# *Academic, Social and Psychological Correlates of Gender Disparity in Higher Education: The Case of Debub University*

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**Abstract**

*The present study investigates the pattern of female academic success in higher education and their prospects in progressing through the system drawing a solid data on their academic status, socio-cultural and psychological factors, and personal background variables. The sample involved 134 (Male= 94 and Female = 40) first year students admitted in the 2003/2004 academic year. The methods used to collect information include students' academic performance records, and a self-administered measure assessing respondents' gender role attitude, general academic self concept, and perceived parental expectation. The results indicate that with the exception of College of Health Sciences, the attrition rate ranges from33% in the Faculty of Natural Sciences to as high as 46.7% in the College of Agriculture among girls who joined Debub University after the pre-university preparatory program. Further, the analyses generally indicate that females have low academic self-concept and are particularly less confident about their ability in traditionally masculine subjects like Mathematics and Physics. The low self-concept of ability in case of girls was related to their low academic performance. But boys and girls did not significantly vary in their gender role attitude indicating pervading traditional stereotypic beliefs. Finally, implications of the findings relevant to address gender equity in higher education institutions in Ethiopia are discussed.*

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**Key Words**: Academic Self-Concept, Gender Disparity, Socialization, Parental Expectation

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## INTRODUCTION

The opportunity to benefit for Africans from the increasingly globalized knowledge is nothing but to keep abreast with changing situations overcoming the challenges of resource constraints. The current trend in higher education at global level seems to have subscribed to the motto:" *Constructing knowledge societies*" (World Bank 2002) and Ethiopia is by no means an exception. This in turn dictated the massification of higher education despite formidable resource limitations both financial and human. Notwithstanding this scenario, Ethiopian women now need to benefit from this massive expansion since females are underrepresented at all ladders of the education system. However, the underrepresentation appears to be more severe at tertiary level than the lower levels of education (Mama 2003). For instance, a recent publication on female participation in higher education (HE) in Africa demonstrated that the overall average of gender-disaggregated gross enrolment rate that involved 18 countries was found to be 33.5%. The highest enrolment rate being reported to be 51% for Libya and the lowest being in Central Africa Republic with a GER of 9%. Ethiopia's female HE enrolment stands at 15.4 % in 1999, which was next to Central Africa Republic (Damtew & Altbach 2003). Even though far from the African average, there has been increase in female enrolment in Ethiopian higher education institutions (HEIs). To that effect, a number of affirmative measures have been taken via adapting new policies focused on gender mainstreaming. One of such policies includes the New Education and Training Policy (TGE 1994). Among the major focuses of this policy has been to ensure equity of the sexes via increasing access to HE for female secondary school leavers. The positive measures taken by the MoE among others include adopting a special provision for females (entitling females to join HEIs with 0.20 Grade Point Average below what is required for males). Additional measures have also been in place which includes arrangement of special tutorials and library services exclusively meant for females to curb the initial disadvantages suffered.

It is argued that addressing women enrolment is only the first step in much longer process bridging the gender gap in HE participation. In fact female participation has shown a marked increment over the last years, yet the female survival and success trend at HEIs does not seem to show an impressive picture due to factors that are not yet addressed but that are inherent in academic activities, socio-cultural experiences, and psychological development of learners.

Against the backdrop of the above mentioned issues, the present study endeavours to:

- describe the female enrolment and participation at national level
- investigate gender differences in enrolment, attrition, and survival trends at the level of institution,
- empirically reveal the extent to which academic, socio-cultural and psychological variables impact female participation and survival based on case study,
- derive policy recommendations based on the data generated

Data was obtained on students of Dilla College, Debub University. The paper is therefore organized at three different but interrelated levels: (1) first, a national level analysis of female participation in HEIs will be presented based on secondary data, followed by (2) analysis of gender differences in enrolment, attrition and survival trends, and finally (3) empirical data will be presented to examine the effects of pervious academic performance, socio-cultural and psychological variables on female survival in HE by taking Debub University as model.

## 1. Female Participation in Higher Education: The National Context

Compared to other developing regions, the participation in HE is the lowest in Sub Saharan Africa. Ethiopia's HE participation of the age bracket eligible for higher education is characterized as the lowest even by the standards of sub-Saharan Africa. Regardless of gender, post secondary enrolment until 2000 was below 1% among the eligible age group (World Bank 2003). Further, only about 10-15 % of those who complete high school are entitled for higher education each year until 1999 (Habtamu 2000). It is therefore evident what would the share of women be given this low participation. According to EMIS-MoE Education Statistics, of the total of 27, 345 regular students in 1998-99 academic year HEIs, 15.4% were females. And among the total number of graduates in the same year, the share of females was 14%. This shows the lowest participation rate next to Central African Republic (Mama 2003). However, recently due to the expansion process in HE system in the country and opening up of private higher education institutions female participation has shown significant increment.

***Recent Female Enrolment Trends in Public and Private HEIs***

As depicted below (see: Table 1), over the last five years the overall female enrolment in absolute figures reveals a substantial increase in the number of females in public and PHEIs.

For example, the number of females in 2004/05 academic year was 2.5 times as much as those enrolled in 2000/01.

Comparative female enrolment in public HEIs as of 2004/05 academic year reveals that Gonder University found to have enrolled the highest proportion of 28.8 % while Kotebe College of Teacher Education found to have the lowest share of 10.8%.

