Relationship among Academic Self Efficacy, Test Anxiety and Academic Achievement of Undergraduate Students

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Abstract
The present study aimed to explore the existing relationship between academic self-efficacy, test anxiety and academic scores of college students. For data collection, a scale developed by Owen and Froman named as "College Academic Self-Efficacy Scale" and for measuring test anxiety, Westside Test Anxiety Scale was used. College students who were enrolled in Masters degree program were selected through cluster sampling technique. Statistical data were collected from 197 students of selected programs. Correlation coefficient (Pearson r) for calculating correlation among variables i.e., between academic self-efficacy and test anxiety, academic self-efficacy and academic achievement, test anxiety and academic achievement was applied. Further, inferential statistics like Analysis of Variance (ANOVA) applied for calculating group differences on test anxiety score and self-efficacy score. A significant negative correlation was found between academic self-efficacy and test anxiety. The presents study also yielded a significant difference in academic self-efficacy and test anxiety among high, average and low achievers. In the light of result, it was recommended to increase college students; self-efficacy beliefs by introducing numerous beneficial practices like assigning challenging yet achievable tasks and by appreciating students on their achievements. Building confidence a mong them educating anxiety reduction strategies were also recommended to be practices before, after and at the end of academic sessions.

Keywords: academic self-efficacy, test anxiety, academic achievement, college students

Introduction

Scores in the test has always been considered the criteria of students' performance. Higher scores show more competence in students and the students who remain fail to get good grades are considered to be incompetent in their performance. Zollar and Ben-chain (1990) have the opinion that "the era in which we live is a test-conscious age in which the lives of many people are not only greatly influenced, but are also determined by their test performance". It is also agreed fact that fear of test keeps one away from performing at one's optimum level. On the other hand, as in social cognitive theory, one of the most influential factors of one's knowledge is his awareness of personal thoughts regarding the exercise and control of happy or unpleasant events. The present study was aimed to find the effect of both of these variables on the achievement of the students.

Bandura (1997) introduced the concept of perceived self-efficacy and identified it as an influencing factor on human behavior. Self-efficacy is defined as person's beliefs or an individual's confidence in his abilities to perform a task in effective way. Hui (2010) define academic self-concept as one's perception of his or her level of competence or ability within the academic realm. Whereas Trautwein, Ludtke, Marsh, Koller, and Baumert (2006) describe it as an individual's self-evaluation regarding a specific academic domain or ability. Bandura (1986; 1997) theorises that the deep human action and success are dependent in deep interactions between one's personal thoughts and a given task. In addition to the concept of self-efficacy it is also meant as students' beliefs about their ability towards the completion of the task particularly related to their classroom activities. High self-efficacy beliefs owned by students do not only let them to perform better in classroom activities but also encourage them to practice self-regulatory activities. While comparing them with students possessing low self-efficacy beliefs, the contrast can be found on the base of facing problems to meet the demands of assigned tasks. Certain feelings of shyness, hesitation and nervousness for taking challenging tasks lead them to perform low. (Suraya & Wan, 2009).

Test anxiety is a specific kind of worry and it occurs at the time of tests specifically. It goes along with the fear of not showing good performance or potential negative results at the time of examination (Soysa & Weiss, 2014; Zeidner & Mathews, 2005). Test anxiety appears with some observable bodily symptoms like shivering, uneasiness, sweating, increased heart beat and the like. Test anxiety is influenced by the self-efficacy beliefs of the students, which can be described as one's beliefs about the success or failure of any particular task (Bandura, 1997). Test anxiety is influenced by the self-efficacy beliefs of the students, which can be described as one's beliefs about the success or failure of any particular task (Bandura, 1997). The research showed that college students were found nervous and stressed while attempting the examinations (Kellaghan & Greaney, 2019).

With the view of learning, academic self efficacy has been proved to be negatively correlated with test anxiety (Bonaccio & Reeve, 2010). It means that if students are positive in their thinking towards the completion of their academic tasks, they will be less anxious while performing the task as compared to the students who have negative thinking towards the end of the task (OECD, 2019). Students with low academic self efficacy belief will suffer high level of test anxiety, which will ultimately negatively influence their performance. Previous researches (Wigfield & Meece, 1988; Meece et al.,1990) revealed a negative correlation between academic self efficacy and test anxiety on elementary grade students.

