Research Article

Achievement Goals and Cognitive Self- Management among the Secondary School Students

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ABSTRACT

This study aimed to find out the different clusters that exists among the secondary school students with respect to the variables: Achievement Goal orientation and Cognitive Self-Management. 405 secondary school students were considered for the study. The achievement Goal orientation scale (AGOS) developed and validated by the investigator was used to measure the sub- constructs of Achievement goal orientation. To measure Cognitive self-management (CSM) the instrument developed by Rude (1980) was adapted. k- means clustering technique was used and the results showed three meaningful and distinct clusters, which were called as performance approach & moderate cognitive self- management (cluster 1), work-avoidance & low cognitive self- management (cluster 2) and mastery approach & high cognitive self- management (cluster 3) respectively. Majority of the secondary students had cluster 2 (36.5%) and cluster 1 (36.0%) profile. The study concluded that the students should be promoted to develop mastery approach and cognitive strategies which will facilitate academic success. Some of the practical implications of the study were discussed.

Keywords: Achievement goals, cognitive self-management, secondary school students, self-regulation, motivation

INTRODUCTION

To provide a multidimensional perspective to the social-cognitive approach, recent researchers have made use of profiling procedures to investigate the dynamics of motivational constructs such as goal orientation. Wang and Biddle (2001) combined several social-cognitive theories, such as achievement goal theory (Duda, 2001; Nicholls, 1989), sport ability beliefs (Dweck, 1999; Dweck & Leggett, 1988), and self-determination theory (Deci & Ryan, 1985;

Ryan & Deci, 2000) to identify subgroups of young people with varying motivational patterns in the physical activity domain. Chian & Wang (2008) conducted cluster analysis using achievement goal theory, perceived motivational climate, sport ability beliefs, and self-determination theory frameworks. The present study have examined distinct profiles among the secondary students in their achievement goal orientations and cognitive self-management using cluster analysis.

Achievement Goal Orientation

A prominent feature in motivation theory is the role of goals. Achievement goal orientation is a general achievement motivation theory, which refers to the fact that a type of goal towards which a person is working has a tremendous impact on how they pursue the goal. Achievement goals are commonly defined as the purpose of an individual's achievement pursuits (Dweck and Leggett, 1988). Numerous theoretical conceptualisations of achievement motivation have been proffered, but the following have emerged as the prominent theories: the achievement motive approach (Atkinson, 1974, McCleland, 1953), the test anxiety approach (Mandler and Sarason, 1952; Spielberger, 1972), the attributional approach (Weiner and Kukla, 1970), the self-worth approach (Covington and Beery, 1976), and the achievement goal approach (Dweck, 1986; Nicholls, 1984). The traditional achievement goal orientation theory was proposed by Nicholls, (1984). The 2x2 achievement goal orientations has four types of goal orientations: mastery approach, mastery avoidance, performance approach and performance avoidance. With the mastery approach, the focus is on the intrinsic value of learning. Students are geared towards the development of new skills, mastering the skill and understanding the content. Learning goals become a part of the learning process and are absolute. The students who are aiming towards the mastery approach are more likely to be more task-involved and if they fail they are not threatened (Ames, 1992). The second approach with goal orientation is the performance approach. The central theme with performance approach focuses on one's ability of doing better than the other students. Harackiewicz & Sansose (1991) indicated that in certain situations performance goals can develop the competence as well. Performance goals focus on the demonstration of competence relative to others, whereas mastery goals focus on the development of competence or task mastery. Performance goals are hypothesised to be linked to a negative set of processes and outcomes, which includes withdrawal of effort in the face of failure, surface processing of study material

and decreased task enjoyment. Mastery- based standards tend to focus individuals on learning, whereas performance based standards tend to focus individuals on performing (Dweck, 1986). Avoidance motivation represents the inherent focus on avoiding aversive object or event, failures and problematic psychological process. These avoiding process include: i) affective process such as anticipatory worry, emotionality, hyper-reactivity to negative feedback (Elliot & McGregor, 1999), ii) perceptual-cognitive process such as enhanced likelihood of threat appraisals, heightened vigilance, adherence to negative information and difficulty in focus (Covington, 1992), and iii) behavioural processes such as striving to ensure that negative outcomes are avoided and selecting easy task in which failure is not possible (Alicke and Sedikies, 2009; Elliot and church, 2002).

