ISSN Print: 2394-7500
ISSN Online: 2394-5869
Impact Factor (RJIF): 8.4
IJAR 2023; 9(10): 28-32
www.allresearchjournal.com
Received: 25-06-2023
Accepted: 29-07-2023

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Effect of gender, academic motivation and geographic areas on anxiety and academic performance of adolescents

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DOI: https://doi.org/10.22271/allresearch.2023.v9.i10a.11296

Abstract
The main purpose of this research was to study independent and interaction effects of gender, academic motivation and geographic areas on anxiety and academic performance of adolescents. The sample for this research consisted of 300 female and male adolescents. Purposive sampling technique was used. Data analysis was done descriptively by using mean and standard deviation and further three way ANOVA with 2×2×2 factorial design was used. Research results revealed no triple interaction of gender, academic motivation and geographic areas were found on anxiety and academic performance.

Keywords: Academic motivation, anxiety, academic performance, adolescents

Introduction

Academic Motivation: According to Deci & Ryan, (2002) [1] in many different areas, the idea of motivation is utilized to examine the "what and why" of human behavior. Krapp (1993) [13] asserts that psychological mechanisms that explain how learning activities manifest, alter through time, and have an effect of motivation to learn. Classroom settings and teaching are common for students. Of course, it also plays a role in academic learning. Learning processes play a role in educational success, which is highly significant for motivation to study. These are a natural part of education and academic motivation. Academic motivation is the driving force behind behaviors that have some relationship to academic functioning and success, such as the level of effort students put forth, their capacity for time management, the activities they choose to engage in, and their dedication in the face of challenges (Schunk *et al*., 2008) [3].

Anxiety

In this day and age, people cannot escape worry at any point in their lives, but it is most prevalent throughout the critical scholastic years and the early stages of a profession. This is due to the strain placed on students by their need to remain in step with the demands of the competitive world. A person is also less likely to be anxious if they are confronted with a clear and present danger or a realistic worry. When assuming new duties and developing one's identity, anxiety is frequently a realistic reaction. Particularly in adolescents and teenagers, a modest level of anxiety is typical in developing children. When anxiety also manifests in unrealistic situations or with unusual intensity, it may be an indication of an anxiety disorder.

Academic Performance

According to Tukman's (2013) definition, academic performance is the outward display of one's knowledge, abilities, beliefs, comprehension, and viewpoints. Thus, academic performance is the application of an instructed action that leads to mastery at the end of the training process. It refers to how well pupils performed academically as determined by the grades they received in particular topics or domains.

Review of literatures

Majali, (2020) [14] analyzed how anxiety affects motivation and performance. The study's findings revealed that 41 percent of high-achieving pupils and 49 percent of those with medium anxiety levels both experience anxiety. Respondents who reported having a moderate level of situational anxiety had high rates of internal and external motivation. Students with high levels of trait anxiety have noticeably poorer motivation. A high level of anxiety, lowers motivation for learning while also promoting great academic accomplishment. Firose (2020) [12] examined the link between teenage students' anxiety and achievement motivation. Purposive sampling was used to choose the secondary school samples. Anxiety and drive for success were assessed using the two standardized questionnaires. ANOVA, correlation, and the t-test were used in the statistical analysis. The findings showed that anxiety had a bad relationship with motivation for achievement. Additionally, teenage students differ in their levels of anxiety and drive for success based on their gender and parental income. Further study revealed that while there was no discernible variation in teenage students' anxiety levels according to their birth order, there was a discernible difference in their ambition to accomplish. Brar, (2018) [7] highlighted the connection between teenagers' motivation for academic success and their anxiety levels. The study's findings indicated significant gender differences in academic accomplishment motivation and anxiety level, but no significant differences were discovered in regard to location variation. The considerable inverse association between teenagers' anxiety levels and motivation for academic achievement was another study finding.

