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Patterns of Gender and Disciplinary Disparities among Postgraduate Students' Motivational Beliefs: A Multivariate Analysis

Munaza Nausheen[*], Paul William Richardson[**] and Effat Alvi[***]

Abstract

While most of the research on gender and subject level differences has been conducted with same group of students studying different subjects, these differences have been comparatively less examined at college/ university level among postgraduate students enrolled in different study domains. This paper presents the results of the multivariate analysis of covariance of motivation beliefs of the 368 postgraduate students in five different subject areas at a public university in Lahore Pakistan. A Questionnaire was developed by adapting scales from Motivated Strategies for Learning Questionnaire (MSLQ), to measure the motivational beliefs of students. The results of the study indicated that males and females have different levels of motivational beliefs with females being more test anxious and extrinsically motivated than males. These beliefs also varied across different disciplines of study and significant department wise differences were revealed in the motivational components of task value and test anxiety.

Keywords: Motivational beliefs, Gender, Discipline of study, Postgraduates

[*] Assistant Professor, Department of Educational Research and Evaluation, IER, University of the Punjab, Lahore. E-mail: munaza.ier@pu.edu.pk
[**]Professor, Monash University, Melbourne, Australia
[***] Assistant Professor, Department of Educational Research and Evaluation, IER, University of the Punjab, Lahore. E-mail: effat.ier@pu.edu.pk

Introduction

Students' motivational beliefs have been the focus of many studies which have provided basis for the improvement of student learning in higher education (Harvey, 2003; Watson, 2003). In a range of Western countries, many studies indicate that students' personal characteristics such as age, gender and ethnicity can have major effect on motivational beliefs as well as on the learning outcomes (Pintrich & Zusho, 2007). Systematic variation has been reported in students' motivational beliefs and achievement by these personal characteristics (Bong, 1999; Chen, Lee, & Stevenson, 1996; Hackett, Betz, Casas, & Rocha-Singh, 1992; Mega, Ronconi, & De Beni, 2014; Pajares, 2003). In addition to personal characteristics, the distinctive nature of the academic disciplines in higher education/universities has also been recognized as an important variable by many researchers (Becher, 1994; Entwistle, 1997, 2005; Neumann, 2001; Ramsden, 1998)

Most of the research on student learning in the context of higher education has been conducted in developed countries such as the USA, UK and Australia (Diseth, 2007; Diseth, Pallesen, Hovland, & Larsen, 2006; Harvey, 2003; Mega, et al., 2014; Pajares, 2003; Pascarella & Terenzini, 1998; Watson, 2003; Wilson, Lizzio, & Ramsden, 1997) with very few studies conducted in Asian countries e.g. Pakistan (Mega, et al., 2014; Salili, 1996). The researchers in the field of motivation and learning have increasingly highlighted the importance of conducting research in different cultural and social contexts (Byrne & Flood, 2003; Kaplan & Maehr, 2007; Schunk, Pintrich, & Meece, 2008), and it has also been suggested that since learning and education have different social functions, students in different societies might be expected to construct different goals and motivations related to learning (Bernardo, Salanga, & Anguas, 2008).

Educational Context in Pakistan

Education in Pakistan is divided into five levels, Primary (grades one through five), Middle (grades six through eight), High (grades nine and ten, leading to Secondary School certificate), Intermediate (grades eleven and twelve, leading to a higher Secondary School Certificate), and Higher Education (education above grades 12) leading to a bachelor degree (BA/BSC) after two years of study mostly at affiliated colleges. A Masters degree or Postgraduate degree is mostly undertaken at universities and requires a further two years of study after a bachelor degree. In Australia, USA and UK an undergraduate degree with honors requires four years of study at a university. Therefore, a postgraduate degree in Pakistan may be considered as equivalent to 3rd and 4th years of an undergraduate degree with honors in Australia, UK and USA. There are 108 public and 75 private universities (Higher Education Commission, 2016).