**Table 1: Overall Enrolment of Private and Public HEIs from 2000/01-2004/05.**

| Year | Enrolment | | | |
|---|---|---|---|---|
| | **Male** | **Female** | **Total** | **% Female** |
| 2000/01 | 68724 | 18707 | 87431 | 21.4 |
| 2001/02 | 74931 | 26898 | 101829 | 26.41 |
| 2002/03 | 110695 | 37259 | 147954 | 25.2 |
| 2003/04 | 128804 | 43307 | 172111 | 25.2 |
| 2004/05 | 144591 | 46574 | 191165 | 24.4 |

SOURCE: *Education Statistics: Annual Abstract, December 2005, Adds Ababa, Ethiopia.*

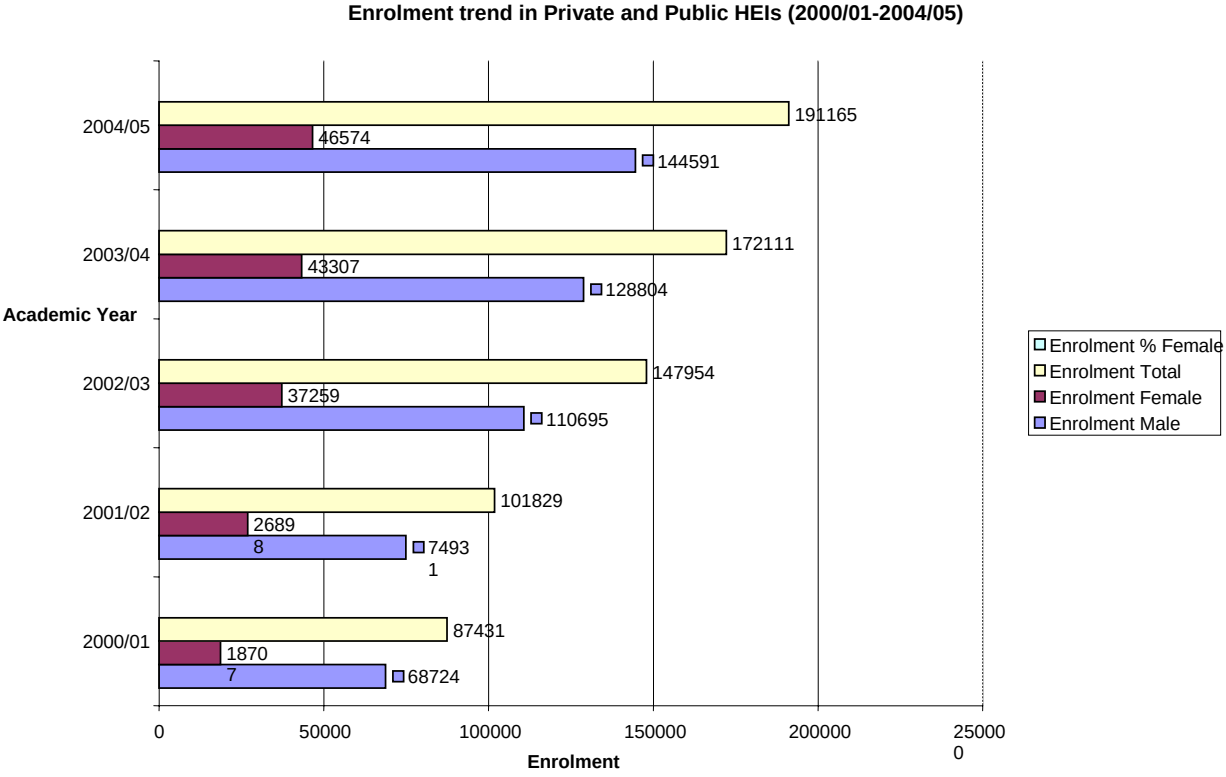


***Fig. 1****. Overall Enrolment trend in Public and Private HEIs (2000/01-2004/05)*

SOURCE: Based on data obtained from '*Education Statistics: Annual Abstract, December 2005, Adds Ababa, Ethiopia."*

In case of private HEIs, the picture is totally different. Despite paucity of data, some of them have enrolled more female students than males. Specifically, Royal and Admas Colleges (see: Table 2) reported to have enrolled 54.7 % and 51.6% female students respectively. In absolute size, however, the largest share of the female student population (6362 i.e. 24.3%) was enrolled in St. Mary's University College (SMUC). Hence, as of 2004/05 academic year, SMUC had the largest overall student population than any other HEIs be it public or private.

**Table 2: Enrolment in Public/Government Higher Education Institutions (2004/5)**

| Institution | Enrolment by Gender | | % Female |
|---|---|---|---|
| | Total | Female | |
| Adama University | 6264 | 1427 | 22.8 |
| Addis Ababa University | 41052 | 10339 | 25.2 |
| Alemya University | 14540 | 3034 | 20.9 |
| Arbaminch University | 4897 | 968 | 19.8 |
| Bahirdar University | 20429 | 4664 | 22.8 |
| Debub University | 14671 | 3050 | 20.8 |
| Gonder University | 7265 | 2090 | 28.8 |
| Jimma University | 15344 | 3334 | 21.7 |
| Mekelle University | 14073 | 2627 | 18.7 |
| Defense University College | 1886 | 232 | 12.3 |
| Ethiopian Civil Service College | 2094 | 261 | 12.5 |
| Kotebe College of Teacher Edu | 877 | 95 | 10.8 |
| Ethiopian Mass Media Institute | 361 | 128 | 35.5 |

**SOURCE:** *Education Annual Statistical Abstract 2004/05*

A closer inspection of enrolment trends based on Fig.2 below confirms the fact that the hitherto dominating male students number yet to increase from as low as 68724 in 2000/01 to as high as 144 591 in 2004/05 while the number of female students increased from 18707 to 46574 within the same interval. The female-to-male ratio in 2000/01 academic year was 1:3.6. – While the ratio for 2004/05 academic year was found to be 1:3.1.

This implies the fact that for every ten female there were about 36 male students in HEIs in 2000/01 academic year while the number of male students decreased to 31 for every 10 females in 2004/05.

**Table 3. Enrolment in Private Higher Education Institutions (2004/5)**

| Institutions* | Enrolment by Gender | | |
|---|---|---|---|
| | **Total** | **Female** | **% Female** |
| Alpha University College | 4450 | 851 | 19.1 |
| Admas College | 2246 | 1159 | 51.6 |
| Kisama Africa University College | 287 | 38 | 13.2 |
| Mekelle Institute of Technology | 160 | 6 | 3.8 |
| New Abyssinia College | 237 | 78 | 32.9 |
| New Millennium College | 150 | 53 | 35.3 |
| Royal College | 3121 | 1706 | 54.7 |
| Rift Valley University College | 951 | 333 | 35.0 |
| St. Mary's University College | 26,194 | 6362 | 24.3 |
| Unity University College | 12,737 | 3953 | 31.0 |
| Zega Business College | 862 | 396 | 41.2 |
| Micro link Information College | 348 | 131 | 37.6 |
| | | | |

* It does not include Private Higher Education Institutions with no degree programs as of 2004/05

**SOURCE:** *Education Annual Statistical Abstract 2004/05*

As depicted in Fig. 2 below, over the last five years, it is true that both male and female enrolments have shown a steady increase though no significant proportional changes in the level of participation have been observed in case of females. Notwithstanding the fact that the Government policies have clearly stipulated the need for mainstreaming gender issues, limited success has been registered with respect to enrolling more young women in HE.

