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**CLUSTER PROFILES OF ACHIEVEMENT GOAL  
ORIENTATIONS AND WELL-BEING AMONG ADOLESCENTS**

Priyadarshini Muthukrishnan (a)\*, Thomas Alexander (b)

\*Corresponding author

(a) SEGi University, Kota Damansara, Selangor, Malaysia, priyakrishnan.mail@gmail.com

(b) St. Xavier's college of Education, Palayamkottai, Tamil Nadu, India, tomalexsj@gmail.com

***Abstract***

Assessing students' achievement goals and their well-being is important to improve the academic settings and to facilitate the holistic development of the students. This study aimed 1) to identify the distinct cluster profiles of achievement goals and well-being, and 2) to find out any significant gender differences among the identified clusters profiles and the secondary school students. 404 students were selected for the study and the sample completed the Achievement Goal orientations inventory and Student well-being scale, both were developed and validated by the investigator. k-means clustering analysis confirmed that three distinct clusters could segregate the students based on their goal orientations and well-being. The results showed that the three goal orientations were complimentary. The first cluster with 119 students had high performance approach and low well-being. This confirmed that the students demonstrating learning as a pursuit of competence have low well-being. The second cluster showed 129 students with mixed achievement goals and moderate well-being. The final clusters consisted of 156 students with mastery approach and high well-being. The chi-square analysis showed that there was significant difference among the cluster profiles across gender. The findings demonstrated that student disposition towards mastery goals confirmed better well-being than students displaying performance goals.

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**Keywords:** Achievement goals; cluster analysis; psychological well-being; mastery approach; performance approach; work-avoidance.



## 1. Introduction

Adolescence is a critical developmental period which involves significant changes in the physical, social, emotional and cognitive domains. The students at the secondary schools spend substantial amount of time and effort in their academics and self- development. Their well- being at this crucial period is an important concern. Studies have identified that when an individual fail to fit to the environment showed decline in academic performance, school adjustment, well- being, decreased academic value and interest (Anderman & Anderman, 1999; Eccles & Roeser, 2009). Urdan (1997) confirmed that students goal orientation demonstrated variation in their achievement behaviour. Dweck (1986) suggested that the endorsement of certain goals is associated with different patterns of coping style and emotions. Most of the research findings have confirmed that the pursuit of mastery goals was associated with better well- being and performance approach with the maladaptive and depressive symptoms among the students. Previous research findings confirmed that individual's well- being is associated with the kind of goals they strive to achieve, their perceived ability, cognitive and behavioural strategies they adopt in the pursuit of their goals (Covington, 1992). The students' ability in risk taking behaviour publicly and taking advantage of the opportunities to improve their competence (Elliot & Dweck, 1988) showed positive adaptive patterns in academic tasks. Kaplan and Maehr (1999) concluded that achievement goals were associated with cognitions and emotions and influence the learning and well- being of students.

### 1.1. Achievement Goal Orientations

Dweck and Leggett (1988) defined achievements goals are the purpose of an individual's achievement pursuits. Achievement goal orientation describes student's general orientation towards learning, that is the kind of goals they choose to attain the kind of outcomes they prefer (Niemivirta, 2002). Many researchers have identified three distinct goal orientations that students have towards learning and studying: mastery approach, performance approach and work avoidance (Ames, 1992; Dweck & Leggett, 1988). The central and most distinct distinctions drawn in the goal orientation theory has been between mastery and performance goals. Mastery goals focus on the development of competence or task mastery while the performance goal refers to engaging in academic related tasks for the purpose of demonstrating one's own competence. Mastery- based standards motivate individuals on learning, whereas performance- based standards motivate individuals on performing (Dweck, 1986). The endorsement of mastery goals has shown to be connected with positive affect, adaptive behaviour of learning, coping, and behaviour, interest, enjoyment, and persistence after failure (Elliot, McGregor & Gable, 1999). Individuals with performance goals have shown withdrawal of effort when faced with failure, surface processing of study material rather than deep processing or mastery of content and decreased task enjoyment. Performance approach leads to negative set of processes and outcomes. Many researches have maintained a theoretical distinction between the mastery, performance goals and work avoidance goals (Elliot, 1999). In contrast to achievement goals, students with work avoidance tendency consistently avoid putting effort or tries to engage in a task with the least effort. Students with work avoidance orientation avoids challenging tasks. Avoidance motivation represents the inherent focus on avoiding aversive object or event, failures and problematic psychological process. These avoiding process include behavioural processes such as striving to ensure that negative