Cognitive Self- Management

Many researchers have showed that different goal orientations determine students' cognitive and behavioural reactions as well as academic performance (Ames, 1992; Ames & Archer, 1988; Valle et al., 2003). Cognitive self-management refers to "metacognition in action", which involves how metacognition helps to orchestrate problem solving in action (Idol &Jones, 1990). Cognitive self-management skill is often called executive control of behaviour (Paris, Lipson and Wixon, 1983) which refers to student's abilities and planning before they handle a task and make necessary adjustments and revisions during their work. Ability of the students to form good plans, to use a variety of strategies to revise and visit ongoing performances of executive cognition that helps guide and coordinates thinking (Baker & Brown, 1984). Cognitive self-management has a direct implication on student's performance. Individuals with different goal orientations manifest different motivational response patterns. Individuals who score high levels of metacognitive activity also scored high on learning approach (Schmidt & Ford, 2003}. When thinking skills are lacking poor decision making and planning result. It is an ability to think in abstract terms._ It is the highest stage of intellectual functioning. It is the way of controlling one's self or the ability of individual to control one's self. It includes different dimensions: positive focus, systematic problem solving, task-efficacy, reasonable goal setting, and self-blame.

Purpose of the study

In order to acquire deep understanding of the subject matter and to achieve the desired goal the students need to engage in different cognitive strategies like planning, integrating

information, acceptance of the challenging task, systematic approach to overcome the problems and progress towards the goals. Many researchers have reported that in order to engage in this kind of strategic behaviour, students need to be motivated to invest the required effort (Schunk & Zimmerman, 1989). The personal characteristics also act as predictors of success. Many researchers have been conducted on identifying motivational profiles. Several studies have been conducted on the relationship between goal orientations and cognitive variables. However, profiles based on goal orientations and cognitive attributes among the secondary students in Asian perspective was not conducted so far. Specifically, this study will address the research questions: What are the different cluster profiles of the secondary students based on their goal orientations and cognitive self-management?

Methodology

Subjects and procedure

In this study 405 secondary school students studying in class IX were selected by simple random sampling technique. Before the start of data analysis the cases were verified for missing data, outliers and extremes. The sample consisted of 405 secondary school students (N=405) of which 174 students were girls (43.00%) and 231students were boys (57.00%). 22.47 % of the students were in government schools, 39.01% in government aided schools and 38.52 % in private schools.

Measures

Achievement Goal Orientation scale (AGOS). The scale used to measure the goal orientations among the students was constructed and validated by the investigator. The tool developed by Was (2006) has 2x2 framework of the achievement goal orientations: mastery approach, work avoidance, performance approach, and performance avoidance. Following the conceptualisation by Nicholls et al'; {1989) three types of achievement goal orientations were assessed using AGOS. The questionnaire measures mastery approach, performance approach and work avoidance. It consists of 28 items and was based on a 3-point Likert scale with the options agree, somewhat agree and disagree. The content and construct validity of the tool was established. The reliability of the tool was established by test-retest method (product moment correlation coefficient= 0.77). The Cronbach's alpha coefficient for the mastery approach, performance approach and work avoidance were 0.82, 0.80 and 0.84 respectively.

Cognitive self- Management Test. The instrument considered to measure cognitive self- management was adapted tool developed by Rude (1980). The items were modified to suit the secondary school students. The tool was later subjected to content validity. The test-retest reliability correlation value was 0.81. There are 26 items measuring the sub-constructs: positive focus, systematic problem-solving, task-efficacy, self-blame and reasonable goal setting. The questionnaire has both positive and negative statement with a 3-point Likert scale-always, sometimes and never. The Cronbach's alpha coefficient for the sub- constructs positive focus, systematic problem-solving, task-efficacy, self-blame, and reasonable goal setting were 0.82, 0.78, 0.81, 0.79 and 0.85 respectively.