Academic self-efficacy and test anxiety both play an influential role towards their performance measured by their achievement scores. Test anxiety has been reported one of the main reason which have a strong negative effect on self-efficacy and ultimately on the academic achievement of students (Von Der Embse et al., 2018).

A number of research studies support that students with strong academic and self regulatory, self efficacy beliefs are more able to manage their learning. They resist the temptations and social pressures on the way of their learning and academic achievement. As a result they are not only more inclined to complete their education but also better equipped to cope up the challenges of today's competitive society (Bandura, Barbaranelli, Caprara & Pastorelli, 2001; Zimmerman, 1990).On the other hand the students with low sense of self regulatory and academic self-efficacy are more indulged in problem behaviours like delinquency, dropping out of school, and school failure (Bandura, 1997; Bandura, Barbaranelli, Caprara, & Pastorelli,2001; Bandura, Barbaranelli, et al., 2001).

Those having low sense of self efficacy possess negative thoughts and feel threatened by the demands of the task. Because of such negative thoughts they set low objectives for them (Suraya & Wan, 2009; Bandura 1994). Students having high self-efficacy beliefs are able to initiate their study activities and develop practical self-learning strategies in turn they are more likely to progress and achieve better. Non self-regulated students, on the other hand, do not participate in learning process and resultantly they have surface knowledge and low academic achievement (Zimmerman, 1986). A great number of research studies prove the effects of self-efficacy on students' accomplishments (Bandura, 1997; Chemens, hu & Garcia, 2001; Eastin & LaRose 2000; Khorrami-Arani 2001; Maimunah, Roziah, & Nor, 2005).

Research studies support strong relationship between self – efficacy and general performance of the individuals. The results of 114 experimental studies indicate strong and positive relationship between self-efficacy and the performance (Staikovic & Luthans, 1988). Similarly, research on 38 studies conducted between the years 1977 to 1988 found positive relationship between self-efficacy and academic achievement (Moulton, Brown &, Leni, 1991).

Students' achievement, on the other hand, is inversely related with test anxiety. High test anxiety is considered to be one of the main factors for low achievement of the students at university level (Gaudry & Spielberger, 1971). In the study conducted by Nicholson (2009), it was found that 11 grade students' academic achievement was related to their level of test anxiety. In another study Khalid and Hassan (2009) identified that those undergraduate students who were low test anxious achieved higher in test and vice versa. Similarly significant inverse relationship between test anxiety and academic achievement was found in a study conducted on a large sample of graduate and undergraduate level students (Chapell, Blanding, Takahashi, Silverstein, Newman, Gubi, & McCann, 2005). A strong agreement is present in empirical literature that test anxiety is associated with lower academic performance (Rana & Mahmood, 2010).

Objectives

The objectives of the study were to:

1. Describe high, average and low achievers on their academic self-efficacy beliefs and test anxiety score.
2. Determine the relationship between academic self-efficacy, test anxiety and academic achievement of students.
3. Find out the difference in mean scores of academic self-efficacy and test anxiety with varied achievement levels of students (high, average and low).

Research Questions:

1.1. What are the categories (high, average, low) of students with regard to their achievement scores?

1.2. What is the mean of students' academic self-efficacy and test anxiety score?

2.1. What is the relationship between academic self-efficacy and test anxiety?

2.2. What is the relationship between academic self-efficacy and academic achievement?

2.3. What is the relationship between test anxiety and academic achievement?

3.1. What is the difference in students' self-efficacy beliefs with regard to their low, average and high achievers?

3.2. What is the difference in students' test anxiety scores with regard to their low, average and high achievers?

Methodology

The study was descriptive in nature and the prevalence of academic self-efficacy and test anxiety were collected by using College academic self-efficacy scale' developed by Owen & Froman and Westside test anxiety scale.

