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Research Paper



Effect of Academic Achievement Motivation on Academic Performance of Students

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ABSTRACT

The study aimed to examine the effect of age, gender and academic achievement motivation on academic performance of students. A 2x2x3 factorial design with Two age groups (Early Adolescents: 11-14 yrs. & Late Adolescents: 15-18 yrs.) x Gender (Boys & Girls) x Three levels of academic achievement motivation (High, Average & Low) was used and a total of 240 students participated in the present study. Academic Achievement Motivation Test was applied to identify the level of academic achievement motivation in students. Further, Students' academic performance was assessed with help of Academic Performance Test and their scholastic achievements in annual exams. Data analysis was done using Univariate analysis. Results revealed significant effect of academic achievement motivation on academic performance. Specifically, highly motivated students performed very superior on academic performance test in various subjects i.e., English, Hindi, Science, Social Science and mathematics as compared to average and low motivated group of students. Similarly, scholastic achievement of high motivated students was found higher than their average and low motivated counterparts. Despite this, the effects of age and gender on academic performance were found partially significant. Early adolescent group performed better in Social Science and Mathematics whereas, late adolescents scored more in English subject. However, the aggregate score of all subjects was found higher in early adolescents as compared with late adolescents. Likewise, boys were found superior in Mathematics, English and as a whole whereas, girls achieved better in Hindi, Science and Social Science subjects than their boys' counterparts. Findings are discussed.

Keywords: Academic Achievement Motivation, Academic Performance, Age, Gender, Scholastic Achievement.

Students are the most important segment for any educational institute. Schools, colleges and universities have no worth without students. The social and economic development of the country is directly linked with students' academic achievement. The academic achievement motivation plays an important role in producing the best quality students who will become responsible for the country's economic and social development (Ali et al, 2009).

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Academic performance according to the Cambridge University Report (2003) is frequently defined in terms of examination performance. Hoyle (1986) argued that schools are established with the aim of imparting knowledge and skills to those who go through them and behind all this is the idea of enhancing good academic performance. According to Niebuhr (1995) academic performance of students is typically assessed by the use of teacher's ratings. tests, and examinations.

Although, performance on standardized tests receives the greatest attention in discussions of students' academic performance, teachers' evaluations of performance as indicated in course grades represent a common metric of student performance that often is more directly linked with teaching and learning than are annual standardized test scores. Grades serve a number of important functions. They communicate to students and parents /guardian information about students' performance in different subjects. However, as a measure of academic performance, teacher-given grades have well-known limitations. Grades are composite measures that account not only for students' subject mastery but often for other factors, such as their class participation, attitudes, progress over time, and attendance. Both general and special educators are known to consider emphasize different factors. Despite many complicating factors, student grades still are an important indicator within the academic performance outcome domain for students because they indicate success by a teacher's standards and success relative to other students in a given classroom (Yang, 2003). Moreover, academic success of students sometimes depends on their own internal factors like academic achievement motivation which plays vital role in students' success in educational life.

A number of studies pointed out positive associations between academic achievement motivation and academic success of students. Broussard and Garrison (2004) found positive relationship between students' motivation and academic achievement. According to them students with high levels of motivation consistently exhibit higher achievement and class grades than students with low motivation. Omar, Jain and Noordi (2013) carried out a study in Malaysia on students of polytechnic institution to assess motivation in learning and happiness among the students. The study revealed the presence of a high level of motivation in learning and happiness among students. Niehaus, Rudasill, and Adelson (2012) also conducted a study, among Latino middle school students to evaluate intrinsic motivation and academic outcomes and the study revealed that intrinsic motivation was positively associated with students' academic achievement. Similar results were found in other studies. Arbabisarjou et al. (2016) found that there was a significant relationship between academic achievement motivation and academic performance among medical students. Further, Korantwi-Barimah et al. (2017) demonstrated positive significant correlations between academic self-concept, motivation and academic performance amongst university students.

