Addis Ababa University

School of Graduate Studies

College of Education and Behavioral Studies

School of Psychology

Department of Measurement and Evaluation

Prediction of First Year Students' Academic Performance in the School of Medicine of Addis Ababa University

By Galane Ashenafi

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A thesis submitted to the School of Psychology in partial fulfillment of the requirements for MA degree in Measurement and Evaluation

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Approval of the Board of Examiners

1. Advisor

   Name_____Signature_____Date_____

2. Internal Examiner

   Name _____Signature_____Date_____

3. External Examiner

   Name _____Signature_____Date_____

Abstract

Academic performance of medical students is affected by multiple factors, including cognitive and non cognitive factors. The purpose of this study was to identify the prediction power of selected psychological variables' (academic self-efficacy and achievement motivation) and students' previous academic achievement (preparatory grade point average and Ethiopian University Entrance Examination) on medical students' first year first semester grade point average in Addis Ababa University. The ability of each of these variables in predicting males' and females' academic performance was also assessed. The subjects of this study were 227(male = 143 and female = 84) students who enrolled in Addis Ababa University School of Medicine in 2013/2014 academic year. Students' previous academic achievement and University grade point average (UGPA) were secured from the under graduate Program Office School of Medicine. Academic self-efficacy scale of Pintrich and DeGroot (1990) and Roeser et al. (1996) which were adapted by Mulugeta (1998) and an adapted Academic Achievement Motivation Self-Report Inventory of Daniel (1992) were used to measure participants' academic self-efficacy and achievement motivation respectively. Data were analyzed using multiple regression analysis. Multiple regression analysis revealed that the predictor variables (preparatory school grade point average, Ethiopian university entrance examination, academic self-efficacy and achievement motivation) added significantly to the prediction of university grade point average ($F_{(4,222)}=41.92$,$P<.05$),accounting for 43% of the variance in university grade point average of first semester. The regression analyses revealed that a model involving in preparatory grade point average, Ethiopian university entrance examination, Academic self-efficacy and academic achievement motivation on university grade point average was statistically significant for females ($F_{(4, 79)} = 14.54$, $P < .05$), accounting for 42% and for male ($F_{(4,138)} = 19.6$, $P < .05$), accounting for 36% of the variance in university grade point average. Academic achievement motivation independently did not significantly contribute in predicting males' and females' university grade point average sub groups. Practical implication of these findings to the medical school in particular and educational practice in general was discussed. In addition, directions for future research were recommended.

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List of Abbreviations

EUEE = Ethiopian University Entrance Examination

MOH= Ministry of Health

PSGPA= Preparatory School Grade Point Average

UGPA= First year first semester University grade point average

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CHAPTER ONE

INTRODUCTION

1.1 Background

Academic retention and success of students, especially during first year, are among the major concern for colleges and universities. This is because first year is the time when students lay the foundation on which their subsequent academic success and persistence rest (De Berad, Julka, & Spielmans, 2004). In higher education, researchers and educators are increasingly attentive to the academic success of students as a measure of the effectiveness. That is why colleges and universities in different places of the world use different selection criteria to admit students to their diploma and degree programs depending on potential capacity of students to perform well in the program (Gayle, J. B. & Jones, H. 1993). However, since there are many variables that influence students' academic success, deciding which criteria are the most accurate in predicting student academic success in higher education is a difficult task. On the other hand, students should be selected based on several variables which are used as predictors of their potential to perform fruitfully in higher education (Reseon, R. D., Terenzini, P. T., & Domingo, R. J., 2006).

Researchers and educators have widely investigated various studies to find out the factors that predict students success at University. Reseon et al. (2006) indicated that, before selecting academically competent students, it is essential to identify variables that are used as indicators of success to reduce the failure rate of student in training. This used to evaluate the effectiveness of the training program and decrease wastage of the educational institution's time and resources on students who have little chance to succeed.

According to recent studies, the most important contributing variables to students' academic success apart from the demographic variables such as gender and ethnicity are cognitive and

non-cognitive (e.g., personality traits) predictors which have been used by higher education institutions for students admission decisions (Ting, 2001).

Many studies have confirmed that cognitive and non-cognitive variables, such as high school GPA and college entrance exam test scores and selected psychological variables (self-efficacy and achievement motivation), better predict first-year university students' grades better than cognitive measures alone (Pascarella, E.T., Sedlacek, & Terenzni, 1991; Ting, 2001).

As many studies showed, medical programs are generally challenging educational processes that require great deal of various kinds of skills, competence, and personal qualities. Such curriculum needs special talents of students which includes cognitive and non cognitive abilities, such as basic abilities to recognize and solve problems, achievement motivation and self-efficacy to perform in a very stressful environment. Thus, the selection process of medical student aims at enrolling students who have a high probability of completing the medical curriculum successfully (Stegers-Jager, K.M., Cohen-Schotanus, J., Themmen, A.P., 2012).

Worldwide, medical schools use different methods and criteria to select ideal candidates, which include cognitive factors like previous academic achievements and non-cognitive factors such as self-efficacy and achievement motivation. Traditional medical schools usually tend to depend solely on higher previous academic achievements, while most modern medical schools are beginning to incorporate a set of non-cognitive selection criteria (Sedlacek, W.E., 2005; Bardes, C. L., Best, P. C., Kremer, S. J., Dienstag, J.L., 2009).

However, researchers indicate that, selection of medical students on the basis of cognitive predictors alone is inadequate. Selection should also include an assessment of students' non-cognitive abilities in addition to measurements of their academic abilities. Thus developing

comprehensive admissions criteria that cover both cognitive and non-cognitive factors is required to identify the best applicants to become high-quality doctors in the future (Julian, E.R., 2005).

Accordingly, to predict academic success in universities, contemporary studies have shifted the focus to the usage of non-cognitive factors jointly with cognitive factors. Furthermore, using the combination of these factors help the admissions committee to easily distinguish and determine suited students among candidate with very similar academic experiences. In addition using predictors that are more appropriate and addressing possible obstacles to success will help Medical Schools in their mission to select and retain more students (Le, Casillas, Robbins, & Langley, 2005).

However, starting from its establishment, the admission criteria of undergraduate Medical School of Addis Ababa University was based only on cognitive factors. Typically, enrolment of students is done in centralized fashion on the basis of cognitive predictors alone: the previous academic achievement, preparatory school grade point average (PGPA) and Ethiopian University Entrance Examination (EUEE) result, previously known as Ethiopian School Leaving Certificate Examination (ESLCE). So, students start their studies on the bases of cognitive predictors alone, without consideration of non cognitive (psychological variables) predictors, which are very important to identify the right students for the curriculum (Aboma, 2008). Such a way of selection may exclude many applicants with outstanding non-cognitive ability.

The Addis Ababa University School of Medicine was established in 1964 in Tikur Anbessa Hospital, with the goal of producing medical doctors to handle the country's health problems. It was given to Addis Ababa University (AAU) from the MOH as a main teaching hospital. The

school is one of the oldest and the largest health training institutions in the country, staffed with the most senior specialists (Wakgari, & Aklilu, 2013).

To rejuvenate the professional workforce and in turn, to transform the economy of the country, the MOE had planed the ultimate goal to graduate more students in natural science programs with a targeted goal of 70%: health studies are some of these programs. Thus, currently, the Ethiopian government is striving to improve access to basic preventive and curative health services through expanding physical health infrastructure and training of various categories of health personnel. In addition, a number of strategies have been developed to improve the training and retention of medical doctors. Additionally, to produce more skilled physicians the government has determined to increase the intake of students into School of Medicines to train some 8000

(from 2000-2015) doctors each year to improve the shortage of physicians (which is less than 5 physicians per 100,000 people) (Wakgari, & Aklilu, 2013).

As a result, this huge increase in the quantity of trained doctors in School of Medicines can affect their quality. Therefore, looking for better empirically valid and reliable selection devices of qualified applicants is required. That means, applicants should be selected based on cognitive and non-cognitive variables, (which are used as predicators of their potential to successfully perform in training programs), to choose students who will become professional and reduce the number of students who fail to graduate in the field.

