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Assessment of Goal Orientation among Adolescent Athletes with Regard to Their Participation in Recreation and Leisure Activities: A Factor Analysis Approach

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Abstract

The main purpose of the study was to explore the goal orientation among the athletes of the same age category with regard to their participation in recreational and leisure activities and also to see the differences between both the sexes (male and female). To achieve the purpose of the study 99 adolescent athletes were selected for the study. Out of which 50 were male athletes and 49 were female athletes. Their ages ranged from 12 to 17 years. These athletes were selected on the basis of their active participation in games and sports and also used to participate in various tournaments conducted by the District Sports Office, under the authority of Directorate of Sports, Assam. To measure the Goal Orientation level of the athletes both male and female athletes the Task and Ego Orientation in Sport Questionnaire TEOSQ devised by (*Duda & Whitehead, 1998)* was used. It assessed dispositions towards task and ego achievement goal orientations. The TEOSQ asks subjects to think of when they felt most while participating in recreation and leisure activities. The TEOSQ elicits scores on task (7-items) and ego (6-items) orientation through the stem "I feel most successful in PE when...". Each item was answered on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). Lucid interpretation was carried using Descriptive statistics such mean and standard Deviation. To establish the correlation matrix Pearson correlation was used. Further to explore items analysis, factor analysis using principal component analysis and varimax rotation methods was used. To see the gender based analysis Two Way analysis of variance was used. Cronbach alpha was used to see the reliability of the retained items of the goal orientation questionnaire. The finding of the study showed that, all the items were retained after the exploratory factor analysis using varimax rotation. Further *t-test* showed no significant difference between both the sexes in the subfactor task-orientation and ego-orientation.

Keywords: Task and Ego Orientation, Exploratory Factor Analysis, Principal Component analysis, Varimax, Eigenvalues[1]

Introduction

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In the beginning, goal orientation was existed only in the education field *(Ames, 1984, 1992a; Dweck, 1986; Dweck & Elliot, 1983; Nicholls, 1984, 1989; Roberts, 1992)*, and after that, it was start applying in the discipline of games and sports and many researches were conducted, it was found that goal orientation showed two subfactors namely, task orientation and ego orientation. Goal orientation is similar to achievement motivation; it is the motivation to achieve a goal in sport. Goal orientation is a "disposition toward developing or demonstrating ability in achievement situations". In task orientation, the perception of competence is referred to oneself and to the subjective experience of improving one's performance and increasing one's skills. For example, a task oriented batsman perceives himself of high ability if he can score more runs than what he scored in the last match. The task oriented athlete continues to work for mastery of the skill he is working on, and enjoys the feeling of self-efficacy and confidence in so doing.

It has been demonstrated that task goal orientation is associated with greater persistence, more interest, and greater effort *(Duda, 1992; Roberts, 2001; Roberts, Treasure & Kavussanu, 1997),* that is, there is an increase in the subject's level of effort and enjoyment. On the other hand, in ego orientation the aim pursued is to show that one is the best, i.e., to win, and assessment of one's performance is dependent on comparing oneself with others *(Duda, 1992, 1993, 1996; Roberts, 2001).* In case of ego-orientation, the goal is to outperform another individual or other individuals. It is no longer enough simply to gain mastery over a skill and make personal improvements. So in ego-orientation, social comparison becomes the driving force. An ego-oriented bowler will try to outperform other bowlers, either by throwing the fastest ball or by taking more wickets than other bowlers. Individual's perceived ability is measured as a function of outperforming others as opposed to self-improvement. Likewise, ego goal orientation is associated with greater competitiveness, with greater anxiety during competition, and with somewhat unfavourable attitudes to other competitors *(Biddle, 2001; Duda, 2001; Fry, 2001).*

The Task and Ego Orientation in Sport Questionnaire *(TEOSQ)* was developed to assess people's proneness for task and ego involvement in the athletic context *(Duda, 1989b, 1992).* In the case of task orientation, the goal is mastery of a particular skill. The premise that individuals can hold different orientations to achieve and focus on different goals in sport (and that such differences can be measured) is not unique.