Results

Descriptive and correlational statistics

Table 1 displays the descriptive statistics and Pearson correlation coefficients of the variables: mastery approach, performance approach, work avoidance, positive focus, systematic problem solving, task-efficacy. self-blame, and reasonable goal setting. To ensure that there were no multidimensionality among the variables under study, the inter-correlation matrix was analysed. All the inter-item correlation coefficient lies below 0.6. The mean value shows that students have high mastery approach, task- efficacy, and systematic problem solving skill. The sample showed low performance approach. The students had moderate task-efficacy and systematic problem solving skill.

Table 1. Descriptives and Zero- Order Correlations Coefficients among the Measured Variables

	Variables	M(SD)	1	2	3	4	5	6	7	8
1	Mastery approach	2.41 (0.36)								
2	Performance approach	1.54 (0.27)	-.110·							
3	Avoidance goal	2.07 (0.34)	.113•	.469**						
4	Positive focus	2.23 (0.29)	-0.01	.214**	.283°*					
5	Systematic problem solving skill	2.46 (0.40)	0.069	0.03	-0.024	0.052				

6	Task efficacy	2.57 (0.37)	.446..	-.141..	-0.03	-0.057	_254**			
7	Reasonable goal setting	1.60 (0.41)	-.207**	-0.081	-.142**	-0.062	-.14s**	-.282**-		
8	Self-blame	1.77 (0.38)	-0.094	-.397..	-.323••	-.244**	0.021	-0.010	.266**	-

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

Cluster Analysis

A cluster analysis with three goal orientations and variables in cognitive self-management was conducted to identify the different profiles among the secondary school students. The non- hierarchical or k- means clustering technique was used in this study. In contrast to the hierarchical clustering techniques, non-hierarchical procedures do not involve tree-like construction process. Instead. They assign objects into clusters once the number of cluster is specified (Hair et al., 2009). The k-means clustering was selected based on two reasons. Firstly, k-means clustering technique is suitable for large sample size (N>lS0) as they do not require the calculation of similarity matrices among all the observations, but instead similarity of each observation to the cluster centroid. Secondly, this method directly works on the raw data, unlike the hierarchical agglomerative methods. The iterative process of classification minimises the variance within each cluster, ensuring maximum homogeneity within the cluster and heterogeneity among the clusters. In this technique several analyses are sometimes required which provides the most interesting results for interpretations(Aldendeferfer & Blashfield, 1984).

k-means clustering is intensely affected by the outliers. As all the observations were already screened for the outliers, it was proceeded with the transformation of raw scores into the standardized z- scores. All the variables were converted into z- scores and k-clustering technique was run with 10 iterations. The results showed three cluster solution. The three different group of students with different profiles in goal orientations and cognitive self-management could be clearly differentiated. Further, to confirm the validity of the three cluster solution, the F ratios that describe the significant differences between the clusters were computed and found statistically significant differences among the clusters. Hence, it was

decided to use three cluster solution. The Table 2 shows the descriptive statistics of the three cluster solution and the one-way ANOVA for the three distinct clusters is showed in Table 3.

Table 2. Cluster Means, Standard Deviations, and Z Scores for the Three Cluster Solutions

	Cluster 1 (N1=146)			Cluster 2 (N=lll)			Cluster 3 (N=148)		
	Mean	SD	z	Mean	SD	z	Mean	SD	z
1. Mastery approach	2.11	0.29	-0.83	2.53	0.33	0.33	2.62	0.22	0.57
2. Performance approach	1.75	0.24	0.79	1.56	0.22	0.09	1.36	0.19	-0.67
3.Avoidance Goals	2.03	0.26	-0.13	2.38	0.32	0.9	1.89	0.26	-0.54
4. Positive focus	2.1	0.3	-0.16	2.41	0.28	0.58	2.16	0.24	-0.28
5. Systematic problem solving skill	2.46	0.42	-0.39	2.31	0.37	-0.02	2.62	0.34	0.39
6. Task efficacy	2.65	0.31	-0.84	2.25	0.33	0.22	2.82	0.2	0.66
7. Reasonable goal setting	1.79	0.37	0.47	1.38	0.36	-0.51	1.56	0.4	-0.08
8. Self-blame	1.89	0.36	0.31	1.45	0.28	-0.84	1.9	0.32	0.33

