Students’ Perceptions of the Image of a Scientist and Academic Achievement in Senior School Chemistry

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Abstract
This study investigated students’ perceptions of the image of a scientist and academic achievement in Senior School Chemistry in Delta State Capital Territory. The study used descriptive survey and ex-post facto research designs. Sample of the study was 3000 (1500 male and another 1500 female) Senior School Two students. Four research questions and five null hypotheses were posted. Two reliable instruments, Perception of a Scientist Task (POST) and Students’ Promotion Examination Results (SPER) were used to collect data. More significant number of students were of the perception that a scientist was a male than those that were of the perception that a scientist was a female; more significant number of male than female students were of the perception that a scientist was a female. The students that were of the perception that a scientist was a male had a higher, significant, mean academic achievement in Senior School Chemistry than the students that were of the perception that a scientist was a female. Implications of the study and recommendations were highlighted to encourage girls into science and related subjects.

Keywords: Scientist; Image of a Scientist; Academic Achievement of a Student; Chemistry; Senior Secondary School.

Introduction
A scientist is the person who has undergone approved professional training in any of the science courses at the Faculty of Science in a University. The basic natural sciences which a person can specialize in are biology, chemistry and physics. These science courses have different branches where people can further specialize.

The scientists of the 15th to 19th centuries were mainly men (Samuel in Igbojinwaekwu, 2012). Also, the scientists that made vital discoveries in scientific field were mainly men. Examples are Carl Linnaeus (1707-1778), Charles Darwin (1809-1882), Gregor Mendel (1822-1864), Joseph Priestly (1733-1804), Antoine Lavoisier (1743-1794), John Dalton (1766-1844), Michael Faraday (1791-1867), Isaac Newton, Albert Einstein, Archimedes, Boyle, Charles, Alexander Fleming (1881-1955), Pythagoras, William Harvey (1578-1657), Anthony van Leeuwenhoek (1632-1723), Edward Jenner (1749-1823), Louis Pasteur (1822-1895), Sir Joseph Lister (1827-1912), Robert Koch (1843-1910), Sir Patrick Manson (1844-
1922), Sir Ronald Ross (1857-1922), Sir Fredrick Gowland Hopkins (1861-1941), etc (Igbojinwaekwu, 2012).

The scientist does not believe in superstition. He/she believes in scientific process, a process that is well defined (Maduabum, 2004). In scientific process, an observation is made, questions are raised based on what is observed, guesses/hypotheses are made to give or provide tentative answers to the questions raised, data are collected for analysis in line with the questions raised and stated hypotheses. Real answers to questions raised are, therefore, provided by either accepting/retaining or rejecting the hypotheses.

The image of the scientist deals with the mental picture on who a scientist is? According to Igbojinwaekwu (2012), a scientist is a human being, male or female or both. Students' perception on the image of a scientist is what the students feel a scientist is. Some students believe that a scientist is a male or a man, while other students believe that a scientist is a female or a woman; some of the students believe that a scientist is a white man. These beliefs were documented by many researchers (Igbojinwaekwu, 2012, Jones, Howe and Rua, 2000; Barman, 1997; chambers, 1983). Igbojinwaekwu (2012) in his study, Images of Scientist: The Perceptions of Senior School Students, using a researcher made instrument, the Perception-of-Scientist-Task (POST) for data collecting with a sample of 3000 (1500 males and 1500 females ) Senior School Students of Public Secondary Schools in Delta State Capital Territory, Delta State, Nigeria, observes that 1,420 (94.7%) and 1,480 (98.7%) male and female students, respectively, support that scientists are men; 60(4%) male and 15(11%) female students, respectively, support that scientists are women. He also, observes that 20(1.3%) male and 5(0.3%) female students, respectively support that scientist are both men and women. He, also, observes that 20(1.3%) male and 5(0.3%) female students, respectively, support that scientists are both men and women.

Jones, Howe and Rua (2000) in a Gender Difference Study in Students’ Experiences, Interests and Attitudes Towards Science and Scientist using Draw-A-Scientist-Task (DAST) as instrument for data collection reveal that, although, there was equal representation from both male and female in the study, only 24% of the middle school students, in the United States of America (U.S.A) included a female as a scientist in their drawings. Barman (1997) as Jones, Howe and Rua (2000), using Who-Is-A-Scientist-Task (WIAST) with a sample of 1,504 students from 23 States in the District of Columbia and 3 additional countries, observes that 98.1% of the students still perceive scientists as white males with laboratory coats, eye glasses, white hand gloves and facial hairs. Chambers (1983) in his study, Stereotypic Image of the Scientist: The Draw-A-Scientist-Test (DAST), in U.S.A, observes that less than 1% of the 4,807 students used as sample of the study, drew a female scientist.

