SUPERSTITIOUS BELIEFS AND ACADEMIC PERFORMANCE OF PUPILS IN EARLY CHILDHOOD SCIENCE IN OGOJA EDUCATIONAL ZONE, SOUTH EASTERN NIGERIA.

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ABSTRACT: *This study was designed to investigate the influence of superstitious beliefs on academic performance of pupils in early childhood science. The research design was ex-post factor. A random sample of four hundred (400) pupils was used. Data for the study were collected through a forty item three-point Likert-scale type questionnaire on Superstitious Beliefs and Science Achievement Test. The data were analyzed using Analysis Of Variance (ANOVA) and tested at $P < 0.05$ level of significance. A post hoc pair-wise comparison was made using LSD to compare main and interaction effects. Results showed that academic performance of early childhood pupils was significantly decreased by superstitious beliefs in the four basic categories of "Good luck", "Bad luck", "Impending danger" and "Perceived effect". Social study curriculum in early childhood schools was recommended to be broadened to teach concepts in superstitions which may reduce pupils beliefs and enhance the teaching of science.*

KEYWORDS: Academic Performance, Beliefs, Early Childhood Science, Superstition, Nigeria.

INTRODUCTION

In our traditional societies, members are brought up from infancy to view natural phenomena around them from the perspective of supernatural forces. This observation is a peculiar characteristic of the third world countries that are constituted by superstitious societies (Anonymous, 2006). In general, superstitious beliefs abound where there is a combination of factors such as paganism and dogmatic orthodox religion (Block, 1994).These complicate explanation of natural phenomena based on scientific principles.

Man's fear arising from his inability to understand, control and predict natural event and phenomena, which are either relevant to or threaten his existence and wellbeing in his environment, places him in a confused state. Newport & Strousberg (2001) asserted that the absence of modern science from the traditional cultures of the world prior to the time of its birth in Western Europe gave rise to superstitions as the child of events in man's attempt to control and predict nature. Superstition is a term employed to designate beliefs that are not consistent with acceptable notions of reality and possibility. It is a belief rooted in manipulation which exists in the realms of mystic or supernatural (Vyse, 2009). These beliefs influence the reasoning, thinking, creative ventures and understanding in man, especially children. It was this that lead Uche & Umoren (1998) to advise that when young children are being introduced to science by teachers, all superstitious ideas should be eliminated and that unless this is done,

the teachers can only succeed in producing people with dichotomous minds: divided between scientific explanation and superstitious beliefs.

Several studies have shown that pupils often bring with them to the classroom alternative conceptions of science. These alternative conceptions differ fundamentally from the knowledge that is transmitted by the science teacher. Researchers have labeled this phenomenon as alternative framework (Driver, 1989) or student's prior/pre-instructional knowledge (Posner *et al*, 1982; (Idiong, & Andy, 1997). These studies contended that student's prior knowledge does interfere with the learning of scientific concepts, attitudes, process and products, thus, their academic performance. Ingle & Turner (1981) claimed that learning of science in Africa has been made difficult by this conflict of science and culture. Their study tended to suggest a possible influence of superstition on pupils cognitive development, thus their academic performance. Whiting & Whiting (1990) emphasized that unique cultures allocate values differently and that those values have consequences for behaviour. They further claimed that value differences are accounted for with child rearing practices, family structure and belief system. Cultural values have much to do with individual's behaviour in a number of social contexts. Value orientations are often discussed as important to understanding academic achievement.

Arciniega (1971) argued that contextually, desperate values affect the performance of pupils outside the dominant culture mainstream, while Hodgkinson (2004) noted that values and perceptions are related to pupils' academic performance. Whiting & Whiting (1990) illustrated this social conflict of holding conflicting value orientation among the instance of the Mexican American children. These children want social acceptance but will not want to achieve this at the cost of giving up their heritage and belief. They want the beliefs of the dominant societal group but not the cost of their language, custom and cultural values. This kind of orientation is likely to affect the academic performance of such pupils. However, Whyte (1996) had earlier noted that though traditional Mexican-American children are oriented towards the authority structure of the family, which very well impedes achievement, there was a noticeable lack of information to explain the effects on academic achievement cross-culturally.

Ajikobi & Bello (1991) observed that some Nigerians are imbued with beliefs that have built in them a form of mind, which repulses explanation of a concept in ways other than theirs. This attitude is invariably transmitted to children such that any attempt to provide an alternative modern scientific explanation to such beliefs held are observed to evoke unwilling and non-co-operative attitude. This conflict normally affects the pupils' cognitive development and could possibly affect pupils' academic performance in the sciences. Since the early childhood forms the bedrock upon which the secondary and tertiary levels of education are built, it becomes necessary to begin at the early childhood level to lay the appropriate foundation in science education. It is at this level that science education seeks to awaken in the child the desire or otherwise to become a professional scientist and to experience joy or excitement in the intellectual power of science. Very few pupils opt for science and there has been a general outcry over the low level of performance of pupils of sciences in both internal and external examinations in Nigeria (Uche & Umoren, 1998).

