

Conformity and Aptitude as Predictors of Science Related Career Choice Among Secondary School Students in Rivers State, Nigeria

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ABSTRACT

The present study investigated conformity and aptitude as predictors of science related career choice among secondary school students in Rivers state. Correlation research design was used in the investigation. A sample of 675 SS2 students were drawn from a population of 13,204 SSII students across the 268 public secondary schools in the three senatorial zones in the state. Multiple stages of sampling procedures were used to draw this sample size. Three instruments namely "Adolescents Conformity Scale", "Science Aptitude Test Question" as well as the Science Career Choice Inventory were used for the study. Experts vetting was used in validating the instruments while the reliability was determined using Cronbach Alpha method with reliability indices of 0.71 for Adolescents Conformity Scale, 0.84 for Science Aptitude Test Question and 0.82 for Science Career Choice Inventory were obtained. Simple linear regression was used to analyze the data generated from the research instruments. Result of the study showed that conformity relates about 0.7% with science career choice and it ($p=0.025<0.05$) significantly predict science related career choice among secondary school students in Rivers State. Also aptitude relates about 1.1% with science career choice and ($p=0.007<0.05$) significantly predict science related career choice among secondary school students in Rivers State. It was concluded that conformity and aptitude are strong predictors of career choice in general and not just limited to science related ones.

Keywords: Conformity, Aptitude, Science, Career Choice

INTRODUCTION

It is an obvious fact that one big challenges faced by students in life is that of choosing a career. Such choice or decision plays a vital role in establishing the individual towards opportunities that are available to him. It is also worthy to note that the career an individual chooses to pursue determines to a great extent his happiness and lifestyle in later life. In choosing a career, many factors serve as a challenge thereby making this decision to be indispensably done with outright carefulness. The inability to make a wise decision concerning career can mark the end of happiness to an individual and the beginning of an enduring frustration. An American author

Hill (1937) has wisely remarked that no man can succeed in a line of endeavour which he does not like" and it's very true, indeed. One needs to be on the right career track coupled with appropriate set of skills to flourish outright. However, deciding which career to opt for has, always been a daunting task for many, especially young teenagers, who are faced with numerous career choices and are constantly bombarded with unsought, and frivolous advices from virtually every one they meet in today's world. Generally, it is believed that career or vocation should be exclusively the decision and choice of an individual, but in reality, this choice has left many wondering. The decision of making a good choice of career is majorly the concern of students, parents and government. The problem of career choice has implication for national development. In every society, the quality of workers as well as their degree of job satisfaction contributes directly or indirectly to economic stability.

According to Brown (2001 p. 214) career is "the pattern of work and work related activity that people develop throughout a life time". This definition implies that career is a life time venture and as such should be perfectly fitting to the individual's physical, emotional and spiritual life. Career includes the job or series of jobs a person has until retirement. It was in the same vein that Hookey, Watts, Sultana & Neavy (2013) noted that career is an individual's journey through learning, work and other aspects of life. From this definition it could be understood that career relates to a range of aspects of an individual's life, learning and work. It could also relate to the working aspect of life.

According to Alutu (2004) Career is a way of life, it moulds one's character, determines one's social status, income, style of life, choice of friends as well as mental and physical health. This implies that the choice of career has a persuasive connection with one's entire way of life. Generally, it is believed that the primary motive behind the pursuit of various occupation is the fundamental human need to "make ends meet", to satisfy needs. While this of course has some truth in it, the contemporary society with its dynamic and sophisticated social and economic system have taken the problem of career choice a step or two further by making it both complex and intriguing (Udoh & Sanni 2012).

As noted earlier, many factors combine to determine the career choice of individuals. In practical terms, every effort to put forth in order to decide a career translates, in the light of significant factors, to an effort to limit oneself from entering into a wide array of careers. In other words, choosing a career implies letting go of several other alternatives. A number of factors tend to impact more strongly than others. Of course, it is also worthy to note that what influence the choice of career of one individual may not be that which influence the other person. While it is fairly difficult to determine the relative potency of these variables, it is true that there may be some form of interaction and connectivity where one modify the other. According to Onyejiaku (2001) "while some variables causing career choice are psychological in nature, some are biologically rooted, others may have socio-economic undertone" (p. 28). But yet, it is not uncommon for individuals to get into a career by accident or chance. As we live in exciting times where there are quintessential adjustments and flexibility to career requirements, the career of an aspiring college applicant is a substantial index of envisaged success, measured in monetary value.