For example, *Vealey (1986)* developed the Competitive Orientation Inventory (COI) to assess individual differences in the tendency to focus on playing well versus winning in sport. *Gill and Deeter's (1988)* Sport Orientation Questionnaire (SOQ) measures individual differences in sport achievement orientation or a person's degree of competitiveness, win orientation, and goal orientation. There are important conceptual distinctions, however, between these three instruments. The constructs of task and ego orientation, as assessed by the TEOSQ, are not equivalent to the individual differences determined by the COI or the SOQ (*Duda, 1992*). Recent research has supported the relevance of differences in goal orientations to the investigation of behavioral variation in athletic settings *(Duda, 1989, 1992, Roberts, 1984).* Further, studies have found that individual differences in goal perspectives predict overall views about the sport. For example, goal orientations have been found to relate to attitudes toward sportsmanship and aggression *(Duda, Olson, & Templin, 1991; Huston & Duda, 1992; Stephens, Bredemeier, Shields, & Ryan, 1992)* as well as to perceptions of the wider purposes of sport involvement *(Duda, 1989b). Nicholls (1989)* has argued that an individual's goal orientation also corresponds to fundamental beliefs about how achievement activities operate.

Purpose of the Study

The main purpose of the study was to explore the goal orientation among the athletes with regard to their participation in recreational and leisure activities and also to see the differences between both the sexes (male and female).

Hypothesis of the Study

It was hypothesized that all the items will be retained after exploratory factor analysis using Varimax rotation. It was also hypothesized that male athletes will have higher level of task orientation and level of Ego orientation will be higher with female athletes.

Methods

To achieve the purpose of the study 99 adolescent athletes were selected for the study. Out of which 50 were male athletes and 49 were female athletes. Their ages ranged from 12 to 17 years.

These athletes were selected on the basis of their active participation in games and sports and also used to participate in various tournaments conducted by the District Sports Office, under the authority of Directorate of Sports, Assam.

An instrument used as a tool: to measure the Goal Orientation level of the athletes both male and female athletes the Task and Ego Orientation in Sport Questionnaire TEOSQ devised by *Duda & Whitehead, 1998* was used. It assessed dispositions towards task and ego achievement goal orientations. The TEOSQ asks subjects to think of when they felt most while participating in recreation and leisure activities. The TEOSQ elicits scores on task (7-items) and ego (6-items) orientation through the stem "I feel most successful in PE when...". Each item was answered on a 5-point Likert scale ranging from 1 ("strongly disagree") to 5 ("strongly agree"). The TEOSQ has been validated and used extensively in diverse samples (see Duda & Whitehead, 1998), including English secondary school students (e.g. Fox, Goudas, Duda, Biddle, & Armstrong, 1994; Goudas, Biddle, & Fox, 1994; Spray & Biddle, 1997).

Results

To explore the study and lucid interpretation Descriptive statistics such mean and Standard Deviation was used. To establish the correlation matrix Pearson correlation was used. Further to explore items analysis, factor analysis using principal component analysis and varimax rotation methods was used. To see the gender based analysis t-test was used. Cronbach alpha was used to see the reliability of the retained items of the goal orientation questionnaire.

Table 1: Descriptive Statistics of all the Items of Goal Orientation

Items of Goal Orientation	Mean	Std. Deviation	N
Q1 I'm the only one who can do the play or skill	3.1717	.65528	99
Q2 I learn a new skill and it makes me want to practice more	3.7273	.84296	99
Q3 I can do better than my friends	3.2222	.88704	99
Q4 The others can't do as well as me	3.5960	.74120	99
Q5 I learn something that is fun to do	4.0303	.59684	99
Q6 Others mess up and I don't	3.7475	.73323	99
Q7 I learn a new skill by trying hard	3.1414	.90362	99
Q8 I work really hard	3.4949	.84965	99
Q9 I score the most points/goals/hits etc.	2.7374	.86409	99
Q10 Something I learn makes me want to go to practice more	3.7980	.66975	99
Q11 I'm the best	3.1717	.74286	99
Q12 A skill I learn really feels right	3.5556	.96068	99
Q13 I do my very best	4.0707	.53932	99

Table 2: Correlation Matrix to See the Inter-Correlation of all the Items Combined of the Goal Orientation

	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	Q13
Q1	1.000	-.118	.127	-.003	.039	-.164	-.024	.066	-.028	.057	-.061	.171	-.150
Q2		1.000	.014	.083	.017	-.146	.145	-.109	.069	.136	-.104	.063	.335
Q3			1.000	-.141	.238	.024	.139	.002	-.083	-.216	-.229	.105	-.140
Q4				1.000	-.087	-.246	.056	.288	.119	.101	.294	-.068	.047
Q5					1.000	.158	.049	-.070	-.004	-.138	-.104	-.030	-.134
Q6						1.000	-.177	-.027	-.251	-.209	.062	-.031	-.238
Q7							1.000	.054	.179	.081	-.128	-.162	-.042
Q8								1.000	.040	-.038	.236	-.065	.056
Q9									1.000	.242	-.136	.079	.237
Q10										1.000	-.012	.018	.068
Q11											1.000	-.164	-.234
Q12												1.000	.160
Q13													1.000