This work attempted to examine the predictive power of both cognitive (preparatory school grade average and Ethiopian University Entrance Examination result) and non-cognitive (academic self-efficacy and achievement motivation) variables of first year first semester students academic performance in Addis Ababa University School of Medicine. The reason why academic self-efficacy and achievement motivation variables were selected was that the incremental validity they have shown in predicting college GPA in a meta-analysis conducted by Roeser et al. (1996) as well as in local researches conducted by Mulugeta (1998) and Daniel (1997) have contributed significantly unique variance to GPA.

1.2 Statement of the problem

Several studies argue that cognitive predictors are necessary but not sufficient markers of academic success in the university. Wolfe & Johnson (1995), Anastasi (1997) & Robbins et al. (2004) suggested that cognitive predictors by themselves are inadequate for predicting which students should be admitted to colleges and universities. Cognitive

predictors alone are incomplete predictors of how well a student will do in college and they are not presently capable of predicting students' personal trait, and feelings which may influence academic performance (Robbins et al., 2004).

In addition, other researchers showed that cognitive predictors, including standard test scores and high school GPA, when used alone to predict academic performance in the university, they produced comparatively low validity. Therefore, using non-cognitive predictors with cognitive predictors is very important to predict the academic performance of university students (Ting & Sedlacek, 1997).

Academic self-efficacy and achievement motivation are among the main non-cognitive predictors of medical students' performance at the university. Alnasir, A.A & Jaradat (2011) discussed that an effective intellectual functioning requires for medical professionals, much more than simply understanding of factual knowledge and reasoning operations for any activity. Beyond sound knowledge and excellent skills, student should reveal many other skills and abilities, including having beliefs of self-efficacy to perform in a very stressful environment, and motivational belief towards their profession.

Sugiyama, K. (1992) demonstrated that self-efficacy is a strong predictor of academic achievement. Students' self-efficacy (beliefs about their capabilities) influences their academic achievement.

Motivational belief on the other hand also affects student academic achievement. That is why some students do extremely well academically and others even cannot pass simple examination (Stegers-Jager, K.M., Cohen-Schotanus, J., Themmen, A.P., 2012).

Hence, the purpose of this study is to predict the academic performance of first year first semester medical students by using psychological variables (academic self-efficacy and achievement motivation) with previous academic achievement (PGPA and EUEE).

As a result, the study has tried to answer the following research questions.

1. To what extent does the combination of students' prior academic achievement scores (PGPA and EUEE) and psychological variables (academic self-efficacy and achievement motivation) predict first year first semester university GPA?
2. Which variable has the highest contribution in predicting first year first semester university GPA?

It was decided to consider the first semester GPA of year one medical students because including the results beyond that time would make it difficult to determine if the results were mainly due to pre-university or university experiences.

1.3 Objectives

The general objectives of this study is to predict first year first semester GPA of medical students based on their prior academic achievement results and psychological variables.

Specifically, the objectives of this study are:

- To find out how well PGPA, EUEE, academic self-efficacy and achievement motivation predict first year first semester GPA of Addis Ababa University medical students.
- To identify which of these variables has the highest contribution to predict first year first semester GPA of Addis Ababa University medical students.

1.4 Significances of the Study

This study examined psychological predictors (academic self efficacy and achievement motivation,) that play an important role to predict academic performance of students at the university and use them with cognitive predictors (EUEE and PGPA) to reduce problems related

to students' academic performance. Thus the study will give important information to educators, university admission officers, counselors, students and other concerned bodies in many respects.

- University admission officers can use these variables in their prediction model.
- Educators may improve the academic performance of their students through designing educational practices that could positively affect the variables of this study.
- Students can evaluate their assets and liability with respect to the psychological variables of this study that have an effect on their academic performance.
- The result of this study will also help counselors who work with students for better academic and personal planning.
- Other concerned bodies such as policy makers, curriculum designers, etc can use in the teaching-learning processes.

1.5 Delimitation of the study

The study was conducted on students regular degree program of AAU admitted to the School of Medicine in the year 2013/2014 academic calendar.

1.6 Definitions of Terms

- **Achievement motivation:** One's incentive to achieve success, enjoyment of surmounting obstacles and completing tasks undertaken, and to strive for success and excellence (Robbins et al., 2004).

- **Cognitive factors:** Academic performance measures: The Ethiopian university entrance examination and preparatory school grade point average.
- **Non-cognitive variables:** Academic self efficacy and achievement motivation.
- **Preparatory grade point average:** is individuals' total score across all subjects taught during the two years in university preparatory program.
- **Preparatory school:** is the place where subjects that prepare students, who complete grade ten, for university studies, will be taught for two years.
- **Self-efficacy:** People's belief about their capabilities to produce designated levels of performance which trained and influence over events that affect their lives (Bandura, 1997).
- **The Ethiopian university entrance examination:** is an examination which is given to students at the completion of the two years preparatory school programs which are pre-requisite for universities admission.

CHAPTER TWO

Review of Related Literature

2.1 Introduction

Worldwide, only the top academic achievers in high school and pre-medical studies, filtered through an extensive screening process and get in to medical schools. However, once the

students are enrolled at the medical colleges, their performance varies widely, whereby some students manage to stay in the top band, while the others only just manage to pass; still some who cannot pass drop out of the college (Arulampalam et al., 2004). One of the major responsible factors for early drop-out from college is the first year first semester university GPA (Smith, & Naylor, R.A., 2001).

Understanding and finding out why students do not perform well academically is important, as this can then be used to promote the factors that contribute to academic performance.

This chapter provides review of existing literature about prediction of academic achievement of medical students using cognitive and non-cognitive predictors, namely preparatory school grade point average, Ethiopian university entrance examination, academic self-efficacy and academic achievement motivation respectively.

2.2 Prediction of Academic Performance of Medical Students

Many studies have been conducted on the prediction of college GPA. Some researchers showed an importance of cognitive predictors for academic performance (Noble, 1991; Reseon et al., 2006; Samson, 2007; Mohammed, 2004). Others emphasized non-cognitive factors to effectively predict which student will fail or succeed in university (Tracey & Sedlacek, 1984; White & Sedlacek, 1986, Daniel, 1994 & Mulugeta, 1998). Some of them favor the combination of both to predict academic performance at university (Le, Casillas, Robbins, & Langley, 2004; Ting, 1997; Wolfe & Johnsone, 1995; Aboma, 2008). This research focuses on both cognitive and non-cognitive factors.

Gayle el al. (1993) have indicated that, before selecting academically competent candidates, it is essential to identify variables (cognitive and non cognitive) that are used as indicators of success and reduce failure rate in a training program. This help to evaluate the effectiveness of training program and it decrease wastage of time and resources on students who have little chance to succeed.

Pajares, F., & Schunk, D. H. (2001) also recommended that to develop comprehensive admissions criteria, both cognitive and non-cognitive factors are required.

According to recent studies, the leading contributing factors to predict students' academic success in higher institutions include cognitive measures such as prior academic achievement measures (preparatory school grade average point and university entrance exam score) and psychological variables (achievement motivation and academic self-efficacy) (Aboma, 2008).

Likewise, the related literature indicates that selection of students in medical school depends on two broad predictors: cognitive and non-cognitive predictors (Ting, 1997). For instance, to select future doctors in medical schools, countries like United Kingdom, Australia and American use both cognitive and non-cognitive predictors (De Berad et al., 2004).

Murden et al. (1978) examined both cognitive and non-cognitive predictors of medical students' academic success: High school GPA and Medical College Admission Test (MCAT) as cognitive predictors, rapport and achievement motivation as non-cognitive independent variables. The results of the study revealed the combination of high school GPA and achievement motivation had significant relationship with medical student GPA.

Pajares et al. (2001) also suggested that investigation of cognitive and non-cognitive predicators is needed in order to fully explain students' success in the medical school in their research titled 'Cognitive Predictors of Students' Success in the Medical School.

