Gender and Age as Determinants of Environmental Perception

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Abstract

Purpose: The main purpose of this study was to determine the extent to which gender and age account for the variations in the environmental perception of tertiary education students in Enugu Geographical Area, Enugu State.

Methodology: Three research questions and two hypotheses guided the study. The study adopted a correlational research design. The study was conducted in Enugu Geographical Area, Enugu State. The population of the study comprised 29,364 tertiary education students in Enugu Geographical Area, Enugu State. The sample size of the study was 760 tertiary education students in Enugu Geographical Area of Enugu State. Multi-stage sampling technique was used to draw the sample size. Structured questionnaire developed by the researcher was used for data collection. The instrument was titled "Environmental Perception Scale" The instrument was validated by seven experts. Cronbach Alpha was used to establish the reliability of the instrument.

Findings: The instrument yielded a reliability coefficient of 0.77. Data collected were analyzed using mean score and standard deviation for research question one while linear regression was used to answer research questions 1-2. Regression ANOVA was used to test the null hypotheses.

Unique Contributor to Theory, Policy and Practice: The findings of the study showed that the tertiary education students have positive perception of their environment in Enugu geographical area; that 46% of variation in students' environmental perception is attributed to students' gender with R value of 0.68 and R^2 value of 0.46 and there is a significant difference between gender and tertiary education students' environmental perception and that 42% of variation in students' environmental perception is attributed to students' age with R value of 0.62 and R^2 value of 0.42 and there is a significant difference between age and tertiary education students' environmental perception. Based on the findings of the study, relevant conclusions were drawn.

Keywords: *Environmental Perception, Gender, Age*

INTRODUCTION

Environmental perception has been adopted as a diagnostic tool since UNESCO's Man and the Biosphere program of 1968, which declared the study of environmental perception as a fundamental tool for the management of places and landscapes. Since the 1970s, it has been recognized that perceptions of individuals must be taken into consideration as a practical approach to solve environmental problems, as individual perception and subsequent concerns regarding environmental challenges are at the heart of environmental management and protection.

Environmental perception is an act of understanding the environment by the senses and has to do with what one is aware of or what one feels about the environment. Mbewe (2016) maintained that environmental perception is a multi-dimensional phenomenon and a transactional process between the person and the environment. Mbewe further asserted that environmental perception is not directly controlled by the stimulus; secondly, it is linked to and indistinguishable from other aspects of psychological functioning; and thirdly, it is relevant and appropriate to specific environmental contexts. Environmental perception is the way in which an individual perceives the environment, and the process of evaluating and storing information received about the environment. Environmental perception is the process in which the sensory experiences of the environment are organized and made meaningful (Umeano, 2012). An individual builds up an understanding of the environment that is closest to him and makes decisions about how to respond and behave therein based on his understanding, previous experiences and memory (Hawcroft & Milfont, 2010). Environmental perception describes the multiple ways in which people receive information from their surroundings, allowing them to know their environment (Gieseking, Mangold, Katz, Low & Saegert, 2014).

The issue of environmental perception is an important research area due to increased environmental degradation from human activities. The environment of Enugu Geographical Area has been subjected to increasing pollution and destruction due to rapid industrial and technological development. The consumption of natural resources for addressing the raw material needs, the ever-increasing production of waste and unintentional human actions end up damaging the environment. More so, developmental needs and growing population of Enugu geographical area have put much pressure on environmental resources such that more often than not this has resulted in mismanagement of resources (Mba, 2018). There are constant reminders about the consequences of not taking action to address environmental challenges such as air pollution, contaminants, climate change, habitat loss, aesthetic devaluation, food shortage among others (Rogarjan & Nebrida, 2019). The public is confronting evidence of the harmful environmental impact of anthropological activities. The concern for the environment are ever growing due to levels of pollution and other waste generation from human activities. This limits the capacity of the natural environment to accommodate the waste and therefore threatens human life (Ifegbesan & Rampedi, 2018). Littering, indiscriminate dumping and stockpiling of waste has been identified

as being serious environmental problem in and around settlements in Enugu geographical area (Mama, Nnaji, Nnam, Opata, 2021). Correspondingly, Jens (2010) also notes that the greatest challenges facing developing countries are unhealthy disposal of waste.