Despite motivational factors, there have been several studies conducted to determine the effect of numerous demographic variables on student academic achievement. Grissom (2004) concluded the negative relationship between age and achievement which remains constant over time. Momanyi, Too and Simmiyu (2015) found that age had a significant effect on the student's academic performance. The youngest students (13-15) had higher scores in academic performance than oldest students (16-18). Similarly, Clark and Ramsay (1990) detected a negative relationship between age and academic performance of students. On the other hand, Richardson, J.T.E. (1994) reported that mature students performed well in most academic settings than younger students because mature students seek a deeper understanding of their academic work unlike younger students who may adopt a surface

approach. However, another study reports that age does not significantly contribute to academic performance of students (Kaur, et. al. 2010).

The role of gender in academic performance is also reported by other studies. In a study Seegers and Boekarts (1996) investigated gender differences in self-referenced cognitions in mathematics. Their results showed that boys scored significantly higher than girls on mathematics tasks and math-related self-concept. Similarly, Niemivirta (1997) reported that boys use more superficial learning strategies than girls. However, some other studies indicated that academically motivated girls performed better than boys. In a study, Covington and Dray (2002) found that motivated women were found superior in academic achievement as compared to motivated men. Similarly, Baker (2004) found her motivated female participants exhibited higher levels of academic performance than highly motivated man counterparts. On the other hand, Pintrich and DeGroot (1990) found no motivational differences between seventh-grade boys and girls. In a recent study, Pandey and Singh (2018), found partial role of age and gender in academic performance.

A close perusal of review of above studies denotes that academic achievement motivation has positive link with academic achievement, however the role of demographic factors along with academic achievement motive in academic performance is less investigated issue therefore, and more studied are needed in Indian context.

Objective and Hypothesis

Against this backdrop, this study was designed to investigate the effect of academic achievement motivation, age and gender on academic performance of students. Following hypotheses were made.

- H₁: Prior Studies indicate that motivation plays positive role to achieve their academics (Niehaus et al, 2012; Noordi, 2013). Therefore, it was hypothesized that academic achievement motivation would exert favourable effect on academic performance of students.
- H₂: Earlier studies report that early adolescents performed better on academic achievement tests than late adolescents (Clark & Ramsay 1990; Diaz 2003) however, some other studies revealed that late adolescent scored higher in academic achievement test (Pandey, 2007; Pandey, et al., 2015). Therefore it was expected that early adolescent group and late adolescents group of students would vary on academic performance.
- H₃: Studies report gender differences in academic achievement (Anagbogu, 2002; Pandey, 2017). Therefore, it was hypothesized that boys and girls would differ on academic performance.

METHODOLOGY

Design

This study is based on a 2x2x3 factorial design with two Age groups [Early Adolescents (11-14 yrs.) & Late Adolescents (15-18 yrs.)] x Gender (Boys & Girls) and three levels of Academic Achievement Motivation (High, Average & Low).

Sample

A total of 240 students, age ranged 11 to 18 yrs. (Mean age=14.31 yrs.), grade 5 to 12th standard enrolled in different schools of Gorakhpur city, participated in the present study. Stratified random sampling technique was exercised for sample selection.

Instruments

- **Personal Data Sheet (P.D.S):-** In order to determine the personal characteristics and school background of students, Personal Data Sheet was used.
- 2. Academic Achievement Motivation Test: - To assess level of academic achievement motivation in students, Academic Achievement Test, (T. R. Sharma, 1984) was used. The test provided a direct numerical score indicating how much an individual: a boy or girl is motivated in the field of academic achievement.
- 3. **Academic Performance Measures:**- To assess the academic performance of students two criteria were adopted:-
 - Scholastic Achievement (Based on Annual Exams) and (i)
 - Academic Performance Test (ii)
- (i) Scholastic Achievement (Based on Annual Exams):- The scholastic achievement of students based on annual examinations was recorded. The scores obtained in annual exams of earlier three academic years were collected from report cards of students and aggregate scores were converted in grades (3rd division (33-47%); 2nd division (48-59%); 1st division (60-100%) and the level of academic performance of students was determined.
- (ii) Academic Performance Test: The academic performance test (Pandey & Singh 2017) was devised and used to assess academic achievement of students. This test is based on NCERT CBSE course books from class 5 to 12 standards. Academic performance test is divided into two sets- The first set of the test contains items for 5-6th and 7-8th standard students and second set of the test includes items suitable for 9-10th and 11-12th standard students. The test covers five different subjects i.e., English (5items), Hindi (5items), Science (5items), Social science (5items), and Mathematics (5items) of different standards. This test is based on multiple choice type objective questions and each question has 4 options, Out of 4 only 1 answer would be correct. It is pilot tested and retest reliability of the test was found fairly high (r=.78).