These previous research studies tend to suggest a possible influence of superstitious beliefs on pupils understanding of science, mainly at the secondary school level. It was our aim in this study to investigate if there is any relationship between pupils' superstitious beliefs and their academic performance in early childhood science in Ogoja Educational Zone, South Eastern Nigeria.

Research questions

This research work attempted to answer the following question: to what extent does superstitious belief influence academic performance of early childhood pupils in science in Ogoja Educational Zone of Cross River State, Nigeria?

Statement of hypotheses

In other to obtain answers to the research questions, the following null hypothesis was formulated:

There is no significant relationship between superstitious beliefs and pupils' academic performance in childhood science in Ogoja Educational Zone, South Eastern Nigeria.

RESEARCH METHODOLOGY

Research design

The study was designed to investigate the influence of superstitious beliefs on the academic performance of pupils in early childhood science. An expost-facto design was used to investigate the possible cause and effect relationship between the variables studied. The independent variable was superstitious beliefs of pupils and the dependent variable was academic performance in early childhood science.

Study area

The research covered the entire five Local Government Areas under Ogoja Educational Zone of Cross River State, Nigeria. Ogoja Educational Zone of Cross River State has five Local government Areas: Obudu, Obanliku, Bekwara, Ogoja and Yala. Each of these has a semi-urban setting which serves as the local government headquarter.

Sample population/sampling technique

Twenty (20) out of three hundred and twenty seven childhood schools in Ogoja Educational Zone of Cross River State were randomly selected for the study. Four (4) schools were randomly selected from each of the five Local Government Areas and twenty primary six pupils were randomly selected from each school selected. There were therefore four hundred (400) pupils that constituted the sample population of the study out of a total of fifteen thousand, four hundred and sixty three (15,463) primary six pupils. Out of this total number, eight thousand, nine hundred and forty one were males (8,941), while six thousand, five hundred and twenty two (6,522) were females.

Instrumentation

After a careful study of theoretical literature in related subjects, the researchers developed two instruments to carry out the study in order to generate data. These were:

1)   Superstitious Beliefs Questionnaire (SBQ)

2)   Science Achievement Test (SAT)

The superstitious beliefs questionnaire (SBQ) had 40 questions and these were used to collect data on pupils' superstitious beliefs and practices. The questionnaire was constructed in parts, adapting from the categorization of Bajah (1981). The categories and the number of items in each of the categories included:

1)   Good luck (10 items)

2)   Bad luck (10 items)

3)   Indicators of impending danger (10 items), and

4)   Perceived effects (10 items)

The total number of items of all the categories was 40. The questionnaire was face validated by one of the supervisors, an expert from the Department of Curriculum and Teaching, University of Calabar, Nigeria, to arrive at the 40 items used. The researchers developed science achievement test (SAT). It is a multiple choice objective test. Because of face validation by one of the supervisors of this work, the total number of items was reduced from thirty to twenty. The number was then distributed as six items for reasoning, six for understanding and eight for creativity. The questions for the test were drawn from the early childhood curriculum, generally, and centred on those concepts claimed to have been taught in primary five. This test was used to determine the levels of the primary six pupils' reasoning, understanding and creative abilities.

Procedure for data collection

The questionnaire for this study was administered to the respondents by the researchers personally. Care was taken to ensure that the same steps in questionnaire administration and timing were the same in all the schools involved. In all the schools, no permission was refused. The pupils were then informed about the purpose of the exercise. They were instructed not to write their names to ensure anonymity, honesty, sincerity and independence in response to reflect their beliefs, feelings and knowledge. The respondents were further assured that the instrument did not constitute any or part of their school assessment but were only meant to aid research in superstitious beliefs and science achievement. The pupils were asked to be careful to avoid mutilation.

The administration of the questionnaire was undertaken during the first term of 2010/2011 school year. Two schools were sampled in a day, giving eight working days to complete data collection with the help of the teachers. All the 400 copies of the questionnaire were returned for data computation and analysis.

Data preparation and scoring

The entire instrument was coded and scored by the researchers. In superstitious beliefs questionnaire, pupils were expected to answer "True" or "False" or "I don't know" to the items on the questionnaire, which were classified according to the variables they were designed to test. Each was score as "True" (2 marks), "False" (1 mark) and "I don't know" (O mark).

In science achievement questionnaire, each correct item was scored one mark for the entire twenty questions. This means a respondent could score a maximum of twenty marks: six marks each for understanding and reasoning and eight marks for creativity.

Procedure for data analysis

Each set of data collected was analyzed using the following procedure.

Hypothesis: There is no significant relationship between superstitious beliefs and pupils' academic performance in early childhood science.

