely Altruistic Values (AV), Biospheric Values (BV), Egoistic Values (EGV), New Ecological Paradigm (NEP), Awareness of Consequences (AC), Ascription of Responsibility (AR), and Personal Norm (PPN) significantly predicted Pro-Environmental Behaviour (PEB).

Multiple regression analysis (Step 1) results revealed that Altruistic Values (AV) and Egoistic Values (EGV), significantly predicted Pro-Environmental behaviour. However, Biospheric Values was not found to significantly predict Pro-Environmental behaviour (PEB). Also, multiple regression analysis (Step 2) results also revealed that Altruistic Values (AV), Egoistic Values EGV, New Ecological Paradigm (NEP) and Ascription of Responsibility (AR) significantly predicted PEB. However, BV and AC did not significantly predict PEB. Further multiple regression analysis (Step 3) results found that AV, EGV, NEP, and AR significantly predicted PEB. However, BV, AC, and PPN do not significantly predict PEB.

Similar studies have been done by [88], in which the researchers found that AV is a significant predictor of PEB [89]. A possible explanation for this finding is that altruistic values are referred to as pro-social values which tend to be consistent as a key predictor for Pro-Environmental behaviour as well as environmental attitudes [90].

Also, it has been found that EGV has been proven to be particularly important in explaining PEB [89], [91]. This can be explained by the fact that when Pro-Environmental activity is only based on egoistic reasons, individuals would stop doing it as soon as they realize that the costs outweigh the benefits. For example, people reduce using their cars due to congestion but restart using their car as soon as they realize that now the streets are less congested [53].

Researchers have found that influences such as parental exposure to sustainability, exposure to gardening as a child, upbringing in a rural background, and the amount of time spent outdoors with family were identified as important aspects of development of positive environmental attitudes in such individuals who exhibited Pro-Environmental behaviours. Researches have also suggested that an educational system that focuses on environmental education related to pro-ecological worldviews from NEP scale assessment may be implemented [92], [93].

The relationship between ascription of responsibility and Pro-Environmental behaviour can be explained in the light of social-cognitive theory perspective for understanding a variety of routes to promote Pro-Environmental behaviour. Personal agency is defined as an individual's ability to choose, execute, and govern their own activities in order to achieve desired results. When applied to the field of environmental psychology, the theory contends that people with favourable contextual conditions and high environmental self-efficacy judgments will have higher outcome expectations, set more challenging goals, and engage in more Pro-Environmental behaviour than people who have lower perception of their ability to perform such acts [10].

After obtaining evidence from existing studies in support of our findings, we also contemplated on why the Value Behaviour Norm Theory proves to predict Private Sphere Pro-Environmental Behaviour especially among university students. Values prove to be a guiding light to deciding whether to engage in Pro-Environmental behaviour or not. Values are constructed by the society and overall upbringing of the individual. Each University student has their own set of values and belief systems which govern whether they will want to engage in Pro-Environmental behaviour or not. Additionally, Norms are generally seen as socially constructed rules and particularly in university students, where peer pressure and peer influence is extremely high, environmental psychologists can use this factor to their advantage and encourage Pro-Environmental behaviour.

The VBN model explained a significant amount of variance in predicting Private Sphere Pro-Environmental Behaviour in university students. Implications suggest that the VBN model may be used to bring about awareness programs for university students in order to enhance their Pro-Environmental behaviour.

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