In line with the above, the environment is not being managed the way it should. However, successful environmental management cannot be accomplished without understanding the perception that people have of the environment (Abdulkarim, Yacob, Abdullah & Radam, 2017). When assessing the way people operate within the environment, it is important to look at their perceptions and their actions towards the environment. One needs to understand a person's environmental worldview before one can even attempt to understand and know what influences his or her attitudes and behaviour towards the environment (Lange & Dewitte, 2019). If human behaviour towards the environment is to be changed, it is important to know individuals' environmental perceptions and what shapes these perceptions. Only after understanding the relationships between the perception that people have towards the environment and the factors that influence these perceptions, can one comprehend and improve the public's attitude towards nature (Ahmad, Rahim, Pawanteh & Ahmad, 2012). The changes in perception of individuals are majorly possible with Environmental Education (EE).

Environmental Education is a continuous learning process in which individuals acquire knowledge, skills, values, and experiences in order to improve their perception of the environment. It is the learning process that increases peoples' knowledge and awareness about the environment and its associated challenges, develops the necessary skills and expertise to address environmental challenges and fosters attitudes, motivations and commitments to make informed decisions and take responsible actions towards the environment (Kaya, Gul & Gul, 2012). Environmental Education has been a major vehicle for changing perception, developing awareness and sensitivity about major problems of the environment (Pzmony, 2011). Well-planned Environmental Education that includes practical activities plays an important role in changing individual's perception toward the environment. Having knowledge of the perception of tertiary education students about their environment and how they differ will help to give them an effective Environmental Education.

For the purpose of this study, the tertiary education student's gender and age were considered as the determinants of their environmental perception. Gender is a social construct determined by social norms, culture, attitude, values, tradition, belief and practices. It refers to roles, responsibilities, identities or other qualities attributed to people because they are men or women (Rolleri, 2012a). Gender refers to the roles, behaviours, activities and attributes that a given society at a given time considers appropriate for men and women (Fausto-Sterling, 2012). Gender is the cultural role expected of people which helps in the classification of individuals into male and female. Gender plays a very important role in environmental perception because differences in environmental perceptions between men and women are dependent on the specific

environmental issue under consideration as females or males may be more familiar with certain environmental issue due to their regular contact with them in their livelihoods (Kideghesho & Msuya, 2010).

Male and female tertiary education students' perception of the environment may differ. Studies carried out in the past indicated that environmental perception varied between male and female. Several studies reported that females are more positive and show greater concern towards environmental issues than do males (Yalcinkaya, 2013). Mudombi (2011) found no significant differences based on gender. Paumgarten and Shackleton (2011), found males to have more positive environmental perception than females. There is much controversy surrounding the issue of gender. Lang (2011) argued that females, due to their role in the society have more positive environmental perception while Monus, (2019) argued that males are generally more knowledgeable than women of the use of natural resources. Hence, due to much controversy surrounding the issue of gender and environmental perception, this study sought to find out if the different roles of male and female in the society account for the variations in the environmental perception of tertiary education students in Enugu Geographical Area, Enugu state. Apart from gender, environmental perceptions can differ with age of individuals.

Age is the time elapsed (usually in complete years) between date of birth and a specific point in time usually the date of collection of data. It describes how old a person is at a particular point in time. Tesfai, Nagothu, Simek and Fucik (2016) suggest that young children had more positive perception towards environmental issues than older students. Adejoke, Mji and Mukhola (2014) reported that younger learners had better scores than their older counterparts in terms of environmental perception, knowledge and attitudes. The young are more environmentally concerned than the old. This is probably due to generational and historical cohort differences, as well as to changes in socio-economic position that correspond with aging. Younger people tend to have a more idealistic belief system and are more willing to advocate for the environment, while older people are more inclined to maintain the status quo (Shibia, 2010). It is recommended that investment in environmental education should be at the early stage of children's schooling in order to increase their understandings and knowledge of the environment. Young people's environmental perceptions have shown to be important because they are the ones that will be affected. They can provide alternative solutions to environmental problems arising from present day activities. Today's youth are future scientists, policy-makers, consumers, and voters of a country. Older individuals may also be more concerned about the environment (Shi & He, 2012). Higher age is positively correlated with a higher perceived knowledge of the environment (Witzling, Shaw & Amato, 2015). Hence, due to the inconclusiveness on whether age could account for the variation in environmental perception or not in different areas of study, this study sought to find out if the age of the tertiary education students account for the variations in their perception of the environment of Enugu Geographical Area, Enugu State.