2.3 Cognitive Predictors

Academic achievement of students is the outcome of education, the extent to which students instructors and institutions have realized their educational goals. According to Tinto (1997) student characteristics that are measured by levels of academic preparation in high school and college admission test scores have impact on their future academic success. This is why the College Admission Index is based mainly on cognitive measures.

Cognitive measure is very important to dictate what was taught in schools, helps as gatekeeper guarding entry to schools, selecting students during the course of their career, and providing an evaluation of students when leaving school which is likely to have very important implications for their further education and all their life (Thomas, 2004).

Cognitive ability measures what an individual can do; individual's ability to reason using previously learned experiences or procedures, form of concepts, solve problems using unfamiliar information or novel procedures, the individual's acquired knowledge, and the ability to communicate one's knowledge (Ting, 2001).

Usually, the correlation between cognitive abilities and academic achievement is explained in terms of pupils' characteristics. Students who are quick and eager to learn can most probably manage academic-related problems in school effectively and consequently obtain higher grades than their peers with lower cognitive abilities (Fleming, J., 2002). Therefore, higher educational

institutions and different scholarships use previous academic achievements (high school grades and results acquired from entrance examination) as a common criterion for the selection of students and prediction of their stay and success in universities (Daniel, 1992).

The effectiveness of cognitive predictors in students' college performance has been studied well. For example, Barislow (1962); Entwistle, D., & Cowell (1971) verified that cognitive predictors are some of the predictors that concern students' academic success. The studies were conducted on the efficacy of previous academic performance assessment as a predictor of college success which generally demonstrated the strong positive relationship between previous academic achievements and college GPA.

The results of some studies on student academic success, particularly among freshmen, have confirmed that cognitive variables such as high school GPA and college admission test scores predict the academic success of college students (White, & Sedlacek, 1986; Tracey, & Sedlacek, 1989; Boyer, & Sedlacek, 1988).

Study assessing the impact of admission test scores and academic performance in high school on college students' academic performance at the end of the freshman year has found admission test scores to be a predictor of first-year GPA (Pascarella et al., 1991).

Willough (1985) studied the relationship between students' high school academic achievement and their performance in a school of medicine. In their study, they found that high school GPA was one of the most consistent predictor of students' performance in doctor of medicine program.

Entwistle et al. (1971) found previous academic achievements to be good predictors of performance in undergraduate medical training.

2.3.1 Preparatory/ High School/ School Grade Point Average

For educational selection, one needs to have a readily available transcript of the candidate's previous work. In Ethiopian universities, students' admission is done in a centralized fashion on the basis of previous academic performance alone. Preparatory school GPA is one of predictors used by the Ministry of Education to admit students who have completed preparatory school programs at university.

There are frequent cases in which high school achievement was the most predictive indicator of students' future college success. Using the high school average score as a predictor of college performance, Harg & Saerle (2003) have concluded that high school grade point average was the best single predictor of college academic success as compared to the Scholastic achievement or Aptitude Tests.

Willingham (1985) found that high school grades are highly correlated with first-year university GPA as well as cumulative GPA over time. Thus, high school grades could be deemed as one of predictors of the first-year college GPA and the subsequent years.

Research conducted by Meressa (1994) also indicated that high school grade point average contributed significantly to the prediction of first semester average score and first year composite.

Samson (2007) in his study concerning the prediction of grades in nursing schools, high school achievement was found to be significantly related to first year GPA of students. Kassim (1999) also in his study on the predictive validity of selection criteria for students of nursing school concluded that high school average grade point was one of potential predictor among other variables.

Aboma (2008) has indicated that preparatory school GPA as the only positively significant predictor of first year first semester GPA for both males and females.

More specifically, Willighoam (1985) studied the relationship between students' high school academic achievement and their performance in a school of medicine. The researcher found that high school GPA was one of the most consistent predictors of students' performance in medical program.

Schunk (1995) did a study at the university of Navarra, Spain to examine first year medical students' success. The independent variables in his study were students' grades in high school science courses and their scores on college admissions science tests. The results of his study indicated that the overall GPA of high school sciences was a better predictor of students' success in first-year college science courses than the individual high school science grades.

However, Alnasir, & Jaradat (2011) in their study found that student grades in high school did not predict students' achievements in Year One of Medical School.

2.3.2 Ethiopian University Entrance Examination Scores

In Ethiopia, students are expected to sit for Ethiopian University Entrance Examination (EUEE) at the end of two years preparatory school. A minimum pass mark in this examination is a pre-requisite for university admission.

Previously, this exam was called 'Ethiopian School Leaving Certificate Examination (ESLCE). Starting from 2003, it changed to Ethiopian Higher Education Entrance Certificate Examinations (EHEECE) then, Ethiopian General Secondary Education Certificate Examination (EGSECE). Recently it has been changed to EUEE. Based on their EUEE result, students will be admitted to

various institutions of higher learning in Ethiopia. Students with highest results on this exam enter the School of Medical.

Various researches have been carried out to examine whether or not the ESLCE GPA (now EUEE) predicts students' college performance. The results of many researchers were consistent. Desta (2002); Mohammed (2004) & Shenkute (1992) found the ESLCE to be the best predictors of student' success in college. Belay (1990) & Tamiru (1992) also found that Ethiopian school leaving certificate examination or Ethiopian Higher Education Entrance Certificate Examination (ESLCE/EHEECE) were efficient in predicting futures success.

In contrast, other researchers forwarded their argument opposing the above findings. Kebede (1991), Meresa (1994), & Fantu et al. (1996) found that the ESLCE GPA has no contribution in predicting first year first semester academic performance of student. Samson (2007) in his study on the predictive validity of the criterion used for the selection of candidates for the Health Science College at Awassa found that the ESLCE/EHEECE GPA has no significant relationship with college GPA of all academic years in almost all fields of study. Similarly, Aweke (2013) found that there is no relationship between the predictor variable EGSECE GPA and the criterion variable in college GPA.

On the other hand, there are several studies which indicated that cognitive predictors by themselves were inadequate to predict students' allocation to colleges and how well they will do in college (Wolfe, & Johnson, 1995; Anastasi, 1997, & Robbins et al, 2004). Thus, investigations of non-cognitive predicators have needed in order to better explain students' success in college.

2.4 Non-cognitive Predictors of College Academic Achievement

Non-cognitive variables have been defined in the literature as extracurricular or non-academic activities relating to adjustment, motivation and perceptions (Sedlacek, 2005). Their measures are related to psychological factors such as social support and academic related skills.

Thomas, K. (2004) concluded that even if matriculation results remain the single best predictor of university success for students it is also true that non cognitive variables play important roles in determining students' success or failure in educational activities.

Research such as Astin et al. (1976) has indicated that non-cognitive variables were as important in predicting academic success as cognitive variables.

It is also explained in studies that non-cognitive measures were essential in predicting the academic success of college students. Le; Casillas; Robbins, & Langley, R. (2005) indicated that non-cognitive variables complemented the cognitive criteria to predict students' academic achievement and maintenance.

Similarly, Ranasinghe et al. (2012) said that non-cognitive variables had important implications for educators in structuring educational processes aimed at improving academic performance of students and that non-cognitive predictors shed light on academic criteria and academic intervention programs for enhancing students' success at university.

Among several non-cognitive variables, achievement motivation and academic self efficacy appear to be necessary ingredients for one's success in achievement settings (Astinet al., 1976). Robbins et al. (2004) also asserted that achievement motivation and academic self efficacy can be used as entrance standards for admission of students, as evaluation instruments for anticipating successful GPA, persistence and graduation, and as advising intervention tools.

2.4.1 Academic Self-Efficacy

The concept of self-efficacy highlights the importance of self-belief for successful completion of tasks. It also places importance on one confidence in abilities to act in a positive and effective manner to achieve ones goals (Bandura, 1997).

Academic self-efficacy was one of the most important factors that have been identified in relation with academic achievements. In the literature, students' self-efficacy is equated with their outcome expectancy (Pintrich, P.R., & De Groot, E. V., 1990).