Approximately 209,617 students are enrolled in postgraduate programs (MA/MSc), with more women (53%) than men studying at both public and private universities and Degree Awarding Institutes in Pakistan (Higher Education Commission, 2015). The current study was conducted at a big public university in Lahore, Pakistan. A Postgraduate Masters degree at the participating university was based on course work, consisting of four semesters of study, over a period of two years. Some faculties also required a minor research thesis in addition to course work for the award of postgraduate degree. Almost all programs of study at the participating university were offered twice in a day i.e. in the form of two shifts, one in the morning and a second shift in the evening. Students who either fail to get admission into the morning shift due to the high admission criteria or cannot study during the morning shift were generally able to get admission in the afternoon shift. Fees were higher for afternoon shifts, even though students were not provided with the accommodation and hostel facilities available to students enrolled in the morning shift. The students enrolled in the two shifts were different and these differences are elaborated in the result section of this paper.

Motivational beliefs

The role of motivation in learning has been well established through extensive research at almost all educational levels (Eccles, Wigfield, Harold, & Blumenfeld, 1993; Pintrich & DeGroot, 1990; Schunk, 1982). Motivation is the process by which goal-directed activity is instigated and sustained. Motivation can influence what, when and how we learn and it bears a reciprocal relationship to learning and performance, that is, motivation influences learning and performance and what students do and learn influences their motivation (Pintrich, 2003; Schunk, 1995).

There have been several theories of the students' motivational behaviour, however in the literature on student motivation three motivational constructs of expectancy, value and affect are most widely referred to (Bandura, 1997; Pintrich & DeGroot, 1990; Pintrich & Schunk, 2002; Wigfield & Eccles, 2000). 'Expectancy' refers to students' beliefs that they can accomplish a task; 'value' focuses on the reasons students engage in an academic task , while 'affect' focuses on students' worry and concern over taking exams as well as on affective and physiological arousal aspects of anxiety (Duncan & McKeachie, 2005). These constructs have their roots in social cognitive theory which postulates that motivational processes influence both learning and performance (Schunk, 1995).

Motivational processes and beliefs are also considered to be sensitive to the features of the task, the classroom or the subject in which, the student is engaged (Alderman, 2004). According to Pintrich (Pintrich, 2000) much research and theory in educational psychology is moving from the focus on individual differences alone to a greater consideration of the person within a context and 'in considering subject area differences in student motivation a fundamental question relates to the degree to which students' perceptions and beliefs vary across those domain contexts. As the issues related to contextual differences are considered to be important not only for the development of theory but also because of their implications for instructional practice (Alderman, 2004; Pintrich, 2000).

There have been limited research on the gender and domain level differences in the motivational beliefs of the postgraduate students but many studies have been conducted with school age children These studies have reflected several gender differences, for example, girls and boys begin school with different beliefs of their abilities, with boys having higher perceptions of math abilities and girls reporting higher perceptions of language and arts abilities (Eccles, et al., 1993). Similarly, boys tend to report higher self–efficacy and expectancy beliefs than girls about their performance in math and science, while girls have higher efficacy beliefs for English. No differences were found in task value beliefs in mathematics but females had higher value beliefs for English (Eccles, 1984; Eccles et al., 1983; Pintrich & DeGroot, 1990). Gender differences in self efficacy are also linked to age or grade level, and begin to emerge in the middle years of schooling. These age related gender differences in efficacy-beliefs are generally attributed to increased concerns about gender role stereotypes, with entry into adolescence (Wigfield & Eccles, 2000).