Although pro-environmental policies and management strategies that have been put in place and sometimes implemented, the quality of the environment is still worrisome and deteriorating day by day. Enugu geographical area has been experiencing environmental issues such as indiscriminate dumping and litters of plastics, wastes, household wastes and empties of canned foods and drinks, water and air pollution, congestion, growth of shanties and slums, unplanned streets, flooding, stockpiling of wastes, bush burning, felling of trees among others. This could be as a result of their perception of their environment which could be influenced by their gender and age. Therefore, there is need to find out the extent to which gender and age account for the variations in the environmental perception of the students since environmental perception determine the attitude that either increase or decrease environmental quality in order to solve environmental issues or improve the environmental quality. A good understanding of environmental perception can help predict attitudes and behaviours towards the environment. Environmental perception differs and the different perceptions of the environment to a large extent influences or may account for variances in behaviour, attitude and concern for the environment. Hence, this present study sought to answer the question, to what extent does gender and age determine the environmental perception of tertiary education students in Enugu Geographical Area, Enugu State? In other words, what is the extent to which factors such as gender and age account for variations in the environmental perception of tertiary education students in Enugu Geographical Area, Enugu State?

Purpose of the Study

The main purpose of this study was to determine the extent to which gender and age account for the variations in the environmental perception of tertiary education students in Enugu Geographical Area of Enugu State. Specifically, the study sought to find out the

1. Environmental perception of tertiary education students
2. Relationship between gender and tertiary education students' environmental perception.
3. Relationship between age and tertiary education students' environmental perception.

Research Questions

The following research questions guided this study.

1. What is the environmental perception of tertiary education students?

2. What is the relationship between gender and tertiary education students' environmental perception?

3. What is the relationship between age and tertiary education students' environmental perception?

Hypotheses

The following null hypotheses were formulated to guide the study and were tested at 0.05 level of significance.

1. There is no significant relationship (p<.05) between gender and tertiary education students' environmental perception.
2. There is no significant relationship (p<.05) between age and tertiary education students' environmental perception.

RESULTS

Research Question One: What is the environmental perception of tertiary education students in Enugu geographical area?

Table 1: Mean and standard deviation of the environmental perception scores of tertiary education students in Enugu geographical area

S/N	Item Statement	X	Sd	Decision
1	Urban roads are cleared of solid wastes	2.71	.86	Accepted
2	Plastic wastes are found (litter) everywhere in the town	1.94	.45	Rejected
3	Solid wastes are not sorted at source	2.72	.43	Accepted
4	Household wastes are dumped by roadsides	2.71	.44	Accepted
5	Solid wastes from households are not properly bagged before dumping	2.81	.42	Accepted
6	Transit vehicles generate noise within the area	2.76	.85	Accepted
7	The air in the urban area is clean	1.97	.44	Rejected
8	Solid wastes are cleared daily in all parts of the area	2.81	.44	Accepted
9	Solid wastes emit foul odour in the environment	2.90	.42	Accepted
10	There is increase in traffic problems in the area	2.79	.43	Accepted
11	The urban area is overcrowded	2.78	.45	Accepted
12	Slums develop at the peripheries	2.72	.52	Accepted
13	Traffic hold ups are frustrating	2.66-	.47	Accepted
14	The highest proportion of the wastes generated in the area is from foodstuff	2.65	.55	Accepted
15	Most of the wastes in the area are properly disposed	3.29	.50	Accepted
	Gender Variable Mean and Standard Deviation	**2.71**	**.48**	**Accepted**
	Age Variable Mean and Standard Deviation	**2.64**	**.51**	**Accepted**
	Grand Mean and Standard Deviation	**2.68**	**.58**	**Accepted**

