

## The Role of Perceived Environmental Knowledge and Altruism as Determinants of Pro-Environmental Behaviour in a Sample of Undergraduates in AAUA, Ondo State, Nigeria.

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**ABSTRACT** Environmental issues, depletion of natural resources, declining weather conditions, and global warming have attracted global attention and they form the bases of developmental and sustainable goals in contemporary societies. This study examined the role of perceived environmental knowledge and altruistic behaviour as determinants of pro-environmental behaviour in a sample of Undergraduates in AAUA, Ondo State. A cross-sectional survey method was used for data collection through questionnaires. The variables of the study were explained using the Environmental Beliefs Model (*EBM*). The independent variable is environmental knowledge, altruism concern and the dependent variable is pro-environmental behaviour. Environmental knowledge was measured using the 16-item Environmental Concern Scale (*ECS*) developed by Weigel and Weigel (1978), altruism was measured using The Self-Report Altruism Scale (*SAS*) developed by Rushton *et al.* (1981) and pro-environmental behaviour was assessed using Pro-Environmental Behavior Scale (*PEBS*) by Larson *et al.* (2015). Two hundred and thirty-six (236) students were sampled using convenient sampling technique. Data was analyzed using multiple regression analysis and results of the study showed that perceived environmental knowledge significantly predicted pro-environmental behaviour [ $\beta = .28$ ;  $3.66^{**}p < .05$ ]. Altruism significantly predicted pro-environmental behaviour [ $\beta = .36$ ;  $5.13^{**}p < .05$ ]. Given this outcome, the study recommended that the Nigeria educational reforms and policies should be reviewed, specifying issues relating to altruistic pro-environmental behaviours and this could be achieved through symposiums and conferences.

**KEYWORDS:** Pro-environmental behaviour, Altruism, Environmental knowledge, Undergraduates

### I. INTRODUCTION

The term pro- environmental behaviour has many meanings. Iwata (2001) describes it as categories of behaviour such as recycling and energy conservation, which can help to alleviate the alarmingly rapid deterioration of the global environment. To Sivek and Hungerford (1990), it is any individual or group action that aim at doing what is right to help protect the environment in general daily practice (environmental activism), for example recycling and energy conservation. For example, Corbett (2005); Hwang *et al.* (2000), and Hines, *et al.* (1987) have implicated prosocial factors on both environmental attitude and responsible environmental behaviour. Specifically, responsible environmental behaviour model of Hines *et al.* (1987), which is an improvement on the Ajzen's theory of planned behaviour (1987), suggests that some prosocial factors such as altruism (participating in pro-environmental behaviours) promote responsible environmental behaviour. The shortcoming of this model according to Hines *et al.* (1987) is that unlike cognitive variables, the personality factors identified are not readily amenable to training efforts in influencing responsible environmental behaviour. In searching for a cognitive variable that is amenable to training, the researchers' attentions are drawn to the construct of environmental attitude. This choice is due to the importance of attitude in biasing perceptions and directing social behaviour (Eagly & Chaiken, 1993). Information about people's attitude has been proved to enhance the relationship between personal characteristics and behaviour; and also assist in behaviour change across a multitude of situations

(Hines *et al.* 1987; Monroe *et al.*, 2000; McKenzie-Mohr & Smith, 1999). Considering this observation, it is then propose that environmental knowledge will increases the chances of exhibiting pro-environmental behaviour.

Altruism is generally defined as the selfless concern for the well-being of others, often manifesting in actions that benefit others at a personal cost. In the context of environmental behavior, altruism extends beyond immediate social interactions to encompass a broader concern for the environment and future generations. This perspective aligns with philosophical traditions that emphasize moral obligations toward nature and collective welfare. Research indicates that altruistic values significantly influence pro-environmental behaviors. Individuals who possess strong altruistic tendencies are more likely to engage in actions that protect the environment, even when such actions do not yield direct personal benefits. This is particularly relevant in discussions about climate change and conservation efforts, where the benefits are often long-term and collective rather than immediate and individual. Studies on empirical evidence linking altruism to pro-environmental behaviours have shown a positive correlation between altruistic attitudes and pro-environmental behaviours across various contexts. For instance, individuals who express concern for the welfare of others (including non-human entities) tend to participate more actively in environmentally friendly practices such as recycling, conservation efforts, and supporting sustainable policies. In a Nigerian context, research has demonstrated that altruistic behaviors such as prosocial actions or donations to environmental causes are positively associated with individual-level pro-environmental behaviors. This suggests that fostering altruistic values can enhance public engagement in environmental initiatives. In view of this, this study investigates perceived environmental knowledge and altruism as determinants of pro-environmental behaviour among a sample of undergraduates in AAUA, Ondo State, Nigeria. Exploring pro-environmental behaviour from this angle might help identify and proffer lasting solution to pro-environmental behaviour.

