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Understanding The Factors Influencing Sexual Molestation Among Adolescents In Nigeria

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Abstract: ***This is a cross-sectional study using an empirical approach to determine relationships that may exists between identified explanatory variables and sexual molestation among adolescents in Nigeria. The data was obtained from a survey, which was administered to students in a secondary school in Northern Nigeria. There are 246 observations in the study, in which variables were classified as discrete. The dependent variable was observed to be ordinal, while explanatory variables were either ordinal or nominal. The use of a likert scale ranging from either 1 to 6 or 1 to 4 was used in measuring the variables. The study used an ordered logit model to estimate the parameters, which assumes equal proportionality among the observed categories. The model indicated that 3 out of 8 explanatory variables were statistically significant in explaining sexual molestation in the given population. The estimated model was tested to validate the assumptions of the ordered logit model. An example of such test is the Brant test. The study concludes by providing recommendations to reduce the incidence of sexual molestation in the given population.***

I. INTRODUCTION

It is unclear how many Nigerians have been sexually molested in total, but it is suggested that a significant number of sexual molestation cases occur between the ages of 0.9 to 19 years. It has been suggested also that, there is a delay in reporting sexual molestation cases until adulthood, if at all they are even reported. As to why there is a delay in reporting is a discussion for another research project. Nigeria's projected population for 2017 is slightly above 190 million, and it is estimated about 50% are children below the age of 18 years [2]. This statistic may indicate the possible magnitude of sexual molestation cases in Nigeria. It is therefore imperative to understand what factors may be related to sexual molestation among adolescents, since the general number of victims may be unknown. Recent studies conducted by the National Population Commission of Nigeria provide some insights into the magnitude of sexual molestation/abuse. Some of these insights are as follows;

Female	Male
1 in 6 girls experience sexual violence	1 in 12 boys experience sexual violence
1 in 10 girls experience unwanted sexual touching	1 in 13 boys experience unwanted sexual touching
64.1% of sexually abused girls experience multiple incidents of sexual abuse.	76% of sexually abused boys experience multiple incidents of sexual abuse
Between ages 14-15, 1 in 3 girls experience sexual violence	Between ages 14-15, 1 in 3 boys experience sexual violence
0.8% of girls receive goods or favours in exchange for sex	1.0% of boys receive goods or favours in exchange for sex
1 in 10 girls is being abused by a family member	1 in 31 boys is being abused by a family member
1 in 8 girls is being abused by a stranger	Boys are rarely abused by a stranger
1 in 5 cases of child sexual abuse occurs in the girl's home	1 in 3 cases of sexual abuse occurs in the boy's home
Half of sexual abuse cases occurs in the afternoon.	1 in 2 cases of sexual abuse occurs in the afternoon

Table 1: Statistics on the incidence of sexual abuse among Nigerian Adolescents

As Table 1 illustrates, the incidence of sexual molestation varies between genders but invariably poses a significant threat to all adolescents in Nigeria. The objective of this research paper is to identify factors that may influence sexual molestation. The study attempts to answer the question, what factors are directly and positively related to the incidence of sexual molestation among adolescents in Nigeria?

II. SCOPE AND METHODOLOGY

This research paper is primarily an empirical study, using cross-sectional data obtained from a survey, administered to students of a public secondary school in northern Nigeria. This already present itself as a limitation of the study, as it is not representative of all adolescents in Nigeria. Despite this, there are useful insights that will be drawn from the ensuing analysis. The total number of observations is 246, obtained from a non-random process. The non-random process included convenience and purposive sampling techniques. These sampling techniques were employed for the following reasons; to reduce research time frame, availability of willing respondents and the age group (i.e. it was most likely to find adolescents between the ages of 13 and 19 in the chosen secondary school). The survey was administered in a single day, and made use of questionnaires which were filled anonymously by the research subjects. Because the research is qualitative, the questionnaires relied on a Likert scale between 1 and 6 to measure most of the variables. Some of the variables were measured as follows; 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, and 6=Strongly Agree. The dependent variable which is sexual molestation (SM), was measured using a Likert scale between 1 and 6, which makes it a discreet variable. In addition, the dependent variable (SM) is an ordinal variable being that ranking is intrinsic in its measurement, with 1=Not applicable being the least and 6=strongly agree being the greatest value. Not all variables followed an ordinal classification, some explanatory variables are nominal and were measured using a likert scale between 1 and 4. In light of this, the research makes use of an ordered logit model, which is also known as the proportional odds model to estimate the relationship between the dependent variable (SM) and the explanatory variables. The ordered logit model assumes that the distance between the measurements values of the ordinal discreet variable are proportional. This assumption was tested using the Brant test. Although, conventionally not acceptable, a multi-linear regression following the ordinary least squares model (OLS) was also used to estimate possible relationships between the dependent and explanatory variables. In using the OLS we assume the dependent variable is continuous.