Table 3: Communalities of all the Variables

Items No.	Questions	Initial	Extraction
Q1	I'm the only one who can do the play or skill	1.000	.700
Q2	I learn a new skill and it makes me want to practice more	1.000	.484
Q3	I can do better than my friends	1.000	.650
Q4	The others can't do as well as me	1.000	.604
Q5	I learn something that is fun to do	1.000	.381
Q6	Others mess up and I don't	1.000	.539
Q7	I learn a new skill by trying hard	1.000	.663
Q8	I work really hard	1.000	.613
Q9	I score the most points/goals/hits etc.	1.000	.401
Q10	Something I learn makes me want to go to practice more	1.000	.595
Q11	I'm the best	1.000	.616
Q12	A skill I learn really feels right	1.000	.630
Q13	I do my very best	1.000	.735

Extraction Method: Principal Component Analysis.

The Communalities of all the variables shows its appropriateness because the values of all the items after varimax rotation are more than <.4 except the item D3 *(Shubash Sharma, 2007)*.

Table 4: Total Variance Explained by all the Variables

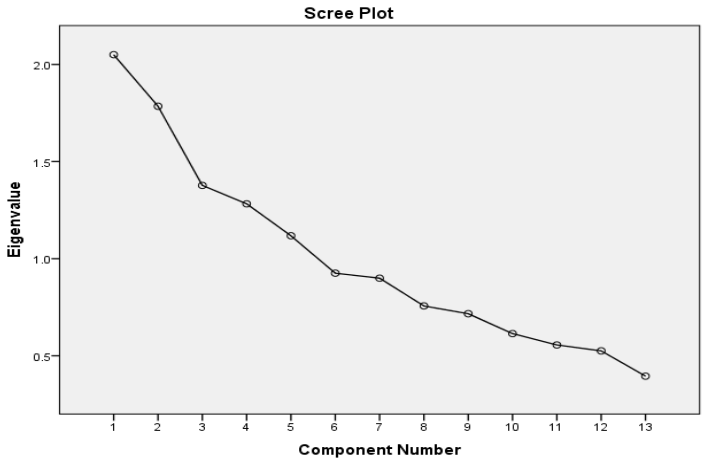
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
Q1	2.050	15.770	15.770	2.050	15.770	15.770	1.731	13.318	13.318
Q2	1.785	13.728	29.497	1.785	13.728	29.497	1.532	11.788	25.106
Q3	1.377	10.592	40.090	1.377	10.592	40.090	1.517	11.666	36.772
Q4	1.282	9.864	49.954	1.282	9.864	49.954	1.505	11.578	48.351
Q5	1.118	8.599	58.553	1.118	8.599	58.553	1.326	10.202	58.553
Q6	.925	7.117	65.670						
Q7	.900	6.920	72.590						
Q8	.757	5.820	78.410						
Q9	.716	5.511	83.921						
Q10	.614	4.723	88.645						
Q11	.556	4.276	92.920						
Q12	.525	4.040	96.960						
Q13	.395	3.040	100.000						

Extraction Method: Principal Component Analysis.

It can be noticed after rotation the first (13.318%), second (11.788%), third (11.666%), fourth (11.578%) and fifth (10.202%) factors explain of total variance respectively. Thus, all these six factors together explain (58.553%) of the total variance.

The decision about the numbers of factor to be retained in the factor analysis is taken on the basis of eigenvalues. The only factor with eigenvalue of more than 1 and items with a factor loading more than .50 were considered. If the factor has a low eigenvalues, then it is contributing little to the explanation of variances in the variable and may be dropped.

Graph 1: Graphical Representation of the Items



The scree plot proposed by Cattell 1966 is another popular technique. The scree plot is a plot against the number of factors, and one looks for an "elbow" signifying a sharp drop in variance accounted for by factors merely represent error or unique components *(R.G. Netemeyer, W.O.Bearden, S.Sharma 2003)* or we can say it is also based on a plot of the eigenvalues associated with successive factors *(R.F.DeVelliss 2003)*. Because each factor after the first is extracted from a matrix that is a residual of the previous factor's extraction, the amount of information in each successive factor is less than in its predecessors. Cattell suggested the right number of factors that can be determined by looking at the drop in the amount of information across successive factors. Inlay term, scree describes the rubble that collects on the ground following a landslide.