The primary objective of this research was to perceived environmental knowledge and altruism as determinants of pro-environmental behaviour among a sample of AAUA undergraduates. In accordance with the primary objective of the study, the following secondary objectives were formulated, namely to:

- (a). Determine if perceived environmental knowledge improve pro-environmental behaviour among a sample of undergraduates in AAUA.
- (b). Examine whether there will be significant positive relationship between altruism and pro-environmental behaviour.
- (c). Investigate the joint relationship of environmental knowledge and altruism on pro-environmental among AAUA undergraduates.

The outcomes of this study would have some pragmatic relevance for specialized institutions like the healthcare sector such as, Society for Family Health, Ministries and Welfare departments of various organizations in Nigeria through the results of this study, would know where to focus pro-environmental behaviour on and when to redesign their curriculum to develop, promote and sustain an enlightened society. This study provides real-life relevance as it would help with learning and educational practice which will be useful in Nigerian colleges including universities, in training medical, psychological, social and human science students on the importance of developing and sustaining pro-environmental behaviour. Findings of this study would have some practical relevance for other researchers as the study has ecological validity, conducted in a real setting using undergraduate in AAUA, Ondo State, Nigeria. The findings from this study will serve as a reference point and stimulate more research in this direction among educationists and sociology researchers as well as other researchers that are interested in similar studies. This study will be of huge benefit for academic purposes.

## II. METHODOLOGY

This study was a cross-sectional correlational research design where no variable of interest is manipulated but are allowed to vary with each other. Survey method of data collection was adopted where questionnaires are used to collect data from the respondents on the variables to be studied. The independent variable is environmental knowledge and altruism and the dependent variable is pro-environmental behaviour.

### RESEARCH HYPOTHESES

The following hypothesis guided this research:

**H<sup>1</sup>:** There will be significant positive relationship between environmental knowledge and pro-environmental behaviour among a sample of AAUA undergraduates in Ondo State.

**H<sup>2</sup>:** There will be significant positive relationship between altruism and pro-environmental behaviour among a sample of AAUA undergraduates in Ondo State.

**H<sup>3</sup>:** There will be significant joint relationship between environmental knowledge and altruism on pro-environmental behaviour among a sample of AAUA undergraduates in Ondo State.

### STUDY AREA

The geo-graphical location of Ondo State shows that it lies on the South-West of Nigeria and the capital of Ondo State is Akure. The indigenes of Ondo State include but are not limited to; peoples of Akoko land, Ikale, Apoi, Ijaw, and the Owo people. Ondo State is a humid State, and she lies on the geographical latitude 50 451 and 80 151 North and longitude 40 451 and 60 East, of Nigeria. The State is surrounded by Ekiti State, Osun State, Ogun Edo State and in the South by trans-Atlantic Ocean.

### SAMPLING AND PROCEDURE

Using accidental sampling technique, the researcher administered three hundred and fifteen questionnaires to students who consented in such a way that averages of 16 copies of questionnaire were administered per department. The reason for using accidental sampling technique and not randomization was because most undergraduates are always busy and the academic situations in the universities due to academic undertakings and lectures did not allow for other sampling techniques. So, the only means to get sustainable participants is by using this non-probabilistic method. Although, two hundred and forty-five (245) copies of questionnaire were administered but only two hundred and thirty-six (236) were found usable for the analysis. This yielded a response rate of 97.11%. In order to get the undergraduates that participated, all the faculties in the university were listed and even numbers was assigned to various departments within the faculty. The choice of even numbers was arrived at via the ballot technique. That is, odd and even were wrapped differently and put together in a box. An individual was then asked to pick a wrapped paper upon which even numbers was written. The faculties used for the study are; Arts, Education, Sciences, Law, Social and Management. The purpose of the study was explained to the participating undergraduates as they were also given assurance of confidentiality and anonymity of their identities and responses. In addition, the respondents were told that there was no right or wrong answers, as such they such be as honest as possible in their responses.