Eccles, Wigfield and their colleagues (2000) have also found differences in motivational beliefs of students in English and Mathematics classrooms at elementary and secondary levels and students' expectancy or efficacy beliefs, task value and anxiety were generally found to be less positive and adaptive in mathematics classrooms than in English classrooms (Eccles, 1984; Eccles, et al., 1983; Wigfield, 1994; Wigfield & Eccles, 1992). Whereas in a similar study by Wolters and Pintrich(1998) for 7th and 8th grade students in the subjects of Mathematics, English and social studies, task value was higher in mathematics than the social studies and English. This study also showed subject area-by-gender interaction. Males reported greater levels of task value in mathematics than in English and social studies with no difference in task value expressed for English and social studies and females reported higher levels of task value in mathematics than either in English or social studies but unlike males, females reported higher task value in English than in social studies. Subject area differences and a significant subject by gender interactions were also reported for self-efficacy beliefs and test anxiety.

Research questions

This study addressed three basic research questions:

1. Are there differences in the motivational beliefs of male and female post graduate students?
2. Are there differences in the motivational beliefs of the postgraduate students enrolled in different departments?
3. Are there differences in the motivational beliefs of the postgraduate students enrolled in morning and afternoon shifts?

Research Methodology

A survey research design, cross-sectional in nature, was used for this study. A questionnaire was developed by adapting scales (Nausheen, 2016) from *Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich, Smith, Garcia, & McKeachie, 1993) to explore the motivational beliefs of the students.

Participants and sampling procedure

Four faculties were randomly selected from 13 faculties of the public university in Lahore, Pakistan. These faculties were: Science, Education, Behavioral and Social Sciences, and Economics and Management Sciences. An ethical approval was obtained from Human Research Ethics Committee (HREC) for the research study. All departments that have at least 30 students enrolled in the morning and afternoon shifts of study were contacted and permission was also sought from the administration of each department to administer a survey. Within the four faculties, the researcher was given access to the departments of Gender Studies, Mathematics, Business Education, the Centre of English Language Teaching and Linguistics, as well as to the Institute of Business and Information Technology. A questionnaire was personally administered by the researcher in normal classroom settings during the second last semester of the Masters degree. Postgraduate student participants (N=368; 235 female) with a mean age of 22.45 years (range 19-41 years) and who were enrolled in either the morning or afternoon shift of study, volunteered to undertake the survey.

Variables and measures

This study involved following variables

Dependent variables Students' motivational beliefs were the dependent variables measured by using three motivational components of value, expectancy and affect from the *Motivated Strategies for Learning Questionnaire* (MSLQ) (Pintrich, et al., 1993). The MSLQ scales have established levels of validly and reliability and have been used

extensively by hundreds of researchers and countless instructors all over the world. It has been translated into more than 20 different languages and has also undergone formal assessment of validity and reliability in two languages apart from English, these being Spanish and Chinese(Duncan & McKeachie, 2005). The MSLQ has been used frequently to study the nature of motivation and the use of learning strategies across different content areas including undergraduate statistics, undergraduate chemistry, high school social studies, and middle school physical education, with target populations, including African American undergraduates, female undergraduate engineering majors, nursing student, and gifted high school students(Duncan & McKeachie, 2005).

The motivational section of the questionnaire used in this study consisted of 31 items related to five motivational scales measuring the three motivational dimensions: expectancy, value and affect. An exploratory factor analysis of the motivational section of MSLQ was performed to establish its validity and reliability in the context of Pakistan. The detailed results of this analysis have been reported separately in another published research article by the author (Nausheen, 2016)

The items on motivational scales required students to rate themselves on seven point Likert scale from "not at all true of me' (1) to "completely true of me" (7) (See Table 1).

Table 1
Scales used in the study

Scales	Subscales (Number of items)	Example items
Value components	Intrinsic goal orientation (4)	I prefer course material that really challenges me so I can learn new things.
	Extrinsic goal orientation (4)	Getting good grade in this class is the most satisfying thing for me right now.
	Task value (6)	I think I will be able to use what I learn in this course in other courses.
Expectancy components	Control of learning beliefs (4)	It is my own fault if I don't learn the material in this course.
	Self-efficacy for learning and performance (8)	I'm confident I can learn the basic concepts taught in this course.
Affective component	Test anxiety (5)	I have an uneasy, upset feeling when I take an exam.