In measuring the sexual molestation, the respondents were asked if their body had been touched inappropriately at any time by any individual. The respondents were expected to respond according to the likert scale of 1 to 6, which was assumed to indicate the degree to which they might have experienced such behaviour.

The survey measured a total of eight potential explanatory variables for sexual molestation and they are; Religion, Income Level, family size, low self-esteem, trust level, inability to disclose incident, sex education and access to health care facilities. These variables are qualitative variables and follow the Likert scale of measurement, thereby making them also discreet variables. The expected effects of these explanatory variables on sexual molestation, and why they were chosen are as follows;

- ✓ Religion: This variable is nominal and was measured using a Likert scale of 1 to 4. Where 1=Christian, 2=Muslim, 3=Traditionalist and 4=Atheist. Respondents were asked to indicate what category they belonged to. It is expected that religion will have a positive effect on sexual molestation, or the presence of religion will increase the odds of higher category of sexual molestation. This is because religion is an important element in Nigerian culture, as a significant number of individuals are either Christian, Muslim or traditionalist. Religion has always had a significant influence on the everyday life of the average individual, from politics all the way to sports. This is evident by the number of worship centres present. There is at least one worship centre in every neighbourhood. This variable is denoted by 'Rel' in this research paper.
- ✓ Income level: This variable is also nominal and was measured using a Likert scale of 1 to 6. The unit of measurement was the Nigerian naira, which had a dollar exchange rate of $1=N180, at the time of the study. Where 1=0 to 100 Naira, 2=150 to 500 Naira, 3=550 to 1000 Naira, 4=1050 to 1500 Naira, 5=1600 to 5000 Naira and 6=above 5000 Naira. Respondents were asked to indicate how much their daily income was. It is expected that income level will have a negative effect on sexual molestation. This is because a significant number of Nigerians live under the poverty line, and income level many times determines an individual's standard of living. Standard of living may suggest access or in-access to circumstances leading to sexual molestation. It is therefore expected that a higher standard of living may reduce the incidence or the probability of having of having high degrees of sexual molestation. This variable is denoted by 'Inc'.
- ✓ Family size: This variable is nominal and was measured using a Likert scale of 1 to 4. Where 1=3 to 5, 2=6 to 10, 3=11 to 20 and 4=20 and above. Respondents were asked to indicate the number of people in their nuclear family. It is expected that family size will have a positive effect on sexual molestation, or a larger family size will increase the probability of higher categories of sexual molestation. This is because a larger family size may reduce the amount of attention given to an adolescent, thereby encouraging neglect. Neglect may make adolescents vulnerable to external influences, such as negative sexual advances, because they are in search of love or attention. Furthermore, Table 1 shows that both males and females are sometimes molested by family members. This indicates that there might be a greater incidence of sexual molestation with a larger family size. Family size is denoted by 'familySZ'.
- ✓ Low Self-Esteem: This variable is nominal and was measured using a Likert scale of 1 to 6. Where 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral,

5=Agree, and 6=Strongly Agree. Respondents were asked to indicate if they felt beautiful enough. It is expected that low self-esteem will have a positive effect on sexual molestation, or higher degrees of low self-esteem will increase the probability of higher categories of sexual molestation. This is because low self-esteem influences several behavioural patterns among adolescents globally. Adolescents are at the period where their brains are still growing physically and cognitively. It is at the adolescent period many adults form opinions about themselves, especially regarding their self-worth. Self-esteem is therefore an appropriate evaluation of self-worth. We can infer from this assumption that if an individual has poor evaluation of themselves they are more likely to be vulnerable to negative influences such as sexual molestation. Sexual predators may exploit this vulnerability. With the introduction of social media and cyber bullying, self-esteem is a prominent element to adolescent development in present day. It is denoted by 'lowselfE'.