### DATA ANALYSIS

In order to determine the extent and direction of associations among the study variables, multiple regression analysis was then used to test hypothesis 1, 2, and 3. Some of the socio-demographic variables were codified. For example, gender was coded male 0, female 1. Marital status was code single 0, married 1, widow 2, and divorce 3. Job position was coded junior 0, senior 1. All analysis was conducted using SPSS Wizard.

## INSTRUMENTS

**Section A:** Measures Demographic Variables such as, age, gender, religious affiliation and type of occupation.

**Section B:** Environmental knowledge will be measured using the Multi-Dimensional Environmental Knowledge Scale (EKS) developed by Min-Seong (2018) based on the four dimensions of environmental knowledge; Subjective environmental knowledge, environmental affect, nature affiliation, and pro-environmental behavior. EKS is a 17-item self-report questionnaire with response pattern in Likert format operationalized via a seven-point Likert scale format where 1 = strongly disagree to 7 = strongly agree. Samples of items of the EKS includes; 'I am very knowledgeable about environmental issues' 'I understand the environmental phrases and symbols noted on product packages' and 'It genuinely infuriates me to think that the government doesn't do more to help control pollution at this destination', 'I become incensed when I think about the harm being done to this destination's plants and animals by pollution'. The EKS was directly scored in such a way that high score indicates positive. Min-Seong *et al.* (2018) reported that the scale demonstrated good internal consistency with an alpha coefficient of .89 and Spearman-Brown split half reliability of .91. **Section C:** Altruism was measured using The Self-Report Altruism Scale (SAS) developed by Rushton *et al.* (1981). The SAS was designed to assess altruism via self-report. The SAS is a 20 -items with 5 response options: never, once, more than once, often, & very often. Each item is scored from 0 to 4. Sample items include; 'I have given directions to a stranger', "I have donated blood", "I engage in behaviours that promote environment wellness for all". The SAS was directly scored in such a way that high score indicates positive. Otto and Bolle, (2011) reported that the scale demonstrated good internal consistency with an alpha coefficient of .87 and Spearman-Brown split half reliability of .93. **Section D:** Pro-environmental Behaviour was measured using Pro-Environmental Behavior Scale (PEBS) by Larson *et al.* (2015). PEB is a 13-item multi-dimensional structure of pro-environmental behaviour. The PEBS identified four key PEB domains: conservation lifestyle behaviors (e.g., household actions in the private sphere), social environmentalism (e.g., peer interactions and group membership), environmental citizenship (e.g., civic engagement in the policy arena), and land stewardship (e.g., support for wildlife and habitat conservation). The average will be between 1 and 5. Scores of 1–2 indicate a lower frequency of pro-environmental behaviors, a score of 3 indicates occasional frequency of pro-environmental behaviors, and scores of 4–5 indicate a higher frequency of pro-environmental behaviors. The scale demonstrated good internal consistency in this study with an alpha coefficient of .91 and Spearman-Brown split half reliability of .89, as well as, Kaiser-Meyer-Olkin of .88.

## PROCEDURE

Before the beginning of questionnaire administration, the research will seek permission from participants who would freely choose to participate in the exercise or not. The reason for carrying out the study will be made known to the participants. The participants will also be told that they can freely decide to discontinue their participation in the study. The researcher will introduce himself and his affiliation and the questionnaire process and instruction will be read to each participant. The duration of the exercise will be made known to the respondents, pencil and paper type of self-report questionnaire will be given to each participant. Questionnaires collected were analyzed and interpreted to obtain the objectives of the study.

## DATA ANALYSIS

This study purports to analyze the data obtained from the study with the use of descriptive statistics, correlations to examine the relationship among variables of the study, and multiple regression analysis to test for the prediction of environmental knowledge and altruism on pro-environmental behaviour.