This may be partly due to lack of preparation with respect to strengthening a larger number of girls to aspire joining tertiary institutions at pre-university or high school level.

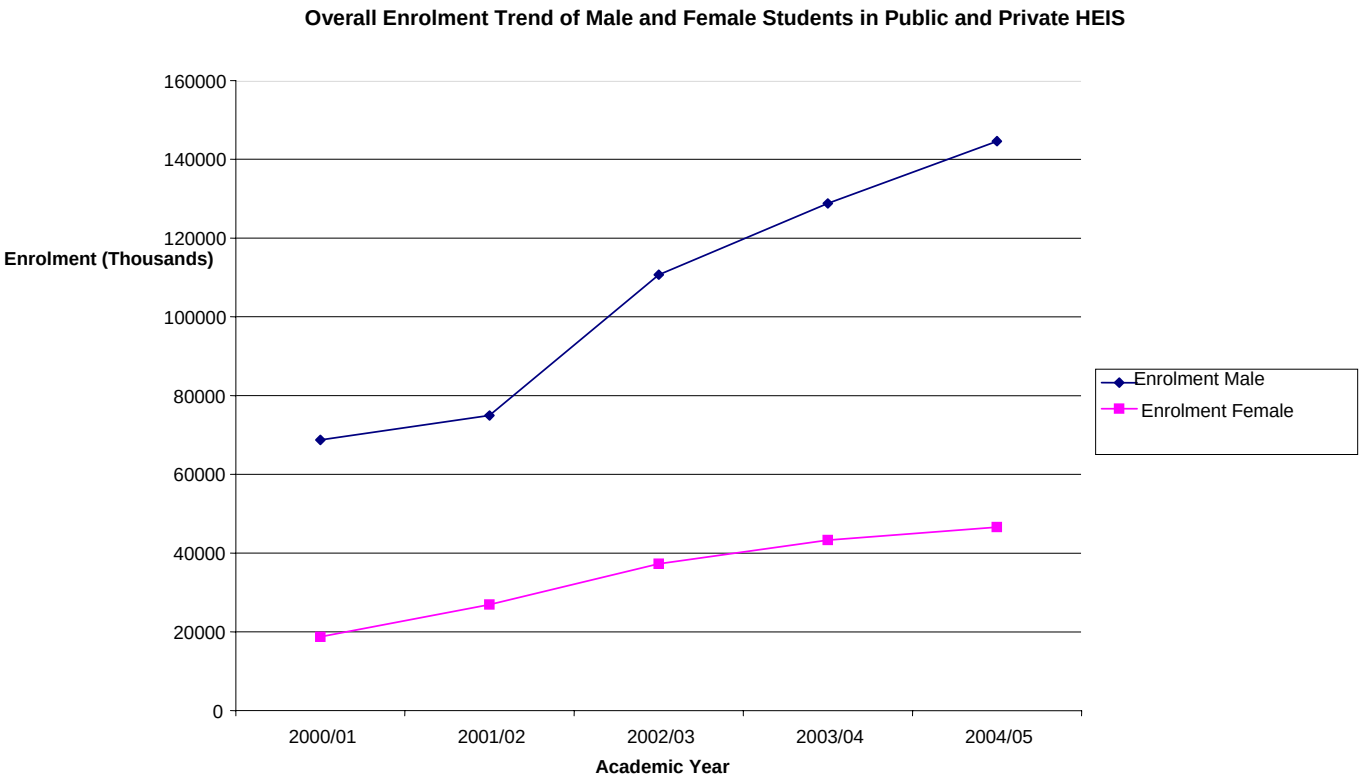


**Fig. 2**. *Comparison of Male and Female Overall Enrolments in HE (2000/01-2004/*05)

## 1.1. The Social and Psychological Explanations of Female Academic Success

Thus, what has been described earlier as being the reality on the ground; the literature in the area identifies some of the major factors for female under representation. These, among others, include the effect of gender role socialization. The process of socialization which male and females undergo affects a number of attributes. This principally points on the impact of the family, the school and the media. In this study, an attempt is made to shade some light on the impact of socialization in the family in terms of the level of expectation in academic contexts, and the extent of traditionalism and progressiveness in sex role orientations and how they relate to academic self concepts and striving for academic success among women in HEIs.

### *The Role of Socializing Agents*

In this section attempt will be made to review the impact of female socialization experience on their success at different levels including their participation in higher education.

In particular it gives emphasis to the impacts of the *family* as the first sociological environment which leaves significant marks on boys and girls with respect to shaping their gender role attitude and thereby their future career aspirations.

This section reviews the role of the family in reasonable detail.

### *Parental Expectation as determinant of Female success in HEIS*

The uncontested role of the family affects the developing gender role attitude beginning from early life informs us that the role of parents' is of paramount importance in determining children's' future career aspirations and roles. Traditional parents shape their children to be more stereotypical even in college major choice if they had the chance to join HEIs (Semela 1997b).

The family provides with socialization experiences including differences in the way sons and daughters are raised. Ruble and Martin (1998) hypothesize that the family plays the role of gender socialization using the following mechanisms: Through (1) encouragement of gender-typical activities and interests, and (2) encouragement of gender-typical personal and social attributes. For instance, parents encourage particular activities (For example, encouraging boys to engage in construction play that foster the differential development of visual-spatial and mechanical skills while encouraging girls to play with dolls) resulting in possession of varying *prior experience* instrumental for later schooling- Both in terms of level of interest and academic performance. Not only have these variations in experience, but also school (via teachers and the curriculum) as socializing agent, continue to sustain the already started differential expectations of the sexes along the traditional lines. With regard to this, other studies (*e.g*., Eccels, *et al*. 1993; Zeigler *et al*. 1999) reveal that parents have differentially expected boys and girls. Eccels *et al*. found that parents hold strong stereotypes regarding boys and girls capabilities in verbal (English), Math, and Sports. Boys are expected to be more able in Math and girls believed to excel in verbal abilities. Similarly, Ziegler *et al*. (1999) conducted a study among 311 (Fathers = 114 and Mothers = 197). These researchers asked parents about their perceived abilities of their children.