- ✓ Level of trust: This variable is nominal and was measured using a Likert scale of 1 to 6. Where 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, and 6=Strongly Agree. Respondents were asked to indicate how much they trusted individuals in their school, places of worship, health centres, and neighbourhood. It is expected that level of trust will have a positive effect on sexual molestation, or higher degrees of level of trust will increase the probability of higher degrees of sexual molestation. This is because often times, adolescents are molested by people they know. Could their level of trust for people around them make them more or less vulnerable? Trust represents access to an individual's emotions and may signal the level of activity one person has with another. This variable is denoted as 'trustL'.
- ✓ Inability to disclose incident: This variable is nominal and was measured using a Likert scale of 1 to 6. Where 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, and 6=Strongly Agree. Respondents were asked to indicate if they would not un-anonymously report an incidence of sexual molestation due to fear of being embarrassed, not being believed and violent retribution. It is expected that inability to disclose incident will have a positive effect on sexual molestation, or higher degrees of the inability to disclose incident will increase the probability of higher degrees of sexual molestation. This is because victims often report incidences in adulthood, when it is sometimes too late. This could be as a result of shame, guilt or a number of other factors. This variable is denoted by 'discA'.
- ✓ Sex Education: This variable is nominal and was measured using a Likert scale of 1 to 6. Where 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, and 6=Strongly Agree. Respondents were asked if they received sexual education from parents, school, friends or media. It is expected that sex education will have a negative effect on sexual molestation, or higher degrees of sex education will increase the probability of lower degrees of sexual molestation. This is because, education in general has been known to influence behavioural patterns of individuals. It is assumed therefore that sex education may influence positive sexual behaviours and inform adolescents about the risks of sexual predators. It is denoted as 'sexE'.
- ✓ Access to Health Care Facilities: This variable is nominal and was measured using a Likert scale of 1 to 6. Where 1=Not applicable, 2=strongly disagree, 3=Disagree, 4=Neutral, 5=Agree, and 6=Strongly Agree. Respondents were asked if they had access to health care facilities. It is expected that health care facilities will have a negative effect on sexual molestation, or higher degrees of health care facilities will increase the probability of lower degrees of sexual molestation. This is because having the knowledge of what health care facilities are available to sexual molestation victims may help in reducing its incidence, perhaps through the gathering of data on its occurrence. It is denoted by 'acessHF'.

These variables have further been described in the tables below;

Variable	Obs	Mean	Std. Dev.	Min	Max
SM	246	2.813008	1.413345	1	6
Rel	240	1.245833	.503111	1	4
Inc	234	1.645299	.9208128	1	6
familySZ	226	1.526549	.6611126	1	4
lowselfE	245	2.865306	1.531841	1	6
trustL	246	3.669715	1.07661	1	6
discA	246	2.734417	1.161326	1	6
sexE	246	3.250407	1.059717	1	6
acessHF	245	3.285714	1.74149	1	6

Table 2: Summary statistics for all Variables

SM	Freq.	Percent	Cum.
1	34	13.82	13.82
2	96	39.02	52.85
3	55	22.36	75.20
4	21	8.54	83.74
5	23	9.35	93.09
6	17	6.91	100.00
Total	246	100.00	

Table 3: Summary statistics for sexual molestation

- ✓ Independent variables (IV): Religion (Rel), Income level (Inc), Family size (familySZ), Low self-esteem (lowselfE), Trust level (trustL), Inability to disclose incident (discA), Sex education (sexE), Access to Health Care Facilities (acessHF).
- ✓ Dependent Variable (DV): Sexual Molestation (SM) Given the IV and DV, the ordered logit model is assumed to take the following form, where P is the probability of success of sexual molestation in each category. Also θ_j is a cut point that indicates where the latent variable is cut to make the 6 categories that are observed in the data. Note that this latent variable is continuous;

$$Ln\ (SM_1\ Odds) = Ln\left(\frac{P_1}{1-P_1}\right) = \theta_1 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)$$

$$Ln\ (SM_2\ Odds) = Ln\left(\frac{P_2}{1-P_2}\right) = \theta_2 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)$$

$$Ln\ (SM_3\ Odds) = Ln\left(\frac{P_3}{1-P_3}\right) = \theta_3 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)$$

$$Ln\ (SM_4\ Odds) = Ln\left(\frac{P_4}{1-P_4}\right) = \theta_4 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)$$

$$Ln\ (SM_5\ Odds) = Ln\left(\frac{P_5}{1-P_5}\right) = \theta_5 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)$$