Independent variables. This study had three independent variables

1. Gender
2. Department of study (six departments included in the sample)
3. Shift of study (Moring and evening shifts of study)

Students' admission score and examination marks in the course were also obtained from the students' record office as a measure of their academic performance and were treated as covariates.

Data analysis

Analysis of the data was performed by using PASW (Predictive Analytics Software), The data analysis was undertaken in three stages. First, descriptive statistics were compiled, with means, standard deviation and ranges, skewness and kurtosis values computed for each of the subscales. This analysis provided information about the nature of motivational beliefs. Second, A three way Multivariate Analysis of Covariance was performed, with gender, departments of study, and shift of study as three independent variables and six motivational components (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning, self-efficacy for learning and performance, and test anxiety), as dependent variables, while controlling for the effect of admission scores and achievement score as covariates. Before proceeding with the main MANCOVA analysis, data on the four motivational scales were examined for suitability for performing a MANCOVA. This was done by testing the assumptions of normality, linearity, univariate and multivariate outliers, homogeneity of variance-covariance matrices and multicollinearity and singularity. Third, Univariate tests were performed on each of the six motivational components across gender, department of study and shift of study.

Results

The results of the study are reported according to the steps followed in the statistical analysis.

Descriptive statistics

Table 2 represents the descriptive statistics for the six motivational sub scales. Most of the motivational variables were normally distributed; only extrinsic goal orientation and task value were slightly negatively skewed. The mean scores for the all motivational scales are well above the scale mid points (participants scored between one to seven) indicating that the students generally reported a high level of functioning in the respective motivational components and have positive expectancy and value beliefs. The mean for test anxiety fall within the average range.

Table 2
Descriptive statistics

Scale	Range	*M*	*SD*	Skew.	Kurt.
Value component	2.31-7.00	5.49	0.85	-1.09	1.56
Intrinsic Goal Orientation	1.50-7.00	5.19	1.05	-0.59	0.35
Extrinsic Goal Orientation	2.00-7.00	5.75	1.05	-1.04	0.84
Task value	1.17-7.00	5.48	1.06	-1.10	1.78
Expectancy component	2.31-7.00	5.25	0.83	-0.51	0.33
Control of Learning	1.25-7.00	5.24	1.15	-0.60	0.39
Self-Efficacy	1.88-7.00	5.27	0.96	-0.44	-0.17
Affective component	1.00-7.00	4.12	1.26	-0.20	-0.42
Test Anxiety	1.00-7.00	4.12	1.26	-0.20	-0.42

An independent –samples t-test showed that there was significant difference in the mean age of males (M = 23.05, SD = 1.86) and females (M = 22.11 SD = 2.18), t (363) = 4.15, p=.001. The magnitude of the differences in the means (mean difference =.93, 95% CI: 1.36 to 1.38) was small (eta squared = .04). There was also a significant difference in the average age for the morning shift (M = 22.13, SD = 1.79) and afternoon shift (M = 22.79 SD = 2.36), t (363) = 3.05, p<.002. However the magnitude of the differences in the means (mean difference = -.67, 95% CI: -0.24 to -0.23) was very small (eta squared = .02). This showed that slightly older students were enrolled in the afternoon shift which had relaxed age restrictions on admission to facilitate access for in-service and mature aged applicants. The age limit for admission to the morning shift was 26 years in all sampled departments, whereas there was no restriction on age for admission to the afternoon shift.

There was also a significant difference in the average admission score for the morning shift (M = 64.27, SD = 6.23) and afternoon shift (M = 56.88, SD = 6.52), t (366) = 11.12 p= .001 and the magnitude of the differences in the means was large (eta squared = .25). Significant differences in the admission scores of the morning and afternoon shifts were also noted in all sampled departments. This indicated that more capable students were admitted to the morning shift as compared to the afternoon shift of study. This was because the afternoon shifts had comparatively lower admission criteria and the afternoon shifts were introduced in the university with an intention of catering for those students who had failed to get admission in the morning shifts.