Table 3. Cluster differences among the cluster variables

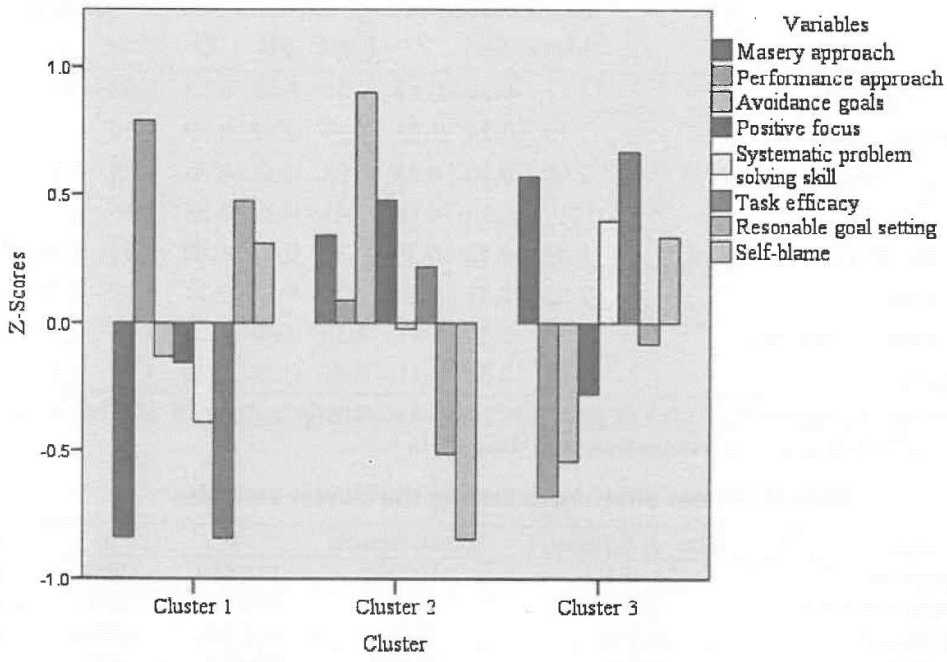
Variables	Sum of Squares	Mean Square	F	p	μ^2
1. Mastery approach	21.321	10.660	137.567	.000	.406
2. Performance approach	9.945	4.972	104.482	.000	.342
3. Avoidance Goals	15.846	7.923	101.442	.000	.335
4. Positive focus	4.493	2.247	29.885	.000	.129
5. Systematic problem solving skill	7.229	3.614	25.374	.000	.112
6. Task efficacy	24.107	12.053	152.486	.000	.431
7. Reasonable goal setting	10.880	5.440	37.239	.000	.156
8.Self -blame	15.723	7.861	74.474	.000	.270

At df (2.402), p <.01

The Figure 1 depicts the distinct three clusters. Cluster 1 was labelled as the "Performance approach & moderate cognitive self- management" group. There were 146 participants in this cluster (36.04%). The characteristics of this cluster were they had high

performance approach, very low mastery approach, and low avoidance goals. These students have considerably high reasonable goal setting compared to the other two clusters. The overall cognitive self- management is moderate among the cluster 1 profile. This cluster was called as performance approach & high cognitive self- management cluster. The second cluster had distinctively very high avoidance goals and low cognitive self- management. These students had considerable performance approach and positive focus. This cluster was called as avoidance goals & low cognitive self- management group which had 111 participants (27.41%). The final cluster was considered as "Mastery approach &high cognitive self-management" group. There were 148 participants (36.54%) in this cluster. The characteristics of this cluster were they had high mastery approach and high cognitive self-management. These students had high task- efficacy, systematic problem solving skill and self- blame compared to the other two clusters.