The odds ratio is derived when the exponent of the log odds is obtained. The model is expressed as follows;

$$SM_1\ Odds = e^{\theta_1 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)}$$

$$SM_2\ Odds = e^{\theta_2 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)}$$

$$SM_3\ Odds = e^{\theta_3 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)}$$

$$SM_4\ Odds = e^{\theta_4 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)}$$

$$SM_5\ Odds = e^{\theta_5 + (\beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF)}$$

Using the Ordinary least squares assumptions, the model is specified as follows;

$$SM = \beta_1 + \beta_2 Rel + \beta_3 Inc + \beta_4 familySZ + \beta_5 lowselfE + \beta_6 trustL + \beta_7 discA + \beta_8 sexE + \beta_9 acessHF$$

Moreover, given the models the following hypothesis was tested;

- ✓ Hypothesis for religion;
  - H_0: In the population there is no significant linear relationship between religion and sexual molestation.
  - H_1: In the population there is a significant linear relationship between religion and sexual molestation.
- ✓ Hypothesis for income level;
  - H_0: In the population there is no significant linear relationship between income level and sexual molestation.
  - H_1: In the population there is a significant linear relationship between income level and sexual molestation.
- ✓ Hypothesis for family size;
  - H_0: In the population there is no significant linear relationship between family size and sexual molestation.
  - H_1: In the population there is a significant linear relationship between family size and sexual molestation.
- ✓ Hypothesis for low self-esteem;
  - H_0: In the population there is no significant linear relationship between low self-esteem and sexual molestation.
  - H_1: In the population there is a significant linear relationship between low self-esteem and sexual molestation.
- ✓ Hypothesis for trust level;
  - H_0: In the population there is no significant linear relationship between trust level and sexual molestation.
  - H_1: In the population there is a significant linear relationship between trust level and sexual molestation.
- ✓ Hypothesis for inability to disclose incident;
  - H_0: In the population there is no significant linear relationship between inability to disclose incident and sexual molestation.
  - H_1: In the population there is a significant linear relationship between inability to disclose incident and sexual molestation.
- ✓ Hypothesis for sex education;
  - H_0: In the population there is no significant linear relationship between sex education and sexual molestation.
  - H_1: In the population there is a significant linear relationship between sex education and sexual molestation.
- ✓ Hypothesis for access to health care facilities;
  - H_0: In the population there is no significant linear relationship between access to Health Care Facilities and sexual molestation.
  - H_1: In the population there is a significant linear relationship between access to Health Care Facilities and sexual molestation.

III. RESULT AND ANALYSIS

ORDERED LOGIT MODEL ESTIMATION FOR SEXUAL MOLESTATION

```
Iteration 0:   log likelihood = -344.96256
Iteration 1:   log likelihood = -318.73133
Iteration 2:   log likelihood = -318.03044
Iteration 3:   log likelihood = -318.02827
Iteration 4:   log likelihood = -318.02827

Ordered logistic regression                     Number of obs   =        219
                                                LR chi2(8)      =      53.87
                                                Prob > chi2     =     0.0000
Log likelihood = -318.02827                     Pseudo R2       =     0.0781
```

SM	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Rel	-.2007337	.2626908	-0.76	0.445	-.7155981	.3141308
Inc	.1882397	.133386	1.41	0.158	-.0731921	.4496716
familySZ	.3207361	.1883686	1.70	0.089	-.0484596	.6899318
lowselfE	.2114573	.0833068	2.54	0.011	.048179	.3747356
trustL	.4446599	.1209454	3.68	0.000	.2076112	.6817086
discA	.5597063	.112954	4.96	0.000	.3383205	.7810921
sexE	.0957268	.1228143	0.78	0.436	-.1449849	.3364384
acessHF	.0388415	.0756502	0.51	0.608	-.1094301	.1871131
/cut1	2.739319	.8477492			1.077762	4.400877
/cut2	5.040302	.8930851			3.289887	6.790716
/cut3	6.221146	.9242632			4.409623	8.032669
/cut4	6.752299	.9370019			4.915809	8.588789
/cut5	7.771169	.9688078			5.87234	9.669997

Table 4: Ordered logit model for sexual molestation

In the output above (Table 4), the likelihood ratio chi-square of 53.87 with a p-value of 0.0000 indicates that the model as a whole is statistically significant, as compared to the null model with no predictors. The pseudo-R-squared of 0.0781 is also given. Low self-esteem, trust level and inability to disclose incidence are statistically significant while other variables are not. Therefore we accept the alternative hypothesis (H_1) for Low self-esteem, trust level and inability to disclose incidence, while we accept the null hypothesis (H_0) of the other explanatory variables. A one unit increase in low self-esteem, will increase by 0.2114573 the log odds of being in a higher level of sexual molestation, given all of the other

variables in the model are held constant. Similarly, a one unit increase in trust level, will increase by 0.4446599 the log odds of being in a higher level of sexual molestation, given all of the other variables in the model are held constant. Furthermore, a one unit increase in inability to disclose incidence, will increase by 0.5597063 the log odds of being in a higher level of sexual molestation, given all of the other variables in the model are held constant.

