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Development of Academic Goal Orientation Inventory for Senior Secondary School Students of Kerala

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Abstract

Research interest in achievement motivation and its correlates has grown in recent years. Though there are thousands of studies on goal orientation, the number of instruments to identify goal orientation based on four-fold model viz., performance approach goal orientation (PAP), performance avoidance goal orientation (PAV), mastery approach goal orientation (MAP) and mastery avoidance goal orientation (MAV) are rare, especially in the non-western education contexts. This paper describes the development of academic goal orientation inventory for adolescent students. Data from 832 higher secondary school students of Kerala chosen through stratified random sampling were factor analyzed to confirm that the responses on the new inventory follows the 2x2 achievement goal-orientation framework proposed by Pintrich (2000) and Elliot and McGregor (2001). This 15 item inventory reliably and validly identifies four goal orientations.

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Motivational process has a significant role in achievement situations, is accepted by psychologists for long years. In 1986, Dweck described motivational processes as having adaptive and maladaptive motivational patterns. These patterns of motivational processes were depicted as goal orientation. Goal orientation is a disposition toward developing or demonstrating ability in achievement situation (Dweck, 1986). Learners' cognitive strategies, affective responses and achievement behavior are affected by their goal orientation. The dominant theoretical approaches that explains goal orientation in educational situations identifies two types of goal orientation, namely learning orientation (mastery orientation) and performance orientation.

Mastery orientation denotes a personal intention to learn, and to improve one's ability and skills. Such students are not concerned of what others would think about their competence. They probably set challenging goals, and persist when encountered with difficulties. In performance goal orientation, the subjects strive to demonstrate their competence and expertise or to avoid unfavorable judgments about their competence, in achievement situations. Performance goal orientation is a personal intention to be a competent person in front of others. Such students very much bother about measuring up their performance , and focusing on getting good grades, being the first in class and like that (Dweck, 1986; Ames, 1992). Later researches evidenced that goal orientation affects cognitive and affective behaviors (Kadivar, Kavousian, Arabzadeh, & Nikdel, 2011; Gonida, Voulala, & Kiosseoglou, 2009; Howell & Watson, 2007). Yet, literature evidence that studies following Dweck's theory has given less attention to performance avoidance goals. Most of the earlier studies followed mastery goals against performance goals dichotomy, and hence many earlier instruments purporting to delineate goal orientation of learners did so for performance vs. mastery dichotomy, and ignored approach - avoidance dimension. This study intends to fill the gap especially with focus on goal-orientation of learners in non-western school contexts.

As early as 1996 Elliot and his colleagues recognized the shortcomings of the dichotomous nature of goal orientation. They proposed an alternative framework with

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approach and avoidance division for performance goal orientation. However, as per this framework, only performance avoidance goal orientation has negative effects (Elliot & Harackiewicz, 1996).   Shortly, the three fold goal orientation was added with mastery avoidance orientation by Pintrich in 2000. Learners with performance approach orientation focus on being superior, winning and being the best. They use normative standards in getting highest grade and winning the competition. Learners with performance avoidance orientation focus on avoiding looking stupid and avoiding losing. They may use standards of normalcy, not being the worst, ensuring not to get the lowest grade or being described as the slowest. Mastery approach orientation learners focus on the mastery of the task, learning and understanding. Such learners use standards of self-improvement, progress and deep understanding of the task. Conversely, learners with mastery avoidance orientation focus on avoiding misunderstanding and their attempt is not on mastering the task but on not being wrong and not doing it incorrectly (Elliot & Harackiewicz, 1996; Pintrich, 2000; Elliot & McGregor, 2001). In spite of the 2x2 achievement goal-orientation framework, and increasing number of researches in goal orientation or achievement motivation most of the studies in the area are still employing the three dimensional construction of goal orientation. This is partly owing to instruments that reliably and validly sort learners into typology of 2x2 goal orientation framework.

Previous goal orientation instruments

This study is to develop a self-report inventory, to identify the four goal orientations of adolescent students, namely performance approach goal orientation, performance avoidance goal orientation, mastery approach goal orientation and mastery avoidance goal orientation. The relevance of a new instrument is evidenced from a review of previous goal orientation instruments. An array of achievement goal orientation measures emerged in the literature especially in domains like academic learning, organizational psychology and in sports. Many of these instruments focused on the dichotomous nature of the construct (Duda, 1989; mills, 1997; Button et al., 1996), some followed three dimensions (Vandewalle, 1997; Midgley et al., 1998). A review of literature failed to identify an instrument that follows 2x2 achievement goal framework other than Achievement Goal Questionnaire (AGQ) by Elliot and McGregor (2001), a revalidated version of which is available also in 2008 (Elliot & Murayama).