The results show that parental expectation, affected scholastic achievement of their children in Physics i.e. they expected their daughters to have lower ability in Physics than do they expect their sons.

The authors then concluded that boys profited from traditional positive view of parents that attribute Physics as boys' subject", which at the same time, discouraged their daughters' motivation to achieve in the area. The differential expectation of girls in subjects like Mathematics and Physics is not limited to parents; teachers also play a prominent role. In this regard, a study among secondary school students in Addis Ababa indicates that generally Math teachers expect girls to achieve low in their subject as compared to boys (Semela 1997a).

The influence on females is not confined to family and school, but pervades every section of society. Particularly, in traditional societies such as in Ethiopia whereby patriarchal thinking dominates the social organization (Wondiemageneihu 1991; Terefe 2000), it is not hard to decipher what is like to be a girl. Thus, stereotypic assignment of roles to males and females is the rule which governs every aspect of life via unequivocally establishing the existing power relations between the sexes. As a result, the place of women limited to house– keeping, wifing and mothering. Education, particularly higher education which serves as precondition for social mobility in African societies has been the exclusive preserve of men. Previous statistics on the participation of women in higher education clearly depicts this reality. Women who managed to enter tertiary education institutions are for the most part, believed to be victims of the traditional societal attitudes perpetuated by their own parents. Against the backdrop of the Ethiopian experience, succeeding at college is not the norm for a typical woman who is expected to marry and have babies. Thus, it is first of all less likely for them to join in large numbers and graduate to start with partly because of their apparent underrepresentation at primary and secondary levels, partly due to socialization experiences that informs them success at higher levels is inconsistent with femininity that evolves to avoidance of success motives or what is popularly known as *fear of success* (Horner 1972) in psychological literature. On the other hand, there is evidence to suggest that egalitarian parents could encourage less progressive sex role attitudes. With regard to this, a study among female students in Ethiopian HEIs showed that girls with better educated mothers tend to be assertive and more egalitarian in their gender role orientations (Semela 1997b).

Hence, it can be argued that parents, particularly mothers' expectations and status attributes influence girls' likelihood of success HEIs in Ethiopian context.

## 1.3. Academic Self-concept

Self-concept is one of the oldest and the most important psychological constructs in the social/behavioural sciences. The enhancement of self-concept and the benefits of feeling positively about oneself on choice, planning, persistence, and subsequent accomplishments transcend traditional discipline and cultural barriers (Marsh 1990). Thus, maximizing self-concept is recognized as both a critical goal and a means through which other important outcomes are achieved not only in educational settings, but also in diverse disciplines including child development, sport/exercise, health, and social services, to mention but few.

### *Self-concept as a predictor of academic achievement*

Self-concept as an attitude about oneself is important in educational settings, particularly in predicting current and future academic success. Due to this, over the last two decades a number of researchers have demonstrated their interest on this construct (e.g., Marsh 1990, 1991; Lüdtke *et al*. 2002; Köller *et al*. 2000; 2001; Bong & Skaalivk 2003). Specifically, an appraisal of academic competence made by students in the form of self-reports or self-concept has been shown to be associated with important educational outcomes such as academic motivation and achievement. Burns (1982) reviewed the self-concept research published up to that time and concluded that there exist a positive correlation in areas of academic achievement and corresponding academic self-concept components. Later studies also confirmed the existence of these relationships. Quite recently, studies made to find out relationships between math self-concept and mathematics achievement documented a significant association (*e.g.*, Lüdtke, et al. 2002; Köller et al. 2000; 2001).

Therefore, self-concept is considered to be an important variable in current research particularly in the field of educational psychology which has been used to explain and predict students' achievement. Subsequent studies (*e.g.*, Köller & Baumert 2001; Ludtke, et al. 2002; Marsh 1990; 1991) substantiated the importance of this variable particularly in explaining issues in educational achievement and major course choice. These studies have also documented the existence of gender differences in academic self – concept relative the kind of subjects students learn in school.

Keeve and Kotte (1992) in their analysis of data from the Second International Educational Achievement (IEA) Science Study employed five attitude scales in the investigation of sex differences in attitudes toward science.

These five scales were; Interest in Science, Ease of Learning Science, and Career Interest in Science, Beneficial Aspects of Science, and Harmful Aspects of Science. In general, at all three age levels under survey, the 10-year-old level, 14-year old level, and terminal secondary level, boys held more favourable attitudes to science than did girls. Moreover, the magnitude of sex difference in attitude increases with age. The main exception were in Hungary and Finland, where at the 14-year-old level girls held more favourable attitudes towards the Beneficial Aspects of Science. In addition, girls held more favourable attitudes with respect to Non-harmful Aspects of Science in several countries at the 14-year-old level.

In relation to the role of domain-specific interest to achievement in mathematics and physical sciences (physics and chemistry), studies indicate that girls demonstrate low interest than boys. This is because girls are typically more concerned about human dimensions of science (i.e. biology and health sciences) than more abstract scientific principles, experiments or instruments (Jones & Wheathy 1990) as it is the case in chemistry and physics. On the other hand, girls interest in science stems from wanting to help people, animals, plants or the earth (hence laboratory based sciences and physical sciences are often rejected by girls because they cannot make affective links between those subjects and what they care about (Burkam et al. 1997). This may particularly explains girls' lack of interest in math and particularly in physical sciences.

A study conducted among high school students in Ethiopian context indicated that girls generally have low academic self-concept and academic self-efficacy, low Physics self-concept and low achievement (Endawok 1997). This demonstrates partly the possibility that girls have low interest as compared to boys to study laboratory-based subjects like Chemistry and Physics which have no direct relation with humans like the health sciences or biological sciences (Burkam *et al*. 1997; Häußler & Hoffmann 1995). Thus, low self-concept in such areas is also believed to negatively affect their motivation to learn or achieve – or even avoid success (Horner 1972) due to "masculinity" of the disciplines.

## METHOD

This section describes the nature of study participants, data collection instruments used and their psychometric characteristics, the procedures used to analyze data.

