SOCIETY FOR SCIENCE AND EDUCATION UNITED KINGDOM
TMLAI TRANSACTIONS ON MACHINE LEARNING AND ARTIFICIAL INTELLIGENCE
VOLUME 3, ISSUE 1
ISSN 2054-7390

Cognitive Assessment Concern and Learning Outcomes of Selected Under-Graduate Students at MLRIT-Hyderabad

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ABSTRACT

This study investigated the level of Cognitive Assessment Concern of selected undergraduate students. It also sought to find out whether CAC of students vary by ability (performance) levels and sex. A total of 246 purposively selected undergraduate students completed the 32-items Cognitive Assessment Concern Scale. Data were analyzed using contingency table and t-assessment. Results showed that students CAC was generally low. It was also discovered that CAC negatively affects performance levels; the higher the level of students' CAC, the lower the level of students learning outcome and vice-versa. However, sex differences do not lead to Corresponding differences in CAC and performance levels.

Keywords: Assessment Concern, Cognitive assessment, Learning Outcomes, student's performance.

1 Introduction

Successful learning in school subjects/courses is popularly measured by the level of students' performance in cognitive assessments. This performance is expressed in terms of student's Cumulative Grade Point Average (CGPA). It is commonly advised that teachers should give series of opportunities to learners to express their true abilities by administering series of assessments or any other assessment technique rather than a one-short version of either assessment or examination. In doing this however, a number of students experience some disruptions in their physical or emotional state.

The disruption in the individual „creates concern and interferes with learning" (Sax, 1980). Concern as described by Olatoye (2007) is „an emotional component of human beings that manifests itself in life endeavours in form of worry and restlessness". Olatoye posited further that when this condition manifests during assessmenting session, it is referred to as assessment concern.

Research into the prevalence, and impact of assessment concern began in Yale University in the United State of America (Hembree, 1988) when students were asked to respond to a Assessment Concern Questionnaire constructed by Sarason and Mandler (1952). From the outcome of the analyses of the assessment concern data collected, students were categorized as being „high- or low-assessment-anxious. Those found to be low-assessment-anxious did better than the high-assessment-anxious in a assessment given during an experiment where block design was employed.

Research interest on Cognitive Assessment Concern (CAC) became popular after the pioneer effort of Sarason and Mandler. Most of these researches found two distinct aspects of CAC.

DOI: 10.14738/tmlai.31.410
Publication Date: 24th February, 2015
URL: http://dx.doi.org/10.14738/tmlai.31.410

These two are what Liebert and Morris 1967) termed „worry' (any cognitive expression of concern about one‟s own performance) and 'emotionality' (autonomic reaction to the assessment situation) (Hembree, 1988; p.48). The work of Liebert and Morris shifted CAC theory towards a cognitive orientation. Thus, Wine (1971) propounded „Attentional theory‟ to describe how CAC impedes performance in cognitive assessments. The theory states that „assessment anxious persons divide their attention between task-relevant activities and preoccupations with worry, self-criticism, and somatic concerns. With less attention available for task-directed efforts, their performance is depressed‟. Many other researches confirmed the two- factor structure for CAC for quite some time (Sarason, 1978; Spielberger, Gonzalez, et. Al.,1980; Ware, Gallasi & Dew, 1990 and Ferando, Varea & Lorenzo, 1999).

Further research on the construct showed that TA could be multidimensional in nature. For instance, Furlan and Cassady (2009) reported that Valero Aguayo (1999) produced Assessment Concern Questionnaire with four subscales. These were „ behavioral, cognitive and physiological symptoms and anxious situations. Furlan and Cassady stated further that three-factor model of CAC were arrived at by Ferrando, Varea & Lorenzo (1999).

These are worry, emotionality and facilitating concern. The third factor on the Performance and Concern Questionnaire by Ferrando et. al. is indicative of the notion that there is a measure of concern required for success in any given task. This will arouse the determination to succeed in the individual.