Sample

The sample of the study was comprised 197 students of three masters' degree program i.e. M.A History, M. A Education and M. ed were selected by applying cluster sampling technique. All the students were the subject of the study. the detail of the sample is given as under:

Table 1

Detail of the participants selected for the present study

Programs	N	%
M.A History	66	34
M.A Education	76	38
M.Ed	55	28
Total	197	100

Scales

College Academic Self-efficacy Scale: The College Academic Self Efficacy Scale (CASES) developed by Owen & Froman 1988 was used to measure the academic self efficacy believes of the students. It is a 33 items five point Likert type scale ranging from 'not at all confident' to 'highly confident' about the beliefs of the students towards the success or failure of any task. The alpha coefficient reported by Owen & Froman was .90. The reliability of the scale for present study was .86.

Westwide Test Anxiety Scale: It is a standardized scale comprised of ten statements to measure the test anxiety of the students. This scale was particularly developed to measure the anxiety level of college students. It is brief scale in which responses to the items are given on a five point scale ranging from 'not at all true' to 'extremely true'. For the present study Cronbetch alpha was measured .80 as a result of pilot study.

Academic Achievement: the data on test anxiety and self-efficacy scale were collected few days before the final examination of running semester and students' obtained marks of this semester were taken as academic achievement. Achievement scores were converted into percentages for the purpose of data analysis.

Data collection

The data were collected by the researchers themselves. It was ensured to the students that the data will be used for the research purpose only and the information provided by them will be kept confidential. The students were provided relax environment and flexible time to fill in the questionnaires. Since the instruments were administered personally, so in case of any ambiguity or problem in understanding by the respondents, they were guided.

Data Analysis

The data were analyzed using Statistical Package for Social Sciences (SPSS) version 16. Descriptive Statistics and Inferential statistics were applied for data analysis corresponding to the objectives of the study. Pearson Correlation was

calculated to find the relationship between academic self-efficacy and test anxiety, academic self efficacy and academic achievement, and test anxiety and academic achievement. Student were categorized into three groups: low, average and high achievers on the basis of their academic scores and Analysis of Variance (ANOVA) was run to identify the difference in academic self efficacy and test anxiety of the groups. Results are shown in tables.

Table 2

Mean and standard deviation of academic scores, academic self-efficacy and test anxiety with respect to degree program

Program	Academic scores (%)		Academic self efficacy		Test anxiety	
	Mean	SD	Mean	SD	Mean	SD
M.A History	59.47	4.98	122.53	13.94	27.61	6.77
M.A Education	66.77	8.28	116.7	13.27	29.63	8.51
M. ed	70.35	4.49	117.22	13.30	26.91	7.97

For academic scores value was ranging from 59.47 for intermediate students to 70.35 for masters students. For academic self efficacy it was from 116.78 for bachelor students to 137. 53 for master students and for test anxiety it ranged from 26.91 for master students to 29.63 for bachelor students.

Table 3

Mean score of academic self-efficacy and test anxiety of high, average and low achievers

Categories	Range of achievement scores	N	Self- efficacy score (Mean)	Test anxiety score (Mean)
High	85-70	56	120.79	26.09
Average	72-62	73	117.63	28.26
Low	62-47	68	115.97	30.15

In the table above, the range of the achievement score was used to categorize students as high, average and low achievers. Test anxiety score for high achievers was low (M= 26.09) whereas high (M= 120.79) in their self-efficacy beliefs. To the contrary, low self-efficacy beliefs (M=115.97) were found in the category of low achievers while they were found more anxious (M= 30.15). So it is concluded that with the variation in achievement score, the self- efficacy beliefs and test anxiety also vary.

Table 3

Correlation between academic self efficacy and test anxiety

Variables	N	r-value	Sig.
academic self efficacy Test anxiety	197	-.338	.000

$p < .05$

Table 3 shows that there is highly negative correlation between academic self-efficacy and test anxiety (p>.05) of students. It means in case of increase in academic self-efficacy, test anxiety was also decreased. So concluding that there is negative correlation between academic self-efficacy and test anxiety was accepted.

Table 4

Correlation between academic self-efficacy and academic achievement

Variables	N	r-value	Sig.
Academic self-efficacy Academic achievement	197	.241	.003

p< .05

Table 4 clearly indicated that correlation between academic self-efficacy and achievement scores exists at noticeable level at p<.05 level. Self-efficacy and achievement were positively correlated which further indicates that with the increase in the level of academic self-efficacy beliefs, an increase in academic achievement of the students occurs ultimately.