Procedure

This study was conducted in multiple phases. In the Ist phase, children were contacted in school setting and were requested to cooperate. After getting consent, they were briefed about aim of the study. Then, they were given booklet, containing Personal Data Sheet (PDS), and Academic Achievement Motivation Test (AAMT). They were requested to respond carefully. The AAM was used to identify the level of academic achievement motivation. In the 2nd phase of the study, the Academic Performance Test was administered to the participants. As soon as, they completed their responses, on measures data were collected. Further, students' scholastic achievement in examinations (last three years) was also recorded from the school. Data were collected and scored according to prescribed rules given in manuals. Scored data were subjected to statistical analyses by using SPSS, 21st version.

RESULTS

This section includes the obtained results from the statistical analysis of responses. In order to assess the effect of academic achievement motivation, gender and age on academic performance (scholastic achievement), three way ANOVA analysis was done. Results are presented in the following section.

I) Scholastic Achievement: - A 2x2x3 factorial analysis of variance was computed to assess the influence of age, gender and academic achievement motivation on scholastic achievement of students. Results are displayed in table-1.

Table1:- Mean S.D. and Significant F-Values of Scholastic Achievement as a function of Age, Gender and Level of Academic Achievement Motivation (AAM)

N=240, **P<0.01

Age		Boys				Girls	Significant F-Value	
		High AAM	Average AAM	Low AAM	High AAM	Average AAM	Low AAM	A= Age B= Gender
Early Adolescents	Mean	71.91	63.28	50.56	74.16	63.45	51.17	C= Level of AAM
	S.D.	5.51	10.76	4.51	2.59	6.91	4.98	AAW
Late Adolescents	Mean	71.02	62.31	53.19	69.09	66.53	49.05	B= 111.46**
	S.D.	7.71	7.36	3.70	5.85	6.54	6.19	

ANOVA results (Table-1) indicate that scholastic achievement was significantly influenced by level of academic achievement motivation. Highly motivated students were found superior in scholastic achievement (M=71.52) as compared to average (63.88) and low motivated students (M=51).

(II) ANOVA Results Based on Academic Performance Test Scores

Further, ANOVA was computed to determine the effect of age, gender and level of academic achievement motivation on academic performance in five different subject i.e., English, Hindi, Science, Social Science, Mathematics and scores overall subjects, Results are represented in following session:-

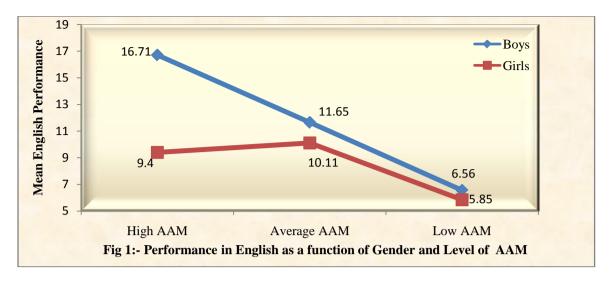
1) **Performance in English:** - A 2x2x3 ANOVA was also done for performance in English subject (Table-2).

Table2:- Mean S.D. and Significant F-Values of Performance in English by Age, Gender and Level of AAM

N=240, **P<0.01

Age		Boys				Girls	Significant F-Value	
		High	Average	Low	High	Average	Low	A= Age
			AAM	AAM	AAM	AAM	AAM	B= Gender
Early Adolescents	Mean	18	11.78	5.89	8	9.14	5.56	C= Level of
								AAM
	S.D.	2.30	5.07	2.44	2.21	3.15	2.88	B = 23.21**
Late Adolescents	Mean	15.42	11.52	7.23	10.8	11.09	6.14	C = 54.27**
	S.D.	3.45	4.21	2.71	3.79	3.25	2.97	B x C =
								6.27**

ANOVA results (Table-2) evinced that performance in English subject was significantly influenced by gender and level of academic achievement motivation. Significant main effect of gender indicates that boys (M=11.64) did better than girls (M=8.45). Moreover, significant main effect of academic achievement motivation revealed that highly motivated students scored very high (M= 13.05) as compared to average (M= 10.88) and low motivated groups (M = 6.20).