Figure 1. The three distinct Cluster profiles identified by k- means clustering analysis



Findings

The mean, standard deviation, and correlations between the key variables of the overall sample is presented in the Table 1. Overall, the participants had high mastery approach, task-efficacy and problem solving skill. They had moderate avoidance goals and low performance

approach, reasonable goal setting and self- blame. The purpose of the study was to identify the distinct clusters among the students in the key variables. Non- hierarchical cluster solution was used in this study and the results of the present study showed that there are three clusters among the secondary school students with distinct achievement goals and cognitive self- management profiles. The three clusters were labelled as i) Cluster 1- Performance Approach & Moderate Cognitive Self- Management, ii) Cluster 2- Avoidance goals & Low Cognitive Self- Management and, iii) Cluster 3- Mastery Approach & High Cognitive Self- Management.

The Table 3 shows the cluster composition and the descriptive statistics of the three clusters across all the key variables. The cluster 1 was called as performance approach & moderate cognitive self- management based on the mean and z- scores. Cluster 1 consisted of 146 students (N= 146, 36.04%). The z- score showed this cluster had very low mastery- approach and low avoidance golas. This agreed with the research findings of Wang (2001) which showed a cluster profile with high performance/low mastery approach among the polytechnic students. However, the present study results vary from the research findings of Liu and her colleagues (Liu et al., 2009) which showed the profiles in terms of high mastery/ high performance and low mastery/ low performance. The present study categorises student profiles based on achievement goals and cognitive self- management unlike the other two studies. The second cluster was characterized as avoidance goals& low cognitive self- management. This group of students (N=lll, 27.40%) had very low performance- approach and low mastery- approach and had better positive focus but very low reasonable goal setting and self- blame. The findings of Roebken {2007) showed that three cluster solution with the first cluster consisted of undergraduate students with an above average mastery and performance and a low performance goals. The third cluster consisted of N= 148 {36.54%) and these students had very high mastery- approach, very low performance- approach and avoidance goals characteristics, This cluster showed high cognitive self- management with high mean in task-efficacy, systematic problem-solving, and self- blame. However, these students had very low positive focus and reasonable goal setting. The cluster profile agreed with the findings of Middleton & Midgley {19970 which confirmed that students did not have one single goal orientation, but rather various goal orientations at different levels. The different goal orientations need not be considered complimentary or opposites. Meece and Holt (1993) showed that students can be high in mastery as well as performance approach goals. Valle et al., (2003) acknowledged

students can pursue mastery, performance, or work- avoidance orientation simultaneously. Individuals with multiple goal orientations manifest different motivational and behavioural response patterns. Individuals who score high on learning (mastery) goal orientations tend to perceive difficult task as challenging not threatening (Elliot & McGregor, 2001), set high performance goals (Lee, 1989), engage in high levels of metacognitive activity (Schmidt & Ford, 2003) and perform well (Schmidt & Ford, 2003).

Discussion

These study show potential implications for the teachers to understand that student will have mixture of goal orientations. The study had examined the goals and cognition. Given that the students do pursue multiple goals, it is very important to understand to what extent each goal orientation is high, moderate or low among the students. So, the teachers should have knowledge of how the goal orientations are developed, the factors that promote mastery approach, and the classroom climate which facilitate mastery approach and cognitive strategies.The results showed comparable number of students in cluster 1 (N= 146) and 3 (=-148). The students who prefer avoidance goals had low cognitive self- management (N=111). The students with cluster 3 characteristics tend to be under-achievers and will set low goals for themselves, and perform poorly. The profile clearly depicts that these students attribute their failures to external factors rather that internal factors. These students were mostly related to work withdrawal behaviours and have low- motivational level to engage and complete the task. The present study confirmed that students with high mastery approach also had relatively high cognitive self- management. To encourage mastery approach in the classroom, teachers should practice "TARGET" principles, which was originally proposed by Ames (1992) to increase mastery goal structures in the classroom. TARGET is an acronym of task, Authority, Recognition, Grouping, Evaluation and Time (Deemer, 2004). In school and in learning settings, the motivation enhancement is often related to extrinsic incentives rather than developing intrinsic motivation or internalization of the reinforced behavior. The motivational component is linked to the student's cognitive engagement, self- efficacy and academic performance. Students who believed they are capable are more likely to integrate cognitive strategies in attaining academic success. Teaching students about the self- regulatory and cognitive approaches to apply in their academics will be more influential in the academic performance of the students.

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