### III. RESULTS AND DISCUSSION

**Table 1:** Summary of Multiple Regression Analysis Showing the Prediction of Environmental Knowledge and Altruism on Pro-environmental behaviour.

Predictors	<i>B</i>	<i>t</i>	<i>R</i>	<i>R</i> <sup>2</sup>	<i>Df</i>	<i>F</i>
<i>Independent Variable(s)</i>			.68	.23	1,236	66.48**
Environmental Knowledge	.43*	3.66**				
Altruism	.36**	5.13**				
<i>Dependent Variable</i>						
Pro-Environmental Behaviour.						

\*\*  $p < 0.01$ , \*  $p < 0.05$

The result of the multiple regression, showed that environmental knowledge relationship was significant predictor of pro-environmental behaviour among undergraduates in Adekunle Ajasin University, Ondo State South-West, Nigeria [ $\beta = .43^{**}$ ;  $p < .01$ ]. Hence, hypothesis 1 was accepted. Also, the results of the regression analysis showed that altruism directly predicted pro-environmental behaviour [ $\beta = .36^{**}$ ;  $p < .01$ ]. Hence, hypothesis 2 was accepted. This result implies that undergraduates who have high or increased perception of altruism are more likely to report increased levels of pro-environmental behaviour in AAUA, Nigeria. In addition, the results of the regression analysis demonstrated that, on the contribution of all the independent variables (emotional empathy and religious orientation) signify that all the independent variables when pulled together yield a multiple *R* of .68 and *R*<sup>2</sup> of .23 [ *F* (3, 236) = 66.48\*\*  $p < 0.01$ ]. This is an indication that undergraduate's emotional empathy and religious orientation contributed 68% of the variance in pro-environmental behaviour. Meanwhile, other variables not considered in this study therefore accounts for 34%. Therefore, the hypothesis 3 was accepted.

As shown in Table 1, the results indicate significant positive relationships between environmental knowledge and pro-environmental behaviour. Thus, it appears that when environmental knowledge becomes more positive, and when people's judgments of their capabilities to organize and execute environmental related action increase, environmental knowledge is likely to become more favourable, confirming hypothesis one. These findings are generally similar to findings elsewhere, (Adams, 2003; Corbett, 2005; Hines *et al.* 1987; Hwang *et al.* 2000). Research indicates that environmental knowledge serves as a necessary antecedent for pro-environmental behavior. Individuals who possess a higher level of environmental knowledge are more likely to engage in behaviors that benefit the environment because they understand the consequences of their actions. For instance, someone knowledgeable about climate change is more likely to reduce energy consumption or support renewable energy initiatives. Increased environmental knowledge raises awareness about critical issues such as climate change, biodiversity loss, and pollution. This understanding can motivate individuals to take action to mitigate these problems. With greater knowledge, individuals can make informed choices regarding their consumption patterns, waste management practices, and energy use. For example, knowing the benefits of recycling can lead to increased participation in recycling programs. Environmental knowledge can shape social norms by fostering discussions around sustainability within communities. When individuals share their knowledge about environmental issues, it encourages others to adopt similar pro-environmental behaviors. Knowledge empowers individuals by providing them with the tools needed to effect change. When people feel competent in their understanding of environmental issues, they are more likely to believe that their actions can make a difference.

Results also indicate significant positive relationships between altruism and pro-environmental behaviour, indicating when undergraduates have high levels of altruistic behaviours this also leads to pro-environmental behaviour. This suggests that the ability to organize and execute environmental related action, they are likely to perceive themselves as having low tendency to exhibit responsible environmental behaviour. These findings confirm hypothesis 2. Similar findings have been reported (Busch, *et al.*, 1996;