PROPORTIONAL ODDS MODEL ESTIMATION FOR SEXUAL MOLESTATION

```
Iteration 0:   log likelihood = -344.96256
Iteration 1:   log likelihood = -318.73133
Iteration 2:   log likelihood = -318.03044
Iteration 3:   log likelihood = -318.02827
Iteration 4:   log likelihood = -318.02827

Ordered logistic regression                     Number of obs   =        219
                                                LR chi2(8)      =      53.87
                                                Prob > chi2     =     0.0000
Log likelihood = -318.02827                     Pseudo R2       =     0.0781
```

SM	Odds Ratio	Std. Err.	z	P>|z|	[95% Conf.	Interval]
Rel	.8181303	.2149153	-0.76	0.445	.4888996	1.369069
Inc	1.207123	.1610133	1.41	0.158	.9294223	1.567797
familySZ	1.378142	.2595987	1.70	0.089	.9526959	1.99358
lowselfE	1.235477	.1029236	2.54	0.011	1.049358	1.454607
trustL	1.55996	.18867	3.68	0.000	1.230735	1.977253
discA	1.750158	.1976874	4.96	0.000	1.40259	2.183856
sexE	1.100458	.135152	0.78	0.436	.8650354	1.399953
acessHF	1.039606	.0786463	0.51	0.608	.8963449	1.205764
/cut1	2.739319	.8477492			1.077762	4.400877
/cut2	5.040302	.8930851			3.289887	6.790716
/cut3	6.221146	.9242632			4.409623	8.032669
/cut4	6.752299	.9370019			4.915809	8.588789
/cut5	7.771169	.9688078			5.87234	9.669997

Table 5: Proportional odds ratio for sexual molestation

In the output above (Table 5) the results are displayed as proportional odds ratios. For a one unit increase in low self-esteem, the odds of high category of sexual molestation versus the combined middle and low categories are 1.235477 times greater, given that all of the other variables in the model are held constant. Likewise, the odds of the combined middle and high categories versus low sexual molestation is 1.235477 times greater, given that all of the other variables in the model are held constant. For a one unit increase in trust level, the odds of the high category of sexual molestation versus the low and middle categories of sexual molestation are 1.55996 times greater, given that the other variables in the model are held constant. For a one unit increase in inability to disclose incidence, the odds of the high category of sexual molestation versus the low and middle categories of sexual molestation are 1.750158 times greater, given that the other variables in the model are held constant.

MARGINAL EFFECTS OF THE EXPLANATORY VARIABLES ON SEXUAL MOLESTATION

```
Marginal effects after ologit
      y  = Pr(SM==1) (predict, outcome(1))
         =  .11806499
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Rel	.0209015	.02738	0.76	0.445	-.032758	.074561		1.23288
Inc	-.0196006	.0141	-1.39	0.164	-.047228	.008027		1.64384
familySZ	-.0333969	.01992	-1.68	0.094	-.072448	.005654		1.52968
lowselfE	-.0220181	.009	-2.45	0.014	-.039653	-.004383		2.82192
trustL	-.0463005	.01352	-3.43	0.001	-.07279	-.019811		3.71918
discA	-.0582798	.01348	-4.32	0.000	-.084697	-.031862		2.69559
sexE	-.0099676	.01286	-0.78	0.438	-.035175	.015239		3.24018
acessHF	-.0040444	.0079	-0.51	0.608	-.019519	.01143		3.30137

Table 6: Marginal effects of explanatory variables on SM=1

In the output above (Table 6), if there is a one unit increase in low self-esteem, trust level and inability to disclose incidence, respondents will be respectively about 2.2%, 4.6% and 5.8% less likely to be in the not applicable category.

