



### **CLIMATE CHANGE AS CORRELATE OF MENTAL RETARDATION AND ACADEMIC PERFORMANCE OF SECONDARY SCHOOL STUDENTS IN EBONYI STATE: COUNSELLING IMPLICATION**

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**N.G Dibia**

Department Of Psychology And Counselling Michael Okpara University of Agriculture Umudike  
nekechidibia@yahoo.com, 08038897503

**Ibelegbu, Justice C**

Department Of Psychology And Counselling Michael Okpara University Of Agriculture Umudike.  
necherejustice@gmail.com, 07031093819

#### **Abstract**

This study investigated climate change as a correlate of mental retardation and academic performance of secondary school students in Afikpo Education zone of Ebonyi State. A correlational research design was used for the study. Two research questions guided the study and two null hypotheses were posed and tested at 0.05 level of significance. The target population consisted of 12,763 students in 43 public and 71 private secondary schools in Afikpo Education zone (Owan, Bassey&Ekpe, 2020). A sample of 1274 students was selected through simple random sampling technique using caroyamen method of estimating sample size and was used for the study. Two self-structured questionnaires titled: Climate Change and Mental Retardation Questionnaire (CCMRQ) and Climate Change and Academic Performance Questionnaire (CCAPQ) were developed, validated and used for the study. The internal consistency reliability of the instruments were calculated using cronbach Alpha procedure and reliability estimate of 0.75 and 0.70 were obtained for CCMRS and CCAPS respectively. Data obtained through the administration of the two instrument were analyzed using mean and standard to answer the two research questions while Pearson Product Moment correlation was used to test the null hypotheses at 0.05 level of significance which revealed the following findings; that climate change effect can lead to mental retardation of secondary school students. Climate change can also lead to poor academic performance of students. A major counselling implication of the study is that counselors should constantly organize guidance and counselling programmes for the students on climate change, in order to acquaint them with information on the subject matter. This will help to widen their awareness on climate change. It was recommended that government should employ measures that will help in controlling ozone layer depletion, such as afforestation and control of green house gases (GHGs). The use of chlorofluorocarbons (CFC) should be discouraged and alternative sought for.

#### **Keywords**

#### **Introduction**

The recent change in the global climatic condition has become a source of worry to different sectors of the world. This is so because, it has adversely affected the economic, political, educational, health, and other sectors. Climate change is the changing of weather patterns primarily as a result of the increase in carbon pollution in the atmosphere (Balbus, Crimmins, Gamble, Easterling, Kunkel, & Sarofim, 2016). According to

them, these changes alter weather patterns which include rising temperatures, heavy rains and droughts, and some other kinds of severe weather. Francis (2014) noted that climate change is the latest challenge to sustainable human development. It may have negative impact on a nation's effort to achieve her developmental goals. The author saw climate change as a change in the statistical properties of the climate system. It includes changes in the earth's weather, including

changes in temperature, wind, etc. Consequently, the author suggested that climate change be taught even at secondary school level, in order to acquaint the students with adequate knowledge of climate change which will in the end enhance their school adjustment.

There is evidence that climate change is taking place in Nigeria. All the countries within Sub-Saharan Africa, including Nigeria are highly vulnerable to the impact of climate change (Building Nigerians Response to Climate Change – BNRCC Project, 2011). Climate change is therefore a global phenomena which requires both national and international approach, and indigenous knowledge. Ebele and Emodi (2016) opined that Nigerian's climate has been changing which is evident in increase in temperature, variable rainfall, rise in sea level and flooding, drought and desertification, land degradation, more frequent extreme weather events, affected fresh water resources and the lots of biodiversity. They added that the impact of climate change cut across ethnic, religious, national and international borders and as such, affects global sustainable development, livelihood and man's ability to live together on earth. Climate change is one of the most important environmental issues facing the world today. Currently, there is a general notion in the scientific community and even among decision makers that climate change is a reality and the impact is here with us. Ekpoh and Ekpoh (2011) noted that climate change is any long time change in the pattern of the average weather of a specific region or the earth as a whole. It is an abnormal variation in the earth's climate that usually occur over durations ranging from decades to millions of years.