Further, significant gender x level of motivation interaction effect [F (2, 228) = 6.27, P < .01] evinced that both the factors exercised joint influence on students' performance. Interaction graph (Fig-1) shows that in case of boys, high motivated boys performed far better than average and low motivated boys. In case of girls, low motivated group performed very poor but little difference in average and high AAM group was identified.

2) Performance in Hindi Subject as a function of Age, Gender and AAM

Table -3 displays Mean, S.D. and F-value of students' performance in Hindi subject. Results evinced that scores of Hindi differed in accordance with age, gender and level of motivation (Table-3).

Table3:- Mean S.D. and Significant F-Values in Hindi Subject as a function of Age, Gender and Level of AAM

N=240, **P<0.01

Age		Boys				Girls	Significant F-Value	
		High	Average	Low	High	Average	Low	A= Age
		AAM	AAM	AAM	AAM	AAM	AAM	B= Gender
Early Adolescents	Mean	13	10.05	8.8	14	14.17	10.95	C= Level of
								AAM
	S.D.	2	3.07	2.52	2.82	3.12	3.24	
Late Adolescents	Mean	14.57	11.07	7.80	14.8	14.72	11.71	B = 20.27**
	S.D.	3.71	3.35	1.86	2.69	3.35	1.86	C = 26.55**

ANOVA results displayed in Table-3 evinced that performance in Hindi subject was significantly influenced by gender and level of motivation. Significant main effect of gender indicated that girls (M=13.39) performed far better than boys (M=10.88). Furthermore, significant main effect of AAM revealed that high motivated students performed far superior (M=14.09) than average (M=12.50) and low motivated (M=9.81) groups.

3) Performance in Science Subject as a function of Age, Gender and Academic **Achievement Motivation**

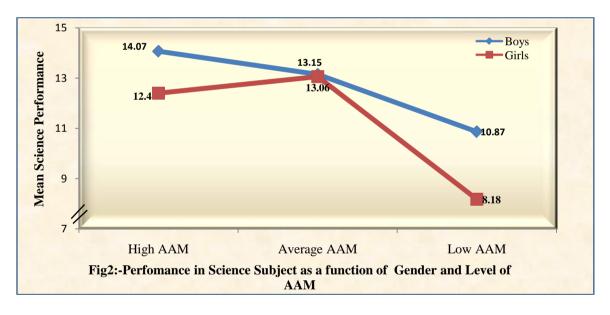
Students' performance in Science Subject differed in accordance with age, gender and level of motivation (Table-4).

Table4:- Mean S.D. and Significant F-values in Science subject as a function of Age, Gender and Level of Academic Achievement Motivation

N=240, **P<0.01, *P<0.05

Age		Boys				Girls	Significant F-Value	
		High AAM	Average AAM	Low AAM	High AAM	Average AAM	Low AAM	A= Age B= Gender
Early Adolescents	Mean	13	13.18	10.52	12	13.94	8.52	C= Level of AAM
	S.D.	2	3.38	3.38	2.1	2.8	3.67	B= 7.09*
Late Adolescents	Mean	15.14	13.12	11.23	12.8	12.18	7.85	C = 37.92**
	S.D.	3.20	2.94	3.25	2.52	2.30	2.97	B x C = 4.73*

Results displayed in Table -4 evinced that performance in Science was significantly influenced by gender and level of motivation. Significant main effect of gender evinced that boys scored higher in science subject (M=12.69) than girls (M=11.21). Furthermore, Main effect of level of motivation evinced that highly motivated students scored very high in Science subject (M= 13.23) than average (M=13.10) and low motivated students (M= 9.53). Gender x level of academic achievement motivation interaction effect was also found significant [F (2, 228) = 4.72, P < .05].



Interaction graph (Fig-2) denotes that in case of boys, high motivated boys performed far better than average and low motivated counterparts. However, in case of girls, average motivated girls were found little superior than high motivated group whereas, low motivated girls scored very poor in science subject.