Methodology

Objectives

To study the effect of gender (male & female), geographic areas (urban & rural) and levels (high & low) of academic motivation on the measures of dependent variables (anxiety and academic performance).

Hypothesis

The effect of gender (male & female), geographic areas (urban & rural) and levels (high & low) of academic motivation would differ significantly on the measures of dependent variables (anxiety and academic performance).

Sample

Present study was conducted on 300 female and male adolescents with an age range of 16-19 years. Purposive sampling technique was used. Adolescents (male & female) are taken from CBSE Board school of Uttar Pradesh.

Behavioral Measures

Academic Motivation

Academic Motivation Inventory (AMI - MKS) Misra, K. S. (2020) [15]: The academic motivation inventory (AMI - MKS), developed by Misra, K.S. (2020) [15]. There are 46 items. Participants can respond to their answer on a five-point rating scale which is strongly agree, Agree, undecided, disagree, strongly disagree. There are two types of items, positive and negative.

Anxiety Scale

This scale was constructed by Sinha D. It contains 100 questions. Participants can respond in the form of yes or no. Participants can get a maximum score of 100 and lowest score of 1. Highest scores show high anxiety while lowest scores show low anxiety on this scale.

Academic Performance

Academic performance was assessed and categorized on the basis of grades of previous year. In this study we are following the CBSE grading scheme. The CBSE grading system has a five-point scale, in which students will be awarded grades from A to E.

Analysis tools

To achieve a logical conclusion, the collected data was analyzed by SPSS 20.0 by using various relevant statistical tests like Mean, S.D., and Correlation.

Results

Significant independent and interactive effect of ‘gender’ of adolescents (male & female), 'Geographic areas '(Urban & Rural) and ‘levels of Academic Motivation' (high & low scores) separately, on measures of dependent variables (Anxiety and Academic Performance). 2×2×2 (2 gender of adolescents × 2 geographic areas × 2 level of Academic Motivation) factorial analysis has been run for study on the measure of dependent variables which was achieved by screening out subjects falling M ±1 SD (referred as high and low scorers) on measures of Academic Motivation.

Table 1: Mean & SD value for the eight - groups (2 gender ×2 Geographic areas ×2 level of Academic Motivation) on the measures of dependent variables (Anxiety and Academic performance)

Gender	Geographic areas	Levels of Academic Motivation	N	Academic Motivation	
			96	Academic performance	Anxiety
Female	Urban	Low	M	4.666	72.50
			SD	0.81	4.888
		High	M	8.888	42.111
			SD	0.927	5.51
	Rural	Low	M	5.352	74.176
			SD	0.785	4.461
		High	M	8.444	45.112
			SD	1.236	3.855
Male	Urban	Low	M	5.50	56.416
			SD	0.522	4.44
		High	M	9.125	23.375
			SD	0.834	2.924
	Rural	Low	M	6.40	56.1
			SD	0.966	5.586
		High	M	8.08	30.00
			SD	1.35	5.377

Table 2: Mean & SD value for the gender, Geographic areas and levels of Academic Motivation on the measures of dependent variables (Anxiety and Academic performance)

			Academic Performance	Anxiety
Gender	Female (41)	M	6.707	60.512
		SD	1.99	15.825
	Male (55)	M	7.363	39.545
		SD	1.659	14.768
GA	Urban (35)	M	7.057	47.942
		SD	2.071	17.366
	Rural (61)	M	7.098	48.819
		SD	1.69	19.083
Levels of AM	Low (45)	M	5.533	65.20
		SD	0.919	9.976
	High (51)	M	8.451	33.764
		SD	1.237	9.076

Table 2: Summary of 2×2×2 ANOVA (Gender × Geographic Areas × Levels of Academic Motivation) on the measures of dependent variables (Academic performance and Anxiety)