Table 5

Correlation between Test Anxiety and Academic Achievement

Variables	N	r-value	Sig.
Test anxiety Academic achievement	197	-.204	.004

p< .05

It is evident from table 5 that academic achievement is negatively correlated with test anxiety. So increase in test anxiety will cause decrease in academic achievement of the students. The results supported the research assumption that there is a negative correlation between test anxiety and academic achievement of the students.

Table 6

One-way ANOVA for difference in mean scores of students' academic self-efficacy at different achievement levels (high, average and low)

Variables	Sum of Squares	df	Mean Square	F	Sig.
Between group	724.205	2	326.103	5.005	.003
Within group	35036.383	194	180.600		
Total	35760.589	196			

p< .05

The results clearly indicated that significant difference was found in the mean scores of high, average and low achievers. Post Hoc test further

highlighted the difference in all three combinations: high and average, average and low, low and high. It means that the academic self-efficacy is affected by the level of academic achievement. So it is concluded that academic self-efficacy varies in students with respect to their achievement scores.

Table 7

One-way ANOVA for difference in mean scores of students' test anxiety at different achievement levels (high, average and low)

Variables	Sum of Squares	df	Mean Square	F	Sig.
Between group	673.890	2	336.945	5.330	.006
Within group	12263.358	194	63.213		
Total	12937.249	196			

$p < .05$

Table 6 revealed that the difference in the mean scores of test anxiety in high, average and low achievers is significant. Post Hoc test further identified that this difference was found between high and low achievers. Whereas there was no significant difference between high and average, and, average and low achievers. So, test anxiety scores differ in students with respect to their achievement level.

Discussion

The focus of the study was primarily to explore the relationship between college students' academic self efficacy and test anxiety. Identifying the relationship of academic self efficacy and test anxiety with college students' academic achievement was also aimed in the current study. The findings of the study clearly showed that academic self efficacy of college students was inversely related to test anxiety and this is in line with the results of previously conducted studies (Bonaccio & Reeve, 2010; Wigfield & Meece, Wigfield, & Eccles, 1990).

In the light of these results, it is recommended that some strategies and training programs should be introduced to the college students to increase their self efficacy beliefs and such practices should be applied in the classroom that help the students to decrease their level of test anxiety. As discussed in literature (Staikovic & Luthans, 1988 ; Multon, Brown & Leni, 1991; Bandura, et al., 2001; Zimmerman, 1990) that academic self efficacy is positively related with academic achievement, the results of this study also favoured it. If self efficacy is positively related to the achievement, as indicated, students should be provided opportunities to enhance their beliefs regarding the completion of their academic tasks.

It was hypothesized that test anxiety hinders the academic achievement of the students and high test anxiety causes to lower achievement of college

students as resulted in the studies (Gaudry & Spielberger, 1970; Khalid & Hassan, 2009; Chapell, et al., 2005; Rana & Mahmood, 2010).

When the achievement of the students was categorized to high, average and low levels, the results highlighted mean difference in academic self efficacy scores between high and low achievers. Bandura (1997) in his initial study also discussed that students having high self efficacy beliefs are able to initiate their study activities and develop practical self learning strategies in turn they are more likely to progress and achieve better. Non self regulated students, on the other hand, do not participate in learning process and resultantly they have surface knowledge and low academic achievement. It was further analyzed that, as evident in the related studies, high and low achievers differ in their test anxiety scores. Overall the findings of the current study were aligned with the evidences of empirical studies conducted before.

Recommendations and Implications

In the light of findings, it is recommended that some strategies and training programs should be introduced to the students to increase their self efficacy beliefs and such practices should be applied in the classrooms that help the students to decrease their level of test anxiety. The way teachers provide routinely feedback while exposing them with frequent classroom tests etc., to the students can also be a strategy to increase their self-efficacy beliefs as well reducing test anxiety. Another important but easy to be practiced strategy can be treating students on equal grounds that may further lead to eliminate the gap among students who possess varied intelligence level.

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