```
Marginal effects after ologit
      y  = Pr(SM==2) (predict, outcome(2))
         =  .45395548
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Rel	.0282407	.03729	0.76	0.449	-.044842	.101323		1.23288
Inc	-.026483	.01922	-1.38	0.168	-.064148	.011182		1.64384
familySZ	-.0451235	.02744	-1.64	0.100	-.098907	.00866		1.52968
lowselfE	-.0297494	.01267	-2.35	0.019	-.054581	-.004918		2.82192
trustL	-.062558	.01976	-3.17	0.002	-.101282	-.023834		3.71918
discA	-.0787436	.0202	-3.90	0.000	-.118328	-.039159		2.69559
sexE	-.0134675	.01738	-0.77	0.438	-.047536	.0206		3.24018
acessHF	-.0054645	.01067	-0.51	0.609	-.026381	.015452		3.30137

Table 7: Marginal effects of explanatory variables on SM=2

In the output above (Table 7), if there is a one unit increase in low self-esteem, trust level and inability to disclose incidence, respondents will be respectively about 2.9%, 6.2% and 7.8% less likely to be in the strongly disagree category.

```
Marginal effects after ologit
      y  = Pr(SM==3) (predict, outcome(3))
         =  .24118027
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Rel	-.0186497	.0247	-0.75	0.450	-.067068	.029769		1.23288
Inc	.0174889	.01291	1.35	0.175	-.007813	.042791		1.64384
familySZ	.0297989	.01845	1.62	0.106	-.006358	.065956		1.52968
lowselfE	.019646	.00862	2.28	0.023	.002755	.036537		2.82192
trustL	.0413124	.01391	2.97	0.003	.014042	.068583		3.71918
discA	.0520011	.01484	3.50	0.000	.022919	.081083		2.69559
sexE	.0088938	.01154	0.77	0.441	-.013729	.031516		3.24018
acessHF	.0036087	.00705	0.51	0.609	-.010211	.017428		3.30137

Table 8: Marginal effects of explanatory variables on SM=3

In the output above (Table 8), if there is a one unit increase in low self-esteem, trust level and inability to disclose incidence, respondents will be respectively about 1.9%, 4.1% and 5.2% more likely to be in the disagree category.

```
Marginal effects after ologit
      y  = Pr(SM==4) (predict, outcome(4))
         =  .06781633
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Rel	-.0094504	.01258	-0.75	0.452	-.034101	.0152		1.23288
Inc	.0088622	.00663	1.34	0.182	-.00414	.021865		1.64384
familySZ	.0151	.00948	1.59	0.111	-.003475	.033675		1.52968
lowselfE	.0099553	.00454	2.19	0.028	.001048	.018862		2.82192
trustL	.0209343	.00744	2.82	0.005	.006361	.035508		3.71918
discA	.0263506	.00817	3.23	0.001	.010337	.042364		2.69559
sexE	.0045067	.00588	0.77	0.443	-.007009	.016023		3.24018
acessHF	.0018286	.0036	0.51	0.611	-.005217	.008875		3.30137

Table 9: Marginal effects of explanatory variables on SM=4

In the output above (Table 9), if there is a one unit increase in low self-esteem, trust level and inability to disclose incidence, respondents will be respectively about 0.09%, 2.0% and 2.6% more likely to be in the neutral category.

```
Marginal effects after ologit
      y  = Pr(SM==5) (predict, outcome(5))
         =  .0724953
```

variable	dy/dx	Std. Err.	z	P>|z|	[	95% C.I.	]	X
Rel	-.0121443	.01601	-0.76	0.448	-.043517	.019229		1.23288
Inc	.0113884	.00831	1.37	0.170	-.004895	.027672		1.64384
familySZ	.0194044	.01196	1.62	0.105	-.004039	.042848		1.52968
lowselfE	.0127931	.00563	2.27	0.023	.001761	.023825		2.82192
trustL	.0269017	.0088	3.06	0.002	.009647	.044156		3.71918
discA	.0338619	.00923	3.67	0.000	.015777	.051947		2.69559
sexE	.0057914	.00751	0.77	0.440	-.00892	.020502		3.24018
acessHF	.0023499	.0046	0.51	0.610	-.006673	.011373		3.30137

Table 10: Marginal effects of explanatory variables on SM=5

In the output above (Table 10), if there is a one unit increase in low self-esteem, trust level and inability to disclose

incidence, respondents will be respectively about 1.3%, 2.6% and 3.4% more likely to be in the agree category.