According to Ekeke (2020), in Nigeria, it is at secondary school that a student confronts his or her very first career choice when in tenth grade (Senior Secondary School 1) he or she needs to

decide between Science, Arts, Technical or Commerce subjects. A number of students pick specific subjects simply because their friends are opting for them while some decide according to their parents' wishes. Only a few select subjects based on their interests and even at that, there is no telling that their preferred subjects would lead them to their desired careers. Science is defined as applied knowledge. It is a subject that has an impact on our everyday activities. It is also defined as a tool that is important to both individuals and the nation as a whole in order to survive and to meet the global economic requirements (Mbugua, Muthaa&Nkonke, 2012).

Owolabi (2004) defined science as an integral part of human society. Its impact is felt in every sphere of human life, so much that it is intricately linked with a nation's development. Science as a field of study has done a lot for mankind. For instance, life has been made a lot easier for man as a result of the advancements in science. Through science, man has been able to better understand his environment and this has enabled him to manipulate the conditions of his environment to suit his own benefit. Science has also made it possible for man to acquire his desired needs easily. It has reduced human needs to the barest minimum. Ogunleye (2000) observed that science is a dynamic human activity concerned with understanding the workings of our world. This understanding helps man to know more about the universe. Without the applications of science, it would have been impossible for man to explore the other planets of the universe. Also, the awareness of the existence, of other planets would not have been realized without science.

This implies that science subjects continue to be one of the most important subjects, as the world is currently at a stage where its wealth and economic development are highly dependent upon the science workforce. Science is a body of knowledge, a way of inquiry or method of investigation, and a way of thinking (Scientific attitudes) in the pursuit of nature (Joshi, 2008). This three-fold nature of science is what qualifies one to be science literate and to fit into the modern age of science and technology. Science is not a solitary discipline, it studies about everything around us, no wonder it is linked with every human endeavour that can be studied either as a body of knowledge or as an approach to solving problems (Scientific method). While science is studied as separate disciplines (Biology, chemistry and physics) in the senior secondary level, in the junior secondary level it is studied as a unified discipline called integrated science or introductory science which draws content from the different but related science subjects.

Indeed, the relevance of science to national goals, aspirations and economy, dictates to a large extent the huge commitment and support which most developing countries are now giving to science and technology education. In Nigeria, this is noticed in the several opportunities and scholarships made available by Government parastatals (such as Niger Delta Development Commission and Federal Ministry of Education) and multinational firms (such as Shell, Agip, Total etc.) in the field of science, medicine, engineering (technology) and related disciplines. Thus, academic achievement in SSCE science subjects is vital to the adequate training in science thereby, leading to a scientific literate society. According to Ogunleye (2002),

Science is a dynamic human activity concerned with understanding the workings of our world. This understanding helps man to know more about the universe. Without the applications of science, it would have been difficult for man to explore the other planets of the universe.

Emphatically, science is the foundation upon which the bulk of present day technological breakthrough is built. Nowadays, nations all over the world including Nigeria are striving hard to develop technologically and scientifically, since the world is turning scientific and all proper functioning of lives depend greatly on science.

Science for the purpose of this study comprises of the basic disciplines such a Physics, Chemistry, Mathematics and Biology. Many investigations have shown that secondary school students are exhibiting dwindling interest in Science (Esiobu, 2005). According to Adegoke(2008), since science is an all-important discipline, it is easily observed that a lot of students find it naturally attractive for making their career not minding their proficiency or aptitude in the area. As noted earlier, a lot of factors could be responsible for student career choices. While some of such factors are internal, some are totally external and beyond the control off the students.