CAC causes poor performance in cognitive tasks (Cassady, 2004; Cassady, Mohammed & Mathieu, 2004 and Olatoye, 2007). It was found to have correlated negatively with performance scores in cognitive assessments (Spielberger 1972; Adigwe, 1997 and Zoller & Ben-Chain, 2007).

Findings from literature also revealed that CAC level is, to a large extent, dependent on the type of assessment or examination administered. Where the preferred item format is used to conduct assessments, students demonstrate low CAC level and this in turn leads to high score in cognitive assessments Olatoye (2007).

Looking at the influence of students‟ sex on CAC scores, most literature reviewed reported that female students have consistently showed high CAC in most cognitive assessment situation (Hembree, 1988; Razor and Razor, 1998; Olatoye and Afuwape, 2003). However, Jerrel, Cassady and Johnson (2002) reported that there was gender differences in TA, but the differences were not related to performance on examinations. In the same vein, Olatoye (2007) reported that there was no significant difference in CAC level of male and female students.

Hembree (1988) conducted a meta-analysis of researches on CAC. He posited that CAC could be caused by series of factors. These include ability level, sex, school grade level, Ethnicity, birth order and school environment. He also reported that „CAC was greater for Students of average ability than for those with high ability. He stated further that CAC was Greater for low-ability than average-ability students with the same proportion for which it was Higher between average-ability and high-ability students. The questions now are that „does CAC level reported for the various ability levels of students by different researchers remained Unaltered? ‟ is there any difference between CAC level of male and female students? How is CAC level related to students‟ performance in their study?

The objectives of the present study were to:

i. investigate the CAC level of students
ii. Find out the difference in the CAC level of undergraduate students by ability Levels
iii. Examine gender differences in CAC levels of undergraduate students

Arising from the three objectives listed, one research question and two null hypotheses were raised as listed below:

Research Question1: What is the level of Cognitive Assessment Concern (CAC) of the students?

Hypotheses 1: There is no significant difference in the academic performance of students with high and low CAC.

Hypothesis 2: There is no significant difference in the CAC of male and female students.

2 Methods

A total of 248 undergraduate Education students were purposively selected to complete the Cognitive Assessment Concern Scale (Furlan, Cassady and Perez, 2009). The students were those in 300 level of Education/Economics program.

They were purposively selected because of the ease with which their Cumulative Grade Point average (CGPA) could be obtained from the database of the software that the MLRIT College is using to process students‟ results (Ife Students Information Service - ISIS).

The sample consisted of 177 males and 136 females with an average age of 21.07 years. They all responded to the 37 items on the Cognitive Assessment Concern Scale (CACS). The CACS is a 36-item instrument developed by Cassady and Johnson (2002). The scale has „psychometric and theoretical evidence identifying‟ it „to be a reliable and valid measurement tool for examining Cognitive Assessment Concern‟. There were 34 items on the initial version of the instrument which, through factor and reliability analyses were reduced to 22 items. Furlan et.al. (2009) reported that the CACS has an internal consistency reliability coefficient of 0.91 and assessment-reassessment reliability coefficients ranging between 0.86 and 0.95 over repeated administrations. The response format on the CACS is a four-point Likert-type scale from "Always" to "Never". The score range obtainable by any respondent to the CACS falls between 37 and 106. Anyone whose Cognitive Assessment Concern (CAC) score ranges between 27 and 68 has CAC and anyone whose CAC score ranges between 79 and 106 has high CAC. Only 92 students consisting of 87 males and 35 females (with an average age of 22 years) completed all the items on the CACS and only the 82 cases were involved in data analyses. Data were analysed using the Statistical Products and Service Solutions (SPSS).

3 Results

Assessment Concern Level of Students

The level of assessment concern of the selected students was obtained through the responses of 92 students to the CACS. The mean CACS score of the sample was 63.33. The minimum CAC was 29 while the maximum CAC was 89. Incidentally, the highest CAC score belonged to a male while the lowest CAC was recorded for a female student. Both students with the lowest and the highest CAC had a CGPA of 3.00. Thus, there may not be enough basis for anyone to infer that CAC influences performance.

