The Relationship between Achievement Motivation and Mathematic Performance Amongst Female Learners and in Selected Urban Girls' Secondary Schools in Kenya

Global Journal of Social Sciences Studies
Vol. 4, No. 1, 23-29, 2018
e-ISSN: 2518-0614

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ABSTRACT

Poor performance in mathematics has been a concern worldwide despite the fact that mathematics may be regarded as "the mother of technology and associated fields. Poor Mathematics performance in all tiers of education has continued to be reflected in national examinations between 2005 and 2009 in Kenya. Girls mathematics performance in Nairobi county has been very poor with 85% of students obtaining D+ or below at Kenya Certificate of Secondary Education (KCSE) (Kenya National Examinations Council (KNEC), 2010). There is limited literature on relationship between achievement motivation and mathematics performance in girls' high schools in Kenya. The empirical studies done in causes of poor performance in mathematics mainly focus on topics like the mathamatics teaching methods (Omar, 1996) achievement (Njoroge, 2014) peer pressure and perception Mbugua *et al.* (2012) among many others. The main purpose of this study was to investigate the relationship between achievement motivation and mathematic performance in selected girl's secondary school in Nairobi. This study was based on McClelland (1961) Achievement Motivation theory. Descriptive survey design was adopted in this study to investigate relationship between student achievement motivation, and mathematics performance. Purposive sampling technique used to select the schools in Nairobi county.. Simple random sampling techniques used to sample 300 participants from selected girls schools. The Researcher adapted achievement motivation tool used by Githua (2002). Pre-mock exams results (2013) were used to measure Mathematics performance. Data collected was analyzed using both descriptive and inferential statistics. The Pearson correlation alpha=0.05 was used to test the stated hypothesis. The results of the study indicate positive but weak and none significant relationship between Achievement Motivation and Mathematics performance in the area of study. Further research should be done in difference environment to confirm this finding.

Keywords: *Achievement motivation, Mathematics, Females, Performance, Kenya.*

DOI: 10.20448/807.4.1.23.29
Citation | Janet Obiero (2018). The Relationship between Achievement Motivation and Mathematic Performance Amongst Female Learners and in Selected Urban Girls' Secondary Schools in Kenya. Global Journal of Social Sciences Studies, 4(1): 23-29.

Funding: This study received no specific financial support.
Competing Interests: The author declares that there are no conflicts of interests regarding the publication of this paper.
History: Received: 22 November 2017/ Revised: 12 December 2017/ Accepted: 3 January 2018/ Published: 12 January 2018
Publisher: Online Science Publishing

1. INTRODUCTION

The poor mathematics performance has been a concern worldwide despite of empirical studies that have been done on certain factors which have been recognized as possible contributors to the Mathematic performance. An analysis of performance (International survey) carried in forty countries across the globe by Stigler and Hiebert (1999) indicate a general poor performance in mathematics in all countries (Rotich, 2007).Learners tend to enjoy mathematics in primary grades but this level of enjoyment falls dramatically when they progress to secondary schools (Willis, 1977). Currently, little attention has been paid to achievement motivation as possible factors which influence the performance of students in mathematics.There is usually an outcry over poor performance in mathematics in girls schools in world wide yet, it is a requirement for all learners to pass Mathematics so as to lay a good foundation for the future career. Furthermore, studies that have been carried out on mathematics performance worldwide suggest that there is a need to look for other solutions that can improve mathematics performanc (Chowdhury and Shahabuddin, 2007).

In Africa, mass failure in Mathematics persists amongst girls in despite the efforts to improve the performance (Mbugua *et al*., 2012). The actual causes of failure are not fully understood and this limits the teachers and policy makers as regards the remedy for the problem in question. Female learners in Kenya perform poorly in the National Examinations especially at KCSE level for instance Mathematics performance in Kenya certicate for secondary education result analysis report (2008), indicates that 20.7% females scored between A and B while 70% of them scored grade D and below in Nairobi County. The cause of the poor Mathematics' performance in girls' secondary schools in Kenya has not been fully addressed. Empirical studies done in Kenya have mainly focused on pupil self-concept, Mullis *et al.* (2008) the family size, Gambrell and Bales (1986) motivation, Njoroge (2014) peer pressure and perception Mbugua *et al.* (2012). Therefore this study investigated relationship between achievement motivation and mathematics performance in selected girl's secondary school in Nairobi .Kenya.

Empirical studies done on mathematics performance conclude that students' achievement motivation has positive effects upon their scores and that mathematics achievement motivation enabled them to be more organized in their studies (McClelland, 1961; Zerebergen, 2000; Wang and Lin, 2008). Furthermore, Asikhia (2010) state that there exist notable differences in mathematics performance among girls with different achievement motivation level which affects their mathematics performance. Those students, who hold a high desire of success, work hard to achieve (Zenzen, 2002). The basic premise of achievement goal orientation theory is that when students engage in academic tasks, they set various personal goals and the type of goals that students adopt can directly influence their outcomes (Elliot and Mcarego, 2001). Wang and Lin (2008) suggests achievement motivation is largely social psychological in nature. It often occurs within groups, where interpersonal interactions can undermine or facilitate engagement in tasks to be done. While Njoroge (2014) suggest, motivation can enhance learning in mathematics.