After fourteen years of goal orientation researches, in 2001, Elliot and McGregor published an instrument that followed 2x2 achievement goal framework. The 12 item Likert type scale (7 point) included three items for each goal orientations. Validity of this four goal orientation construct was confirmed using factor analysis. It is described to have excellent internal consistencies, for each of the four goal orientations. The structural validity and predictive utility of the test were re-examined by Elliot and Murayama (2008).

In 1989, Duda developed an instrument TEOS (The Task and Ego Orientation in Sports Questionnaire) designed specifically for sports context with a revision in 1995. Mills (1997) adapted Duda's 13 item version to educational context. These Questionnaires by Duda and Mills too considered only two dimensions of achievement goal construct - performance and mastery. Mills had reported 0.77 and 0.84 internal consistency indices for learning goal orientation and performance goal orientation scales respectively.

Button et al. developed a bipolar framework instrument for goal orientation in work domain (1996). It consists of sixteen items, with equal number of items to measure learning goal orientation and performance goal orientation. Internal consistency of this scale ranged from 0.81 to 0.85 for learning goal orientation and 0.68 to 0.77 for performance goal orientation (Butten et al., 1996).

Work Domain Goal Orientation Instrument developed by Vandewalle (1997), followed the three typology nature of goal orientation. This 13 item scale has five learning goal

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orientation, four performance prove goal orientation and four performance avoidance goal orientation items. Reported internal consistencies range from r=.88 to .89 for learning goal orientation, 0.84 to 0.85 for performance prove goal orientation and r=.83 to .88 for performance avoidance goal orientation. Test retest reliabilities r=.66, r=.60 and r=.57 respectively are also reported.

In 1998 Midgley et al. developed Patterns of Adaptive Learning Survey (PALS); based on three dimension construct of achievement goal orientation. The test has reported adequate internal consistencies for each subscale. Thus, it is striking that all the above cited measures consider only two dimensional or three dimensional construct of goal orientation. It is further questionable, of how valid the identification of goal orientation of learners in school context of countries like India can be if one applies instruments developed in remarkably different academic contexts of better developed countries? This study is also to validate the 2x2 framework of goal orientation of learners in school learning setting in Kerala.

Method

Planning of Goal Orientation Inventory

The new inventory is developed on the basis of achievement goal theories of Dweck (1986), Ames (1992), Elliot and Harackiewicz (1996) and Pintrich (2000). This instrument follows a different pattern from the existing instruments. Every inventory-item is given in the forced choice ipsative item format. This instrument on goal orientation is domain specific to academic contexts and academic achievement context. In each inventory-item, four categories of responses indicative of as many goal orientations are given against a stem statement. The respondents need to select their preferred category of response against each statement. A sum score is obtained for each of the four goal orientations. The highest of total scores of the four categories identifies the preferred goal orientation.

Item Writing

The format for the instrument is finalized after going through an extensive literature survey. Characteristics of four goal orientations were used as the basis for the construction of four categories of responses in the tool. There are four response categories viz., *reach the top among the group* (PAP), *be not amongst the most backward in the group* (PAV), *understand in detail and be aware of it* (MAP) and *understand essentials without much errors* (MAV), per item. A brief description for these response categories is given in the instrument, such that subject can choose specific goal orientations (see in appendix). The inventory in its draft form contains total seventeen incomplete statements grouped into three sections, viz., 1. Learner's aims when involving in different academic activities, 2. Learner's effort when involving in different activities, and 3. Learner's basis for self-evaluation in different academic contexts. The original tool was developed in Malayalam.

E.g.

> When selecting a course for study my intention is to… (reach the top among the group , be not amongst the most backward in the group, understand in detail and be aware of it or understand essentials without many errors)
>
> When Teacher returns the answer-sheet my basis for self-evaluation of my performance is…(reach the top among the group, be not amongst the most backward in the group, understand in detail and be aware of the topic or understand essentials without many errors)

Responses can be "Reach the top among the group" (PAP), "Be not amongst the most backward in the group" (PAV), "Understand in detail and be aware of the topic" (MAV) or "understand essentials without much errors" (MAV). The respondent is to select the response category that s/he think is most appropriately describing his or her goal while involving in different academic activities, while making effort in different learning activities, and while self-evaluating oneself in academic contexts.