This term, then implies that the vertical portion of the plot is where substantial factors are located while the horizontal portion is the scree, or rubble, that should be discarded. Ideally, the progression of factors will have a point at which the information drops off suddenly, with an abrupt transition from vertical to horizontal and a clear "elbow" *(R.F.DeVelliss 2003)*. The factors plotted along X-axis against eigenvalues, on the y-axis.

As one moves toward the x-axis (factors), the eigenvalues dropped. When the drop ceases and the curve made an elbow toward less steep decline.

Table 5: Results of the Factor Analysis for the Occurrence of Burnout among Athletes Represented by Rotated Components Matrix (Varimax- Rotation Solution)

Items	Component						*Cronbach alpha*
		1	2	3	4	5	
Q7	I learn a new skill by trying hard	**.510**					
Q9	I score the most points/goals/hits etc.	**.593**					***.370***
Q10	Something I learn makes me want to go to practice more	**.618**					
Q3	I can do better than my friends		**.785**				***.361***
Q5	I learn something that is fun to do		**.580**				
Q4	The others can't do as well as me			**.719**			
Q8	I work really hard			**.777**			***.526***
Q11	I'm the best			**.539**			
Q2	I learn a new skill and it makes me want to practice more				**.660**		***.466***
Q13	I do my very best				**.778**		
Q1	I'm the only one who can do the play or skill					**.518**	***.275***
Q12	A skill I learn really feels right					**.778**	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
Rotation converged in 5 Iterations.

The purpose of factor extraction is merely to determine the appropriate number of factors to examine. Table 5 represents the results of factor analysis done on all 13 the items. An exploratory factor analysis using Principal Component analysis using Varimax Rotation with Kaiser Normalization was done on the result obtained from the items on the factor goal-orientation to assess the goal-orientation of the athletes. It has been seen that none of the item was excluded from the analysis. Rotation converged in 5 iterations. The factor loadings on all the items that are presented in the above table. It is noticed that none of the factor is less than .50.

The result of Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) test which tells whether the sample size taken for the factor analysis was adequate or not. It tests whether the partial correlation among the variables are small. KMO values range from 0 to 1. The closer the value to 1 the more adequate is the sample to run the factor analysis. Usually KMO more than 0.5 is considered is sufficient for doing factor analysis reliably. In this case Kaiser-Meyer-Olkin Measure of Sampling Adequacy yielded a measure of .547 which is >.5; hence the sample size is adequate to run the analysis and to make it more lucid.

Further the Bartlett's Test of Sphericity was used to test the null hypothesis the correlation matrix is the identity matrix. Since the significance value (p<.001) of Bartlett's Test is .000, which is <.01hence it is significant and the correlation matrix is not an identity matrix. Thus, it may conclude the factor model is appropriate

Table 6: Gender Based Difference of Goal Orientation

Subfacators	**Descriptive Statistics**								
	N	**Mean**	**SD**	**Min.**	**Max.**	**Sig.**	**df**	**MD**	**t**
Task-orientation male	49	25.4898	1.86103	21.00	30.00	.053	97	-.65020	*-1.508*
Task-orientation female	50	26.1400	2.39054	20.00	30.00				
Ego-orientation male	49	19.2600	1.38225	16.00	22.00	.201	97	-.63347	*-1.945*
Ego-orientation female	50	19.9600	1.87312	16.00	25.00				

The result of the t-test showed that there is no significant difference between male and female active students on the both the subfactors viz. Task otientation and ego orientation of Goal orientation because the calculated t-value is less than the tabulated value. So it's revealed that both the groups significantly possess the same level of task and ego orientation on the factor goal orientation.

Conclusion and discussion

The purpose of the study was to explore the goal orientation among the athletes of the same age category with regard to their participation in recreational and leisure activities and also to see the differences between both the sexes (male and female). It is concluded from the result that, all the items of the goal orientation questionnaire were retained after using exploratory factor analysis with varimax rotation.

The retained items factor loading was more than .50 which shows its consistency and could generalize for the future researches. The finding of the present study is well corroborated by the finding of *(Duda, 1992, 1993, 1996; Roberts, 2001).* In task orientation, the perception of competence is referred to oneself and to the subjective experience of improving one's performance and increasing one's skills. On the other hand, in ego orientation the aim pursued is to show that one is the best, i.e., to win, and assessment of one's performance is dependent on comparing oneself with others *(Duda, 1992, 1993, 1996; Roberts, 2001).* The genderbased difference of goal orientation didn't show any significant difference.

It could be a reason that both the sexes were active adolescent students and accordingly their perception of both the factors were same. In a study conducted by *(Juha Kokkenen et. al., 2010),* boys were significantly higher in ego-orientation, whereas girls were higher in task orientation.

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