Evidence shows that global mean temperature increased by 0.60c during the 20<sup>th</sup> century, with the six (6) hottest years occurring between 1997 and 2007 (IPCC, 2014). This according to them was linked to higher concentration of carbondioxide and other green house gases (GHGs) in the atmosphere which are dominantly antropogenic origin, such as fossil fuel combustion, land use and deforestation (Ekpoh&Ekpoh, 2011). Climate change phenomenon has serious deleterious consequences for the earth in the form of significant variations in climate, recurrent drought, excessive heat waves, wind storms, killer floods etc. The researchers saw climate change as any alteration in climatic condition over a period of time, as a result of human activities or nature. Human activities and nature are

two major factors that affect climatic condition. Human activities like, deforestation, improper land use, combustion like fossil fuel combustion etc. Nature includes, changes in the ozone layer and other changes that are not man made. Climate change comes with consequences such as intense thunder storms, wide spread floods and incessant drought.

Ogbuabor and Egwuchukwu (2017) observed that climate change impact pose serious danger with so many consequences on the Nigerian economy. According to Ogbuabor et al (2017), extreme weather events such as flood can undermine economic growth through production and infrastructure loses and the need for extra ordinary spending. These impacts could lead to food security challenges and damage to infrastructure. Social dislocation and health challenges such as chronic heat rashes, cerebra-spinal meningitis, stroke, malaria, mental retardation and other related diseases are linked to climate change impacts (Osuafor and Nnorom, 2014). These factors can affect the mental functioning of students and hence, their academic performance. This is so because anything that affects the general health or mental health of individuals affect their performance. Mental retardation is a commonly used term but has no generally accepted definition. This is so because efforts have been made to find definition that will disassociate it from negative perception of affected individuals but still maintain the originality in meaning. Moreso, there has never been an instrument used in measuring the degree of mental retardation in affected individuals.

Nwakwo (2018) saw mental retardation as a serious disorder of childhood, which progresses into adult life and interferes with the intellectual and social functioning of the adult. In mental retardation, the overall intellectual functioning of the individual is below normal and the problem starts very early in the course of human development. The adaptive social skills and learning capability of the individual is adversely affected. From the foregoing, there are deficiencies in the intellectual functioning and social skills of a mentally retarded individual, however, for a problem to be recognized or diagnosed as mental retardation, certain intellectual deficits should be identified. For instance, the general, not specific intellectual functioning should be significantly below average, defective intellectual functioning is poor adaptive skills to academic and social situations. These problems are easily noticeable during the early developmental

periods.

Contributing, Uzoka (2018) saw mental retardation as a situation where the intellectual ability of a child is far below that which can enable him operate in a normal class among children of the same age range. Mental disorder can be defined by level of intelligence quotient (IQ), level of maladaptive behaviour, and state of the mind (Uzoka, 2018). It may be observed at birth and manifest during the child's developmental stage (Nwakwo, 2018). From the foregoing, the researchers see mental retardation as a maladaptive behaviour which affects the proper functioning of an individual, both intellectually and socially. Mental retardation is first seen at childhood developmental stage and can progress into adulthood. The effect of mental retardation on the individual could be disturbing as it affects virtually all areas of his life. The researchers are of the opinion that mental retardation could be properly managed to be reduced or prevented by counselling the mentally retarded and also organizing seminars on how it could be prevented. Nwankwo (2018), noted that mental retardation can be prevented, this could be achieved, according to him, by understanding the factors causing mental retardation. In developed countries such as America and developing countries like Nigeria, mental retardation with known organic causes is prevented, but for majority of the cases in which the aetiology is not known, prevention still remains a problem.