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Scoring

On each statement the selected response category is given a score of one and other categories are given zero score. Thus for each of the 17 stem statements, there are four alternative responses and each response is taken as an item during scoring, item analysis and principal component analysis of the corresponding goal orientation. For each student category-wise score was found. Then the highest scored category is taken as the preferred goal orientation of that particular subject.

In case of tie scores in highest scores, for such students, scores on performance orientation (sum of performance approach and performance avoidance) and mastery orientation (sum of mastery approach and mastery avoidance) were compared, and higher scoring category within the higher scoring orientation is selected as the particular student's orientation.

Participants

Data from a total of 832 adolescent students drawn through stratified random procedure from Kerala state, comprising of 467 girls and 365 boys is used. From this total sample, separate random subsamples were drawn for item analysis and validation of the 2x2 framework of goal orientation.

Preliminary item analysis

Dichotomously scored item responses on each category of response, indicating one goal orientation each, were subjected to item analysis using the method suggested by Edwards (1969) to verify the ability of the statement to discriminate upper and lower groups on the given goal orientation. All statements passed this test for each of the four goal orientations. Items *Dp* ranged between 0.33 to .69 in performance orientation and between .31 to .68 in mastery orientation.

Result

Factor Validity of Goal Orientation Inventory

Theoretically, construct validity of the test has been assured by following the theories of goal orientation proposed by Dweck (1986), Ames (1992), Elliot and Harackiewicz (1996) and Pintrich (2000) in construction of the instrument. Three separate exploratory principal component analyses (PCA) were conducted for each of the three sections of the inventory on the data from a sample of 370 higher secondary students. Each of the three analyses confirmed the validity of four-fold division of goal orientation in academic setting, in corresponding sections. The response patterns on each category loaded on a component representing the corresponding goal orientation better than on alternative goal orientation, in the pattern predicted by the theory.   Item loading of four response categories of each statement on corresponding goal orientations are given in table 1.

Table 1

Loading of four response categories of each statement on corresponding goal orientations obtained in three separate principal component analyses

		Items	Respective item loadings for four goal orientations			
			PAP	PAV	MAP	MAV
Principal Component Analysis1		**My Intention, When involved in the activities given below**				
	1.	Selecting a course for study	.176	.532	.470	.612
	2.	Concentrating in class	.457	.627	x	.439
	3.	Group discussions and seminars	.321	.384	.302	x
	4.	Clarifying and doubt	x	.503	.529	x
	5.	Preparing for exam	.259	.583	.230	.469
	6.	Selecting book for studying	.166	.514	.642	.628
Principal Component Analysis 2		**My effort, When involved in the activities given below**				
	7.	Studying anything	.538	.698	x	.382
	8.	Involving in school activities	.557	.301	.418	.164
	9.	Reading book	.589	.256	x	.584
	10.	Writing exam	.278	.808	.443	.579
	11.	Doing assignment	.563	x	.398	.520
Principal Component Analysis 3		**My basis for self-evaluation in the Following circumstances**				
	12.	My performance in seminar	.275	.339	x	.278
	13.	Teacher returns the answer sheet	x	.655	.374	.461
	14.	Is the learning has been useful	x	.414	.690	.646
	15.	The effectiveness of an assignment	x	.218	x	.277
	16.	Attaining the objective of a course	x	.459	.655	.492
	17.	About success	x	.738	.580	.357

Note: X denotes loading < .15

Table 1 shows that in activities related to setting aims comparatively more items have moderate (>.4) loading on PAV, in performing learning activities more items have above moderate loading on PAP, and in evaluation activities 4 statements each have near moderate loading in PAV, MAP and MAV each.

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Those items having an item loading (on the component) greater than 0.3, are included in the final tool. If factor loading in one or two categories of a stem statement is low, that stem is retained but those categories (having low item loading) were not considered for scoring. Item number 12 and 15 were completely expelled from the tool as those have very low item loading on all the four categories. Thus, the final inventory has 15 stem statements. The fifteen stem items and the response categories which are not (initially) scored on these statements are given in table 2. The 'x' marks denotes exclusion from initial scoring. These items are scored only if there is tie among the goal orientations in initial scoring by following the procedure mentioned in scoring section.

Table 2
Selected items and the response categories

Sl. No	PA P	PA V	MA P	MA V
1.	X			
2.			X	
3.			X	X
4.	X			X
5.	X		X	
6.	X			
7.			X	
8.		X		X
9.		X	X	
10.	X			
11.		X		
13.	X			
14.	X			
16.	X			
17.	X			
No. of items	6	12	10	12

Thus there is a maximum score '6' for performance approach goal orientation, '10' for mastery approach goal orientation and '12' for each of performance avoidance and mastery avoidance goal orientations. For keeping balance between total scores in each goal orientation category, the obtained score was weighted appropriately, multiplying PAP with 2 and MAP with 1.2 respectively.