The average achievement score for the participants of the study was 78.88 (*SD* = 9.65). No significant differences were noted between the achievement score of males (*M* = 79.11, *SD* = 10.91) and females (M = 78.74, *SD* = 8.87) with *t* (366) = 0.35, *p* = 0.73. Similarly no significant differences were noted between the average achievement score of students enrolled in the morning (M = 78.95, *SD* = 8.57) and afternoon (*M* = 78.81, *SD* = 10.68) shifts of study, with *t* (366) = 0.14, *p* = 0.89.

MANCOVA for motivational beliefs

A three way Multivariate Analysis of Covariance was performed, with gender, departments of study, and shift of study as three independent variables and six motivational components (intrinsic goal orientation, extrinsic goal orientation, task value, control of learning, self-efficacy for learning and performance, and test anxiety), as dependent variables, while controlling for the effect of admission scores and achievement score as covariates.

Multivariate tests showed that achievement score is multivariate significant F (6, 251) = 3.401, p<0.05 whereas admission score is not multivariate significant, F (6,251) = 1.78, p> 0.05 for motivational beliefs. MANCOVA showed that there were no significant interactions among the three independent variables. However it showed that there were significant multivariate effects of gender, department and shift of study on the motivational beliefs of the students. MANCOVA also showed that there was a significant multivariate effect of admission score on the motivational beliefs of the students as shown in Table 3.

Table 3
MANCOVA Summary (at p< .05)

Effects	Pillai's Trace	*F*	*Df*	Error *df*	Sig.	Effect size Partial *η2*
Admission Score	.065	4.64	4	268	.001	.065
Gender	.050	3.50	4	268	.008	.050
Department	.143	2.50	16	1084	.001	.036
Shift of Study	.035	2.43	4	268	.048	.034
Gender * Shift	.024	1.62	4	268	.170	.024
Gender * Department	.045	.76	16	1084	.728	.011
Department * Shift	.044	.75	16	1084	.738	.011
Gender * Shift * Dept	.063	1.46	12.	810	.136	.021

These results indicated that there were significant differences in the motivational beliefs of the males and females, students enrolled in different departments, as well as between those enrolled in the morning and afternoon shifts of study.

Follow-up univariate tests were performed on each of the four motivational components (*extrinsic goal orientation, task value, self-efficacy for learning* and *test anxiety*) across gender, departments and shift of study.

Shown below are the results of the follow up analysis for each of the three independent variables: gender, department, and shift of study.

Gender

Results of univariate analysis showed that females significantly differed from males on *extrinsic goal orientation F* (1, 335) = 5.93, p = .015. The partial η^2 was .017, which according to Cohen's (1988) criterion, can be classified as a small effect. A pair-wise comparison of the estimated marginal means of *extrinsic goal orientation* showed that females were significantly more extrinsically motivated than males p = .014 (mean difference = .45, SE = .18, 95% CI : 0.09 to .80) (Figure .1).