Bandura (1977) in his Social cognitive theory provided a practical frame for understanding the technique that may influence students' behaviors during clinical experiences: state that knowledge and skills alone are not always good predictors of behavior because the beliefs that individuals possess about their capabilities significantly affect their behavior.

People with high assurance in their capabilities approach difficult tasks as challenges to be mastered rather than as threats to be avoided. They have an efficacious outlook fosters intrinsic interest and deep engrossment in activities. They set challenging goals and maintain strong commitment for themselves. They heighten and sustain their efforts in the face of failure. They quickly recover their sense of efficacy after failures or setbacks. They approach threatening situations with assurance that they can exercise control over them. Such an efficacious outlook produces personal accomplishments, reduces stress and lowers vulnerability to depression (Abdul, et al., 2013).

In contrast, people who doubt their abilities keep away from difficult tasks which they view as personal threats. They have low aspirations and weak commitment to the goals they choose to pursue. When faced with difficult tasks, they inhabit on their personal scarcity, on the barrier

they will encounter, and all kinds of adverse outcomes rather than concentrate on how to perform successfully. They lose their efforts and give up quickly in the face of difficulties. They are slow to recover their sense of efficacy following failure or setbacks. Because they view insufficient performance as deficient aptitude it does not require much failure for them to lose faith in their capabilities. They fall easy victim to stress and depression (Abdul, et al., 2013).

Academic self efficacy in learning has been widely investigated by western researchers and educators. Schunk (1995), Pajares et al. (1996) and Bandura (1997) have specified an equivalent idea that self-efficacy correlates with academic achievement outcomes. Students with high self efficacy often display greater performance compared to those with low efficacy.

Wright (2012) also advocated that self efficacy was equated with self competence. Hence, significant authorities such as parents and teachers who exert great influences should play their role efficiently in enhancing this self competence and eventually self efficacy helps to make great achievement.

The efficacy beliefs of undergraduate students in science programs have been linked to their persistence, achievement and interest. Pajares., & Graham (1999) supported this claim showing that self-efficacy was most powerful predictor of students' academic ability.

2.4.2 Academic Achievement Motivation

Achievement motivation is another key variable to predict students' academic achievements. It is clear that students who are not motivated to succeed will not work hard.

In meta-analysis of achievement motivation, Robbins et al. (2004) have described achievement motivation as one's inspiration to achieve success, enjoyment of surmounting obstacles and

completing tasks undertaken and as a drive to strive for success and excellence. His analysis also showed that achievement motivation was predictor of college students' academic achievement beyond cognitive predictors.

In their study, Tucker, C.M., Zayco, R. A., & Herman (2002) have indicated that achievement motivation directly affected students' academic achievement. Also, Johnston, C.G. (2006) reported a statistically significant relationship between GPA in college and achievement motivation.

Motivation has been shown to be a predictor of learning, academic success, persistence or continuation in a study and well-being of medical education (Pintrich P. R., & De Groot E.V., 1990). It influenced learning and study behavior, academic performance, choice of medicine as a career, choice of specialty and then intention to continue medical study.

Motivation of medical students could be different from students of general education. Medical education is not typical for higher education because of intertwine with clinical work. Unlike general education, where students have a wide variety of choices to do different things and create unique profiles for themselves, medical education works towards one restricted and clearly defined profession. The environment within which teaching and learning occur is highly specific. Also, medical students are considered highly motivated from the outset (Pintrich P. R., & De Groot E.V., 1990).

On the other hand, a local study conducted by Tsige (2006) in the College of Commerce students shows that there was a negative relationship between academic achievement motivation and academic performance.

2.4.3 Relationship between Academic Self-Efficacy & Achievement Motivation

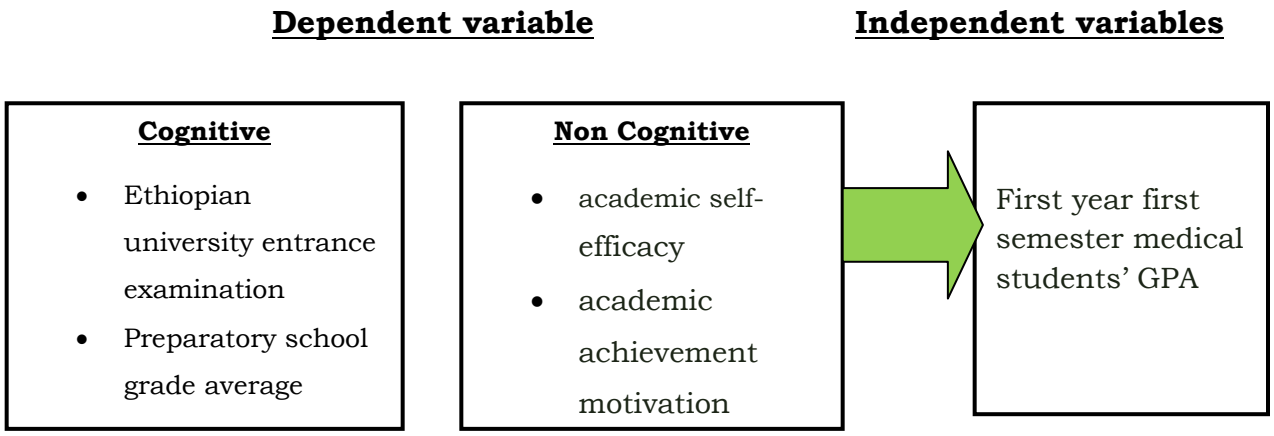
College students' self-efficacy belief has been found to play an important role in motivating them to learn. As students engage in activities, they are affected by such personal influences as goal setting and information processing, along with situational factors (e.g., rewards, teacher feedback). Then, they derive cues signaling how well they are performing. Person's beliefs in their capacity to learn will influence their participation in learning (Pajares, & Schunk, 2001).

Perceived self-efficacy is defined as people's beliefs about their capabilities to produce designated levels of performance that exercise influence over events that affect their lives. So, self-efficacy beliefs determine how people feel, think, motivate themselves and behave. A strong sense of efficacy enhances human accomplishment and personal well-being in many ways (Bandura, 1997). Similarly, he proposed the contribution of self-efficacy when individuals make a cognitive judgment about their mastery of present situations in view of their past experiences, then they proceed to carry out the necessary behaviors to accomplish the task at hand.

Thus, motivation and self-efficacy are enhanced when students perceive that they are performing skillfully or becoming more competent (Schunk, 1991).

2.5 Conceptual Model of the Study

A simple conceptual model that has been developed for this study, included predictor variables (preparatory school grade average and Ethiopian university entrance examination) and psychological variables (academic self-efficacy and academic achievement motivation) with the criterion variable, university academic performance (first year, first semester university GPA) in presented below.



2.5 Summary

There are many variables that predict student performance in higher educational system. Two broad categories of predictors mentioned in the literature were cognitive and non-cognitive predictors.

Cognitive predictors may provide information on what an individual can do, and cover such areas as preparatory school grade point average and college entrance test scores. Non-cognitive predictors provide information on what an individual will do. It refers to psychological variables that play important roles in determining students' success or failure in educational activities (Premuzic, 2004).

According to the literature, investigation of both cognitive and non-cognitive predicators is essential in explaining students' success in medical school (Tucker, et al., 1983).

The Methodology part will be discussed in the next portion.

CHAPTER THREE

METHODOLOGY

This section describes the research design, participants, variables included in the study, data instruments, and procedures of data collection and data analysis.

3.1 Research Design

The research design utilized in this study was quantitative research approach. The study examined predicting academic achievement of first year first semester university student based on cognitive and non cognitive variables. Preparatory school grade point average, Ethiopian University Entrance Examination result, academic self-efficacy and academic achievement motivation were chosen as predictors (independent variables) and first-year first semester grade point average was selected as the criterion (dependent variable) in this study. Descriptive statistics, correlation, multiple regression analyses and analysis of variance were employed to analyze the data.

3.2 Participants

The present study was carried out in AAU School of Medicine on Tikur Anbessa Campus. Freshmen students enrolled in the regular program in the Gregorian academic year of 2013/2014 were taken as the participants of the study. The total population of the study enrolled was 300 (203 males and 97 females).