outcomes are avoided and selecting an easy task in which failure is not possible (Alicke & Sedikies, 2009; Elliot & Church, 2002).

### **1.2. Adolescent Well-being**

According to World Health Organization (World Health Organization, 1948) well-being is complete physical, psychological, and social well-being and not just absence of disease. According to Dunn (1959), wellness is a dynamic process which leads to maximise an individuals' potential. Hettler (1980), viewed wellness as an active process through which the individual becomes aware of towards a more successful existence. Goss & Cuddihy (2009) considered wellness as an active process through which an individual is aware of one-self and finds balance and integration across multiple life dimensions. Ahmed et al., (2017) confirmed that adolescents who engage in regular physical activity have high self-esteem and task orientation compared to the inactive adolescents.

## **2. Problem Statement**

The adolescence stage is the period of stress and storm. The students at this stage focus much on their academics, and their well-being is a neglected concern. The earlier studies have identified that the pursuit of goals has influence on the well-being of the individuals. Kaplan & Maehr (1999), findings showed that goal orientation is related to emotions and cognitions and it contributes to the psychological well-being. Several theories have indicated that people's personal goals and the reasons to pursue their goals play an important role in the development and maintenance of well-being of an individual (Little, Salmela-Aro, & Philips, 2007). Personal goals that are perceived as difficult to be achieved and are appraised stressful have been found to be associated with depressive symptoms (Salmela-Aro & Nurmi, 1996). Students endorsing dominantly mastery goal approach orientation have demonstrated adaptive pattern of motivation and achievement (Meece & Holt, 1993; Roser et al., 2002). However, Pintrich (2000) found that those with high mastery and performance approach have showed the highest level of positive affect and those characterised by high performance and low mastery have reported less positive affect. The previous research findings have identified the relationship between goal orientations and well-being, however studies using cluster analysis to segregate the secondary school students based on their goal orientations and well-being have not explored in depth. This study will provide more evidences and expand the knowledge in this research area.

The present study adheres to the multiple goal perspectives of the achievement goal orientation theory and well-being. Current research has considered trichotomous achievement goal model with three types of goal orientations: mastery approach, performance approach and work avoidance. The current research views well-being of the adolescents as a multidimensional phenomenon, integrating five dimensions such as physical, mental, emotional, social and spiritual well-being. This provides a holistic approach and interconnectedness of all the dimensions. This research explores the goal orientations and well-being among the secondary students and aimed to categorise the students into homogenous groups based on their goal orientations and their well-being.

### **3. Research Questions**

The current research attempted to examine the following research questions:

- 3.1. What are the distinct cluster profiles in achievement goal orientations and well-being among the secondary school students?
- 3.2. Is there any significant association between gender and the different cluster profiles?

### **4. Purpose of the Study**

The main purpose of the study was to investigate the relationships between the three types of goal orientations and the dimensions of the well-being using cluster analysis. In the current study cluster analysis was carried out to categorise the students into homogenous sub-groups which provided the information about how their goal orientations and well-being were interrelated. Cluster analysis is a multivariate statistical analysis which identifies the underlying common characteristics and classify the sample into homogenous groups

### **5. Research Methods**

#### **5.1. Participants**

A total of 404 secondary students in Grade 9 participated in the study. The study was conducted at Tirunelveli District in India. The research adopted simple random sampling technique to select the sample. The sample was chosen from 15 different schools and consisted of 174 girls (43.06%) and 230 boys (56.94%).