If there is a tie on Avoidance-Avoidance or Approach- Approach dimensions the tie is broken by looking for which orientation the student have on Mastery-Performance dimension by comparing the total of Mastery orientations with that of Performance orientations. Likewise, if there is a tie on Mastery-Mastery or Performance-Performance dimensions, the tie is broken by looking for which orientation the student have on Approach-Avoidance dimension by comparing the total of Approach orientations with that of Avoidance orientations. If tie persists even after applying these first set of criterion, tie is broken by considering the scores of excluded items that had below moderate loading also and following the same scoring procedures.

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The internal consistency of the test is obtained through Cronbach's alpha. The inventory found to have α= 0.83 for performance approach, α= 0.76 (N=100) for mastery approach. Test retest method of reliability is also employed with an interval of one week. The obtained coefficients were r= 0.98 (N=40) for performance approach, r= 0.98 for performance avoidance, r= 0.99 for mastery approach and r= 0.97 for mastery avoidance. These values prove the temporal stability of the tool. The consistency of identified goal orientation was 100% on re-administration after one week.

Conclusion

Present study is conducted to develop and standardize an academic goal orientation inventory for identifying four goal orientations namely; performance approach goal orientation (PAP), performance avoidance goal orientation (PAV), mastery approach goal orientation (MAP) and mastery avoidance goal orientation (MAV). Principal component analyses evidenced that the test has essential item loading. A goal orientation inventory which can validly and reliably distinguish among the learners preferring the four goal orientations proposed by goal orientation theory with a two tier scoring process is finalized.

The students do not stick to one goal orientation, it happens in rare cases only, many times they vary in their goals from situations to situations, even though, it is possible to have an overall goal orientation in learning. That may be the reason to fail sometimes in identifying one's goal orientation. It is concluded that students' reports of goal orientation is context specific. One significant observation from this study is that all aspects of academics are not identical in their value to identify learners' goal orientations. Avoidance orientations, both mastery and performance, are best reflected in students reports of their *input intentions* in strategic plans for various aspects of academics. Performance approach is best reflected in student's reports of their efforts or *exertions in various process aspects* of academics. Mastery Approach is best reflected in student's reports of yardsticks for *self-evaluating their academic outcomes.* Response patterns on the newly developed Academic Goal Orientation Inventory suggests that students with mastery approach orientation retain their motivation till the end of learning act to engage in metacognitive self-evaluation, while those with performance approach fall short in this aspect after engaging their maximal efforts during the performance/execution phase of their learning acts. Students with avoidance orientation, especially performance-avoiders, apply minimal enthusiasm even at the initial phases of learning acts.

Appendix
ACADEMIC GOAL ORIENTATION INVENTORY

Instructions:

Each one has varying aims and intentions while planning and involving in learning activities and its self-evaluation after the learning. Four such types of aims are given below:

1. Reach the top among the group

(This type of people aspire to become first in the group, attains appreciable achievements and also works hard with the purpose of exhibiting it before others)

2. Be not amongst the most backward in the group

(This type of people work to achieve so that they may belong to the average of the group and can thus avoid failure and embarrassment)

3. Understand in detail and be aware of the topic

(This type of people aspire to use their maximum ability and tries to improve daily work tediously)

4. Understand essentials without many errors.

(This type of people ensure that they have required the necessary details with minimum errors and misconceptions)

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For the following given situations tike mark (√) against the intention and aim to which you belong:

		Reach the top among the group	Be not amongst the most backward in the group	Understand in detail and be aware of topic	Understand essentials without many errors
Your Intention, When involved in the activities given below					
1	Selecting a course for study	My intention is to	☐		
2	Concentrating in class				☐
3	For group discussions &seminars			☐	☐
4	Clarifying a doubt		☐		
5	Preparing for exam		☐	☐	
6	Selecting book for studying		☐		
Your Effort, When involved in the activities given below					
7	Studying anything	My effort is to			☐
8	Involving in school activities			☐	☐	☐
9	Doing assignment			☐	☐
10	Writing exam		☐		
11	Doing assignment			☐	
Bases of judging Yourself in the Following circumstances					
12	While teachers return answer sheet	My basis for self-evaluation is	☐		
13	On, if the learning has been useful		☐		
14	On attaining the objective of a course		☐		
15	About success in learning		☐		

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