However, because of student's withdrawal, transference to other universities, incomplete grade and other problems, the researcher could not get the final first semester UGPA of 56 students and

preparatory school and EUEE result of 5 students. In addition, the responses of 12 subjects were excluded from the analyses because the questionnaires were incomplete. Thus, the study includes only 227 students. The mean age of the participants was 19. Of these, 143 (63%) were males, and 84 (37%) were females.

3.3 Variables

3.3.1 Independent (predictor) Variables

The independent variables utilized in this study included preparatory school grade point average, Ethiopian university entrance examination results, academic self-efficacy and academic achievement motivation. These variables were included in the regression analyses.

The independent (predictor) variables were coded as:

X_1= Academic achievement motivation score

X_2= Preparatory school grade average result

X_3= EUEE: Ethiopian University Entrance Examination result

X_4= Academic self efficacy score

3.3.2 Dependent (criterion) variables

UGPA earned by each student at the end of first year first semester was the dependent variable of the study.

3.4 Instruments

Self-efficacy scale and academic achievement motivation self-report inventory were used in this study. Ethiopian University Entrance Examination result, Preparatory school grade average result and first year first semester GPA were collected from the medical school. The reliability indices of the self-efficacy scale and academic achievement motivation self-report inventory were 0.78 and 0.76 respectively. (See the section on procedure below)

3.4.1 Academic Self-efficacy Scale

Academic self-efficacy scale which was developed by Reseon, R. D., Terenzini P.T., & Domingo,R.J., (2006), & Pintrich, & De Groot (1990) and adapted by Mulugeta (1998) was employed to the measure academic self-efficacy of the participants. The total number of the scale items was 15. The items were scored on a five point Likert scale varying from "strongly disagree" (scored 1) to "strongly agree" (scored 5). All of the items were positively worded. The range of possible scores was 15 to 75.

3.4.2 Academic Achievement Motivation Self-Report Inventory

Daniel's (1992) academic achievement motivation self-report inventory was adopted to measure academic achievement motivation, The inventory consisted of 25 items focusing on the students' motivation for achievement in academic settings with a five point Likert scale ranging from "strongly disagree" (scored 1) to "strongly agree" (scored 5). This instrument was preferred since it was developed in the Ethiopian context (concerning Kotebe College of Teachers' Education (KCTE) second year students). As reported by Daniel, the split-half, KR-20 and Coefficient alpha of the items were 0.74, 0.79, & 0.71, respectively.

3.5 Procedure

In a pilot study, Academic Achievement Motivation Self-Report Inventory instrument was administered to thirty three students of first year medical students at Kidus Paulos Hospital. Some students reported the challenge they faced while they responded to the academic achievement motivation self-report inventory. They said “Some questions were vague (unclear)”. Three questionnaires were returned incomplete. Thus, only thirty of them were used to compute the reliability of the items.

At first, the obtained reliability (Cronbach’s Alpha) of the instrument was .45 which was much lower than the reliability of .711 reported by Daniel (1992). Based on the information about language difficulty and/or vagueness in some of the items as indicated by some respondents some items were deleted. The four items deleted were:

1. Even though the probability of questions included in the test from outside is so little, I would like to read all related subjects from outside,
2. I often do something just to prove to myself that I can do it,
3. Students should be concerned more about success in college than avoiding feelings of failure, and
4. I believe that my parents expect my performance as more important than what I expect for myself.

Subsequently, the reliability of the 25- items scale rose to 0.76.

The academic self-efficacy scale was also administered to the 33 students. Out of the 33, 31 responded properly. No complaints were raised by the students. The reliability of the15-item instrument was 0.87; a result which was similar to the indices reported by Reseon, R. D. Terenzini, p. T., & Domingo, R.J., (2006), Pintrich, & De Groot (1990), & Mulugeta (1998).

The results of the students on the Ethiopian university entrance examination, their preparatory school average grade as well as their first semester grade point average (GPA) were collected from the medical program Office. Academic self-efficacy scale and academic achievement motivation self-report inventory were administered in English language. Subjects were asked to respond carefully and genuinely. The administration was made in a single room where students were gathered for the second semester registration. This option was preferred in order to reduce missing papers.

3.6 Data Analyses

The data were analyzed using SPSS version 20. Descriptive statistics were computed. Pearson product-moment correlations for all variables in the study were calculated. Mean difference between males and females scores on the variables in the study were calculated. Standard multiple regression analysis was done for all subjects and for both male and female subjects separately. Statistical tests of significance were performed using $\alpha = 5\%$ level of significance.

3.7 Ethical confederations

Ethical considerations such as willingness to participation, privacy of participants, data protection, the purpose and procedure of the study, absence of any form of danger from participation and the right to withdraw oneself or one's data from study were clearly described to the participants.

CHAPTER FOUR

Analysis and Discussion

4.1 Presentation and Analysis of the Data

In this section, descriptive statistical results, findings of the correlation analysis of predictor variables and criterion variable, multiple regression and stepwise multiple regression analysis were presented.

4.1.1 Descriptive Statistics

The participants of the study are 227 (203 males and 97). Descriptive statistics such as mean, standard deviation and range were used to show the general feature of each criterion and predictive variables. The results are presented in Table 1 below.

Table 1 Mean, Standard Deviation and Range of Variables in the Study (N=227)

No.	Measures	Statistics			
		Range		Mean	Std. Deviation
		Minimum	Maximum		
1	Preparatory school grade point average	56.80	99.25	87.65	8.58
2	Ethiopian university entrance examination	470	647	568.51	28.63
3	University grade point average	1.46	3.67	2.67	.44
4	Academic achievement motivation	25.00	86.00	38.98	7.93
5	Academic self-efficacy	15.00	49.00	22.13	6.18

Preparatory school GPA was the individual's score average across all subjects taught during the preparatory program. The average score was calculated out of 100. As shown in Table 1, the highest score was 99.25, while the lowest score was 56.80 with the range of 42.45.

The result on the Ethiopian university entrance examination was subject's total score on the exam which is given at the completion of preparatory programs. The score of the exam was calculated out of 700. The highest score was 647; the lowest score was 470 with the range of 117 (See Table 1).

University GPA: First year, first semester university grade point average (GPA) was calculated out of 4. The highest score was 3.67 and the lowest score was 1.46 with the range of 2.21.

Academic Self-efficacy Result: Academic self-efficacy was the individuals' score on the questionnaire to indicate their degree of self-efficacy on a 5- point Likert-type scale ranging from 1 (very low) to 5 (quite a lot). The scores were varied from 15 to 75. As individuals scores on the scale decreased, academic self-efficacy of individuals increased and vice versa (See the appendix).

Academic Achievement Motivation: Individuals' responses on the academic achievement motivation questionnaire to indicate their degree of motivation for achievement in academic setting. It varied from 25 to 125, on a 5 point Likert- type scale ranging from 1 (very low) to 5 (quite a lot). As individuals score on the scale decreased, academic achievement motivation of individuals increased and vice versa (See the appendix).

Results of Correlation Analysis

Correlation coefficients were computed to ascertain whether there were correlations among the variables of interest.

The correlation coefficients obtained showed that all of the predictor variables in the study had statistically significant relationships with the criterion variable (first year first semester university GPA). Results of the correlation analyses are given in Table 2.

Table 2 Correlation Matrix of Variables in the Study

No.	Variables	1	2	3	4	5
1	UGPA	_				
2	PGPA	.464**	_			
3	Ethiopian university entrance examination	.4**	.42**	_		
4	Academic achievement motivation	.21**	.485**	.22**	_	
5	Academic self-efficacy	.18**	.46**	.19**	.73**	_

** Correlation is significant at the 0.01 level (2-tailed)

PGPA= Preparatory grade point average, UGPA=University grade point average

4.1.2 Results of Multiple Regression Analysis

In order to know the contribution of all predictor variables, independent variables were employed in a linear combination for prediction of criterion variable. Multiple regression analyses were conducted to examine the combined contributions of PGPA, EUEE, academic self- efficacy and

academic achievement motivation to the prediction of UGPA. Multiple regression analyses were carried out to examine the independent contribution of PGPA, EUEE, academic self- efficacy and academic achievement motivation as predictors of UGPA.