Academic achievement of a student is the score or grade a student obtains after sitting for an examination or a test (Igbojinwaekwu, 2015). It could be an internal or external examination, formal or informal. During teaching and learning processes, the teacher has the behavioural objectives which the students will attain by the end of the lesson, being taught. The teacher, also, has some evaluative questions, each assessing the student on one behavioural objective. Simply put, if there are five behavioural objectives, there must be five evaluative questions to enable the teacher easily ascertain the extent of attainment to the behavioural objectives by the end of the lesson.

Chemistry is one of the most important branches of science which inculcates scientific skills in the student. It deals, generally, with change, structure and properties of matter which
surrounds us (Moses in Igbojinwaekwu, 2012). Ababio (2005) defines chemistry as a branch of pure science which deals with the composition, properties and use of matter. According to Igbojinwaekwu (2012), chemistry is regarded as the central science, because hardly do we have any science that does not require the knowledge of chemistry. In line with Igbojinwaekwu (2012) the Unified Tertiary Matriculation Examination (UTME) (2014) states that students seeking admission into Universities to study courses like pharmacy, agricultural science, microbiology, nursing, geology, medicine, textiles, fine arts or visual arts, clothing, food technology, engineering, laboratory technology, biochemistry, etc, require, at least, a credit pass in chemistry at the Senior School Certificate level.

The contributions of chemistry to societal, industrial and economic sectors of the world, in general and Nigeria, in particular, have been felt in all aspects of human life (Moses in Igbojinwaekwu, 2012). Also, Offiah and Samuel (2008) state that chemistry is at the core of every technology we enjoy today, and that the power of chemical science is what creates an enabling infrastructure that delivers the food, medicines and materials which are the hallmarks of modern life.

In Nigeria, the secondary school system is of two tiers. The first is Junior Secondary School, which is for the students who graduated from the Primary School. The second is the Senior Secondary School, where graduates of Junior Secondary Schools, who are academic minded, are given serious academic attention, in preparation for the academic rigours in the tertiary institutions. Both the Junior and Senior Secondary Schools are of three years duration. The students of the Senior Secondary Schools are called Senior School Students.

Statement of the Problem
The study on Images of Scientists, that is, who are scientists, males, females or both, whites, blacks or both, were carried out in the United States of America (U.S.A) and United Kingdom (UK) by chambers (1983); in Canada and Australia by Barman (1997); in Nigeria by Igbojinwaekwu (2012). No study, to the best of the knowledge of the researcher, is on how the Perceptions of the Senior School Chemistry Students of the image of scientists affect their academic achievement in senior school chemistry, being a central science. This gave birth to this study. The interest of the researcher lies on the students whose perception is that a scientist is a male or female and how it affects the students’ academic achievement. The statement of the problem is, therefore, stated thus: What effect has the Senior School Chemistry Students’ Perceptions of the Image of a Scientist on Academic Achievement of Senior School 2 Students in Senior School Chemistry?

Purpose of the Study
This study intended to find out:
- The perceptions of Senior School Chemistry (SSC) Students of the image of a Scientist.
- The perceptions of Senior School Chemistry (SSC) Male and Female Students of the image of a Scientist.
- The Perceptions of Senior School Chemistry (SSC) Male Students vis-a-vis Female Students of the Image of a Scientist.
- The Mean Academic Achievement (MAA) of the SSC Students according to their Perceptions of the image of a Scientist.
Research Questions
The following five research questions were formulated to guide this study;

- What are the perceptions of SSC students of the image of a scientist?
- What are the perceptions of SSC male and female students of the image of a scientist?
- What are the perceptions of SSC male students vis-a-vis the SSC female students of the image of a scientist?
- What is the Mean Academic Achievement (MAA) of SSC students in Senior School chemistry, according to their perceptions of the image of a scientist?

Null hypotheses
The following five stated null hypotheses were formulated and tested at P<0.05 on a 2-tailed test, to further guide this study.