### 2.1. Participants

In this study two different techniques were used to collect information in the light of the questions to be answered. For the first study (Study I), data was obtained from the Debub University Registrar's Office and the Registrar offices of the DCTEHS and WGCF for the 2003 batch. To assess the general trend on female survival rate after the one year of university stay was studied on the basis of the these data obtained from students' records.

Study II was based on primary data generated based on a questionnaire survey on students' gender role attitude, academic self-concept, and parental expectation and personal background characteristics which was collected on 134 male and female second year students at Dilla College.

### 2.2. Measures

As indicated, in Study II, academic self-concept, parental expectation, and gender role attitude measures were developed in the light of the existing literature. The details are presented hereunder:

*Academic Self-Concept*- was assessed on five-item scales in four different domains namely: Mathematics (MSC), English (ESC), Physics (PSC), and Biology (BSC) . The aggregate score on these four domains would make up the academic self-concept score. The internal consistency reliability for the measures respectively were .86, .81, .84, and .88. The 20-item aggregated self-concept measure has an internal consistency reliability of .86.

*Gender role attitude*- was assessed using a four –item scale based on known stereotypes in Ethiopian Culture. Sample item include: "Women should be happy for being housewives", "Men are more effective managers as compared to women".

The statements are rated on a five-point Likert-type scale ranging from strongly agree to strongly disagree. The internal consistency reliability was found to be acceptable
(alpha = .70)

*Parental Expectation* - referees to expectation of parents as to which profession or college major should their children choose. Participants were requested to go back in time and show in which area his/her mother and father wants her/him study. The respondents were asked to indicate the type of college major they want to join.

In addition a questionnaire assessing respondents personal characteristics, such age, sex, parents' education, employment status, place residence, and region where she/he come from had been administered.

### 2.3. Data Analysis

Description of enrolment and survival trends were made in on the basis of Percentages and Bar graph generated on the bases of data secured from the University Registrar in Study I. In Study II, however, bivariate, and multivariate statistics were used to make sense of the data and demonstrate a relationship between the socio-psychological variables and academic performance.

## RESULTS

As indicated in the methods section, the results of the two separate studies are presented as follows:

1. First the results of Study I will be presented which would be based on Academic Status of Year II students computed from Semester I and II of the 2003/04 academic year performance
2. In Study II the results of based on bivariate and multivariate statistical procedures will be presented.

### 3.1. Enrollment and Survival Rates of Female Students at Debub University

In this section attempt is made to demonstrate the extent to which the increasing enrollment rate of female students at Debub University is accompanied by their survival after one semester of the 2003/04 academic year.

The reason why this academic year was considered was the fact that special attention has been given for female high school completers on the one hand, and both sexes were generally allowed to join HEIs with exceptionally low EGSLCE Grade Point Averages after nearly two decades on the other.

Furthermore, this academic year had witnessed two different groups of students possessing varying entry behaviors. The first category consisted of students, (which in Debub University called as PPC) underwent the preparatory program which has been in place after the introduction of the NETP.

The second category which is referred to as FPC-(Freshman Program Completed) consisted of students of both groups was assigned a "sophomore" status taken all courses together and evaluated at the same footing.

**Table 4 Enrolments and Attrition Rates of Regular Degree Students in 2003/04 Academic Year Semester I**

| AREA OF TRAINING | ENROLLMENT | | | DISMISSAL RATE | | | |
|---|---|---|---|---|---|---|---|
| | Male | Female | % Female | Male | % | Female | % |
| **Agriculture** | | | | | | | |
| PPC | 440 | 180 | 29.03 | 90 | 20.5 | 84 | 46.7 |
| FPC | 222 | 23 | 9.4 | 2 | 0.9 | - | - |
| Year III | 148 | 34 | 18.7 | - | - | - | - |
| Year IV | 79 | 28 | 26.2 | - | - | - | - |
| **Total** | 889 | 274 | | **92** | **21.3** | **84** | **46.7** |
| **Engineering** | | | | | | | |
| PPC | 181 | 68 | 27.3 | 9 | 4.7 | 18 | 26.5 |
| FPC | 123 | 8 | 6.1 | - | - | 1 | 12.5 |
| Year III | 46 | 9 | 16.4 | _ | - | - | - |
| Year IV | 40 | 8 | 16.7 | _ | - | - | - |
| Year V | 28 | 5 | 15.2 | _ | _ | - | - |
| **Total** | **418** | **98** | **18.99** | **9** | **4.7** | **19** | **39** |
| **FNS** | | | | | | | |
| PPC | 286 | 82 | 22.3 | 45 | 15.7 | 33 | 40.2 |
| FPC | 216 | 21 | 8.9 | - | - | 18 | 4.8 |
| Year III | 190 | 29 | 13.2 | - | - | - | - |
| **Total** | **692** | **132** | **44.3** | **45** | **15.7** | **51** | **45.0** |
| **FSS** | | | | | | | |
| PPC | 293 | 126 | 30.1 | 44 | 15 | 39 | 31 |
| FPC | 340 | 152 | 30. 9 | - | - | 8 | 5.3 |
| Year III | 170 | 42 | 19.8 | 2 | 1.2 | - | - |
| **Total** | **803** | **320** | **28.5** | **46** | **16.2** | **47** | **36.3** |
| **CHS** | | | | | | | |
| PPC | 228 | 79 | 25.7 | 4 | 1.8 | 6 | 7.6 |
| FPC | 104 | 35 | 25.2 | - | - | 2 | 5.7 |
| **Total** | **332** | **114** | **50.9** | **4** | **1.8** | **8** | **13.3** |

***Source*:** *Computed based on data obtained from Debub University Registrar*, 2004

**Note:** PPC = Preparatory Program Completed; FPC = Freshman Program Completed; FNS = Faculty of Natural Sciences; FSS = Faculty of Social Sciences; CHS = College of Health Sciences.

### 3.2. Empirical Study Results

The participants of the study were 134 (male= 94; Female = 40) Teacher Education students with mean age 20.19 (SD = 1.68) years.

The participants demonstrate varying entry behaviors. The majority (79.6%) underwent two years of college preparatory programs after completion of secondary school as per the New Education and Training Policy (NETP). The remaining 20.4 % were those taken the traditional secondary school leaving certificate examination (ESLCE).