Multicollinearity was diagnosed between independent variables; none of the coefficients were greater than .90. So, multicollinearity was not a problem.

The joint contribution of predictor variables on criterion (UGPA) variable was explored by multiple regression analysis. Multiple regression analysis revealed that the predictor variables (PGPA, EUEE, academic self-efficacy and academic achievement motivation) together significantly predicted UGPA ($F_{(4,222)} = 41.92$, $P<.05$), accounting for 43% of the variance in UGPA. Table 3 below gives the summary regression analyses for the whole sample and for female and male subgroups.

Table 3 Summary of Multiple Regression Analyses to Predict UGPA

		Previous Academic Achievement and Psychological variables				
Student group	n	Predictor	B	R	R^2	F ratio
		Constant	.341	.66	.43	
		PGPA	.02			

All	227	EUEE	.003			41.92*
		Academic self-efficacy	.014			
		Academic achievement motivation	013			
Females	84	Constant	.656			
		PGPA	.014			
		EUEE	.003	.65	.42	14.54*
		Academic self-efficacy	.03			
		Academic achievement motivation	.002			
Males	143	Constant	.9			
		PGPA	.012			
		EUEE	.003	.60	.36	19.6*
		Academic self-efficacy	.017			
		Academic achievement motivation	.01			

Dependent variable: UGPA

Predictors: (Constant), PGPA, EUEE, academic achievement motivation, and academic self-efficacy $p^{*} < .05$

The regression analyses revealed that a model involving PGPA, EUEE, academic self-efficacy and academic achievement motivation variables was significant in the case of females' UGPA ($F_{(4, 79)} = 14.54$, $P < .05$), accounting for 42 % of variance in UGPA.

The four predictor variables (PGPA, EUEE, academic self- efficacy and academic achievement motivation) together significantly predicted males' UGPA ($F_{(4, 138)} = 19.6$, $P < .05$), accounting for 36% in the criterion variable.

The prediction equations of all participants and males and females subgroup were given below.

$Y' = .34 + .02X_1 + .003X_2 + .014\ X_3 + 0.013X_4$ (for all students)

$Y' = .66 + .014X_1 + .003X_2 + .03\ X_3 + 0.002\ X_4$ (for females)

$Y' = .9 + .012X_1 + .003X_2 + .017\ X_3 + 0.01X_4$ (for males)

Where,

Y' = Predicted UGPA, X_1 = PGPA, X_2, EUEE, X_3 = academic self-efficacy and X_4 = academic achievement motivation

Gender differences were identified from the above-mentioned variables in predicting males and females UGPA subgroups.

Multiple regression analyses were employed to evaluate the relative contribution of each predictor variable in predicting the criterion variable. Multiple regression was revealed the variable which had the highest contribution in predicting the dependent variable.

Based upon statistical criteria, one variable was entered into the model at first step. Then, the predictor variable that contributed the most to the prediction equation in terms of increasing the variance in the criterion variable was entered step by step. This process was continued until additional variables contributed statistically to the regression equation.

The multiple regression model used in this study are given below.

$Y' = A + B_1X_1,$

$Y' = A + B_1X_1 + B_2X_2,$

$Y' = A + B_1X_1 + B_2X_2 + B_3X_3$

$Y' = A + B_1X_1 + B_2X_2 + B_3X_3$

$Y' = A + B_1X_{1+}B_2X_{2+}B_3X_{3+}B_4X_4$

Where;

Y' = Predicted UGPA; X_1 = academic achievement motivation; X_2 = PGPA; X_3 = EUEE, and X_4 = academic self-efficacy

First, academic achievement motivation was found to be the best predictor of UGPA (F (1,226) = 69.13, P<.05), accounting for about 24% of the variance in UGPA.

$Y' = 3.7+.03X_1; R= 0.49$

PGPA was then added to the model; both academic achievement motivation and PGPA contributed significantly to prediction of UGPA (F (2,225) = 66.5, P < .05), accounting for 37% of the variance. PGPA independently contributed 13% to the model.

$Y'= 1.85+ .02\ X_1+.03X_2; R=0.61$

Third, a regression model that included academic achievement motivation, PGPA, and EUEE was run and the three predictors together contributed significantly in predicting UGPA (F (3,224) = 51.79, P < .05); they together accounted for about 41.1% of the variance in the UGPA. EUEE was found to independently contribute for 10.69% to the previous variance in UGPA.

$Y' = .27+ .02\ X_1+.02\ X_2+.01X_3$; R= 0.64

When academic self-efficacy was included in the model, four of the predictor variables jointly contributed significantly in predicting UGPA (F (4,223) =41.9, P <.05), accounting for 43% of the overall variance in UGPA. Academic achievement motivation independently contributed 1.9 % in predicting UGPA. The results of stepwise regression analyses are presented in Table 4.

The regression equation for all participants was,

Y' =.34+.01 X_1 +.02 X_2 +.01X_3+.01X_4; R= 0.656

Y' = Predicted UGPA, X_1 = PSGPA, X_2, EUEE, X_3 = academic self-efficacy and X_4 = academic achievement motivation.

Table 4 Regression Analyses of Predicting UGPA (n=227)

Student Group	Step	Predictor variable	B	R	R^2	F-ratio
All	1	Constant	3.7	.49	.24	69.13*
		Academic achievement motivation	.03			
	2	Constant	1.85	.61	.37	66.50*
		Academic achievement motivation	.02			
		PGPA	.03			
	3	Constant	.27	.64	.41	51.79*
		Academic achievement motivation	.02			
		PGPA	.02			
		EUEE	.01			
	4	Constant	.34	.656	.43	41.92*

		Academic achievement motivation	.01			
		PGPA	.02			
		EUEE	.01			
		Academic self-efficacy	.01			

a. Predictors: (Constant), academic achievement motivation

b. Predictors: (Constant), academic achievement motivation and PGPA

c. Predictors: (Constant), academic achievement motivation, PGPA and EUEE

d. Predictors: (Constant), academic achievement motivation, PGPA, EUEE and academic self-efficacy

e. Dependent Variable: UGPA, $p^{*} < .5$

Stepwise multiple regression analyses were performed to determine the contribution of each independent variable in predicting females' and males' UGPA separately.

First, academic self-efficacy was entered in to the model and found to be significant in predicting females' UGPA (F (1, 83) = 30.23, P<.05), accounting for 26% of the variance in females' UGPA. The regression model is given below.

$Y' = 3.45 + .04X_1$; $R = 0.519$

In the second step, PGPA added to the model and both academic self-efficacy and PGPA contributed significantly in predicting female' UGPA (F (2, 82=) 26.14, P < .05), accounting for 39% of the variance in females' UGPA. PGPA independently contributed 13% to the model. The regression model is given below.

$Y' = 1.86 + .03 X_1 + .012 X_2$; $R = 0.626$

A regression model that included academic self-efficacy, PGPA and EUEE contributed significantly in predicting females' UGPA ($F(3, 81) = 19.6$, $P < .05$), accounting for 42% of the variance in females' UGPA. EUEE independently contributed 3% to the model.

The regression model is given below.

$Y' = .61 + .03X_1 + .014X_2 + .003X_3$; $R = 0.651$

As the findings of this study indicated, academic self-efficacy had the highest contribution in predicting females' UGPA. Academic achievement motivation was not significantly contributed in predicting females' UGPA. The results are presented in Table5

Table 5 Summary of Regression Analyses of Predicting Female Students' UGPA (n=84)

Student Group	Step	Predictor variable	B	R	R^2	F-ratio
Females	1	Constant	3.45	.519	.269	30.23*
		Academic self-efficacy	.04			
	2	constant	1.86	.626	.392	26.14*
		Academic self-efficacy	.03			

		PGPA	.012			
	3	constant	.61	.651	.424	19.60*
		Academic self-efficacy	.03			
		PGPA	.014			
		EUEE	.003			

a. Predictors: (Constant), academic self-efficacy

b. Predictors: (Constant), academic self-efficacy and PGPA

c. Predictors: (Constant), academic self-efficacy PGPA and EUEE, $p^{*}<.05$

Multiple regression analyses were also performed to determine the contribution of each independent variable in predicting males' UGPA.