#### **5.2. Procedure**

Before the data collection procedure, permission from the school principals and students were obtained. The students' willingness to participate in the study was given due consideration. A meeting was held with the students to inform the objectives of the research and the confidentiality of the data collected from them. The students were informed that the response to the questionnaire do not have fixed right or wrong answers. They were encouraged to complete the questionnaire and to provide authentic data. The students responded to 70-item survey questionnaire and the average time taken for completion was 40 min.

#### **5.3. Measures**

Achievement Goal Orientation scale (AGOS). The scale used to measure the goal orientations among the students was constructed and validated by the investigator. 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 has 28 items and is 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.

**Student Well- being Scale.** The research instrument to measure well-being of the students was developed and validated by the investigator. The student well-being scale was developed based on Hettler (1980) six-dimensional model of well-being. The scale measure well-being under five dimensions: physical, mental, emotional, social and spiritual well- being. The questionnaire has 42 items and each item was responded in a 3- point Likert scale- always, sometimes and never. The reliability and the validity of the scale was established. The Cronbach's alpha coefficient for physical, mental, emotional, social and spiritual well- being were 0.76, 0.81, 0.75, 0.80 and 0.82 respectively

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## **6. Findings**

### **6.1. Descriptive and correlational statistics**

Table 01 displays the basic descriptive statistics and Pearson correlation coefficients of the variables: mastery approach, performance approach, work avoidance, physical, mental, emotional, social and spiritual well- being. Before the start of data analysis, the cases were verified for missing data, outliers and extremes. To ensure that there was no multidimensionality among the variables considered for the study, the inter-correlation analysis was carried out. All the inter-item correlation coefficient lies below 0.6 which confirms the uni-dimensionality of the variables. The mean value shows that students have high mastery approach, emotional well-being and spiritual well-being. The sample showed low performance approach. Table 01 reports zero order correlations among the variables. The correlational statistics within the dimensions of achievement goal orientations, within the dimensions of well- being, and between goal orientations and well-being agreed with the earlier findings. Most importantly, the relationship between the different dimensions of goal orientations were striking. The correlation with respect to mastery goal was significant and negatively correlated to the performance goals. The correlation between mastery goal and physical, mental, emotional, social and spiritual well- being were significant and positive, while between performance approach and physical, mental, emotional, social and spiritual well- being were significant and negative. The inter-correlation among the dimensions of well- being were positively correlated.

**Table 01.** Descriptive and Zero- order Correlations among the Variables

Variables	1	2	3	4	5	6	7	8
Mastery approach	-							
Performance approach	-.110*	-						
Work avoidance	.114*	.472**	-					
Physical well being	.490**	-.286**	-.067	-				
Mental well being	.351**	-.117*	.051	.470**	-			
Emotional well being	.364**	-.040	.072	.350**	.514**	-		
Social well being	.330**	-.397**	-.284**	.399**	.279**	.132*	-	
Spiritual well being	.422**	-.025	.081	.433**	.537**	.518	.169**	-
<b>Mean</b>	2.41	1.54	2.07	2.01	2.48	2.47	2.05	2.61
<b>SD</b>	0.36	0.27	0.34	0.31	0.32	0.32	0.50	0.35

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

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

## 6.2. Cluster Analysis

The non-hierarchical or k- means clustering technique was used in this study. In this technique objects will be assigned into clusters once the number of cluster is specified (Hair et al., 2009). The k-means clustering analysis was selected for two reasons: Firstly, it is suitable for large sample size (N>150) and 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 (Aldenderfer & 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 the dimensions of well-being could be clearly differentiated. Hence, it was decided to use three cluster solution. The Table 02 shows the descriptive statistics of the three cluster solution.