**Table 5: Demographic Characteristics of Study Participants by Sex**

| Variable | GENDER | | CHI-SQUARE |
|---|---|---|---|
| | Male | Female | |
| **Entry Behavior** | | | |
| PPC | 73 | 36 | 2.82* |
| FPC | 21 | 4 | |
| **Mother Employment** | | | |
| Home-staying | 73 | 33 | .28 (ns) |
| Civil Servant | 20 | 7 | |
| **Mother Education** | | | |
| Illiterate | 41 | 12 | 6.07 (ns) |
| Read & write | 16 | 5 | |
| Primary | 17 | 8 | |
| Secondary | 14 | 11 | |
| College | 5 | 4 | |
| **Residence** | | | |
| Rural | 64 | 30 | .61 (ns) |
| Urban | 30 | 10 | |
| **Major** | | | |
| Languages | 30 | 10 | 5.82** |
| Physical Sciences | 44 | 27 | |
| Mathematics | 20 | 3 | |

* $p < .10$; ** $p < .05$

As can be discerned from the size of PPC students, proportionally female enrollment has increased i.e. there were more females in the PPC group than in FPC. According to Table 6, significant differences were observed in the representation of females in all disciplines.

Despite the claim that females tend to choose traditional streams like language and humanities, all areas were found to be dominated by men. Nonetheless, it should be admitted that females enrollment in the physical sciences seem to be increasing due to policy measures taken in general i.e. in Physics and Chemistry streams in particular.

The question is, however, not a matter of representation; rather it is the issue of retaining them in such exclusive male preserve.

**Table 6: Gender Differences In Socio-psychological variables**

| | GENDER | | | | | | |
|---|---|---|---|---|---|---|---|
| **Variable** | **Male** | | | **Female** | | | **F** |
| | **N** | **M** | **SD** | **N** | **M** | **SD** | |
| GRA | 92 | 9.85 | 4.09 | 39 | 8.75 | 3.54 | 1.96 (*ns*) |
| BSC | 80 | 17.58 | 5.29 | 35 | 18.03 | 5.53 | .17 (*ns*) |
| MSC | 91 | 17.43 | .32 | 40 | 14.00 | 4.36 | 12.82*** |
| ESC | 91 | 12.46 | 4.19 | 40 | 12.57 | 3.58 | .002 (*ns*) |
| PSC | 80 | 14.78 | 4.47 | 35 | 12.6 | 4.99 | 4.96* |
| Overall Academic Self-concept | 80 | 62.5 | 12.6 | 35 | 57.6 | 13.9 | 3.38† |
| UGPA | 68 | 2.67 | .64 | 32 | 1.95 | .53 | 30.9*** |
| UEE | 41 | 169.9 | 29.4 | 26 | 136 | 16.61 | 28.52*** |
| EGSLCE | 49 | 2.59 | .51 | 26 | 2.06 | .25 | 24.84*** |
| ESLCE | 17 | 3.33 | .40 | 5 | 3.40 | .32 | .71 (*ns*) |

† $p < .10$; * $p < .05$, ** $p < .01$; *** $p < .001$

**Note**: GRA= Gender Role Attitude; BSC = Biology Self-Concept; MSC = Mathematics Self-concept; ESC = English Self-concept; PSC = Physics Self-concept; UGPA = University Grade Point Average; CEE = College Entrance Exam; EGSLCE; Ethiopian General School Leaving Certificate Examination; ESLCE = Ethiopian School Leaving Certificate Examination.

A search for gender differences in social and psychological outcomes that directly affect success in academics was carried out and yielded the following results. First college girls on the average possess lower domain-specific academic self concept in hard sciences (PSC: $F = 4.69$; $p < .05$) and mathematics ($F = 12.82$, $p < .001$, $df = 1$) than biological sciences i.e. no statically significant differences were observed between the sexes in biology self-concept ($F = 12.82$; $p < .001$; $df = 1$). Contrary to findings in another context no meaningful differences favoring females were found (English self-concept: $F = 12.82$; $p < .001$; $df = 1$) were found.

### 3.3. The Impact of Home Environment.

As indicated, in the theoretical section of this paper it is adequately discussed about the role of parental expectation as integral part of their socialization process in general and future career aspiration. Table 7 below summarizes parents' expectations about the future careers of their sons and daughters.

**Table 7: Reported Perceived Parental Expectation in College Major Choice**

| FIELD OF STUDY | MOTHER'S EXPECTATION | | FATHER'S EXPECTATION | |
|---|---|---|---|---|
| | **Son** | **Daughter** | **Son** | **Daughter** |
| Language and Humanities | 19 (24.4)[a] | 18 (56.3) | 21 (23.3) | 13 (34.2) |
| Mathematics | 18 (23,1) | 3 (9.4) | 22 (24.4) | 5 (13.2) |
| Biological Sciences | 6 (7.7) | 2 (6.3) | 9 (10) | 1 (2.6) |
| Business & Economics | 12 (15.4) | 4 (12.5) | 15 (16.7) | 7 (18.4) |
| Health Sciences | 1 (1.3) | 4 (12.5) | 4 (4.4) | 5 (13.2) |
| Engineering | 22 (28.2) | 1 (3.1) | 18 (20) | 7 (18.4) |
| **Total** | **78** | **32** | **89** | **38** |
| **%** | **70.9** | **29.1** | **70.1** | **29.9** |

[a] Figures in parenthesis are percentages

As can be discerned, both mothers and fathers expect their daughters to join language and humanities (mothers 56.3% and fathers 34.2%) and health sciences particularly nursing (mothers 12.5% and fathers 13.2%) than to study mathematics. On the contrary, more mothers want their sons (23.1%) than their daughters (9.4%). In quite the same manner, more fathers pushed their sons (24.4%) than their daughters (13.2%) to join mathematics.

This trend generally shows the parents are influencing stereotypic assignment of careers by informing their sons and daughters through their expectations. This of course is not true for all male and female students. Since, some parents do not have an idea of college major choice.

However, such parents may also convey traditional gender roles through encouraging their daughters to marry and start a family as reported by some female responders using for rural areas.