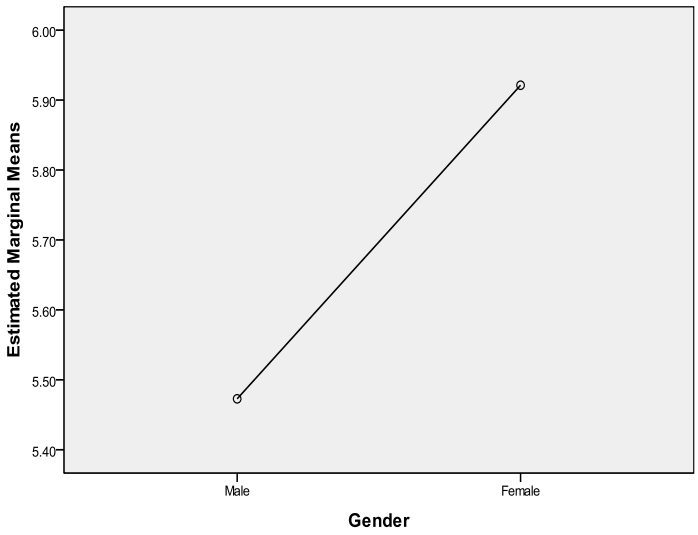

Figure 1. *Extrinsic goal orientation among males and females*

Results also showed that females significantly differed from males on *test anxiety*, *F* (1, 271) = 10.68, p = .001. The partial $\eta^2$was .038, which according to Cohen's (1988) criterion, can be classified as small to moderate, which means that the gender by itself accounted for only 4% of the overall variance. A pair-wise comparison of the estimated marginal means showed that females were significantly more test anxious than males p = .013 (mean difference = .58, SE = .22, 95% CI : 0.16 to 1.10) (Figure 2).

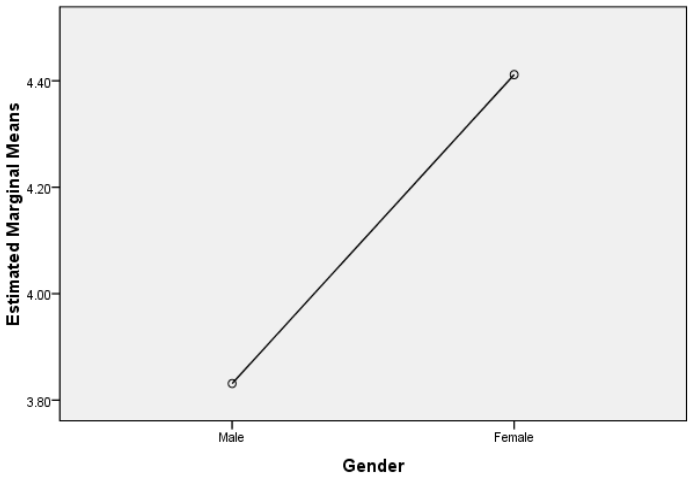

Figure 2*. Test anxiety among males and females*

Department of study

Significant department wise differences were revealed in the motivational components of *task value F* (4, 271) = 2.34, *p* = .055, partial η^2= .033 (a small effect) and *test anxiety F* (4, 271) = 3.97, *p* = .004, partial η^2 = .06 (medium effect). Pair-wise comparisons of the estimated marginal means with Bonferroni adjustment for multiple comparisons (Pallant, 2007, p. 276) showed that *task value* was significantly higher in the Department of Mathematics than the Institute of Business and Information Technology (IBIT), with *p* =.041 (mean difference = .51, SE = .18, 95% CI: 0.013 to 1.12)**,** indicating that the students in the Department of Mathematics found their course material to be more interesting, useful and important than the students in the IBIT.