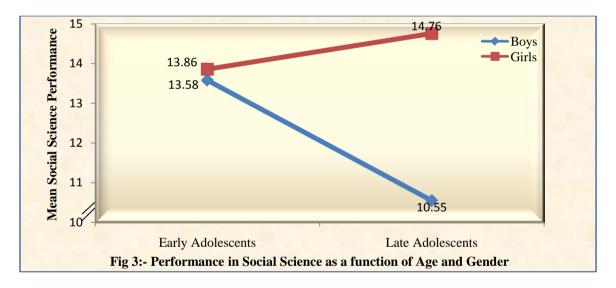
4) Performance in Social Science Subject as a function of Age, Gender and Academic **Achievement Motivation**

Table 5 displays Mean, S.D. and significant F-values of performance in Social Science Subject. Results revealed that students' performance differed across age, gender and academic achievement motivation groups (Table-5).

Table5:- Mean S.D. and Significant F-Value of scores in Social Science Subject as a function of Age, Gender and Level of AAM N=240, **P<0.01

Age		Boys				Girls	Significant F-Value	
		High	Average	Low	High	Average	Low	A= Age
		AAM	AAM	AAM	AAM	AAM	AAM	B= Gender
Early Adolescents	Mean	15	14.37	11.36	16	14.97	10.60	C= Level of
								AAM
	S.D.	2	3.1	3.5	2.8	3.26	3.32	B= 13.72**
Late Adolescents	Mean	12	10.88	8.76	16.4	16.18	11.71	C = 32.38**
	S.D.	3.84	3.37	2.71	2.27	1.94	4.20	A x B=10.54**

Significant main effect of gender evinced that girls were found superior (M=14.31) than boys (M=12.01) counterparts. Furthermore, main effect of academic achievement motivation was also found significant, which revealed that high motivated students (M=14.85) performed far better than average (M= 14.1) and low motivated students (M=10.61). Moreover, age x gender interaction effect was also found significant [F (1, 228) = 10.54, P<.01].



Interaction graph (Fig.3) depicted that in case of early adolescents very little difference was found between boys and girls. However, in case of late adolescents, girls have performed far superior as compared to boys.

5) Performance in Mathematics as a function of Age, Gender and Academic **Achievement Motivation**

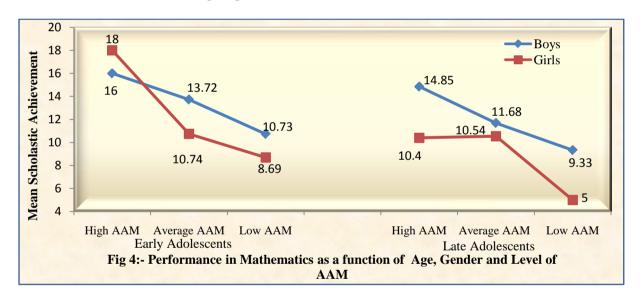
Table-6 displays Mean, S.D. and F-value of performance in Mathematics by students. Results revealed that performance of students differed across age, gender and level of motivation.

Table6:- Mean S.D. and Significant F-Value of Performance in Mathematics as a function of Age, Gender and Level of AAM

N=240, **P<0.01, *P<0.05

Age		Boys				Girls	Significant F-Value	
		High	Average	Low	High	Average	Low	A= Age
		AAM	AAM	AAM	AAM	AAM	AAM	B= Gender
Early Adolescents	Mean	16	13.72	10.73	18	10.74	8.69	C= Level of
								AAM
	S.D.	2.88	4.27	3.54	2.82	3.32	3.54	A=15.91** B= 10.31**
Late Adolescents	Mean	14.85	11.68	9.33	10.40	10.54	5	C = 32.63**
	S.D.	3.30	3.44	3.86	3.37	3.60	3.54	AxBxC=3.65*

Significant main effect of age indicated that early adolescents scored higher in mathematics (M=12.98) than late adolescents (M=10.3). Likewise, significant main effect of gender evinced that boys performed far superior in mathematics (M=12.72) as compared to girls (M=10.56). Furthermore, main effect of level of motivation revealed that high motivated students were found superior in mathematics (M=14.81) as compared to average (M=11.67) and low motivated (M=8.44) group.