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. The difference among the three clusters and the variables is represented in the Table 03.

**Table 02.** Cluster Means, Standard Deviations, and Z Scores for the Three Cluster Profiles

Variables	Cluster 1			Cluster 2			Cluster 3		
	Mean	SD	Z	Mean	SD	Z	Mean	SD	Z
Mastery approach	2.05	0.31	-0.99	1.40	0.27	0.12	2.64	0.23	0.65
Performance approach	2.54	0.21	0.58	2.14	0.22	-0.51	1.10	0.28	-0.01
Work avoidance	2.09	0.26	0.05	2.45	0.31	-0.27	1.98	0.40	0.19
Physical well being	1.72	0.23	-0.94	2.03	0.25	0.06	2.22	0.23	0.65
Mental well being	2.25	0.31	-0.72	2.39	0.23	-0.28	2.73	0.19	0.79
Emotional well being	2.20	0.29	-0.81	2.43	0.25	-0.13	2.71	0.20	0.75
Social well being	1.74	0.33	-0.63	2.14	0.47	0.16	2.23	0.53	0.33
Spiritual well being	2.32	0.27	-0.83	2.70	0.25	-0.29	2.92	0.18	0.88

Notes. Mean and z- scores of +/- 0.5 or greater were used as criteria to describe whether a group scored relatively high or low in comparison with their peers.

**Table 03.** One- way ANOVA among the three distinct clusters and the variables

Variables	Sum of Squares	Mean Square	F	p	$\eta^2$
Mastery approach	403.603	92.401	169.344	.000	.458
Performance approach	397.968	36.736	45.396	.000	.185
Work avoidance	403.030	7.446	7.692	.001	.037
Physical well being	400.378	86.683	153.120	.000	.433
Mental well being	396.134	84.028	147.735	.000	.424
Emotional well being	387.875	83.682	152.175	.000	.431
Social well being	396.550	33.945	41.416	.000	.171
Spiritual well being	393.217	107.344	241.109	.000	.546

At df (2,401),  $p < .01$

The Figure 01 depicts the three distinct clusters. Cluster 1 was labelled as the “Performance approach and low well-being” group. There were 119 participants in this cluster (29.45%). The characteristics of this cluster showed high performance approach with very low level of mastery approach, physical, emotional, mental, social and spiritual well-being. The cluster is named as “Competitive students with low well-being” group. The second cluster identified had mixture of goal orientations and overall well-being is moderate. This cluster was called as “mixed goal orientation with moderate well-being” group, which had 129 participants (31.93%). The final cluster had 159 students (39.35%) who had distinctly high level of mastery approach and high well-being. This cluster was considered as “Mastery students with high well-being” group.