First, academic self-efficacy was entered. It contributed significantly in predicting males' UGPA (F (1,142) = 37.4, P<.05), accounting for 21% of the variance in males' UGPA. The regression model is given below.

$Y' = 3.37 + .032X_1$; $R=0.458$

In the second step, PGPA was added to the model and both academic self-efficacy and PGPA together significantly contributed in predicting male students' UGPA (F (2, 141=) 32.05, P < .05), accounting for 31.4% of the variance; PGPA independently contributed 10.4% to the model. The regression model is given below.

$Y' = 1.88 + .03\ X_1 + .016\ X_2$; $R=0.560$

A regression model that included academic self- efficacy, PGPA and EUEE were contributed significantly in predicting male students' UGPA (F (3, 140) = 24.46, P < .05), accounting for

34.6% of the variance in males' UGPA. EUEE independently contributed 3.2% to model. The regression model is given below.

$Y' = .6 + .03 X_1 + .012 X_2 + .003 X_3$; $R = 0.588$

As the finding of this study indicated, academic self-efficacy had the highest contribution in predicting male students' UGPA. Academic achievement motivation did not significantly contribute in predicting males' UGPA. The results are presented in Table 6.

Table 6 Summary of Regression Analyses of Predicting Male Students' UGPA (n=143)

Student Group	Step	Predictor variable	B	R	R^2	F-ratio
Male	1	Constant	3.37	.46	.21	37.4*
		Academic self-efficacy	.032			

	2	constant	1.88	.560	.314	32.05*
		Academic self-efficacy	.03			
		PGPA	.016			
	3	constant	.6	.588	.346	24.46*
		Academic self-efficacy	.03			
		PGPA	.012			
		EUEE	.003			

a. Predictors: (Constant), PGPA
b. Predictors: (Constant), EUEE, PGPA
c. Predictors: (Constant), PGPA, EUEE, academic achievement motivation
d. Predictors: (Constant), PGPA, EUEE, academic achievement motivation, academic self-efficacy $p^{*}<.05$

4.2 Discussion

The purpose of this study was to investigate the usefulness of previous academic achievements (preparatory school grade point average and Ethiopian University Entrance Examination) and psychological variables (academic self-efficacy and achievement motivation) in predicting academic performance of first year first semester medical school students in Addis Ababa University, Tikur Anbessa Campus. The study examined the ability of the above-mentioned variables to predict the performance of male and female students independently and tried to identify the most important predictors in predicting first year first semester UGPA. Academic self-efficacy, achievement motivation, PGPA and EUEE were combined in this study to investigate their predictive power in academic performance of medical students. To examine the

proportion of variance accounted for by these variables in UGPA multiple regression was performed. The study found that all variables that were included in the design had contribution in predicting the semester UGPA of all students.

Regression analysis indicated that academic achievement motivation explained the largest proportion of the variance in all students' UGPA which was 24 %. This result corresponded to findings of many studies. For instance, Robinson et al. (2004) indicated that academic achievement motivation was the best predictor of university GPA with contribution of 25.2% in university GPA.

The result of this study was in line with the results of Daniel (1992) and Aweke (2013) studies that reported a significant relationship between motivation and college performance.

The regression analysis also indicated that preparatory school GPA result explained a considerable proportion of the variance in semester UGPA which was 13% next to that of academic achievement motivation. This means, students who performed better during the preparatory school period also performed better in university. These students probably had the ability to easily manage the academic atmosphere in university. The result also indicates the importance of the content being taught in preparatory schools in preparing students for the university. The finding of this study was also consistent with previous finding reported by Willough (1985) concerning the relationship between students' high school academic achievement and their performance in a school of medicine. In their study, they found that high school GPA was one of the most consistent predictors of students' performance in medical school.

The proportion of variance in academic performance of medical students accounted for by academic EUEE was 4%. This result was in line with the finding by (Kassim, 199). He concluded that entrance examination was a very important predictor to select students during the course of their career, and to evaluate students when they get in school. Another study found that previous academic achievements were good predictors of performance in undergraduate medical training (Stegers et al., 2012).

The proportion of variance in academic performance of medical students accounted for by academic self-efficacy was relatively low but, it was important. The result of this study suggested that individuals who had high academic self-efficacy also had higher UGPA. The results of the present study agree with the finding of Pajares F, & Graham L. (1999) who concluded that academic self-efficacy affected student academic performance in the university.

The present finding also agrees with Bandura's work which indicated that academic self-efficacy contributed to the academic achievement of students. His work reported that individuals with high academic self-efficacy make a cognitive judgment about their mastery of present situations in view of their past experiences, and proceed to carry out the necessary behaviors to accomplish the task at hand (Bandura, 1997).

PGPA, EUEE and self-efficacy were found to be the significant predictors of UGPA in both male and female subgroups.

CHAPTER FIVE

Summary, Conclusion and Recommendations

5.1 Summary and Conclusion

The topic of the present study was prediction of first year students' academic performance in Addis Ababa university school of medicine. The purposes of this study were to know the predictive power of preparatory school GPA, Ethiopian university entrance examination, academic self-efficacy and academic achievement motivation in predicting academic performance of AAU first year medical students, which predictor variable had the highest contribution in predicting UGPA, and if there was any difference among predictor variables in their ability to predict UGPA.

The subjects of the study were 227 students (Female = 84 and male = 143) who were enrolled in the medical school in 2013/2014 academic year. Preparatory school GPA, EUEE and first

semester university GPA were collected from medical school office. Academic self-efficacy scale and academic achievement motivation self-report inventory were used to collect data from the subjects.

The data were analyzed using correlation, multiple regression and step wise regression by SPSS. The findings indicated that the correlation between each of the predictor variables and the criterion variable was statistically significant. The multiple and stepwise regression analyses revealed that each of the predictor variables contributed significantly to the prediction of UGPA of the participants. It has shown that previous academic achievements (PGPA & EUEE) and psychological variables (academic achievement motivation and self-efficacy) were very important in predicting medical students' GPA irrespective of gender. The multiple and stepwise regression analyses revealed that all of these variables contributed significantly to the prediction of students semester GPA accounting for 43% of the variance. Academic achievement motivation had the highest contribution in predicting UGPA variance (24% of the explained variance). However, these variables were not equal in their ability to predict the performance of male and female students. Self-efficacy had the highest contribution in predicting both male's and female's UGPA subgroups. It contributed significantly to males' and females' UGPA accounting for 21% and 27% the variance, respectively. The multiple and stepwise regression analyses revealed that all of these variables contributed significantly to the prediction of female and male students UGPA accounting for 42% and 36 % of the explained variance, respectively.

The first objective of this study was to find out how well PGPA, EUEE, academic self-efficacy and academic achievement motivation predict first year first semester of AAU medical students when combined and/or independently. Results indicated that a change in UGPA was accounted for by all of the variables in the regression model. That is, all of the variables combined together

contributed significantly in predicting UGPA; they accounted for 43% of UGPA variance in medical students. This implies that both cognitive and non-cognitive variables specifically, PGPA, EUEE, academic achievement motivation and academic self-efficacy are important indicators in predicting UGPA.

Identifying the variable which has highest contribution to predict UGPA was the second objective of this study. Relative to other variables academic achievement motivation made the highest contribution in predicting UGPA (accounting for 24 % of the variance) followed PGPA (13 %), EUEE (4%) and academic self-efficacy (1.9 %).

Relative to other variables academic self-efficacy had highest contribution in predicting female students UGPA accounted for 26.9% of the variance followed by PSGPA 13 % and EUEE 3%.