Prevention strategies could be directed to both the victims, especially those identified with mild and moderate mental retardation and their parents, especially the mothers. Moreso, those prone to mild and moderate mental retardation are identified early and training is given to them before they actually become retarded. Four categories of mental retardation according to American Association of Mental Deficiency (1973) and the latest edition (third) of the Diagnostic and Statistical Manual of Mental Disorders, DSM-111 of 1980 In Nwankwo (2018) include, mild mental retardation (IQ 50-70), Moderate mental retardation (IQ 35-49), severe mental retardation (IQ 20-34) and Profound mental retardation (IQ below 20). The group that fell on mild mental retardation has the highest percentage of all the mentally retarded, because their cases are mild. Nwankwo (2018) noted that this group are not usually distinguishable from normal children until they enter school where some of their deficiencies especially in academic skills and interpersonal relationship begin to rear up. However,

the moderate mental retardation are associated with brain damage. This results when the nerve centres in the brain are badly affected. This may result in defective motor skills, such as grasping and fine finger movements. Moreso, in some severe cases, walking, running, throwing and catching may be adversely affected. Additionally, a child with mild or moderate mental retardation may get worse in severe weather conditions like excessive heat and consequently may affect his academic performance. Moderate mental retardation associated with brain damage-excessive heat may lead to brain damage.

Severe mental retardation often times come with physical abnormalities and limited sensorimotor control. However, profound mental retardation has the lowest percentage and they are deficient in adaptive and self-help behaviours like walking, talking, feeding etc. Uzoka (2018) observed that mentally retarded individuals are deficient, mostly in general intellectual functioning. Nwankwo (2018) agreed with Uzoka, however, added that a few may show some remarkable ability in certain areas of their life than in others. Nwankwo also noted that in some occasions, mentally retarded individuals show high level skill in a specific aspect of behaviour that does not depend on abstract reasoning. So many factors have been observed to cause mental retardation, Uzoka (2018), environmental factors, among others as the causative factors of mental retardation.

The environmental factors like postnatal environmental factors which occur as a result of accidents like head injury or infections such as tuberculosis, meningitis, severe exposure to lead and under stimulation of the environment. Uzoka (2018) added that radiation from the sun can lead to brain damage. This radiation from the sun is always high during excessive weather condition which most times is occasioned by climate change. Nwankwo (2018) noted that apart from the above mentioned factors, environmental hazards like strong radiation could lead to mental retardation. Consequently, the author added that strong radiation has tremendous deleterious effect on body cells including sex cells, tissues and other organs of the body. Mental retardation among a great percentage of the world population today has been attributed to the increasing use of chemical weapons and ballistic missiles in warfare situation. Severe weather conditions can affect the brain or intellectual activities of a student. When the weather is too hot, it may affect a child's concentration level and

thereafter affect his academic performance. Otitoju and Enete (2016) observed that climate change can adversely affect efficiency, productivity and performance.

Academic performance is the outcome of students in an academic situation. The researchers' see academic performance as the academic scores of the students which show their academic achievement in a learning situation.

From the literatures reviewed, there is a pointer that environmental factors can result to mental retardation. More so, the possibility existsthat climate change which results partly from man's interaction with his environmentmay lead to mental retardation and hence affect the academic performance of secondary school students. For instance, when there is extreme heat or cold the student's body system may be disorganized, including his mental functioning and as such may affect their academic performance. Recently in Ebonyi State, the degree of hotness as a result of severe radiation of heat from the sun is high. Additionally, during cold seasons, the coldness in Ebonyi state is also much more compared to what has been.Uroko (2018) Observed that some examination bodies such as EDC, WAEC, and NECO, have recently reported the low performance of students in their various examinations. The researchers' concern is: can these changes in the climatic condition cause mental retardation and as such affect the academic performance of students in Ebonyi State?

### **Purpose of the Study**

The major purpose of this study is to find out if climate change can lead to mental retardation and also affect the academic performance of secondary school students in Ebonyi State.

### **Objectives of the Study**

Specifically, the study sought to:

- i. Find out the relationship between climate change and mental retardation among secondary school students in Ebonyi State.
- ii. Find out the relationship between climate change and academic performance among secondary school students in Ebonyi state.

### **Research Questions**

The following research questions were raised in order to achieve the objectives of the study:

- i. What is the relationship between climate change and mental retardation of

secondary school students in Ebonyi State?

- ii. What is the relationship between climate change and academic performance of secondary school students in Ebonyi State?

### **Research hypotheses**

Two null hypotheses were formulated and tested on 0.05 level of significance. They include:

Ho1 there is no significant relationship between climate change and mental retardation among secondary school students in Ebonyi Sate

Ho2 there is no significant relationship between climate changeandacademic performance among secondary school students in Ebonyi State.