The concept of conformity involves changing one's behaviors in order to "fit in" or "go along" with the people around them. In some cases, this social influence might involve agreeing with or acting like the majority of people in a specific group, or it might involve behaving in a particular way in order to be perceived as "normal" by the group. Onukwufor (2012) noted that Conformity refers to a situation where people change their behavior or beliefs to match those of other members of a group. Conformity is a type of social influence involving a change in belief or behavior in order to fit in with a group and it occurs as a result of group pressure, either real (involving the physical presence of others) or imagined (involving the pressure of social norms expectations) group pressure (Cialdini& Goldstein, in Onukwufor, 2012).

Crutchfield in Hill (2010) stated that, conformity can also be simply defined as "yielding to group pressures". Group pressure may take different forms, for example bullying, persuasion, teasing, criticism, etc. Researchers have found that people conform for a number of different reasons. In many cases, looking to the rest of the group for clues for how we should behave can actually be helpful. Other people might have greater knowledge or experience than we do, so following their lead can actually be instructive.

In some instances, people conform to the expectations of the group in order to avoid looking foolish. This tendency can become particularly strong in situations where we are not quite sure how to act or where the expectations are ambiguous. The effect of conformity on peer groups in adolescence cannot be ignored. A peer group can influence one's own attitude and image. Counseling is formed and influenced by the social environment around adolescents. One form of social influence is in the form of social norms and values that become mutual agreement to regulate adolescents' behavior as to create a uniform behavior in the group. Based on the above explanation it is explained that peer conformity is an act where an individual adjust to peers in the group with the reasons to be accepted and recognized by the group.

Olga (2014) observed that most students make their career choice just to conform to what the society accepts and also to be in same class with their friends. He noted that in most societies certain professions like medicine, engineering and law are seen as reputable, while some others like music, fine arts and theatre arts are not so highly placed. Schreier& Chen (2010) also stated that most teenagers are so attached to their friends that they just go ahead to choose same subjects just to be together, and to be liked. This makes most of them delve into areas they are

not fit for or do not like. It is also observed that students conform in many ways. They can either change their public behavior to suit their peers but may still hold on to their belief in their private life (compliance). They may also change their behavior in either public or private but only when they are within the influence environment (identification) or they may finally change totally to both within and without or in public and private (internalization).

Aptitude may include a person's capacity or hypothetical potential for acquisition of certain more or less well defined patterns of behaviour involved in the performance of a task with respect to which the individual has had little or no previous training. It is the capacity to acquire proficiency with a given amount of training; formal or informal. In other words, it is a combination of characteristics indicative of an individual's capacity to acquire (with training) some specific knowledge, skill or set of organized responses such as the ability to speak a language, to become a musician, or to do mechanical work. An aptitude test therefore is one designed to measure a person's potential ability in an activity in a specialized kind and within a restricted range. On the other hand, there are other factors that may predict career choice. People tend to go for careers they feel they fit into or they have the potential to succeed in. According to Zunker, and Norris (1998), having an aptitude for a particular career is one of the basic requirements to making a career choice. For example, you may read that in order to work in a particular field you need to have an aptitude for science. Other occupations require having an aptitude for math, visual arts, or performing arts; verbal or spatial abilities; or manual dexterity or motor coordination. The aptitude of an individual may determine to a great extent which career he will excel in. According to Standardized tests, an aptitude is a component of competence to do a certain kind of work at a certain level. Outstanding aptitude can be considered "talent". An aptitude may be physical or mental. Aptitude is inborn potential to do certain kinds of work whether developed or undeveloped. The innate nature of aptitude is in contrast to skills and achievement, which represent knowledge or ability that is gained through learning. According to Gladwell (2008), often it is difficult to set apart an outstanding performance merely because of talent or simply because of hard training. Talented people as a rule show high results immediately in few kinds of activity, but often only in single direction or genre. It should be stated that while an individual having a particular aptitude may indicate he or she might succeed in a given career, it may not also mean he or she will do well in every job within it. Required abilities may vary from one job to another, even in the same occupation. A number of occupations may require the same aptitude, but different mental ability. For instance, it could be that an individual may be artistic in nature. He may know how to sketch, paints or do other art work, this may only be at the leisure aspect. It may difficult at times that such individuals cannot engage such aptitude at the commercial or large scale level.

In Nigeria, the growing pace of the economy coupled with the advancement in technology has made the society even more complex than it was in the past. The number of occupations have increased drastically that one career is capable of multiplying into various other fields.