	Source of variations	Sum of squares	DF	Mean squares	F-ratio
Anxiety	Gender	5809.912	1	5809.912	249.226**
	GA	151.582	1	151.582	6.502*
	Levels of AM	17668.571	1	17668.571	757.923**
	Gender × GA	3.345	1	3.345	0.144
	Gender × Levels of AM	0.123	1	0.123	0.005
	GA × Levels of AM	85.816	1	85.816	3.681
	Gender × GA × Levels of AM	39.650	1	39.650	1.701
	Error	2051.44	88	23.312	
	Total	257938.0	96		
Academic Performance	Gender	3.856	1	3.856	3.671
	GA	0.012	1	. 012	0.011
	Levels of AM	200.029	1	200.029	190.418**
	Gender × GA	0.188	1	0.188	0.179
	Gender × Levels of AM	5.069	1	5.069	4.825*
	GA× Levels of AM	11.884	1	11.884	11.313**
	Gender × GA × Levels of AM	0.833	1	0.833	0.793
	Error	92.442	88	1.050	
	Total	5134.0	96		

*Significant at 0.05 level **Significant at 0.01 level
GA = Geographic Areas
AM = Academic Motivation

Table 3: Summary of turkey test showing the patterns of mean differences in significant interaction between 1'gender × Levels of Academic Motivation (high and low scorer)' on Academic performance

		F/L	M/L	M/H	F/H
	Mean	**5.173**	**5.90**	**8.331**	**8.666**
F/L	5.17	×	-0.735	-3.159*	-3.492*
M/L	5.90		×	2.424*	-2.757*
M/H	8.21			×	0.333
F/H	8.50				×

*Significant at .05 level
F/L= low scorer female, M/L= low scorer male
F/H= high scorer female, M/H= low scorer male

Table 4: Summary of turkey test showing the patterns of mean differences in significant interaction between 'Geographic Areas × Levels of Academic Motivation (high and low scorer)' on Academic performance

		U/L	R/L	R/H	U/H
	Mean	**5.222**	**5.74**	**8.176**	**9.00**
U/L	5.222	×	0.518	2.954*	3.777*
R/L	5.74		×	-2.435*	3.259*
R/H	8.176			×	0.823*
U/H	9.00				×

*Significant at 0.05 level
U/L= Low scorer from Urban, R/L= Low scorer from Rural
R/H= High scorer from Rural, U/H= High scorer from Urban

Results of three - way ANOVA (vide table 2) showed (a) significant independent effect of 'gender' was found only on anxiety. Mean comparison of gender of adolescents (vide Table 1) revealed higher anxiety in females (M = 60.512) than male (M = 39.545). (b) Significant independent effects of geographic areas have been found only on anxiety. Mean comparisons of geographic areas (vide table 1) revealed higher anxiety in rural areas (M = 48.81) as compared to urban areas (M = 47.142). (c) Results indicated a significant independent effect of ' levels of uninvolved parenting style' on both measures of dependent variables (anxiety and academic performance). It was observed from (table 1) that high scorer adolescents on academic motivation possessed low levels of anxiety (M = 33.764) as well as higher academic performance (M = 8.451) as compared to low scorers adolescents which showed that low scorer adolescents had high levels of anxiety (M = 65.20) as well as low levels of academic performance (M = 5.533). (d) Non-significant interaction effects have been found on both measures of dependent variables (anxiety and academic performance). (e) Significant interaction effect of gender × and levels of academic motivation found only on academic performance. Analysis of Post Hoc means comparison by using the Turkey test (vide table 3) revealed significantly high academic performance in female adolescents (M = 8.666) and male (M = 8.331) with high scores on academic motivation as compared to male (5.90) and female adolescents (M = 5.173) with low scores on academic motivation. Rests of mean differences were non-significant. (f) Significant interaction between geographic areas and levels of academic motivation was seen on academic performance. Analysis of Post Hoc means comparison by using the Tukey test (vide table 4) revealed significantly high academic performance in high scorer adolescents from urban areas (M = 9.00) as compared to low scorer adolescents from rural areas (M = 5.74), urban areas (M = 5.222) and also high scorer adolescents from rural areas (M = 8.176). It was evident from the (vide table 4) that high scorer adolescents from rural areas significantly had higher academic performance than low scorer adolescents from rural and urban areas.