### **Method**

The research design adopted for this study was a correlational research design. This is because it seeks to establish a relationship and association between two or more variables that do not readily lend themselves to experimental manipulation. The population comprised 12,763 students in 43 public and 71 private secondary school in Afikpo Education zone (Owan, Bassey&Ekpe, 2020). A sample of 1,274 respondents was selected through simple random sampling technique using caroyamen method of estimating sample size and was used for the study. The instruments used for data collection were self-designed by the researchers, they are: Climate Change and Mental Retardation Questionnaire (CCMRQ) and Climate Change and Academic Performance Questionnaire (CCAPQ). The instruments were made up of a total of 20 content items, 10 items each in both instruments. It adopted a four point modified type scale model of 4 (Strongly Agreed) 3 (Agreed) 2 (Disagreed) and 1 (Strongly Disagreed). The items included both positive and negative items and they were validated by three experts in the Department of Psychology and Counselling, College of Education, Michael Okpara University of Agriculture, Umudike. The simple test method was used to ascertain the reliability of the instrument and the data obtained were analysed using Cronbach Alpha procedure and yielded a correlation coefficient of 0.75 and 0.70 respectively for CCMRS and CCAPS.

A total of 1274 copies of questionnaires were administered to the participants. The questionnaires were administered by hand with the help of 21 trained research assistants and all the copies were returned. The data obtained from data collectionwere analysed using Pearson Product



Moment Correlation Coefficient. The hypotheses were also tested with Pearson Product Moment Correlation Coefficient at 0.05 level of significance.

**Results**

**Research Question One**

What is the relationship between climate change and mental retardation of secondary school students in Ebonyi State?

**TABLE 1: PEARSON PRODUCT MOMENT CORRELATION ANALYSIS OF CLIMATE CHANGE AND MENTAL RETARDATION OF EBONYI STATE SECONDARY SCHOOL STUDENTS**

Variables	N	X	SD	DF	r-cal	r-crit	Level of sig.	Deci.
Climate Change	1274	19.52	4.56	974 0	.1980	.062	0.05	Sign.
Mental Retardation	1274	15.29	3.23					

In table 1, the 'r' calculated value of 0.198 was greater than the critical value of 0.062. Hence, the null hypothesis was rejected. Since the computed correlation coefficient is greater than zero ( $r > 0$ ), it is an indication of positive linear relationship between climate change and mental retardation, and individuals' scores did not vary on both variables. This implies that there was a significant relationship between climate change and mental retardation among secondary school students in Ebonyi state.

**Research Question Two**

What is the relationship between climate change and academic performance of secondary school students in Ebonyi State?

**TABLE 2: PEARSON PRODUCT MOMENT CORRELATION ANALYSIS OF CLIMATE CHANGE AND ACADEMIC PERFORMANCE OF EBONYI STATE SECONDARY SCHOOL STUDENTS**

Variables	N	X	SD	DF	r-cal	r-crit	Level of sig.	Deci.
Climate Change	1274	21.30	5.25	974	0.1990	.061	0.06	Sign.
Academic Performance	1274	13.51	2.54					

In table 2, the 'r' calculated value of 0.199 was greater than the critical value of 0.061. Hence, the null hypothesis was rejected. Since the computed correlation coefficient is greater than zero ( $r > 0$ ), it is an indication of positive linear relationship between climate change and academic performance, and individuals' scores did not vary on both variables.

This implies that there was a significant relationship between climate change and academic performance of in-school adolescents in Ebonyi state.

**Hypothesis one**

There is no significant relationship between climate change and mental retardation among secondary school students

**Table 3: Correlation of climate change and their mean mental retardation score of students.**

Variables	N	Climate change	Mental Retardation	Sig.
Climate change	1274	1	.333**	.000
Mental Retardation	1274	.333*	1	

\*\*Correlation is significant at the 0.01 level (2-tailed). A Pearson Product – Moment correlation was run to determine the relationship between climate change and students' mental retardation. The data showed no violation of linearity. There was a positive correlation between climate change and students' mental retardation which was statistically significant ( $r=.333, n=1274, p<.005$ ). Thus we reject the null hypothesis which states that there is no significant relationship between climate change and

mental retardation among secondary school students and conclude that a relation exist between both variables.