For instance, a profession as engineering has over the years metamorphosed into multiple sectors like chemical engineering, petroleum engineering, petro-chemical as well as civil engineering, production engineering, electrical/electronic engineering which have presented the students with many options to choose from. The implication of this is specialization with respect to consideration of some factors. With little or no knowledge about self and job options

in the world of work, students are faced with a lot of problems in the choice of subjects that would lead them to their future career.

Furthermore, the alarming rate in the fall of professional standards has raised issues for concern. The rate at which peers, parents, and other external factors influence career choice is alarming. There are instances where parents decide that their child will study medicine or law etc. not minding if the child has natural aptitude for such courses. In professions like medicine, students are failing out after some years due to inability to cope. Most often, we hear undergraduates complaining “He is a very intelligent lecturer but does not know how to transfer this knowledge” or “I would have excelled better if I were in this profession” etc. This statement often shows the extent to which inadequate knowledge of self in line with a chosen career mirrors negatively. This means that people will do better if they truly have the natural ability to carry out a task rather than just doing it with mere intelligence of artificial effort.

Furthermore, a career that has been chosen without the list of pros and cons may highly affect one's routine and subsequently his or her life. When it comes to students making a career choice, we must all agree that it is quite natural that they find it difficult. At such a nascent age, some students tend to make the wrong choices because he or she is completely clueless about what they want to pursue. Most of them at that scenario tend to influence their decisions by conforming to their peers, the society or their family. Most students do not seem to make rational decisions at that given point in time. On the other hand, career guidance/counseling services in Nigerian secondary schools have for a very long time been left in the hands of school teachers who are already overloaded and without professional training in the area of guidance and counseling. Science is seen as a prestigious and lucrative area of discipline in our society, so most parents consciously or subconsciously make their children choose this area. Sometimes, even without direct pressures from parents, some students opt for sciences like medicine just because of how they wish to be perceived. Many of them get into these areas without proper foundation. Hence, they find it overbearing and extremely taxing to cope with the demands of their studies. Recently, an undergraduate committed suicide in Bayelsa State and his reason was that he failed his Medical Examinations for the third time. He also added on his suicide note that his parents were disappointed as they really wanted him to become a medical doctor. This further portrays the fact that people go science related areas because of external influence rather than their personal abilities. The society today is filled with graduates who come out of science related areas but with little or no idea of what they should do in their various fields. Hence, from the foregoing, it is absolutely necessary to investigate if conformity and aptitude predicts science related career choice among secondary school students in Rivers State.

AIM AND OBJECTIVES

This paper aimed at investigating conformity and aptitude as predictors of career choice among science students in secondary schools in Rivers State. In specific terms, the paper sought;

1. To ascertain the extent to which conformity predicts science related career choice among secondary school students in Rivers State.
2. To determine the extent to which aptitude predicts science related career choice among secondary school students in Rivers State.

Research Questions

The following research questions were posed in the study;

1. To what extent does conformity predict science related career choice among secondary school students in Rivers state?
2. To what extent does aptitude predict science related career choice among secondary school students in Rivers State?

Hypotheses

The following corresponding hypotheses were also formulated to guide in the study

1. Conformity does not significantly predict science related career choice among secondary school students in Rivers State.
2. Students' aptitude does not have any significant predictive power on their choice of science related career in secondary schools in Rivers state.