McClelland (1961) firmly believe that achievement-motivated people are generally the ones who make things happen and get results, and that this extends to getting results through the organization of other people and resources. This framework assumes that people differ in selecting various goals that are related to their achievement behavior and their differences lead to different emotional motivational cognitive and behavioral outcome. Achievement motivation is foundation for all human motivation. This study aimed at improving predictability of Achievement Motivation Theory in relation to Mathematics Performance. The research evidence in indicate that there is positive relationship between motivation and mathematics performance, (Withrock .1983: Corno et al, 1982; Ugurogh and Walberg ,1986) as cited by Chowdhury and Shahabuddin (2007).

2. METHOD

2.1. Participants

Purposive sampling was used to select the six girls' secondary schools in Nairobi County.. The researcher relied on her expertise to select the units that are representative of the population. The sample of 300 respondents were randomly drawn from the selected girls' schools. Their age group range was between 14 to 19 years with a mean of 17 years of age.

2.2. Assessments and Measures

This study adopted descriptive survey design to investigate the relationship between achievement motivation and mathematics performance in selected girls' secondary schools in Nairobi in Kenya. Other variables considered in the study were content of achievement motivation at five levels that was; very highly, highly, undecided, lowly and very lowly. This technique guarded against wild sample and ensured that no sub-population was omitted. Standard mock scores (2011) from the selected girls' secondary schools were used.The researcher adapted achievement motivation tool used by Githua (2002) to measure students' achievement motivation in mathematics performance. The tool had 28 items which addressed areas of achievement motivation as indicated by Githua (2002). All items were designed for a likert scale response using 5 interval scales of "strongly disagree", "disagree" 'undecided', 'agree', and 'strongly agree'. Response to each item was scored from 1-5. Strongly agreement with favorable item was given a score of 5 and strongly disagreement was given a score of 1. A score of 28 items were used. The highest score expected was 140. The lowest was 28. On adjustment the following formula was used; $\sum$ score in each item/125 $\times$ 100**.** Validity of the instruments was established through pilotting of the instruments. Test Retest method was used to attest reliability of instruments. The instruments were administered to the pilot subject and scored. Correlation co-efficient of 0.75 was considered to be high enough to judge the instruments as reliable for study.

2.3. Data Analysis

The data collect was pretested and compared using spearman Pearson r_{xy} at (α = 0.05). It was also analyzed using both descriptive and inferential statistics. The researcher scored and coded raw data obtained. The scored data was displayed through percentage, frequency tables and graphs. The mean, mode, range, median and standard deviation were compared for all the scores. Spearman r_{xy} at (α = 0.05) was used to establish the correlation co-efficient and to test the following null hypothesis:

3. RESULTS

After the analysis of the data collected the findings presented as follow;

Table-4.1. Overall results of Achievement Motivation for the sampled schools

Outcome 1						
Achievement Motivation						
Min	Max	Range	Mean	Median	Mode	Standard Deviation
44	92	48	74.8	75.5	87	92

Source: Researher, 2017

The finding as indicated in table 4.1 show the level of achievement motivation towards mathematics is not the same in all female sampled schools. This suggests that the influence of achievement motivation in mathematics

differ from one student to another. Thus other variables like attitude, culture and environment among many others influence mathematics performance in the sampled schools as in the literature review. Ranani (2014) argues that though there is a modest impact of achievement motivation in mathematics performance, the other variables mentioned may have a stronger influence.