Marginal effects after ologit
y = Pr(SM==6) (predict, outcome(6))
= .04648762

variable	dy/dx	Std. Err.	z	P>|z|	[95% C.I.]		X
Rel	-.0088978	.0118	-0.75	0.451	-.032023	.014228	1.23288
Inc	.008344	.00617	1.35	0.177	-.003757	.020445	1.64384
familySZ	.0142171	.00893	1.59	0.111	-.003283	.031717	1.52968
lowselfE	.0093732	.00423	2.21	0.027	.001077	.017669	2.82192
trustL	.0197102	.00693	2.84	0.004	.006122	.033298	3.71918
discA	.0248098	.00724	3.43	0.001	.010616	.039004	2.69559
sexE	.0042432	.00552	0.77	0.442	-.006583	.01507	3.24018
acessHF	.0017217	.00337	0.51	0.610	-.004889	.008332	3.30137

Table 11: Marginal effects of explanatory variables on SM=6

In the output above (Table 11), if there is a one unit increase in low self-esteem, trust level and inability to disclose incidence, respondents will be respectively about 0.09%, 1.9% and 2.4% more likely to be in the strongly agree category.

TEST OF PROPORTIONALITY

Brant test of parallel regression assumption

	chi2	p>chi2	df
All	20.81	0.936	32
Rel	2.32	0.678	4
Inc	4.73	0.316	4
familySZ	2.57	0.633	4
lowselfE	3.54	0.471	4
trustL	2.53	0.640	4
discA	3.58	0.466	4
sexE	1.90	0.754	4
acessHF	3.13	0.536	4

Table 12: Brant test for sexual molestation

The output above from the Brant test (Table 12) indicate that the model meets the proportional odds assumption or the parallel regression assumption. Because the relationship between all pairs of groups is the same, there is only one set of coefficients (i.e. only one model).

TEST FOR MODEL SPECIFICATION ERROR

Ordered logistic regression — Number of obs = 219
LR chi2(2) = 53.94
Prob > chi2 = 0.0000
Log likelihood = -317.99147 — Pseudo R2 = 0.0782

SM	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
_hat	1.254955	.9517143	1.32	0.187	-.6103704	3.120281
_hatsq	-.026481	.0976577	-0.27	0.786	-.2178867	.1649246

Table 13: Error specification test for sexual molestation

In the output above (Table 13), _hatsq is statistically insignificant indicating that the link function is properly specified, however _hat is statistically insignificant, which indicates there is a misspecification in the ordered logit model.

TEST FOR MULTICOLLINEARITY

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Rel	1.09	1.04	0.9214	0.0786
Inc	1.07	1.03	0.9381	0.0619
familySZ	1.03	1.01	0.9707	0.0293
lowselfE	1.02	1.01	0.9766	0.0234
trustL	1.02	1.01	0.9826	0.0174
discA	1.10	1.05	0.9101	0.0899
sexE	1.14	1.07	0.8797	0.1203
acessHF	1.09	1.05	0.9137	0.0863
Mean VIF	1.07			

Table 14: Multicollinearity test for sexual molestation

From table 14, it can be observed that there is no evidence of significant levels of multicollinearity in the model, as the variance inflation factor (VIF) of all variables is less than 10 as a rule of thumb. Similarly, the tolerance depicted by 1/VIF shows that all variables have a tolerance greater than 0.1.

GOODNESS OF FIT TEST

	ologit
Log-likelihood	
Model	-318.028
Intercept-only	-344.963
Chi-square	
Deviance (df=206)	636.057
LR (df=8)	53.869
p-value	0.000
R2	
McFadden	0.078
McFadden (adjusted)	0.040
McKelvey & Zavoina	0.224
Cox-Snell/ML	0.218
Cragg-Uhler/Nagelkerke	0.228
Count	0.452
Count (adjusted)	0.084
IC	
AIC	662.057
AIC divided by N	3.023
BIC (df=13)	706.114
Variance of	
e	3.290
y-star	4.242

Table 15: Fit statistics for the ordered logit model

Using the McFadden pseudo R^2, the output above indicates that the model is not a good fit. Because according to McFadden values from 0.2-0.4 indicate excellent model fit.