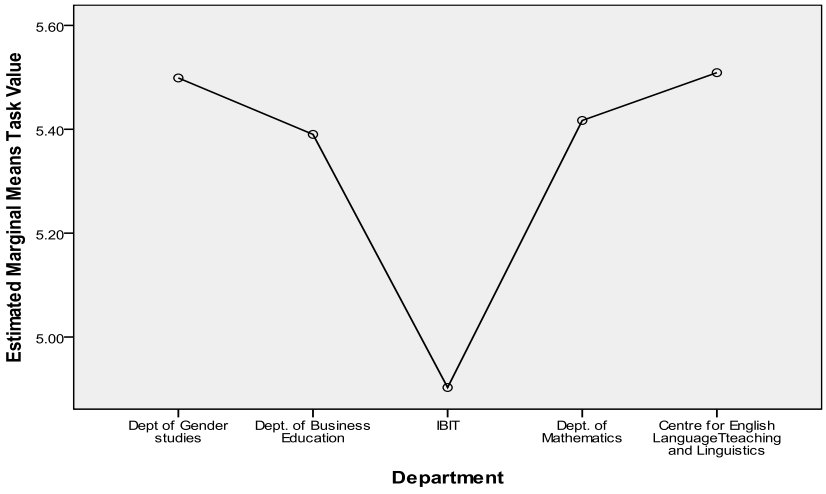

Figure 3. *Task value across departments*

It should be noted that although the CELTL had a higher mean score on Task value than DM (n = 116), its comparison with IBIT (*n* =79) was not found to be significant, which may be due to the smaller sample size in CELTL (*n* = 48). The mean score for *test anxiety* was significantly higher for the Department of Business Education than the Department of Mathematics *p* =.013 (mean difference =.70, SE = .21, 95% CI: 0.096 to 1.30) (see Figure 4)

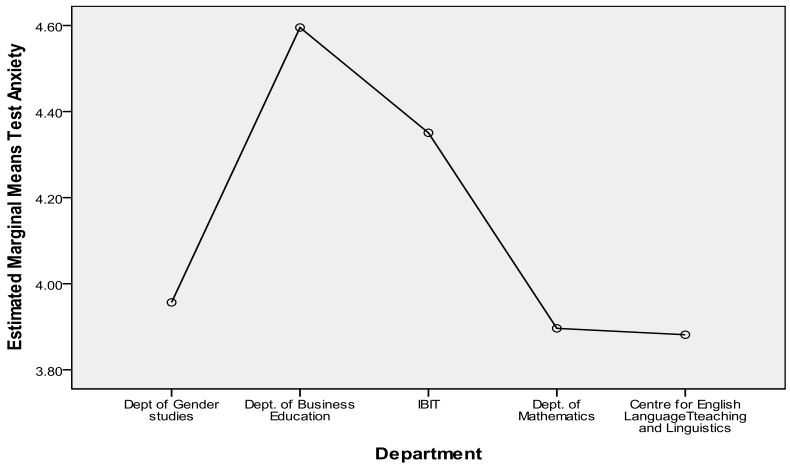

Figure 4. *Test anxiety across departments*

It is interesting to note that although the value of estimated marginal mean of test anxiety in CELTL was almost the same as in DM (*n*= 116), its comparison with DBE (n = 64) was not found to be significant. This may also be due to the smaller sample size in CELTL (*n* = 48).

Shift of study

Results of the univariate tests showed that *test anxiety* was significantly different in the morning and afternoon shifts of study – *F* (1, 271) = 7.57, *p* = .006, partial *η2* was .027, a small effect. A pair-wise comparison of the estimated marginal means of *test anxiety*, revealed that students enrolled in the morning shift were significantly more test anxious than the students enrolled in the afternoon shift of study *p* = .021 (mean difference = .55, SE = .23, 95% CI: 0.08 to 1.01), indicating that the students in the morning shift were more worried and concerned about exams than the students in the afternoon shift. (see figure 5)

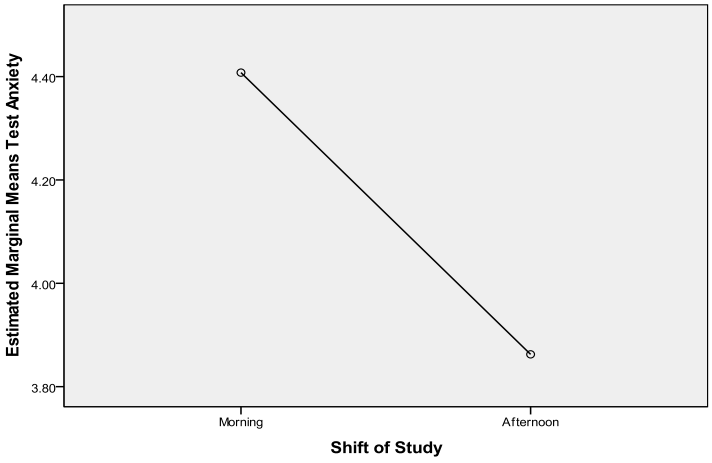

Figure 5. *Test anxiety across shift of study*

Discussion

The main purpose of this research was to investigate gender and disciplinary differences in motivational beliefs across six departments of study. Descriptive results show that post graduate students at the participating University had strong motivational beliefs about themselves with high levels of value and expectancy beliefs. They had higher mean scores on extrinsic goal orientation than intrinsic goal orientation. However, they were less anxious about their examinations/tests.