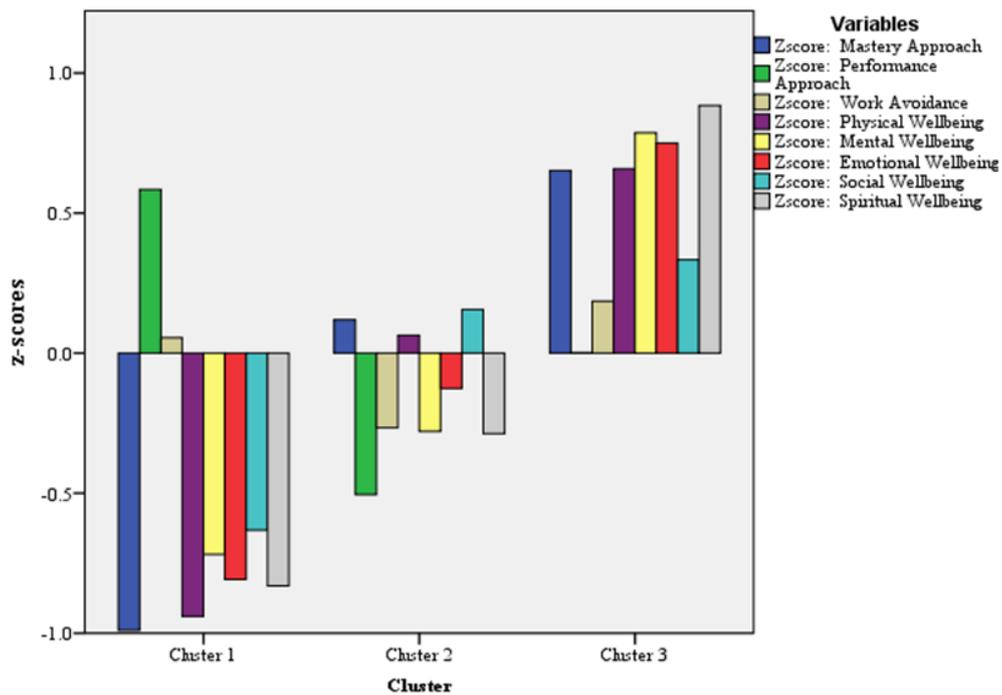


Figure 01. The Three Cluster Profiles identified by Cluster Analysis

Table 04. Descriptive Statistics with respect to Gender and the Three Clusters

Cluster	Gender		Total	
	Boys	Girls		
1	Count	76	43	119
	% within Cluster Number of Case	63.9%	36.1%	100.0%
	% within Gender	33.0%	24.7%	29.5%
	% Total	18.8%	10.6%	29.5%
2	Count	82	47	129
	% within Cluster Number of Case	63.6%	36.4%	100.0%
	% within Gender	35.7%	27.0%	31.9%
	% Total	20.3%	11.6%	31.9%
3	Count	72	84	156
	% within Cluster Number of Case	46.2%	53.8%	100.0%
	% within Gender	31.3%	48.3%	38.6%
	% Total	17.8%	20.8%	38.6%
Total	Count	230	174	404
	% within Cluster Number of Case	56.9%	43.1%	100.0%
	% within Gender	100.0%	100.0%	100.0%
	% Total	56.9%	43.1%	100.0%

To answer the research question two, the chi-square test was conducted using the three cluster profiles and gender. The chi-square statistics showed there was significant association among the three cluster profiles and gender of the secondary students,  $\chi^2(2, N=404) = 12.039$  and,  $p = .002$ . Table 04 shows the cluster composition across the gender.

### 6.3 Discussion

The results of the current study have contributed to the existing volume of literature related to achievement goal orientations and well-being of the secondary students. The first research question of the study was to identify the distinct clusters among the students in the key variables. The mean, standard deviation, and correlations between the key variables showed that the participants had high mastery approach, mental, emotional and spiritual well-being. The correlation results showed mastery goal was significant and negatively correlated to the performance goals and supported the theoretical background of the achievement goal orientations theory. The findings were in line with the findings of Meece & Holt, (1993), that personal task and ego goals were not correlated and contributing further evidence in support of the theoretical assumption that these two goals are not merely polar opposites but rather orthogonal constructs. The findings showed that while mastery goal was significant and positively correlated with physical, mental, emotional, social and spiritual well-being, performance approach was significant and negatively correlated with physical, mental, emotional, social and spiritual well-being.