## *Correlation*

A zero-order correlation computed to find a bivariate relationship among the variables of interest presented as follows:

Gender role attitude (GRA) positively and significantly correlated with mathematics self-concept ($r = 0.18$, $p < .01$) and Physics self-concept ($r = .39$, $p < .01$) but no significant relationship was observed between GRA and Academic Achievement (in both EGSLCE College Entrance Examination). This implies that progressive (egalitarian) attitude in both boys and girls are related positively to MSC and PSC. However, gender is correlated inversely with MSC ($r = -.31$, $p < .05$), PSC ($r = -.21$, $p < .05$), CEE ($r = -.55$, $p < .01$) and College GPA ($r = -.49$, $p < .01$). This demonstrates once again that generally females have low Mathematics and Physics self-concepts than do male counterparts. And they achieve low in college as well as in CEE.

On the other hand, Overall Academic Self-Concept (OASC) significantly correlated both with EGSLCE ($r = .27$, $p < .01$) and College GPA ($r = .45$, $p < .01$) confirming the established relationship between scholastic success and academic self-concept (Marsh 1990; Shavelson *et al.* 1976). Thus, it can be concluded that traditional sex-role orientation among female college students undermined their academic self-concept by increasing their motive to avoid success for those in masculine areas like mathematics and physics (Horner 1972) which are the key subjects to succeed in college.

**Table 8: Mean, SD, and Inter-correlation Matrix of Selected Study Variables**

| | VARIABLES | M | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Gender | 1.29 | .46 | - | | .18* | .05 | -.12 | .05 | .04 | .01 | -.31* | --.21* | -.55** | -.50* | .08 | -.49** |
| 2 | Mother Ed. | 2.38 | 1.4 | - | - | - | -.30** | -.04 | -.21* | -.23* | -.04 | -.10 | -.07 | -.20 | -.30* | .23 | -.17 |
| 3 | Mother Employment | .79 | .40 | - | - | - | - | .00 | .07 | .02 | -.17 | .23*** | -.01 | .16 | -.14 | -.33 | .00 |
| 4 | GRA | 9.53 | 3.9 | | | - | - | - | .05 | .02 | -.16 | .18* | .39** | -.20 | -.06 | .41 | -.06 |
| 5 | Academic Self-concept | 61.0 | 13.2 | - | - | - | - | - | - | .02 | .50** | .66** | .80** | -.01 | .27* | .14 | .45** |
| 6 | BSC | 17.5 | 5.4 | - | - | - | - | - | - | - | .37** | .22* | .34* | -.16 | .05 | -.16 | .20+ |
| 7 | ESC | 12.5 | 4.0 | - | - | - | - | - | - | - | - | -.06 | .15 | -.04 | .08 | .29 | .19+ |
| 8 | MSC | 16.4 | 5.3 | | | | | | | | - | - | .15 | -.04 | .08 | .29 | .19 |
| 9 | PSC | 14.1 | 4.9 | | | | | | | | | - | - | -.03 | .31* | .29 | .39** |
| 10 | UEE | 156.8 | 30.1 | | | | | | | | | | | - | .66** | a | .67** |
| 11 | EGSLCE | 2.40 | .51 | | | | | | | | | | | | - | a | .69**. |
| 12 | ESLCE | 3.34 | .37 | | | | | | | | | | | | | - | -.05 |
| 14 | College GPA | 2.44 | .70 | | | | | | | | | | | | | | - |

*p < .05; ** p < .01; *** p < .001;

## DISCUSSION

As it is apparent from the previous parts, the present study tries to demonstrate the current female participation and survival trends in Ethiopian HEIs, the role of familial, socio-cultural and socio-psychological factors that have stronger link with academic outcomes. First, it attempted to provide a background about the enrolment and retention rates in HEIs taking gender as a unit of analysis. Following that, particular focus was made on participation and survival rates of first-year students across various disciplines at Debub University. Second, in attempted to explain the factors underpinning female under representation, this paper argues about the important role of socializing agents capitalizing on parental influences that inform boys and girls through expressing their expectation what should their future career be. Furthermore, it highlights the influences of socializing agents including parents and teachers, the expectation of college instructors about the academic outcomes of boys and girls with respect to influencing the development of their self-concept which, in turn influence their gender role attitudes. Data about these socio-psychological factors were obtained on a total of 134 First-Year students (Male = 94 and Female = 40) drawn from Dilla College, Debub University.

The analyses of students' records generally reveal that, female enrollment has increased by 6.5% over the last five years in both degree and diploma programs. However, undergraduate degree enrolment stands at 16.8% as of 2003 including those in private HEI at national level. Specifically speaking about Debub University there has been a substantial increment in female enrollment rate particularly as of semester I of 2003. Yet there was very high dismissal rate at end of the same semester.

Perhaps not surprisingly, females achieved significantly lower than their male counter parts in college performance. Difference between the two sexes also found to exist in their previous EGSLCE and EEC score. Further, the role of socio-psychological variables in affecting college performance was also studied.

The results generally indicated that females were outperformed by male counter parts ($F = 30.9$, $df = 1$; $p < .01$). Similarly, females are reported to have slightly lower academic self-concept ($F = 3.38$, $df = 1$; $p < .10$) than do males.

More importantly, females were particularly less confident in their mathematics (PSC: $F = 12.92$, $df = 1$; $p<.001$) and physics (MSC: $F = 4.69$, $df = 1$; $p < .05$) abilities than biology ($f = .17$, $df = 1$; *ns*) and English ($F = .002$, $df = 1$; *ns*). This shows that low self-concept in these areas fit the socialization hypothesis advanced in this paper which asserts that females believe that these subjects are inconsistent with femininity. To give females the disadvantage, these domain specific self-concepts are directly and significantly correlated with college achievement scores (or GPAs) i.e. low-self-concept in this domain contributes to lower college performance. It is interesting to note, however, that males and females did not markedly differ in their gender role attitudes. Nonetheless, the former tend to be more conservative than the latter even though the difference did not achieve statistical significance. This implies the fact that any intervention measures that involve only females may produce les effective results. Such attempts like women assertiveness trainings may be of limited practical significance if men are not able to change; rather continue to perpetuate the existing stereotypic thinking. Since, men are the major actors particularly when it comes to maintaining the status quo via keeping existing power relations intact characterized by male domination. At any rate, no matter how liberal the attitude of women may become, doing little to put an influence on the existing patriarchal thinking among men would undoubtedly hinder females to achieve at higher levels and transform the same in the world of work.