The result in Table 1 shows the environmental perception of tertiary education students in Enugu geographical area. Table 1 revealed that tertiary education students had mean ratings above the criterion mean of 2.50 in items 1, 3-6, and 8-15 which showed that Solid wastes from households are not properly bagged before dumping with 2.81 mean score and 0.42 standard deviation, solid waste are cleared daily in all parts of the area with 2.81 mean score and 0.44 standard deviation, solid waste emit foul odour in the environment with 2.90 mean score and 0.42 standard deviation, and most of the waste in the area are properly disposed with 3.29 mean score

and 0.50 standard deviation among others. However, their mean ratings for items 2, and 7 were below the criterion mean of 2.50 showing that plastic wastes are found littered everywhere in the town with 1.94 mean score and 0.45 standard deviation and the air in the urban area is clean with 1.97 mean score and 0.45 standard deviation.

The grand mean score is 2.68 with standard deviation of 0.58. This indicates that the tertiary education students have positive perception of their environment in Enugu geographical area. This means a slightly greater number of the students tended towards agreeing to the environment being of good state and quality.

Research Question Two: What is the relationship between gender and tertiary education students' environmental perception?

Table 2: Regression analysis of the responses on the relationship between gender and tertiary education students' environmental perception.

Variables	R	R^2
Gender and tertiary education students' environmental perception	0.68	0.46

(R^2) = Coefficient of Determination

The result in Table 2 shows that the correlation coefficient between gender and tertiary education students' environmental perception was 0.68. This means that, there exist a positive high relationship between gender and tertiary education students' environmental perception. Table 2 also revealed that, the coefficient of determination (R^2) associated with the correlation coefficient of 0.68 was 0.46. This coefficient of determination (R^2) indicates that, 46% of variations in students' environmental perception is attributed to gender. This is an indication that 54% of the variations in students' environmental perception is attributed to other factors other than gender.

H0$_1$: There is no significance relationship ($p<.05$) between gender and tertiary education students' environmental perception.

Table 3: Regression ANOVA of relationship between gender and tertiary education students' environmental perception.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.293	1	.293	1.773	.000
	Residual	391.903	758	.155		
	Total	392.195	759			

The result on Table 3 shows that an F-ratio of 1.773 with associated exact probability value of .000 was obtained. This probability value of .000 was compared with 0.05 set as level of significance for testing the hypothesis and it was found to be significant because .000 is less than

0.05 level of significance. Thus, the null hypothesis which stated that; there is no significant relationship between gender and tertiary education students' environmental perception was rejected. Thus, there is a significant relationship between gender and tertiary education students' environmental perception. This significant relationship showed in Table 3 validated the grand mean score of 2.71 with standard deviation score of .48 on tertiary education students' environmental perception based on gender.

Research Question Three: What is the relationship between age and tertiary education students' environmental perception?

Table 4: Regression analysis of the responses on the relationship between age and tertiary education students' environmental perception.

Variables	R	R^2
Age and tertiary education students' environmental perception	0.62	0.42

(R^2) = Coefficient of Determination

The result in Table 4 shows that the correlation coefficient between age and tertiary education students' environmental perception was 0.62. This means that, there exist a positive high relationship between age and tertiary education students' environmental perception. Table 4 also revealed that, the coefficient of determination (R^2) associated with the correlation coefficient of 0.62 was 0.42. This coefficient of determination (R^2) indicates that, 42% of variations in students' environmental perception is attributed to the students' age. This is an indication that 58% of the variations in students' environmental perception is attributed to other factors other than the students' age.

H0₂: There is no significance relationship $(p<.05)$ between age and tertiary education students' environmental perception.