HO1: There is no significant difference, in number, between SSC students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

HO2: There is no significant difference, in number, between the SSC male students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

HO3: There is no significant difference, in number, between the SSC female students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

HO4: There is no significant difference, in number, between the SSC male and female students’ perceptions of the image of a scientist.

HO5: There is no significant difference, in MAA, in SSC between the SSC students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Methodology
The study adopted a descriptive survey and ex-post-facto research designs. The researcher employed a descriptive survey because of an intention to determine the status of a given phenomenon (perceptions of SSC students of the image of the scientist) (Kerlinger, 1979; Nworgu, 1991; Maduabum, 2004; Akuezuilo and Agu, 2002). Ex-post-facto research design was used in this study because the researcher studied students’ perceptions in retrospect to scores that had already existed and that the researcher did not manipulate the independent variable (Maduabum, 2004; Akuezuilo and Agu, 2002).

The population of the study comprised 14,135 Senior School (SS) 2 students in the Public Secondary Schools in Delta State Capital Territory and their Chemistry Scores in the Senior School 1 Promotion Examination into Senior School 2. Out of this population, 7,713 and 6,422 were males and females, respectively. The sample of the study was 3,000, which consisted of 1,500 male and another 1,500 female students. The male and female students in the urban schools were 1,220 and 813, respectively. The rural schools consisted of 280 male and 687 female students, respectively. The sample was obtained through a stratified simple random sampling technique. Perception-of-Scientist-Task (POST), a researcher made instrument, and Students’ Promotion Examination Results (SPER) were the instruments used to collect data in this study. POST had two sections, A and B. Section A sought for the bio-data of the students, while section B had six question items, to find out the perceptions of SSC students of the image of a scientist.
The instrument, SPER, had the school location, gender of the student, scores of students in chemistry and the number of students that offered chemistry. Two Educational Psychologists and two Chemists validated the POST and the SPER. The POST and SPER were judged to be suitable for this study. Test-Retest method was used to estimate the reliability index of POST as 0.81 and was judged to be good, enough, for this study (Kerlinger, 1979; Egbule and Okobia, 2001; Maduabum, 2004). SPER was a standardised document from Delta State Ministry of Education, Examinations and Standards Department, Asaba, Nigeria. So, it was an authentic instrument for data collection and do not require a reliability index to be calculated. The data collected from POST and SPER were subjected to analysis using percentage, chi-square ($X^2$) and Z-test statistics.

**Data Analysis and Results**

**Analysis of Research Questions**

**Research question 1**

What are the perceptions of Senior School Chemistry Students of the Image of a Scientist?

**Table 1: Perceptions of SSC Students of the Image of a Scientist Using POST**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Question Items</th>
<th>N</th>
<th>Favouring Male</th>
<th>Favouring Female</th>
<th>Favouring Both</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>Is a scientist a male or a female or both?</td>
<td>3000</td>
<td>1,420(94.7%)</td>
<td>60(4%)</td>
<td>20(1.3%)</td>
</tr>
<tr>
<td>2.</td>
<td>Can male or female students or both pass chemistry examination?</td>
<td>3000</td>
<td>2780(92.79%)</td>
<td>220(7.3%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>3.</td>
<td>Do you prefer your chemistry teacher to be a male or female or both?</td>
<td>3000</td>
<td>3,000(100%)</td>
<td>0(0%)</td>
<td>10(1%)</td>
</tr>
<tr>
<td>4.</td>
<td>Who is likely to study chemistry in the university? male or female or both.</td>
<td>3000</td>
<td>2,810(99.6%)</td>
<td>190(6.3%)</td>
<td>0(0%)</td>
</tr>
<tr>
<td>5.</td>
<td>Are the world known scientists or applied scientists males, females or both?</td>
<td>3000</td>
<td>2687(99.6%)</td>
<td>13(0.4%)</td>
<td>58(4%)</td>
</tr>
<tr>
<td>6.</td>
<td>On the average, who do you think a scientist is? male or female or both?</td>
<td>3000</td>
<td>1,450(96.5%)</td>
<td>32(2.5%)</td>
<td>18(1.0%)</td>
</tr>
</tbody>
</table>

Data in table 1, as shown in serial number 6, indicates that on the average, 1,450 students, representing 96.5%, 32 students, representing 2.5% and 18 students, representing 1.0% drew...
male, female and both male and female as a scientist, respectively. The implication is that, on the average, most SSC students of SS2 perception is that a scientist is a male.