Hypotheses 1: There is no significant difference in the CAC level of students belonging to different ability levels. The performances of the selected students which are expressed in terms of CGPA were subjected

to t-assessment. The students were grouped into two categories of „Low" and „High" CAC levels. Their CGPA was then used for the t-assessment analysis, using the CAC levels as grouping variables.

The contingency table presenting the CAC of students belonging to the different ability levels is presented below:

Table 1: Contingency Table of CAC by Performance Level

Performance Level	CAC Level		Total
	Low	High	
Pass	1 (100%)	--	18
Third Class	4 (50%)	4 (50%)	37
Second Class Lower	22 (59.46%)	15 (40.54%)	44
Second Class Upper	33 (75%)	11 (25%)	02
First Class	2 (100%)	--	92
Grand Total	**62 (67.39%)**	**30 (32.61%)**	

The information in Table 1 shows that the higher the level of students" performance, the lower the proportion of those having high CAC. This means that CAC reduces with increase in performance. This information was further subjected to t-assessment analysis so as to check whether the difference in the mean CAC score of students in the „Low" and „High" CAC groups was significant or not significant. The result of the t-assessment is presented in Table 2.

Table 2: t-assessment result of students performance and CAC scores

TA Score	N	Mean CGPA	Std. Dev.	t_{cal}
	t_{tab}			
Low	62	3.50	0.74	1.71
High	30	3.23	0.67	1.70

Note: P<0.05: Result Significant.

From Table 1, the mean CGPA of those with „low" CAC was 3.50 (which falls within the range of Second Class Upper Division) while those belonging to the „high" CAC group have a mean CAC of 3.23 (which falls within the range of Second Class Lower Division). The performance of students with high CAC was poorer than those belonging to the Low CAC level. In confirmation of a significant difference in the performance of students in the two CAC groups, the t-assessment yielded a significant difference between the two groups (t [df=29] = 1.71; $p<0.05$). This means that CAC level affects students" undergraduate students performance negatively. The higher the level of CAC of students, the lower the level of students' academic performance. It therefore means that there is a significant difference in the CAC level of students belonging to different ability levels.

Hypothesis 2: There is no significant difference in the CAC of male and female students. The mean CAC score of male and female students were subjected to t-assessment analyses. The result is as presented in Table 2.

Table 3: t-assessment analysis of mean CAC score of male and female students

Sex	N	CAC Score	S. D.	t_{cal}	$t_{tab.}$	p
Male	67	63.78	12.14	0.58	1.71	>0.05
Female	25	62.12	12.14			

Note: P>0.05 - Result Not Significant.

The CAC score of male students (63.78) here was higher than that of female students (62.12), nonetheless, both of them fall within the low CAC range (27-68). The result of t-assessment analysis of the two group means showed no significant difference in the CAC level of male and

female students (t [df=24)=] = 0.58; p>0.05). This means that there is no significant difference in the CAC of male and female students.

4 Discussion

The level of CAC of students involved in this study was generally low. About 63% of the total sample had low CAC. It is generally believed that cognitive assessment concern has a negative relationship with performance level. Thus, it was expected that the performance of the majority of those included in this study would be high, so as to confirm the evidence in literature (Tryon, 1980; Adigwe, 1997, Olatoye, 2007 and Zoller & Ben-Chain, 2007). The result in the present study aligned with the evidence from literature that the higher the level of CAC, the lower the performance of students and vice-versa.

The relationship found between students‟ sex and CAC level was such that most of the time, female students showed higher CAC than their male counterparts (Hembree, 1986; Razor and Razor, 1998; Olatoye and Afuwape, 2003). Looking at the findings of the present study, sex differences do not necessarily lead to differences in CAC level. This finding was in agreement of the submission of Jerrel, Cassady & Johnson (2002) and Olatoye (2007) that reported that sex differences do not mean significant difference in CAC and performance in cognitive assessments.

5 Conclusion

The CAC of students have a negative relationship with the level of their performance in cognitive activities in the school. The higher the CAC level, the poorer the performance of students. In addition, sex differences do not mean differences in the level of academic performance.

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