It is clear from interaction graph (Fig-4) that in case of early adolescents, high motivated girls performed far better than boys. Specifically, highly motivated girls performed far superior than average and low AAM group. But in case of boys, a gradual decline in performance from high to average and low AAM groups was found. Further, in case of late adolescents, boys of high AAM group achieved very high as compared to average and low AAM group. But in case of girls, average AAM group scored more than high and low AAM groups of students.

6) Academic Performance (as a whole) as a function of Age, Gender and Academic Achievement Motivation

ANOVA analysis was also done for aggregate scores of total subjects. Table-7 displays Mean, S.D. and significant F-values of academic performance as a whole responded by students. Results evinced that the academic performance varied across age, gender and level of academic achievement motivation groups (Table 7 & Fig-5, 6 & 7).

Table7: - Mean S.D. and Significant F-Values of Academic Performance (as a whole) as a function of Age, Gender and Level of AAM

N=240, **P<0.01, *P<0.05

Age		Boys				Girls	Significant F-Value	
		High AAM	Average AAM	Low AAM	High AAM	Average AAM	Low AAM	A= Age B= Gender
Early Adolescents	Mean	76	63.13	47.36	68	63.08	44.17	C= Level of AAM
	S.D.	5.65	13.06	7.21	4.28	7.20	10.33	AAW
Late Adolescents	Mean	72	57.92	44.19	66	64.54	42.14	C=109.60**
	S.D.	10.75	10.77	8.43	5.07	5.42	10.06	B x C=3.72*

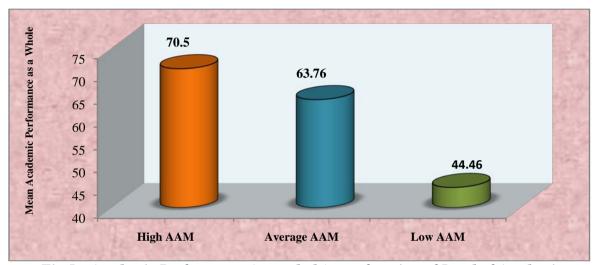
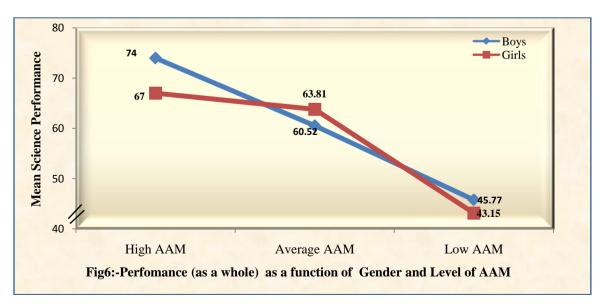


Fig 5:- Academic Performance (as a whole) as a function of Level of Academic **Achievement Motivation**

Significant main effect of level of motivation revealed that high motivated students scored higher (M = 70.5) as compared to average (M=63.76) and low motivated students group of students (M = 44.46) (Fig-5).



Interaction graph (Fig-6) denotes that in case of boys, high motivated boys performed far better than average and low motivated counterparts. Similar pattern was found in case of girls, high motivated girls were found superior than average and low motivated girls.

An overview of ANOVA results clearly depicted that academic achievement motivation exerted positive influence on academic performance of students. Specifically main effect and interaction effects of academic achievement motivation revealed that highly motivated students performed fairly superior in various subjects. Apart from this, their scholastic achievement was also found far better as compared average and low motivated group of students. Whereas, impact of age and gender on academic performance are partially supported.

DISCUSSION

Present findings have proved the hypothesis that academic achievement motivation has positively influenced the academic performance of students. It is clear from univariate analysis that highly motivated group of students performed far superior on various subject tests i.e., English, Hindi, Science, Social Science, Mathematics and as a whole. Their scholastics achievement was also found higher than their average and low motivated counterparts. Moreover, gender difference in academic performance was found in significant non linear manner. However, the effect of age on academic performance is partially supported.