MATERIALS AND METHODS

The study adopts the correlation research design in the investigation. The present study adopted this design because the researcher sought to investigate if conformity and aptitude are predictors of science career choice among secondary school students in Rivers state. Geographically, the study was carried out in Rivers state. The population of the study included all SS2 Science students in public secondary schools in Rivers State. As at the time of the study, there were 13,204 SSII students across the 268 public secondary schools in the three senatorial zones in the state. Sample of the study included 675 SS2 science students drawn from the three senatorial zones (Rivers East, Rivers West and Rivers South-East). The researcher used multiple stages of sampling procedures. Firstly, simple random sampling by ballot was used to select 15 schools from each of the senatorial zones. By this, all the names of public schools in each zonewas written and folded in pieces of paper. Fifteen pieces were handpicked after this to reveal the names of the selected schools. This gave a total of 45 schools. After this, the researcher used purposive sampling technique to identify science students in SS2 in each of the 45 schools. Then, stratified (non-proportionate) sampling was used to draw 15 SS2 students comprising of 8 males and 7 females from each of the Science Classes. This gave a total of 360 males and 315 females making it675 students, which formed the sample size. Three instruments were used for the study. They are the "Adolescents Conformity Scale" (ACS, 2019), the Science Aptitude Test Question (SATQ, 2019) as well as the Science Career Inventory (SCI, Ed. 2019). The ACS was adapted work from the works of Raniseski (1990). The Science Aptitude Test Questionnaire (SATQ) on the other hand is adapted from the works of Chandra (2010). This contained general science questions where students/respondents are requested to respond to. It contains 20 items in all.

Finally, the Science Career Choice Inventory (SCCI) includes several items designed to measure choice of students in science. It used a 5-point Likert scale of Like very much, Like, Indifferent, Dislike, and Dislike very much. The items are all positively keyed, weighted 1-5.

Face and content validity of Adolescent Conformity Scale (ACS), Science Aptitude Test Questionnaire (SATQ) as well as the Science Career Choice Inventory (SCCI) were determined using expert's opinion. Copies of the instrument were given to the project supervisor and two other experts in the area of measurement and evaluation for assessment. After this, few changes were made on ACS, SCCI, and SATQ since the first two were adapted while the last self-

developed. The researcher ensured that such corrections were effected before printing final copies of the instrument.

The reliability of all the instruments were determined using Cronbach Alpha method. Initially, ACS had an original reliability of 0.84. Administration was made on 40 respondents who will not form part of the sample size. After their responses, their scores were subjected to Cronbach alpha analysis. A reliability index of 0.71 for ACS and 0.82 for SCCI were obtained. These values indicate that the instrument is reliable enough. Administration of the instruments was done face to face using the services of assistant field researchers. They were trained on the simple technique and processes of administration. Before administration, proper instructions were given to the respondents. After their responses, the instruments were collected on the spot. The researcher used simple linear regression to analyze the data generated from the research instruments.

RESULT AND DISCUSSION

Research Question One

What extent does conformity predict science related career choice among secondary school students in Rivers state?

Hypothesis One

Conformity does not significantly predict science related career choice among secondary school students in Rivers State.

Table 1: Simple linear regression of conformity as predictor of science related career choice among secondary school students in Rivers state

R	R ²	Adj R ²	Std. Error	Unstand. B
0.086	0.007	0.006	4.24	0.070

Summary

	Sum of Sq	Df	Mean Sq	F	α	Sig.	Result
Regression	90.602	1	90.60				
Residual	12114.81	673	18.00	5.03	0.05	0.025	Significant
Total	12205.41	674					Reject Ho

From the analysis, calculated $R=0.086$, $R^2=0.007$, adjusted $R^2=0.006$, standard error is 4.24 while the unstandardized B value is 0.070. The R^2 value shows that conformity predicts about 0.7% of science related career choice among students. Also, the unstandardized B value suggest that as the value of conformity increases or decreases by a unit, there will be a corresponding increase or decrease of 0.070 unit in the values of science career choices among the students. From the summary table, calculated F is 5.03 while the sig. value is 0.025. Therefore, since the sig. value ($p=0.025<0.05$) is less than 0.05 alpha, the null hypothesis is rejected and the alternate accepted. This means that conformity significantly predict science related career choice among secondary school students in Rivers State.

Research Question Two

What extent does aptitude predict science related career choice among secondary school students in Rivers State?

Hypothesis Two

Students' aptitude does not have any significant predictive power on their choice of science related career in secondary schools in Rivers state.