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MULTI-LINEAR REGRESSION ANALYSIS OF SEXUAL MOLESTATION

Source	SS	df	MS	Number of obs =	219
				F(8, 210) =	5.70
Model	78.1781683	8	9.77227103	Prob > F =	0.0000
Residual	359.995348	210	1.71426356	R-squared =	0.1784
				Adj R-squared =	0.1471
Total	438.173516	218	2.00997026	Root MSE =	1.3093

SM	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Rel	-.0731576	.1871447	-0.39	0.696	-.4420806	.2957655
Inc	.1080735	.0980153	1.10	0.271	-.0851464	.3012934
familySZ	.1529697	.1352369	1.13	0.259	-.113626	.4195655
lowselfE	.1351452	.0594872	2.27	0.024	.0178766	.2524139
trustL	.2707687	.0847124	3.20	0.002	.1037731	.4377644
discA	.3432174	.0788117	4.35	0.000	.187854	.4985808
sexE	.061291	.0885478	0.69	0.490	-.1132654	.2358474
acessHF	.0323824	.0539695	0.60	0.549	-.074009	.1387739
_cons	-.1825431	.5791266	-0.32	0.753	-1.32419	.9591035

Table 16: Regression model for sexual molestation

In the output above (Table 16), The F-test statistic indicates the general regression is good enough to explain the dependent variable. The R squared value indicates that the model explains the dependent variable which is sexual molestation (SM) 17.84% of the time. The adjusted R square indicates the model explains the dependent variable 14.74% of the time.

Using the 0.05 significance level there are only three independent variables that have a significant linear relationship with the dependent variable, and they are low self-esteem (p=0.024), trust level (p=0.002) and inability to disclose incident (p=0.000). The null hypothesis (H_0) of all other explanatory variables had to be accepted because their P values where greater than the 0.05 significance level.

Low self-esteem has a positive relationship with sexual molestation, therefore as low self-esteem increases by one unit, sexual molestation will also increase by 0.1351452. Trust level also has a positive relationship with sexual molestation, therefore if trust level increases by one unit, sexual molestation will increase by 0.2707687. Similarly, inability to disclose incidence has a positive relationship with sexual molestation, therefore if inability to disclose incidence increases by one unit, sexual molestation will increase by 0.3432174.

IV. DISCUSSION AND CONCLUSION

In line with the expectations of the study, the results indicate that low self-esteem has a positive relationship with sexual molestation. This could be because low self-esteem is an evaluation of an individual's self-worth. An adolescent with a low self-worth is likely to be more vulnerable, in an attempt to compensate his/her perceived emotional deficit. Sexual predators who identify this attitude may exploit these children and cause sexual harm. Low self-esteem may be as a result of bullying by an adolescents peers, constant failure, neglect by family and mental disorders among several other factors. In addition, social media and current trends make it increasingly difficult for adolescents to evaluate themselves accurately, as a result of several stereotypes and high lifestyle standards being portrayed globally.

Research shows that significant number of adolescents are likely to be sexually molested by people they know. This information correlates with the observation that trust level has a positive relationship with sexual molestation. The results obtained are not different from the expected effects of trust level on sexual molestation. This could be because rational individuals will often let their guard down when relating with people they trust, thereby making them more vulnerable. The adolescent period may be considered by considered by many psychologists as the formative years of an adult. During this period individuals may be a little naïve about their environment, and how to interact with it. This naivety may be exploited by sexual predators, capitalising on how trusting and open adolescents are.

The expectations of the study concerning inability to disclose incidence are in line with the results of the study. The inability to disclose sexual molestation incidence has positive relationship with sexual molestation. This is because individuals find it difficult to report sexual molestation incidences due to a myriad of factors such as fear of being embarrassed, discountenanced and even physical assault. The inability to disclose sexual molestation incidences leaves room for such cases to be unsolved for the following reasons; 1.) There is insufficient data to understand when and how it occurs, 2.) Sexual offenders are on the loose, perhaps repeating their ill actions towards unsuspecting adolescents.

In conclusion, guardians and parents should spend more time with their children and wards, or invest heavily in environments safe for them. Also, more adolescents should be educated on potential sexual molestation threats and what they need to do, if they find themselves in an inappropriate situation. Finally, more avenues should be created for individuals to express themselves, and to report sexual molestation cases without fear of judgment. Anonymity may be helpful in this regard.

V. LIMITATION OF THE STUDY

- ✓ The study is not a true representation of all adolescents in Nigeria due to sampling methods and how the data was collated. Similarly the sample size is small, thereby encouraging bias.
- ✓ There are no significant basis for comparison. An alternative approach would have been to analyse data of students perhaps in a private school or drop outs.
- ✓ The model in the study only presents or tests the relationship between sexual molestation and certain factors but may not be able to predict or forecast incidence of sexual molestation. Time series data may prove more insightful in this regard.

Additional variables to the model may provide better insights to the effects of sexual molestation.

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