Table 5: Regression ANOVA of relationship between age and tertiary education students' environmental perception.

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	.546	1	.546	3.058	.004
	Residual	450.141	758	.178		
	Total	450.687	759			

The result on Table 5 shows that an F-ratio of 3.058 with associated exact probability value of .004 was obtained. This probability value of .004 was compared with 0.05 set as level of significance for testing the hypothesis and it was found to be significant because .004 is less than 0.05 level of significance. Thus, the null hypothesis which stated that; there is no significant relationship between age and tertiary education students' environmental perception was rejected.

Thus, there is a significant relationship between age and tertiary education students' environmental perception. This significant relationship showed in Table 5 validated the grand mean score of 2.64 with standard deviation score of .51 on tertiary education students' environmental perception based on age.

Discussion of Findings

The result of the study in respect to research question one showed the environmental perception of tertiary education students in Enugu geographical area. The responses of the respondents showed that Solid wastes from households are not properly bagged before dumping, solid waste are cleared daily in all parts of the area , solid waste emit foul odour in the environment and most of the waste in the area are properly disposed among others. The grand mean score is 2.68 with standard deviation of 0.58. The aggregate or grand mean of 2.71 out of 4.00 was slightly high in positive direction from 2.50 mean benchmark. 4.00 mean score represents a perception that the environment is of very good quality while 1.00 indicates a perception that the environment is of very poor quality. So, on the average, the tertiary education students perceived their environment to be of slightly good quality. The standard deviation is high meaning that the variance in perception is high. Many feel the environment to be poor whereas a little more people feel it is of good quality. This implies that the tertiary education students have positive perception of their environment in Enugu geographical area. This finding supported the earlier findings of Li (2018), Boca and Saracli (2019), Erhabor and Don (2016), Rey, Ojeda, Mora-Merchan, Sanchez-Diaz, Morgado and Lasaga (2022) who found out in their respective studies that students have positive perception towards their environment. This positive perception could be accounted for by the infusion of the environmental related contents in different teaching subjects (Kimaryo, 2011) especially at the senior secondary school level and early university courses such the general studies courses like natural studies, social sciences, humanities among others.

The finding of the study with respect to research question two showed that 46% of variation in students' environmental perception is attributed to students' gender and there is a significant relationship between gender and tertiary education students' environmental perception. The result in Table 2 shows that the correlation coefficient between gender and tertiary education students' environmental perception was 0.68. This means that, there exist a positive high relationship between gender and tertiary education students' environmental perception. Table 2 also revealed that, the coefficient of determination (R^2) associated with the correlation coefficient of 0.68 was 0.46. This coefficient of determination (R^2) indicates that, 46% of variations in students' environmental perception is attributed to gender. This is an indication that 54% of the variations in students' environmental perception is attributed to other factors other than gender. Therefore, gender could account for the variations in students' environmental perception to a moderate extent.

For the hypothesis one, the result in Table 3 shows that an F-ratio of 1.773 with associated exact probability value of .000 was obtained. This probability value of .000 was compared with

0.05 set as level of significance for testing the hypothesis and it was found to be significant because .000 is less than 0.05 level of significance. Thus, the null hypothesis which stated that; there is no significant relationship between gender and tertiary education students' environmental perception was rejected. The grand mean of 2.71 out of 4.00 was slightly high in positive direction from 2.50 mean benchmark. 4.00 mean score represents a perception that the environment is of very good quality while 1.00 indicates a perception that the environment is of very poor quality. So, on the average, the tertiary education male and female students perceived to be of slightly good quality. The standard deviation is high meaning that the variance in perception is high. Some male and female students see the environment to be poor whereas little more male and female students feel it is of good quality. Thus, there is a significant relationship between gender and tertiary education students' environmental perception. This finding was in support of the earlier findings of Gokmen (2021) and Katoch (2017) who found out that students' gender has significant relationship with students' environmental perception. Similarly, Yilmaz and Erkal (2017) and Sana, Brouwer and Hien (2017) found out in their respective studies that students' gender has significant relationship with students' environmental perception. The agreement between the present finding and the previous findings is an indication that students' environmental perception can be determined by their gender. In other words, there is a significant relationship between gender and tertiary education students' environmental perception. Such a gender difference is commonly attributed to traditional gender socialization. Women are socialized to be caregivers, nurturers and home managers, a process that generates a 'motherhood mentality' and extends to the development of a proactive attitude towards nature, while men are expected to be the main economic provider for the family, a role that creates a 'marketplace mentality' and that causes men to place a greater value on economic success than on the environment.