The results revealed by cluster analysis were striking. Non-hierarchical cluster solution was used in this study and the results of the present study showed that there were three clusters among the secondary school students with distinct achievement goals and well-being patterns. The three clusters were labelled as i) Cluster 1- performance approach & low well-being, ii) Cluster 2- mixed goals & moderate well-being and, iii) Cluster 3- mastery approach & high well-being. The correlational results demonstrated that students pursuing mastery approach orientations have better well-being compared with students pursuing performance approach and mixed goals. The cluster 1 was called as performance approach & low well-being based on the mean and z-scores. 119 students (29.45%) were identified to have cluster 1 characteristics. This cluster showed negative z-score in performance approach compared to the other two clusters in this research. Kaplan & Maehr (1999) showed that emphasis on relative ability and competition leads to negative academic and general well-being, while emphasis on personal goals leads to positive well-being. Tuominen, Salmela-Aro et al. (2008) results were performance-oriented students reported lower self-esteem, higher levels of depressive symptoms, as well as higher levels of cynicism and inadequacy than mastery-oriented students. Also, performance-oriented students were less committed to and displayed less effort in their educational goals. These students follow the well-being route in the classroom and are more vulnerable to potential failures and setbacks in their studies than their mastery-focused or success-driven classmates (Boekaerts & Niemivirta, 2000). The z-score showed this cluster had very low mastery-approach and low avoidance goals. This agreed with the research findings of Wang & Biddle (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.

Cluster 2 was called as mixed goal orientations and moderate well-being. 129 (31.9%) students were identified with this pattern. The mean scores revealed that these students had lower well-being than the mastery students whilst better well-being than the performance goals. This finding agreed with Tuominen, Salmela-Aro et al. (2008), identified disengaged students who scored relatively low on all achievement goal orientations and did not emphasize learning or performance, nor did they seek to avoid achievement situations. The disengaged students displayed higher self-esteem and reported lower levels of depressive symptoms, cynicism, and inadequacy. The current study findings resembled with Roeser et al. (2002) who identified similar profile with students with poor academic value, relatively positive academic efficacy and mental health. It is confirmed that these students are detached from academic tasks and their well-being indices are not predicted by their success in academic tasks but related to non-academic settings. Seifert (2004) labelled these students with this pattern as ‘bright but bored’.

Majority of the students (N=159, 39.35%) were categorized under cluster 3 and displayed high level of mastery approach and high well-being. As anticipated, the results were consistent with earlier findings that students have dominant tendency to adopt mastery approach (Niemi-virta, 2002; Tuominen-Soini et al., 2008, 2011). The findings agreed with Kaplan & Maehr (1999) who reported that the pursuit of mastery goals was positively associated with general indices of wellbeing (e.g., positive peer relationships, good impulse control, and positive school-related affect) among sixth grade students. Mastery oriented students are characterised with higher level of well-being. In line with the previous research findings (Bråten & Olaussen, 2005; Meece & Holt, 1993; Sideridis & Kaplan, 2011; Turner et al., 1998) which clearly indicated that striving for self-improvement and growth is associated with an adaptive pattern of general and academic well-being and also with high levels of commitment and effort.

To answer the second research question, the chi-square statistics was used. So far, very little research had been considered on the various achievement goals and the demographic variable (Midgley et al., 2001). The Chi-square analysis among the cluster variables and gender showed significant association among the variables. The research showed that most of the boys (35.7%) had characteristics of cluster 2 and majority of the girls (48.3%) had the cluster 3 profile. The findings of the present study were congruent with the findings of Brdar et al., (2009) which showed boys were more likely to adopt avoidance goals, while girls were more likely to pursue mastery goals. However, Meece & Holt (1993) and Niemi-virta (1996), concluded that performance approach was equally frequent among male and female students.

## 7. Conclusion

The current study explored the cluster profiles among the adolescents' goal orientations and well-being. k-means clustering technique had identified three potential clusters which differed from each other distinctly in terms of their goal orientations and well-being. The results clarified that adolescents who had mastery approach had better well-being. The chi-square analysis showed most of the girls had mastery approach and better well-being whilst boys had mixed goals and moderate well-being. Given the findings of the present study, the teachers and teacher educators should understand the different profiles and emphasise the importance of mastery learning goals and establish a learning environment characterized by a high mastery goal orientation. The findings of the study were congruent with the earlier findings and the study highlights the need for mastery approach goal orientation among the adolescents. The teaching,

learning and assessment procedures should facilitate intrinsic value of learning, development of new skills and deep processing learning strategies.

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