In line with the results of the previous research (Cheung and colleagues, 2001) in a Hong Kong university, the present study also showed that the females at the public university of Lahore, Pakistan were more extrinsically motivated than males. Significant gender differences were found in the test anxiety, with females being more test anxious than males in all departments. These results are consistent with previous research with seventh and eighth grade students where mean score for test anxiety was higher for females than males (Wolters & Pintrich, 1998). Task was also found to be significantly different across various departments. This supports the findings of previous research with primary and elementary school children, that task value beliefs differ across subject areas (Eccles, 1984; Eccles, et al., 1983; Wigfield, 1994; Wigfield & Eccles, 1992). Task value was the highest for the Centre for English Language Teaching and Linguistics (CELTL) and lowest for Institute of Business and Information Technology (IBIT). Although no interaction was found between gender and motivational beliefs but it is quite interesting to note that CELTL had more female students and IBIT had more male students.

This study added to the existing body of knowledge by exploring the differences in the motivational beliefs of the students enrolled in morning and afternoon shifts of study. This aspect of the investigation can be considered new as no previous research has examined this aspect of the learning context. The significant differences in the entry characteristics (admission scores and age) of the students in the morning and afternoon shifts of study indicated that slightly older students were enrolled in the afternoon shift, which had relaxed age restrictions on admission to facilitate in-service and mature applicants. Similarly, more capable students were admitted to the morning shifts as compared to the afternoon shifts of study, as the afternoon shifts have comparatively lower admission criteria since the afternoon shifts were introduced into the university with the intention of catering for those students who had failed to be admitted into the morning shifts. The students have to pay comparative higher fees in the afternoon shifts and they were not provided with accommodation in campus hostels and halls of residence.

In the light of the above mentioned differences in the shift of study, it was expected that there would be significant differences in the motivational beliefs of the students enrolled in the different shifts. The absence of significant differences for *extrinsic goal orientation, task value* and *self- efficacy* or learning beliefs across morning and afternoon shifts of study was quite surprising knowing that the students enrolled in these shifts were different in terms of their admission scores and age. However, these results are understandable in the light of the fact, as mentioned above, that there were no significant differences in the current academic achievement of the students enrolled in these shifts. Moreover, Nausheen and Richardson (2013) have also reported significant correlations between motivational beliefs and academic achievement of the postgraduate students. Therefore, it may be inferred that the lack of differences in academic achievement may be due no significant differences in the motivational beliefs in the two shifts of study.

However, it is interesting to note that students in the morning shift were found to be more test anxious than the students enrolled in the afternoon shift, suggesting that the different entry characteristics may have influenced the anxiety level of the students.

Conclusion

To sum up it can be concluded that students' motivational beliefs were different among male and females students, across various disciplines of study as well as for students enrolled in the morning and afternoon shifts of study. Females were more extrinsically motivated and test anxious than males. Students in the morning shift were more worried and concerned about exams than the students in the afternoon shift.

Recommendations

These results of the study identified an important area (extrinsic motivation) that not only requires attention and action to improve the quality of the learning environment from the perspective of all students, but significantly more so from the male than from the female perspective. Teachers may need to plan and organize their teaching in a manner that enhances motivation for better grades and performance among males as well as females.

Students' motivational needs in different departments should be taken in to consideration in the design and implementation of the improved curriculum and course content as well as teaching and learning activities in these departments. As the same teachers teach in the morning and afternoon shifts, therefore while teaching in the afternoon shifts they should discuss with students and try to explore the reasons for their test anxiety. Teachers should also try to adopt strategies that would minimise test anxiety among these students.

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