The finding of the study with respect to research question three revealed that the correlation coefficient between age and tertiary education students' environmental perception was 0.61. This means that, there exist a positive high relationship between age and tertiary education students' environmental perception. Table 4 also revealed that, the coefficient of determination (R^2) associated with the correlation coefficient of 0.62 was 0.42. This coefficient of determination (R^2) indicates that, 42% of variation in students' environmental perception is attributed to the students' age. This is an indication that 58% of the variation in students' environmental perception is attributed to other factors other than the students' age. Therefore, age can account for the variations in students' environmental perception to a moderate extent.

For the hypothesis two, the result on Table 5 shows that an F-ratio of 3.058 with associated exact probability value of .004 was obtained. This probability value of .004 was compared with 0.05 set as level of significance for testing the hypothesis and it was found to be significant because .004 is less than 0.05 level of significance. Thus, the null hypothesis which stated that; there is no significant relationship between age and tertiary education students' environmental perception was

rejected. The aggregate or grand mean of 2.64 out of 4.00 was slightly high in positive direction from 2.50 mean benchmark. 4.00 mean score represents a perception that the environment is of very good quality while 1.00 indicates a perception that the environment is of very poor quality. So, on the average, the tertiary education students perceived to be of slightly good quality notwithstanding their age. The standard deviation is high meaning that the variance in perception is high. Many feel the environment to be poor whereas a little more people feel it is of good quality. The researcher therefore, concludes that there is a significant relationship between age and tertiary education students' environmental perception. This finding agreed with the earlier findings of Shibia (2010), Shabu and Uchi (2013) and Mbewe (2016) who found out that age has significant relationship with students' environmental perception. Similarly, this finding agreed with the findings of Pantavou, Lykoudis and Psloglou (2017) and Shi and He (2012) who found out that age has significant relationship with students' environmental education. In other words, there is a significant relationship between age and tertiary education students' environmental perception. The older respondents have more positive environmental perception than the younger one. This could probably be that the young people still need to be educated regarding environmental issues.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The tertiary education environmental educators should intensify the teaching of Environmental Education in schools and environmental related contents in their different discipline in addition to outdoor activities that raise environmental awareness so as to sustain the positive views of the tertiary education students towards their environment otherwise, the perception of the tertiary education students may begin to decrease over time. More comprehensive Environmental Education should be applied to all students, this is because they are future leaders who will be later involved in decision making. Their decisions and actions will determine the status of the environment in the future.

2. The implementation of environmental education should be combined with activities that will improve the students' environmental perception and that suitable for their physical and psychological structures irrespective of their gender. Otherwise, the significance variations in the environmental perception of male and female students may continue. In other words, recreation activities that include excitement and adventure should be planned and implemented, and their effects can be observed.

3. An early start of Environmental Education is critical for students to develop a positive perception towards the environment in the later stages of life and to raise them as responsible individuals. Also, teachers of environmental related contents especially in tertiary education level should always diversify teaching strategies bearing in mind that their students are of different age brackets. This will enable students of different ages to

have better understanding and perception of their environment otherwise, the significance variations in the environmental perception of students based on age may continue.

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CONCLUSION

Based on the major finding and discussions of this study, it was concluded that tertiary education students have positive perception of their environment. Also tertiary education students' environmental perception is significantly positively related to their gender and age.

Furthermore, it was also concluded that the way students perceive the quality of their environment depends or is determined to a moderate extent by their gender (46%) and age (42%).

The study also concludes that the highest determinant among the factors explored in this study is gender (46%) followed by age (42%).

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