Table 2: Simple linear regression of aptitude as predictor of science related career choice among secondary school students in Rivers state

Secondary School Students in Rivers State							
R	R ²	Adj R ²	Std. Error	Unstand. B			
0.103	0.011	0.009	4.24	0.08			
Summary							
	Sum of Sq	Df	Mean Sq	F	α	Sig.	Result
Regression	129.33	1	129.33				
Residual	12076.07	673	17.94	7.20	0.05	0.007	Significant
Total	12205.41	674					Reject Ho

From the analysis, calculated $R=0.103$, $R^2=0.011$, adjusted $R^2=0.009$, standard error is 4.24 while the unstandardized B value is 0.08. The R^2 value shows that aptitude predicts about 1.1% of science related career choice among students. Also, the unstandardized B value suggests that as the value of aptitude increases or decreases by a unit, there will be a corresponding increase or decrease of about 0.008 unit in the values of science career choices among the students. A calculated F value of 7.20 is realized while the sig. value is 0.007. Hence, since sig. value ($p=0.007<0.05$) is less than 0.05 alpha, the null hypothesis is rejected. This means that aptitude significantly predicts science related career choice among secondary school students in Rivers State.

DISCUSSION

Findings one shows that conformity significantly predicts science related career choice among secondary school students in Rivers State. This means that most students in secondary schools choose science related career choices because their friends have chosen those ones. Most significant is the fact that they go beyond the influence of peers to act in line with what their friends are doing. This finding may also mean that students who are always acting to impress their friends may not actually choose a career on their own. The implication here is that majority of the students who choose their career do so in conformity to what they see their friends do or what their friends want them to do. The reason for such a finding may not be far-fetched, as seen earlier, conformity involves carrying out an act to please significant others. Hence, in the secondary school whereby adolescents are faced with so many dilemmas in making vital decisions, it is not totally surprising to see them decide in favour of their friends. The finding may also come because majority of adolescents including the respondents are quite aware of the social impact peers have thereby making them to conform to each other as a way of staying in the group or for fear of being rejected in the group. The finding of the study is not totally strange to the researcher because she is quite aware of the fact that secondary school students who are basically adolescents are easily influenced by peers and as such, they do all it takes to stay accepted in the group including choosing similar career as their peers. The present finding is in line with that reported by Mallinson and, Hatemi (2018), Mahalik, Perry, Coonerty-Femiano and Land (2006) as well as Fizer (2013) all reported findings in support of the present one. Similarly, Asch (1951) reported that the number of times each participant in his study conformed to the majority view on average, about one third (32%) of the participants who were

placed in this situation went along and conformed with the clearly incorrect majority on the critical trials.

Over the 12 critical trials, about 75% of participants conformed at least once, and 25% of participant never conformed. In the control group, with no pressure to conform to confederates, less than 1% of participants gave the wrong answer. This showed that conformity can actually influence career choices of students.

From research findings two, it is seen that aptitude is a significant predictor of science related career choice among secondary school students in Rivers State. This finding mean that the natural ability of students can significantly tell if they could students can choose science related carrier or not. If students have natural competencies in whatever form, the finding shows that this can determine if they will go into science area. It is earlier stated that aptitude is a present condition which is indicative of an individual's potentialities for the future and which helps to predict the probable development of certain abilities. Hence, if students feel they have certain potentials, they certainly may certainly feel that they can undertake science related courses. An aptitude isn't inborn. It is a combination of in-born capacities and developed abilities and skills etc. Such combinations of in born capacities and acquired abilities make the person what he is at any given time and predicts what he may become. Since an aptitude is an inborn natural ability, it is also probable that even without the students identifying what they want to do in the future, it is possible that one can use the natural aptitude to foretell what such students may likely do in the future. This finding may come because adolescents have identified with their innate abilities more than being just influenced by other factors external to them. The finding may also come because schools counselors, teachers and others have carried out enough career guidance which has provided enough insight to the students on choosing a career. The finding here is not surprising to the researcher. This is because naturally, students may want to go into what they can naturally do outside the influence of external factors. Factors like parental influence in career selection have always been a problem to adolescents. Hence, the present study has shown that students have been able to rise above such influences and take into consideration their natural factors. The works of Lubinski in (2002) reported findings in support of the present on stating that aptitude has significant influence on professional career choice among students.

CONCLUSION

Conformity and aptitude are strong predictors of career choice in general and not just limited to science related ones. Hence, while majority of career preferences of secondary school students are done in conformity with their peers, some on the other hand are out of real aptitude posed by individual students. on the whole, wrong application of either of the two may have negative implications in the long run for the students.

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