**Research question 2**
What are the perceptions of SSC male and female students of the image of a scientist?

**Table 2: Perceptions of SSC Male and Female Students of the Image of a Scientist**

<table>
<thead>
<tr>
<th>S/N</th>
<th>Question Items</th>
<th>Male Students Responses</th>
<th>Female Students Responses</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>N</td>
<td>In favour of male</td>
</tr>
<tr>
<td>1.</td>
<td>Is a scientist a male or a female or both?</td>
<td>1500</td>
<td>1,450(96.7%)</td>
</tr>
<tr>
<td>2.</td>
<td>Can male or female students or both pass chemistry examination?</td>
<td>1500</td>
<td>1320(88%)</td>
</tr>
<tr>
<td>3.</td>
<td>Do you prefer your chemistry teacher to be a male or female or both?</td>
<td>1500</td>
<td>1500(100%)</td>
</tr>
<tr>
<td>4.</td>
<td>Who is likely to study chemistry in the university? male or female or both.</td>
<td>1500</td>
<td>3(0.2%)</td>
</tr>
<tr>
<td>5.</td>
<td>Are the world known scientists or applied scientists males or females or both?</td>
<td>1500</td>
<td>1380(92%)</td>
</tr>
<tr>
<td>6.</td>
<td>On the average, who do you think a scientist is? male, female or both?</td>
<td>1500</td>
<td>1429(95.39%)</td>
</tr>
</tbody>
</table>

Data in table 2, as shown in serial number 6, indicate that on the average, 1429, representing 95.3% SSC male students in SS 2 perceive that a scientist is a male; 71, representing 4.7% SSC male students in SS 2 perceive that a scientist is a female; 1476, representing 98.4% SSC female students in SS2 are of the perception that a scientist is a male, while 24, representing 1.6% SSC female SS 2 students is of the perception that a scientist is a female.
This clearly shows that majority of SSC male and female students are of the perception that a scientist is a male.

**Research question 3**

What are the perceptions of SSC male students vis-a-vis the SSC female students of the Image of a Scientist?

The answer to research question 3 is shown in table 2.

From table 2, it is evident that on the average, more SSC female students (1476, representing 98.4% of the SSC of SS 2 female students) than the SSC male students (1429, representing 95.3% of the SSC of SS2 male students) is of perception that a scientist is a male. However, more SSC male students (71, representing 4.7% of SSC male SS 2 students) than the SSC female students (24, representing 1.6% of SSC female SS 2 students) is of the perception that a scientist is a female.

**Research Question 4**

What is the Mean Academic Achievement of SSC Students in Senior School Chemistry, according to their Perceptions of the Image of a Scientist?

Table 3 shows the Mean Academic Achievement of SSC Students in Senior School Chemistry, according to their Perceptions of the Image of a Scientist.

**Table 3: Mean Academic Achievement (MAA) Of SSC Students in SS Chemistry according to their Perceptions of the Image Of a Scientist**

<table>
<thead>
<tr>
<th>Perception</th>
<th>N</th>
<th>MAA</th>
<th>MAA difference</th>
<th>SD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scientist is a male</td>
<td>2905</td>
<td>68</td>
<td>3</td>
<td>9.0</td>
</tr>
<tr>
<td>Scientist is a female</td>
<td>95</td>
<td>65</td>
<td>8.5</td>
<td></td>
</tr>
</tbody>
</table>

From table 3, it is clear that, the MAA of 2905 SSC SS 2 students, whose perception is that a scientist is a male, is greater than the MAA of 95 SSC SS 2 students whose perception is that a scientist is a female.

H0: There is no significant difference, in number, between SSC students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Table 4 shows $X^2$-test analysis of the number of SSC students’ perceptions of the image of a scientist.
Data in table 4 show that out of 3,000 SSC Students, 2,905 perceived that a Scientist is a male, while 95 perceived that a female is a Scientist. The $X^2$-test is significant in favour of the SSC Students whose perception is that a Scientist is a male.

$H_0^2$: There is no significant difference, in number, between SSC male students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Table 5 shows $X^2$ test analysis of the number of SSC male students’ perceptions of the image of a scientist.