Present result strongly proved the pervasive impact of academic achievement motivation on academic performance. This finding is strongly proved by other researchers. Broussard and Garrison (2004) found that students with high levels of motivation consistently exhibit higher achievement and class grades than students with low motivation. Schunk (1991) opined that academic motivation is an important psychological construct for learning and academic performance in all the school subjects. In schools motivation plays a vital role for students (Linnenbrink & Pintrich 2002). Student's motivation is one of the important factors that show new ways of learning to students. So many studies have been conducted to predict relationship between students' motivation and its impact on student's academic performance. Omar, Jain and Noordi (2013) carried out a study in Malaysia at a polytechnic institution to assess role of motivation in learning and happiness among the students. The study revealed the presence of a high level of motivation in learning and happiness among students.

Other studies have shown that motivated students have higher achievement levels, lower levels of anxiety and higher perceptions of competence and engagement in learning than students who are not motivated (Wigfield & Eccles, 2002; Wigfield & Waguer, 2005). Thus, student motivation is the key to enhancing learning and performance in schools (Linnenbrink & Pintrich, 2002). Other studies have also demonstrated a positive correlation between motivation and academic achievement (Corpus et al., 2009; Law, Elliot, & Murayama, 2012; Lee, McInerney, Liem, & Ortiga, 2010; Lepper, Corpus & Iyenger, 2005, Pandey 2017).

Present results have also indicated that academic performance of students was also partially influenced by age. The academic performance of early adolescents was found better than their late adolescent counterparts. Similarly, other studies indicate that early adolescents achieved higher in academic performance as compared to late adolescents (Lane & Porch 2002). Similar result was found in Diaz (2003) study, who revealed that grades earned by young students were higher than mature students. The fact that mature students have other responsibilities than study and that may lead to poor performance comparing with young

students who concern about their study only. Another study by Clark and Ramsay (1990) detected a negative relationship between age and academic performance. Grissom (2004) in his study concluded the negative relationship between age and academic achievement of students. Similarly, Lugutera and Apam (2013) in a related study in Ghana state students' academic performance found that the performance of students improved with decreasing age. Therefore, a bulk of studies have supported the present finding that early adolescents did better in social science, and mathematics and as a whole as compared to late adolescents.

Finding of the study has also identified gender differences in academic performance. Specifically, boys were found superior in Mathematics, English and as a whole whereas, girls did better in Hindi, Science and Social science subject tests. Furthermore, scholastic achievement of boys was found higher than girls. Other research has also validated this result. Gammie et.al (2003) empirically proved the significant impact of gender on the students' academic performance. Khare and Garewal (1996) conducted a study on academic achievement of students. The results revealed a significant difference in academic achievement of boys and girls. Boys were found to have better academic achievement than girls. In the continuation of above interpretation Tella's study also shows important strength to this study. Tella (2007) investigated the impact of academic achievement in mathematics. Results revealed that male students were found to have better academic achievement in mathematics than girls.

Chaturvedi (2009) also found gender difference on percentages of marks obtained by the students in the last three years of academic achievement. The results indicated that girls were found higher in academic achievement than boys significantly. Similarly, Cullen et al, (2004) found that females scored higher than males in social science and English courses. Asthana (2011) also found gender difference in scholastic achievement. These findings are equivocal and indicate non linear relationship between gender and academic performance.

CONCLUSION

Findings of the study have proved that academic achievement motivation played vital role in academic performance of students. Specifically, highly motivated students were found far superior on different subject test scores i.e. English, Hindi, Science, Social Science, Mathematics, and as a whole. They were also found better in scholastic achievement as compared with average and low achievement groups. Whereas, a development pattern of age on academic performance of students is partially supported. Gender difference in academic performance is also supported at some extent. Boys scored higher in English, Mathematics and as a whole whereas, girls achieved better in other subjects i.e. Hindi, Science and Social Science subjects.

Present study provides valuable data to add knowledge in the area of school psychology. Apart from this, findings can be applied to aware parents, teachers, other school personnel and counselors to motivate students for better performance. However, there are few limitations of this study. First, generalization of the results from this study is limited as the sample size is small and limited to one region (Gorakhpur) of Uttar Pradesh. Secondly, researchers should implement some situational tests in addition and exercise other qualitative analysis to support present findings.

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Conflict of Interest

There is no conflict of interest.

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