Independent variable: superstitious beliefs.

Dependent variable: achievement in science.

Statistical test: Pearson product moment correlation.

To determine the points of significant difference, a post hoc, pair wise comparison of the levels of superstitious beliefs and academic performance was done using Fishers least significant difference (LSD) technique for the main effects and interaction effects (Denga, 2003).

RESULTS AND DISCUSION

Hypothesis: There is no significant relationship between superstitious beliefs and pupils' academic performance in early childhood science.

There are four components of superstitious beliefs that data were collected on, namely, good luck, bad luck, impending danger and explanation of perceived effects. Each of these was correlated with pupils' academic performance using Pearson product moment correlation statistic. The result is presented in Table 1. The result obtained showed negative values of the calculated r, indicating that there was a negative relationship between each of the components of superstitious beliefs and pupils academic performance in early childhood science. That is, as each of the components of superstitious beliefs increased, the learner's academic performance in early childhood science decreased and vice versa.

The critical r value of .113 at .05 significance level is less than the calculated r values for each of the components of superstitious beliefs. This meant that the calculated r values are statically significant with negative relationship between superstitious beliefs regarding good luck, bad luck, impending danger and explanation of perceived effects in relation to pupils academic achievement in early childhood science. The null hypothesis, therefore, was rejected.

A post hoc, pair wise comparison of the levels of superstitious beliefs and academic performance for the main effects and interaction effects showed that for each of the components of superstitious beliefs, the lowest level has the highest mean score, followed by medium and then high levels, consistently (Table 2). For good luck, bad luck and explanation of perceived effects, there was a significant difference between any pair of levels. However, for impending danger, there was no significant difference in the academic performance of pupils in high and medium levels.

Table 1: Pearson product moment correlation of the four components of superstitious beliefs with academic performance (N=400)

Variables	X	SD	$\sum x^2$ $\sum y^2$	$\sum xy$	r	Significance level
Good luck	15.37	1.96	1222.49	-5698.97	-.70*	.000
Bad luck	15.37	1.95	1214.49	-4633.97	-.57*	.000
Impending danger	15.34	1.76	990.19	-3297.34	-.45*	.000
Perceived effects	15.30	1.85	1094.80	-4574.30	-.59*	.000
Academic performance	45.20	13.11				

*$p < 0.05$, df = 398, critical r =.113

Table 2: Pair wise comparisons of the influence of the level of superstitious beliefs on pupils' academic performance using Fisher's least significant difference (LSD) technique

Components of superstitious beliefs	Levels	N	1	2	3
Good luck (MSE=110.688	1. High	22	28.000[a]	11.343[b]*	23.228*
	2. Medium	127		39.343	11.885*
	3. Low	171			51.228
Bad luck (MSE=125.663)	1. High	64	35.952	6.299*	18.311*
	2. Medium	143		42.252	12.011*
	3. Low	113			54.263
Impending danger (MSE 129.235)	1. High	46	40.614	.790	13.267*
	2. Medium	171		41.404	12.477*
	3. Low	103			53.881
Explanation of Perceived effects (MSE=127.374)	1. High	14	34.167	6.647	19.208*
	2. Medium	193		40.814	12.561*
	3. Low	113			53.375

a = Mean scores are along the principal diagonals.

b = Difference between mean scores are above the principal diagonals.

c = Critical LSD values are below the principal diagonals.

* $P < .05$

These results showed that all the four components of superstition were contributory to the low academic performance of the pupils of primary science in Ogoja Educational Zone. Our result collaborated the assertion by Ezeife (1993) that even superficial interaction with an African child will reveal him as superstitious. This superstitious beliefs in the child, he concluded, has a significant force which affects the child's thinking, reasoning and actions. In the African societies, such superstitious beliefs are intentionally imbued in the minds of the young child through tradition, culture and religion. Several other researchers have found that these beliefs are consequential on the child's behaviour (Whiting & Whiting, 1990), values and perceptions Hodgkinson (2004) and orientation (Kluckhahu & Strodbeck, 1961). At the end, the African child's thinking, reasoning, understanding and even creativity is adversely affected as observed elsewhere by Foster & Kokko (2009). Their belief system, therefore, may be responsible for the lack of technological and scientific advancement as found in the whole of Africa. Superstitious beliefs bar creative thinking that could lead to inventions and discoveries. Every situation that challenges the pupils is quickly explained away as good or bad luck; things not understood are seen as impending danger or perceived effect. For the children to make any meaningful progress in science and technology, the teachers of early childhood science must free the minds of our youths from their belief systems.

The main effects due to good luck, bad luck, perceived effect and impending danger also significantly influenced academic performance in childhood science. This also was expected. The significant effect is a confirmation that the level of each of the four components of superstition as established in hypothesis I had a contributory effect on the academic performance in primary science.