Corbett, 2005; Hines *et al.* 1987; Hwang *et al.* 2000). Empirical studies reveal that individuals who engage in prosocial behaviours such as volunteering for environmental causes or donating to conservation organizations are also more likely to adopt sustainable practices like recycling or reducing waste. Several mechanisms explain how altruism translates into pro-environmental action. Altruistic individuals often influence their peers through social norms that prioritize collective well-being. When people observe others engaging in environmentally friendly behaviors out of concern for the planet, they may feel compelled to follow suit. Altruism fosters emotional connections with nature and other living beings. Feelings of empathy towards affected ecosystems or species can motivate individuals to take action against environmental degradation. Altruistically motivated individuals tend to consider long-term consequences rather than immediate benefits. This perspective encourages sustainable practices aimed at preserving resources for future generations. In summary, altruism significantly increases pro-environmental behavior by fostering a sense of responsibility towards others and the planet. Through various theoretical frameworks and empirical evidence, it is clear that altruistic motivations lead individuals to engage in actions that benefit both society and the environment, thereby promoting sustainability on multiple levels.

The summary of beta coefficients of the variables entered into the multiple regression analysis reveals significant contributions of environmental knowledge and altruism to pro-environmental behaviour respectively as presented in Table 2. In terms of hypothesis 3, both environmental knowledge and altruism predicted pro-environmental behaviour among undergraduates in AAUA. Research has shown that there is a significant correlation between higher levels of environmental knowledge and increased engagement in pro-environmental behaviors among undergraduates. Students who are well-informed about ecological issues tend to recognize the importance of their actions on the environment. Similarly, studies indicate that altruistic individuals are more likely to engage in environmentally friendly practices because they feel a moral obligation to help others and protect future generations from environmental harm. For instance, a study might find that students with strong altruistic tendencies are more likely to participate in sustainability initiatives on campus. Another research effort could demonstrate that educational programs aimed at increasing environmental literacy lead not only to greater awareness but also foster a sense of responsibility towards collective well-being. The interplay between environmental knowledge and altruism is critical. Individuals with high levels of environmental knowledge may develop stronger altruistic feelings as they understand the consequences of neglecting ecological issues. Conversely, those with inherent altruistic values may seek out information regarding environmental challenges as part of their commitment to helping others. This reciprocal relationship suggests that educational interventions targeting both areas could be particularly effective in promoting pro-environmental behaviors among undergraduates. In conclusion, both environmental knowledge and altruism significantly predict pro-environmental behavior among undergraduates. By enhancing students' understanding of ecological issues while simultaneously fostering their intrinsic motivations for helping others, educational institutions can cultivate a generation more committed to sustainable practices.

#### IV. CONCLUSION

This study has established that perceived environmental knowledge and altruism significantly predicted pro-environmental behaviour among AAUA undergraduates in South-west, Nigeria. Based on the findings of this study, levels of environmental knowledge and altruism can be used to increase levels of pro-environmental behaviour among AAUA undergraduates. This means that all these predictor variables could jointly interact to play important roles in contributing to pro-environmental behaviours in student populations. Hence, it is the position of this study that perceived environmental knowledge and altruism are significant predictors of pro-environmental behaviour in student population.

Based on the finding of this study, it is recommended that;

- (a). Government agencies can use the results of this study to develop and integrate policies that discourage and incorporate psychologically and socially responsible mechanism, that directly engage the activities of students in terms of pro-environmental behaviours.



- (b). Academic institutions and organizations such as, Ministry of Environment, Information and Culture, National Orientation Agency, Society for Family Health, Ministry of Women Affairs, Social and Welfare Board, and Faith based organizations should engage in programmes that have direct effect on parasocial tendencies within the various levels of tertiary education in order to foster pro-environmental behaviours. This can be done through engaging student in psycho-educational programmes that advances spirit of tolerance, acceptability of one another and equally engage in programmes that involves individual religious belief system.

Like other studies, this present study has some limitations as well. The limitations noted were: One, findings in this study should be generalized with caution due to the following reasons; (1) data might be open to response set because data were collected using self-report questionnaire, (2) the study only made use of 236 participants which may not be enough for generalization. This study only considered two variables and the influence of other variables such as, locus of control and emotional intelligence on pro-environmental behaviours of undergraduates should be considered in future research. Future researchers should also embark on comparative study as this will tell if the independent variables are truly responsible for the antecedent of pro-environmental behaviours among undergraduates in other parts of Nigeria. The interactive role of the dimensions of pro-environmental behaviour on should also be examined.

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