(g) The triple interaction effect of gender × geographic areas × levels of academic motivation was found to be non-significant on both measures of dependent variables.

Discussion

The results (vide table 2) indicated significant independent effects of gender and geographic areas on anxiety in which female adolescents had higher levels of anxiety than male adolescents as shown in table (1). The explanation could be that girls are more emotional in nature than their counterparts and their strategies to cope with problems are different from the boys and another reason may be that female hormones are constantly changing and due to more hormonal fluctuations, they feel high levels of anxiety about their lives, study, career and so on. Further it was evident from the table (1) that rural adolescents experienced higher levels of anxiety as compared to urban adolescents. The explanation could be that the pattern of living, the way of teaching and lack of resources in rural areas were found different from urban areas. That's why rural adolescents experienced high levels of anxiety. Similar findings were found in the study of Lyneham & Rapee (2007) [4] who reported that the impact of anxiety in rural areas was found to be higher than that experienced by similarly anxious children from urban areas. Results vide table (2) significant independent effect of levels of academic motivation on both measures of dependent variable (anxiety and academic performance). It was evident from table (1) that adolescents who scored high on academic motivation expressed low levels of anxiety and high levels of academic performance. It means that adolescents, who were highly motivated, performed better in their academic settings and experienced low levels of anxiety toward their different life situations and their education as well. In support of this result it was found that students' anxiety was negatively related to academic motivation, (Omidvar, 2013) [2]. In the study of Mazali, (2020) [16] who reported that high levels of anxiety contributes to high academic achievement but at the same time reduces the motivation for learning. Further it was evident from the table (2) that there were significant interaction effects of gender and levels of academic motivation as well as geographic areas and levels of academic motivation on the academic performance. It was evident by the table (3) that highly motivated females and male significantly differ from less motivated male and female adolescents. That means when adolescents were highly motivated, they academically performed better than their counterparts. However highly motivated male and female adolescents perform almost similarly but there were minimal differences between them as shown in table (3) but that differences were non-significant. The mean comparisons of the Turkey test table (3) revealed that highly motivated females had higher academic performance as compared to highly motivated male. The present findings are consistent with the result of Gupta & Mili (2016) [5], who found that there are substantial disparities between high and poor performers in class ninth pupils' levels of academic motivation, indicating that high achievers are more motivated to succeed academically than low achievers. This result included gender disparities that showed that while males and females in the high achiever group were equally motivated to succeed academically, males were less motivated than females in the poor achiever group. In the findings of Koseoglu (2013) [6] and Sikhwari (2014) [17] revealed that females scored higher than males in academic motivation while Krishnamurthy (2000) [8]; Yawa *et al.* (2021) [9] showed that there are no significant differences between the academic motivation of men and women, proving that sex is not a determining factor in this regard. In contrast to this study, Tella (2007) [10-11] discovered substantial gender differences in his findings and concluded that highly motivated students performed significantly better academically than less motivated students in various courses. Further it can be seen from the table (4) that the highly motivated rural and urban adolescents were significantly different from the low motivated rural and urban adolescents. It was also evident from the table (4) that there are significant differences in high levels of academic motivation of urban and rural adolescents. From the mean differences it was found that highly motivated adolescents from urban areas have better academic performance than highly motivated adolescents from rural areas. The explanation might be that urban students are supported by better quality education so that they are highly motivated toward their education and perform better at their schools. Another reason might be their educated families and peers groups which also help them to gain higher grades in their

study. Present findings are consistent with the result of who found a significant effect of motivation and learning achievement in which urban students had higher learning achievement than rural students. In contrast to this study, Singh (2011) [18] observed no appreciable differences in the academic motivation of rural and urban students

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