However, superstitious beliefs under "good luck" were not significant. It is an indication that early childhood pupils do not believe in "good luck" any more for their successes. Therefore, no pupil ascribed his success to the benevolent teacher or merely that he met good luck. Nevertheless, the significance under bad luck, impending danger and perceived effects as categorized by Bajah (1981) is a clear indication that early childhood pupils, learning science, still ascribe their successes or failures based on these factors. Interaction with early childhood pupils will clearly show this assertion. It is not uncommon to hear a pupil who fails to blame it on his "wicked" teacher (bad luck), an aunt, uncle or the mothers' marriage mate who has removed his own brains for his/her children(perceived effect). Even much more bizarre and weird, it could be blamed on the black cat they saw on their way to school on the examination day (impending danger).

SUMMARY, CONCLUSION, AND RECOMMENDATION

Summary of the study

From the result of this study, it was concluded that early childhood science pupils in Ogoja Educational Zone still hold strongly to beliefs in 'bad luck', 'impending danger' and 'perceived effects', and these have serious consequences on their academic performance. Early childhood pupils in Ogoja Educational Zone should, first of all, be made to discard their traditional and superstitious misconceptions about certain phenomena in other to free their minds to perform well.

On the basis of the findings from this study, the following recommendations were proffered:

1) The teacher of early childhood science, as a matter of need, should make the pupils of early childhood science see the relevance or irrelevance of their beliefs or traditional concepts when a relevant scientific concept is introduced.

2) The science teacher should, when posted to a new school, understudy the cultural background of the pupils to disabuse their minds when particular scientific concepts are taught.

3) Social study curriculum in early childhoods should be broadened to teach concepts in superstitions which may reduce their beliefs and enhance the teaching of science.

REFERENCES

Ajikobi, S. O. & Bello, G. (1991). Nigerian societal beliefs and language and effects on the teaching and learning process in science. *Proceedings of the 32nd Annual Conference of Science Teachers Association of Nigerian*. Pg 98.

Anonymous. (2006). Fetishism in West Africa: the fetish-superstition in custom. Downloaded from www. sacredtexts.com/afr/fiwa.15.htm.

Arciniega, T. A. (1971). *Public education's response to the Mexican American Students*. El Paso, Texas: Innovative Resources.

Bajah, S. T. (1981) Dichotomy of science and superstitious beliefs: recognition in science education for Africa. *Journal of Science Teachers' Association of Nigeria*. 6: 1-8.

Block, D. (1994). Scientific basis for beliefs. An extract from a lecture delivered in the University of Johannesburg. *South Africa Star* of 3/6/1994.

Denga, D. I. (2003). *Educational measurement, continuous assessment and psychological testing.. Calabar, Nigeria:* Rapid Educational Publishers, Ltd.

Driver, R. (1989). Changing concepts. In: Adey, P. (ed). *Adolescent Development and School Science*. London: Oxford University Press.

Ezeife, A. N. (1993). *The use of the environment in science teaching, methodology of science teaching: historical and conceptual approach*. Uyo, Nigeria, Belpot Nig. Co.

Foster, H. K. & Kokko, H.(2009). The evolution of superstitious and superstition-like behaviour. *Proceedings of the Royal Society B: Biological Sciences* 276 (1654):31.

Hodgkinson, C. (2004). Organizational influence on value system. *Educational Administration Quarterly* 5: 46 – 55.

Idiong, A. R. & Andy, E. B. (1997). Science and superstition. In: Inyang, N. E. & Eka M. E. (eds). *Science and Society*. Uyo, Nigeria.: Afanaide and Bros Publishing Co.

Ingle, R. B & Turner A. D. (1981). Science curriculum as cultural misfits. *European Journal of Science Education* 2: 334-366.

Kluckhahu, F. & Strodbeck, F. (1961*). Variation in value orientation*. New York: Row Peterson and Company,

Newport, F. & Strousberg, M. (2001). *Americans' belief in psyche and paranormal phenomena is up over last decade*. Princeton: Gallup News Service.

Posner, C. I.; Strike, K. A.; Heirson, P. W. & Gertzen, W. A. (1982). Accommodation of scientific conception: towards a theory of conceptual change. *Science Education* 66 [2]:211-228

Uche, S. C. & Umoren, G. U. (1998). *Integrated science teaching: perspectives and approaches*. Aba: Nigeria, AAU Vitalis Book Company.

Vyse, S. A. (2009). *Believing in magic: the psychology of superstition*. London: Oxford University Press.

Whiting J. W. & Whiting, B. B. (1990). Contribution of anthropology to the methods of studying child rearing. In: P.H. Mussen (ed). *Handbook for research methods in child development*. .New York: John Willey.

Whyte, W. F. (1996). *Street society: the social structure in an Italian slum*. Chicago: University of Chicago Press.