outcome 2

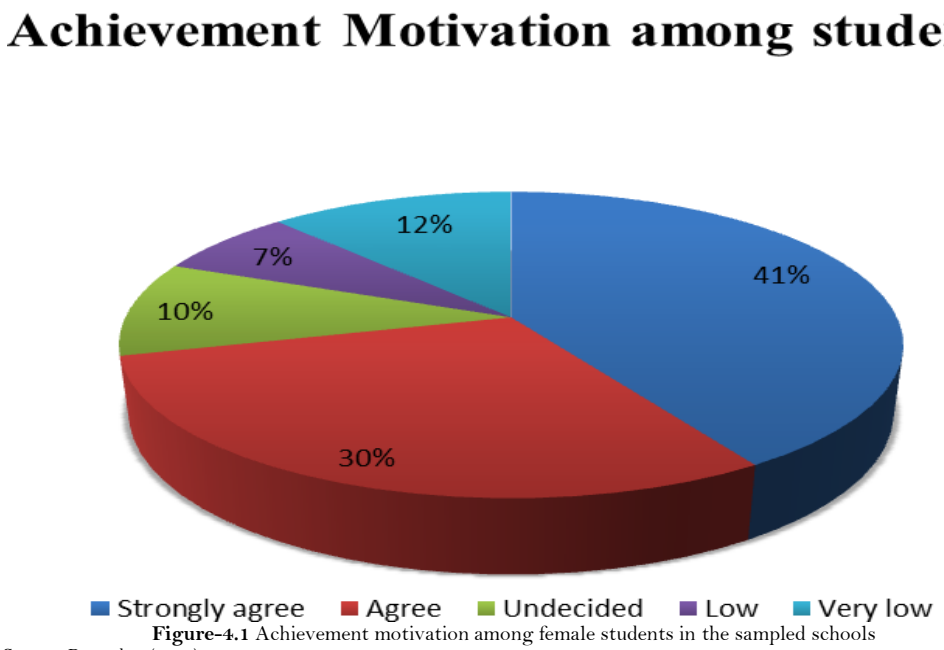

Figure-4.1 Achievement motivation among female students in the sampled schools

Source: Researher (2017)

As shown in figure 4.1, most students (41%) strongly agreed that achievement motivation plays a major role in their mathematics performance. The Figure 4.1 below shows that 30% of the students agreed that achievement motivation is essential in mathematics performance while 12% and 10% felt that achievement motivation has less influence.

The table 4.2 show that mean for participants was score was 54% while majority of them scored 40% with standard deviation of 14.92212.,indicating average performance.

Table-4.2. Correlation between Achievement Motivation and Mathematics Performance

Outcome 4

		Achievement motivation	**Performance in mathematics**
Achievement motivation	Pearson Correlation	1	0.116
	Sig. (1-tailed)		0.188
	N	60	60
Performance in mathematics	Pearson Correlation	0.116	1
	Sig. (1-tailed)	0.188	
	N	60	60

Sourse: Researcher (2017)

The table 4.2 show there is a positive but weak (0.12) and a more significant (0.185) relationship between achievement motivation and mathematics performance at 0.05 level of significance among the sample of female students studied. Majority of those sampled in schools A had low achievement motivation in relation to mathematics performance. Majority of them scored 43% in pre-mock examination while in schools B, majority had high achievement motivation and their pre-mock mathematics results indicate that majority of them scored 59%. In

schools C, the results indicate that the majority of the sample studied had low achievement motivation yet most of them scored 40% in their pre-mock mathematics examination. Therefore the null hypothesis that there is no relationship between achievement motivation and mathematics performance is accepted.

4. DISCUSSION

The slight relationship between achievement motivation and mathematics performance stated in Table 4.2 could be due to the fact that the student achievement motivation was affected by general negative attitude towards mathematics as a subject. As stated in the literature review. There is a common belief that females are less mathematically capable than males (Alderman, 2004). Negative stereotype attitude undermines someone's ability to perform at their highest ability as in the case of schools C (Teilla, 2007). If girls consistently believe that they are biologically not cut out for it, they are likely to perform poorly in mathematics at any level. This justifies why there is a weak relationship between achievement motivation and mathematics performance among the participants. From this findings of the study, it seems as if female students need to have an adaptive motivational pattern before they could accept challenges of difficult courses as students of mathematics. Furthermore, Asikhia (2010) believed that there is a need to motivate pupils so as to arouse and sustain their interest in learning mathematics.

The findings of this study supports other research findings that suggest individual actual achievement behavior depends not only on their motivation to achieve but also on whether they expect to achieve and or they fear failure as indicated in the mathematics pre-mock results of the female sampled students from the three secondary schools studied. The findings of this study also support Ranani (2014) findings that when teachers are caring, supportive and give feedbacks, females tend to be motivated to achieve s in subjects like mathematics.

5. CONCLUSION

Conclusions drawn from the study can be generalized to girls' mathematics performance in secondary schools in Nairobi County. The the findings of the study indicate that there is a positive but weak (0.12) none significant (0.188) relationship between achievement motivation and mathematics performance at 0.005 level of significance among the female students studied. From the findings of the study, it seems as if female students need to have an adaptive motivational pattern before they could accept challenges of difficult subject like mathematics. Furthermore, Asikhia (2010) believe that there is a need to motivate pupils so as to arouse and sustain their interest in learning mathematics.

6. CONTRIBUTION OF STUDY

The findings may serve as a resource material for Mathematics Educators, Mathematicians, School Authorities, Psychologists and Counselors, Government, parents and Significant others who are concerned with the progress of the students. The schools are likely to find this study useful because it aims at putting emphasis on students' confidence to succeed in Mathematics. Educators, parents and teachers may benefit from the findings of the study in selecting means to learn and keep self-beliefs that are consistent with high performance that can be used to improve Mathematics performance. The study added more knowledge to the teachers on need for achievement motivation factors on performance of Mathematics which they can use improve students' upward academic mobility. The study has stimulated interest for more research on factors that influence girls' performance in Mathematics.

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