Table 5: $X^2$-test Analysis of the Number of SSC Male Students’ Perceptions of the Image of a Scientist

<table>
<thead>
<tr>
<th>No of Responses(N)</th>
<th>SSC male students perceptions</th>
<th>Expected frequency</th>
<th>Observed frequency</th>
<th>$df$</th>
<th>$X^2_{cal}$</th>
<th>$X^2_{crit}$</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Scientist is a male</td>
<td>1,500</td>
<td>2,905</td>
<td>1</td>
<td>2632.03</td>
<td>3.84</td>
</tr>
<tr>
<td></td>
<td>Scientist is a female</td>
<td>1,500</td>
<td>95</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 5 shows that out of 1,500 male SSC Students, 1,429 perceived that a Scientist is a male, while 71 perceived that a female is a Scientist. The $X^2$-test is significant in favour of the SSC Students whose perception is that a Scientist is a male.
H03: There is no significant difference, in number, between SSC female students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Table 6 shows X^2-test analysis of the number of SSC female students’ perceptions of the image of a scientist.

**Table 6: X^2-test Analysis of the Number of SSC Female Students’ Perceptions of the Image of a Scientist**

<table>
<thead>
<tr>
<th>N</th>
<th>Perception</th>
<th>Expected frequency</th>
<th>Observed frequency</th>
<th>df</th>
<th>X^2_cal</th>
<th>X^2_crit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500</td>
<td>Scientist is a male</td>
<td>750</td>
<td>1476</td>
<td>1</td>
<td>1405.54</td>
<td>3.84</td>
</tr>
<tr>
<td>750</td>
<td>Scientist is a female</td>
<td>750</td>
<td>24</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 6 shows that out of 1,500 female SSC Students, 1,476 perceived that a Scientist is a male, while 24 perceived that a female is a Scientist. The X^2-test is significant in favour of the SSC female Students whose perception is that a Scientist is a male.

H04: There is no significant difference, in number, between SSC male and female students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Table 7 shows X^2-test analysis of the number of SSC male and female students’ perceptions of the image of a scientist.

**Table 7: X^2-test Analysis of the Number of SSC Male and Female Students’ Perceptions of the Image of a Scientist**
Data in table 7 of serial number 1 show that out of 3,000 (1500 male and 1500 female) SSC Students, 1429 male and 1476 female students, respectively, perceived that a Scientist is a male. Similarly, data in table 7 of serial number 2 show that, out of 3000 (1500 male and 1500 female) SSC students, 71 male and 24 female students, respectively, perceived that a Scientist is a female. The $X^2$-test of data in serial number 1 of table 7 is not significant, indicating that most male and female students are of the perception that a Scientist is a male. The $X^2$-test of data in serial number 2 of table 7 is significant, in favour of the number of SSC male students of SS2 who are of the perception that a Scientist is a male against the number of SSC female students of SS2 who perceive scientist as a female.

HO$_3$: There is no significant difference, in MAA, in SSC between the SSC students whose perception is that a scientist is a male and those whose perception is that a scientist is a female.

Table 8 shows Z-test analysis of difference in MAA of SSC students according to their perceptions of the image of a scientist.

Table 8: Z-test Analysis of Difference in MAA of SSC Students According to their Perceptions of the Image of a Scientist
Perceptions  | N  | MAA | SD  | df  | Zcal | Zcrit | P   
--- | --- | --- | --- | --- | --- | --- | ---
Scientist is a male | 2905 | 68  | 9.0 | 2998 | 3.38 | 2.58 | <0.05
Scientist is a female | 95  | 65  | 8.5 |

Table 8 shows that out of the sample of 3000 SSC students, 2905 are of the perception that a scientist is a male and this group of students have a higher MAA= 68%; the 95 SSC students who are of perception that a scientist is a female have a lower MAA=65%. The MAA difference of 3% of the SSC students was subjected to Z-test analysis and was found to be significant in favour of SSC students who perceive that a scientist is a male.

**Summary of Findings**
The following results were observed in this study;
- On a general note, more SSC students in the public secondary schools, in Delta State Capital Territory, are of the perception that a scientist is a male.
- More SSC male and female students are of the perception that a scientist is a male;
- More SSC male students, than their female counterparts, are of the perception that a scientist is a female;
- The SSC students who are of perception that a scientist is a male have higher significant MAA than their counterparts who are of the perception that a scientist is a female.