Beyond the analyses of the degree of influence of parental expectations on their daughters', career choice clearly demonstrates that parents push their daughters more to what is referred to as "women careers" such as Nursing, Secretarial Science and accounting, but encourage less to join fields like Mathematics, Physical Sciences, and Engineering. The enrolment scenario at Debub University tangibly depicts the validity of the differential socialization hypothesis where parents play a paramount role.

The reality in our context that females are pillars of the family. Among other things, they are expected to play the caring and nurturing roles. As a result, they have lesser time to spend on academic activities such as properly doing their assignments and homework.

And put aside some extra-time for studying compared to boys not to mention the impact of attaching little importance to female education traditionally (Teferra 1986; Semela & Demamu 2001; MoE 2003). In turn, college girls pay the price for not spending their time on academic activities by failing to join HEIs – A problem which is not their own making. When they do (partly through affirmative action), they bring their previous academic deficiencies to colleges which may end up with academic dismissals. This is particularly frequent among girls with non-urban and economically less able backgrounds.

The inclusion of women in the mainstream of education presupposes not only increasing access to join HE to girls, but also creating a friendly environment so that they would succeed. Apart from the social and psychological variables that have already been discussed in the previous sections, experiences have shown that interrelated factors come into play to effectively hinder female survival in the system and thereby ensuring gender equity in higher education. That is (a) parents play the role of encouraging traditional gender-typing. (b) Male class-mates are also undergoing similar socialization experience that charges them with the "Responsibility of safeguarding cultural values" which often disfavor women. (c) As results of the differential socialization that demands their sacrifice and interpersonal orientation, girls themselves accept the normative values and, of course, often resist changes that might bring them to equal footing with men.

In short, everything seem to rest on making the necessary effort to change people's attitudes towards female education in general and that of higher education in particular as the first step towards restoring their legitimate position in our society. According to this study, lack of success at tertiary level among women is not an isolated incident; it is the extension of a series of disadvantages that females experience from their own uneducated

and unemployed mothers and their low status positions that women find themselves in almost all walks of life.

Thus, the affirmative action measures taken by the Federal Democratic Republic Government Ethiopia (FDRGE) may be characterized as an important step towards addressing the issue of gender equity. However, as can be discerned from 2003/04 enrolment and survival data, it seems nothing more than a lost opportunity. Admitting more females and expelling comparable number after a semester amounts to doing nothing and proves the existing higher education system is less friendly to women – and thus needs to be changed. Beyond and above the repercussions on their academic performance, the situation in higher education institutions has been life threatening to females. Little attention has been given to this situation. As such, most HEIs including Debub University have no working document when it comes to addressing the problem of female students that guarantee their likelihood of success and protect them from internal and external threats.

The indispensability of integrating gender issues in all types of trainings HEI curricula should be capitalized since; the focal contents should transcend the usual rhetoric by some individual or group claming to represent women interests to a more comprehensive endeavor that doesn't lose sight of the bigger picture of its contribution to Ethiopia's development. Among the deficiencies, common to all college campuses has been the so called "Assertiveness Training". Even though, the training is useful to develop self-confidence and a positive self-esteem – it should not exclude male students since it would have less practical significance. In other words, reaching male counterparts should be one of the important milestones in addressing female under representation since; men are also victims of the traditional differential socialization. Thus, they must be given the chance need to be changed. This in turn means, introducing legal measures should not take precedence over educating and changing attitudes. Perhaps one of the major vehicles instilling constructive ideas is integrating gender issues and the rights and place of women in development has been it primarily in the newly designed Civic and Ethical Education Curriculum at all levels.

People around the child in general and parents in particular, play a significant role in gender role socialization. Clearly, changing attitudes at a community and household levels require extensive effort.

There are some positive signs in terms of advocacy against harmful practices sporadically happening in limited areas. This concerns advocacy works against female circumcision and genital mutilation and other traditional –cultural practices largely related to women reproductive health.

Female education seems to be sidelined even though it held the key for women emancipation more than political power does. Because, the latter is the corollary that unfolds following its natural course – not to mention the fact that solutions to women reproductive health problems subsumes as only a tip of an iceberg of impediments. Thus, in such forums which constitute community leaders and parents issues like the importance associated with female education via which women empowerment could be materialized should an agenda that should be persuasively presented and discussed. This eventually helps parents and community leaders understand why they must send girls to school and contribute towards the development of more egalitarian sex-role attitudes among them.

Apparently, college students are not only victims of parents and significant others, they are also victims of the higher education environment (MoE 2003) in which case; Debub university cannot be an exception to this rule. To date, higher education institutions do not have a working, uniform and explicit regulations that protect the rights of women which can be unequivocally enforced against those who violate them. As a result, female students find it very hard to succeed even if they possess a very high scholastic ability. Thus, the University should put in place a clearly articulated regulation that protect the rights of female students and of course, clarify their accompanying obligations. The regulation should identify all forms of threats ranging from minor to gross violations of their rights to study and succeed in HEIs. However, the enforcement of the regulation should start with educating both male and female students including the university faculty, campus police and the larger university community before coming into force.

Increasing participation would, thus, be accompanied by a successful completion if and when there is a genuine effort to support female students to succeed.
This is not to deny efforts made by campus-based "Gender Offices". The attempt made to improve female retention, however, proved to be beyond the capacity of this office.

Taken together, the high female attrition is an outcome of a combination of factors: (1) Emphasis on increasing female enrolment rate without at the same time devising mechanisms of increasing their likelihood of success. (2) Inadequate preparation of HEIs to devise strategies that support academic deficiencies and counseling services that boost their academic self-concept. Lack of confidence is found to be an equally handicapping that undermine success in HEIs. (3) The pervading socialization experience disfavoring female success striving at higher levels continues to be sustained in school and HEIs through teachers and college instructors. (4) Even though there is a compelling evidence suggesting females academic achievement in Physical Sciences and Mathematics could be substantially increased to catch up with male counterparts if the contents of instruction is prepared according to females' interests and experiences (Häußler & Hoffmann1995; Hofmann 2002; Niederdrenk-Felgner 1995). This is not limited to higher education, but it calls for the need to revisit our primary and secondary school curricular contents and selection of learning experiences. To date, no attempt has been made in this direction. At the very least, addressing the above mentioned issues is believed to contribute towards improving female success in HEIs in Ethiopia.

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