Academic self-efficacy had highest contribution to the prediction of male students UGPA accounted for 21% of the explained variance followed by PSGPA 10.4 %, EUEE 3.2%. The results also suggested that among the variables considered in the study, academic self-efficacy is the most important variable in explaining variations in academic performance of male students. Overall the results of this study were in the directions expected and were consistent with previous similar works.

However, the study has some limitations. The instruments used in this study lack data on convergent, and construct validity in the Ethiopian context. The study was confined to one university (Addis Ababa University School of Medicine). So, the results may not necessarily apply to students in all medical schools.

5.2. Recommendations

The findings of this study have important implications for educators, teachers, counselors, university curriculum designers and students. It is advisable for educators, university curriculum

designers, counselors to focus not only on cognitive factors but also on the non-cognitive predictors such as self-efficacy and academic achievement motivation in educational programs. Counselors working in high school may work with students to increase their self efficacy and academic achievement motivation.

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Appendix A

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

SCHOOL OF PSYCHOLOGY

DEPARTMENT OF MEASUREMENT AND EVALUATION

A questionnaire to be filled by students:

Dear students,

The objective of this questionnaire is to gather information regarding Academic Self-efficacy, and Achievement Motivation of first year medical students. The information obtained will be

used for research purposes only. As a result, your frank and honest response to each item has practical and valuable significance in the accomplishment of the study.

The questionnaire consists two parts: Academic Achievement Motivation Self-report Inventory and Academic Self-efficacy Scale.

Thank you for your cooperation!

GENERAL INFORMATION

Please make a tick mark (√) or fill in the blank spaces.

1. Sex. Male_____ Female_____

2. Age_____

3. ID No. _____

PART ONE

ACADEMIC ACHIEVEMENT MOTIVATION SELF-REPORT INVENTORY

Based on the extent to which an item explains your behavior (what you feel and act in your academic situations), choose one of the following options and mark "√" in the column provided.

There is no **RIGHT** or **WRONG** answers. Please respond to all items. Don't spend too much over a question.

1= STRONGLY AGREE 2= AGREE 3= UNCERTAIN 4= DISAGREE 5= STRONGLY DISAGREE

		Response Categories				
No.	**Items**	**1**	**2**	**3**	**4**	**5**

1	Regardless of its level of difficulty I will continue to work on my goal until I achieve it.					
2	I am more consistent and work hard my classroom assignments.					
3	Even if the topic is not interesting to learn, I want to get information on that topic.					
4	I check my answers on exam even if I think I know it, because it is always better to be safe than sorry.					
5	I am oriented in my future academic work.					
6	In a tight situation, I like when I am in charge and the blame or praise will come to me.					
7	If I am given lower marks than other students it makes me unhappy.					
8	Other interests such as sport, movies, etc. prevent me from achieving an excellent mark in my college work.					
9	I will try to the best of my ability for my goal.					
10	When I begin something to do, I take it to a successful completion.					
11	I feel that my instructors think that I behave well in the class.					
12	I enjoy being one of the class leaders or representative.					

13	If I success several times repeatedly in my studying, I would go on with trying as harder next time.					
14	If I done a task well and attained my goal, I usually go on.					
15	It bothers me if I get low grades.					
16	Studying in college and universities for about 6 or 7 years is wasting time.					
17	Success in academic has less to do with luck and more to do with hard work.					
18	After I was called from my homework (study) to watch television or listen to the radio, it is difficult for me to begin it again.					
19	Even if it takes a long time, I can read a subject until I understand it.					
20	I will not stop doing an assignment until it is completed even though, it is boring to me.					
21	I will find out the most appropriate person to help me resolve a problem related to my study.					

22	I like it when my teachers say in front of others that I am doing a good job.					
23	Considering the future as positive I will do my best here at college.					
24	I supposed to set my goals as high as I can easily reach.					
25	I enjoy doing well in class.					

PART TWO

ACADEMIC SELF-EFFICACY SCALE

Based on the extent to which an item explains your behavior, please respond to the items in the table by indicating your agreement or disagreement using "√" in the column provided. There is no **RIGHT** or **WRONG** answers. Please respond to all items. Don't spend too much over a question.

1= STRONGLY AGREE **2= AGREE** **3= UNCERTAIN**

4= DISAGREE **5= STRONGLY DISAGREE**

		Response Categories

No.	**Items**	**1**	**2**	**3**	**4**	**5**
1	I am certain I can master the skills taught in college this year.					
2	I can do even the hardest college academic work if I try.					
3	If I have enough time, I can do a good job on all my college academic work.					
4	I can do almost all the academic work in college if I don't give up.					
5	Even if the academic work in college is hard, I can learn it.					
6	I am certain I can figure out how to do the most difficult college academic work.					
7	Compared with other students in college I expect to do well.					
8	I am certain I can understand the ideas taught in the courses I am taking.					
9	I expect to do very well in college.					
10	Compared with others in college, I think I am a good student.					
11	I am sure I can do an excellent job on the problems and tasks assigned in the courses I am taking.					
12	I think I will receive a good grade in the courses I am taking.					
13	My study skills are excellent compared with others in college.					
14	Compared with other students in college I think I know a great deal about the courses I am taking.					
15	I know that I will be able to learn the material for the courses I am taking.					

Letter of Declaration

I, undersigned graduate student, declare that this is my original work and has never been defended in any undergraduate or graduate program in any university. I have also acknowledged according to the references I have used in the work.

Name: Galane Ashenafi

Sgnature: _____

Date: _____

I confirm that this thesis has been submitted for examination with my approval as a university advisor.

Name: Darge Wole (Ph.D)

Signature:_____

Date:_____

Addis Ababa University

School of Graduate Studies

College of Education and Behavioral Studies

School of Psychology

Department of Measurement and Evaluation

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By Galane Ashenafi

November 2014

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By Galane Ashenafi

Approval of the Board of Examiners

4. Advisor

Name_____Signature_____Date_____

5. Internal Examiner

Name _____Signature_____Date_____

6. External Examiner

Name _____Signature_____Date_____

Abstract

Academic performance of medical students is affected by multiple factors, including cognitive and non cognitive factors. The purpose of this study was to identify the prediction power of selected psychological variables' (academic self-efficacy and achievement motivation) and students' previous academic achievement (preparatory grade point average and Ethiopian University Entrance Examination) on medical students' first year first semester grade point average in Addis Ababa University. The ability of each of these variables in predicting males' and females' academic performance was also assessed. The subjects of this study were 227(male = 143 and female = 84) students who enrolled in Addis Ababa University School of Medicine in 2013/2014 academic year. Students' previous academic achievement and University grade point average (UGPA) were secured from the under graduate Program Office School of Medicine. Academic self-efficacy scale of Pintrich and DeGroot (1990) and Roeser et al. (1996) which were adapted by Mulugeta (1998) and an adapted Academic Achievement Motivation Self-Report Inventory of Daniel (1992) were used to measure participants' academic self-efficacy and achievement motivation respectively. Data were analyzed using multiple regression analysis. Multiple regression analysis revealed that the predictor variables (preparatory school grade point average, Ethiopian university entrance examination, academic self-efficacy and achievement motivation) added significantly to the prediction of university grade point average ($F_{(4,222)}=41.92$,$P<.05$),accounting for 43% of the variance in university grade point average of first semester. The regression analyses revealed that a model involving in preparatory grade point average, Ethiopian university entrance examination, Academic self-efficacy and academic achievement motivation on university grade point average was statistically significant for females ($F_{(4, 79)} = 14.54$, $P < .05$), accounting for 42% and for male ($F_{(4,138)} = 19.6$, $P < .05$), accounting for 36% of the variance in university grade point average. Academic achievement motivation independently did not significantly contribute in predicting males' and females' university grade point average sub groups. Practical implication of these findings to the medical school in particular and educational practice in general was discussed. In addition, directions for future research were recommended.

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I wish to express my special gratitude to participants of this study for their frank and honest response to each item of questionnaire during the data collection.

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List of Tables

List of Abbreviations

EUEE = Ethiopian University Entrance Examination

MOH= Ministry of Health

PSGPA= Preparatory School Grade Point Average

UGPA= First year first semester University grade point average

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