**Discussion of the findings**
The prominent findings in this study are that (1)more SSC students are of the perception that a scientist is a male, than the SSC students whose perception is that a scientist is a female; (2) more male and female students, respectively, are of the perception that a scientist is a male; (3) more SSC male students, than their female counterparts, are of the perception that a scientist is a female; (4) the SSC students who are of perception that a scientist is a male have higher significant MAA than their counterparts who are of the perception that a scientist is a female.

The finding in this study that more SSC students perceived a scientist as a male than their counterparts who are of the perception that a scientist is a female, agrees with the findings of Barman (1997); Chambers (1983); Jones, Howe and Rua (2000) and Igbojinwaekwu (2012). Barman in United States of America and United Kingdom, observed, in his finding, that even they had equal representations of boys and girls, more boys and girls indicated that a scientist is a male, while about 1-25% was of the perception that a scientist is a female. The probable reasons for this observation may be that the difference in the social experiences of men and women gave them (females and males) different ways of looking at life and interpreting events and, therefore, conferred on them different standpoints (Harding, Hartstock & Smith in Igbojinwaekwu, 2012). Another probable reason, according to Harding
in Igbojinwaekwu (2012), is that science is gender bias. She observes that science is developed, primarily, from the perspectives of men; women experiences have been neglected as starting points in scientific researches and as generators of evidence for or against knowledge claims. Yet, another vital, probable, reason, according to Kelly and Rosser in Jones, Howe and Rua (2000) is that the inherent masculine nature of science is prime reason for girls’ perception that a scientist is a male. They suggested that science is masculine at the surface level, deeper epistemological level and in the nature of knowledge that is accepted as scientific. Supporting the assertions of Kelly and Rosser, Association of American University Women (AAUW) and Kelly in Jones, Howe and Rua (2000) affirm that at surface level of teaching-learning milieu, men comprised the majority of who study, teach and practice science; the examples and applications frequently use in teaching science are masculine; the classroom interactions accept male dominance as a norm; even the assessments in science are gender biased. Also in support of Kelly and Rosser, Bently, Watts and Manthorpe in Igbojinwaekwu (2012) agree that one of the probable reasons for many students, including girls, to perceive that a scientist is a male is that at a deeper level, scientific thinking and knowing embodied a masculine world view.

One of the vital findings in this study is the higher and significant academic achievement of SSC students in Senior School Chemistry. The probable reason for this situation may be on the ground that those who are of the perception that a scientist is a male try to acquire the attributes of a man, which includes aggressiveness, endurance, emotional, physical and mental stability needed to succeed in sciences and applied sciences.

Implications of the study
One of the findings worth mentioning in this study is that most SSC students, including the girls, are of perception that a scientist is a male. The implications are (1) few girls enrol for science examinations, (2) few girls have the ambition choosing careers in science and related field and (3) few girls are found in professions like engineering, medicine, piloting, etc, where boys thrive, successfully. Another vital finding in this study is that students whose perception is that a scientist is a male have a higher academic achievement in senior school chemistry than those with opposite perception. This implies that academic achievement is perception biased, in favour of the students who are of perception that a scientist is a male.

Conclusion
Most SSC students of SS2 in Public Secondary Schools in Delta State Capital Territory are of perception that a scientist is a male. The students whose perception is that a scientist is a male have a higher, significant, MAA in Senior school chemistry than those students who are of perception that a scientist is a female. More male, than the female students, are of perception that a scientist is a female. Specifically, out of the sample of 3000 SSC students, 1420 (94.71%) are of the perception that a scientist is a male, while 60 (4%) perceived that a scientist is a female and 20(1.3%) are of the perception that a scientist could be a male or a female or both. Fifty (50) (3.3%) male SSC students are of the perception that a scientist is a male, while no female SSC students are of the perception that a scientist is a female. The SSC students who are of the perception that a scientist is a male had 68% MAA, while their counterparts who are of the perception that a scientist is a female had 65% MAA.

Recommendations
The implications of the findings in this study resulted in the following recommendations:
1. More female students should be encouraged to study science and related courses to disabuse the perception that only males are scientists. This should be done awarding scholarships to girls who show interest in studying science and technology at all levels of education.

2. More female teachers should be employed, so that, they would include all the feminine attributes and experiences in the study of science, as much as possible. Above all, science teachers should give all the students, boys and girls, equal attention in the teaching-learning process.

3. Parents should motivate their girls who show interest in studying science and related courses.

4. Curriculum planners and developers should include more feminine characteristics in the science curriculum.

References