**Hypothesis Two**

There is no significant relationship between climate change and academic performance among secondary school students

**Table 3:** Correlation of mean climate change and academic performance score of students.

Variables	N	Climate change	Academic Performance	Sig.
Climate Change	1274	1	.640**	.001
Academic Performance	1274	.640*	1	

\*\*Correlation is significant at the 0.01 level (2-tailed). A Pearson Product – Moment correlation was run to determine the relationship between climate change and students' academic performance. The data showed no violation of linearity. There was a positive correlation between climate change and students' academic performance which was statistically significant ( $r=.640, n=1274, p<.005$ ). Thus we reject the null hypothesis which states that there is no significant relationship climate change and academic performance among secondary school students and conclude that a relation exist between both variables.

**Discussion of findings**

**Relationship between climate change and mental retardation**

Table 1 revealed that changes in the climatic condition can affect the mental functioning of students. Some changes in the climate like, hot weather, strong wind, heavy rainfall and severe cold

can result in mental retardation. This findings is in agreement with Ekpoh and Ekpoh (2011) who observed a correlation between climate change and mental retardation. The authors noted that climate change can lead to excessive heat waves which will consequently result in mental retardation. However, this findings disagreed with Ogbuabor and Egwuchukwu (2017) who did not observe any correlation between climate change and mental retardation but noted that changes in the climate can result in mainly economic challenges. Additionally, the findings of this study is supported by Nwankwo (2018) who revealed that climate change can result in mental retardation. He noted that strong radiation as a climatic factor can lead to mental retardation. The corresponding hypothesis revealed that there was a significant relationship between climate change and mental retardation of secondary school students in Ebonyi State. There was a positive correlation between climate change and mental retardation of students. The relationship is

statistically significance at .000 level of significance.

### **Relationship between climate change and academic performance**

Table 2 reviewed that climate change affect the academic performance of students. Students were found to perform poorly in academics under severe weather conditions like extreme heat, extreme cold, hot sun, thunder storm etc. This result is in line with Nwankwo (2018) who noted that the intellectual functioning of an individual can be adversely affected by environmental factors like strong radiation from the sun. The study also agreed with Otitoju and Enete (2016) who observed that climate change can adversely affect efficiency, productivity and performance. Moreso, the corresponding hypothesis established a relationship between climate change and academic performance of secondary school students. There was a positive correlation between climate change and mental retardation of students. The relationship is statistically significance at .001 level of significance.

### **Conclusion**

This study investigated climate change as correlate of mental retardation and academic performance of secondary school students in Ebonyi State. From the findings, the researchers' found out that:

- Climate change is a correlate of mental retardation of secondary school students. Climate change, for instance, extreme hot weather, thunder storm, radiation from the sun, extreme cold weather and heavy rainfall can lead to mental retardation of students.
- The study also revealed that there is significant relationship between climate change and academic performance of secondary school students.

### **Counselling Implication**

The findings of this study highlights the need for counselors to constantly organize guidance and counselling programmes for the students on climate change, in order to acquaint them with information on the subject matter, so as to widen their awareness on climate change. This will help the students to adjust and also avoid activities that could lead to depletion of the ozone layer. Moreso, the teachers, parents and the general public could also be involved in such guidance programmes, this will help in taking the climate change awareness message to different homes, reaching more students and also the general public.

### **Recommendations**

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

1. Government should employ measures that will help to control ozone layer depletion, such as afforestation and control of green house gases (GHGs). The usage of chloroflourocarbons (CFC) should be discouraged and alternative sought for.
2. Administrators, Policy makers and other stakeholders in education should incorporate climate change as a subject in our secondary schools. This will go a long way in creating more awareness on the subject matter and consequently reduce its negative effects on the students.
3. The school authorities should encourage the students to always seek professional help from the school counselors who will assist them in overcoming most the negative effects of climate change.
4. Researchers should research more on climate change, its impact and possible ways of ameliorating the negative effects on the society

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