Citation: Ahmad, I., Shah, M. A. U. H., & Saeed, M. (2020). Assessing Psychometrics of Goal Orientation Scale in Pakistani Context. *Global Regional Review, V*(I), 425-433. doi:10.31703/grr.2020(V-I).46

URL: http://dx.doi.org/10.31703/grr.2020(V-I).46 **DOI:** 10.31703/grr.2020(V-I).46

Assessing Psychometrics of Goal Orientation Scale in Pakistani Context

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Vol. V, **No.** I (Winter 2020) | **Pages:** 425 – 433

p- ISSN: 2616-955X | **e-ISSN:** 2663-7030 | **ISSN-L:** 2616-955X

Abstract

Goal orientation has been tested all over the world. However, the present study was conducted to validate the Goal Orientation Scale in Pakistan. A total of 141 students from two Pakistani public sector universities participated. A cross validation procedure based on factor analysis was adopted to analyze the collected data. The study was conducted in two stages. During the first stage, Exploratory Factor Analysis (EFA) was performed to assess the four-factor structure. In the second stage, the hypothesized four-factor model was assessed by using Confirmatory Factor Analysis (CFA). The results supported the four-factor model consisting of task orientation, self-enhancing orientation, self-defeating orientation and avoidance orientation. Reliability and validity estimates confirmed the adequacy of GOS as a reliable and valid scale for measuring goal orientation of students in the higher education context of Pakistan. Further research is recommended to test the scale in other fields for getting more robust results.

Key Words: Goal Orientation, Scale Validation, Teacher Education, Psychometric Testing

Introduction

Motivation is a key element of academic achievement (Guthrie & Humenick, 2004; Muenks *et al.*, 2018). Different factors play important role in determining the degree of motivation among students of which goal orientation is an important one (Chadwick & Raver, 2015). The goal orientation enables learners at all levels of education to not only improve their performance but also practice their knowledge and skills positively (Farhan & Khan, 2015; Lazarides *et al.*, 2018). Despite this, less attention has been paid towards the application and evaluation of GOS in the higher education context of Pakistan which is reeling over the years under various issues prominently among which is poor students' performance and determination of life goals in different fields of studies. There are different reasons behind this obscured scenario; however, lack of academic motivation is a key influencing factor. It has been reported that students at higher education level are unable to use their competencies as they enter the job market (Shariq *et al.*, 2019; Yasmin & Sohail, 2018). The main focus of education in Pakistan is distributing degrees and high grades. Little or no attention is paid to the essential aspect of academic motivation and knowledge construction during the instruction period which makes them feel less motivated towards competency development rather they go after high grades and good certification(Batool *et al.*, 2018; Khan, 2014). Due to this inability and academic competency deficiency on the part of students, they cannot excel in their respect fields as creative humans rather come out as high grade degree holders deficient in basic skills of life (Ameen, 2007; Johnson *et al.*, 2016). This situation has been associated with different factors such as low motivation of students for self-development, low self-concept and self-esteem towards higher goals of life, less focus on creativity and reflectivity and reflexivity and so on (Arshad *et al.*, 2015; Ozdemir *et al.*, 2018). The aim of this study was to assess the scale in Pakistani higher education context to check the degree of motivation of students towards their academic goal setting.

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Literature Review

Achievement goal orientation theory helps to better understand the goals and motivation of students at all levels of education (Kassaw & Astatke, 2017; Yudhistira, 2012). Achievement goals are seen as integrating constructs addressing the purposes and orientations by providing guidance in order to explain the attitudes and behaviors of students relating to any achievement situation(Geiger, 2007). The achievement goal theory focuses on why students show interest to be involved in a specific task or select a particular activity during schooling or the process of education. Research on the achievement goal literature has indicated that when students are engaged in tasks or goal oriented activities they focus on learning and development of competencies (Ames & Archer, 1988; Pintrich, 2000). On the other hand, focusing an ego goal means interning into a competition to overpower, outperform or defeat others(Skaalvik, 1997). Studies have shown positive relationship between goal orientation and improved self-esteem of learners (Mascret *et al.*, 2015; VandeWalle, 1997). Related to ego based goals, the existing results seem inclusive and inconsistent both on adaptive and maladaptive outcomes(Ranellucci *et al.*, 2015; Tapola & Niemivirta, 2008). For overcoming the inconsistency, scholars have indicated towards two ego based goals such as self-enhancing orientation in which the goals are to outperform or defeat others and self-defeating or avoidance orientation in which negative judgment is avoided from others' side(Lemos & Veríssimo, 2014).

This has given comprehensive evidence to consider self-enhancing and self-defeating ego orientation to be the two different goal orientations. However, in view of some researchers it is possible to orient students based on little efforts to avoid school assigned task or work (Tuominen-Soini *et al.*, 2012). This type of avoidance orientation could be thought as goal different than tasks, self-enhancement and self-defeat orientation. It has received little attention, therefore, researches have assumed this type of orientations to be negative sides of motivation (Salmela-Aro *et al.*, 2010).

The major purpose of scale validation is to ensure that the scale is valid and reliable. An instrument is a means to evaluate the important concepts hidden in the data collected through a questionnaire that reflects the reality. Basically, the aim of scale reliability is to ensure that the scale is stable and consistent to bring the desired results when used in another context on a different sample at a different time. In a general term, for the purpose of validating scale different processes are used such as ensuring face validity or content validity, construct validity and so on. In the face validity stage, we assess the stability of the scale to bring consistent results when applied in different contexts under different conditions using different degrees of sample. During the construct validity stage of the scale, we evaluate the overall strength of the scale in terms of its items validity and appropriateness to measure the desired situation for obtaining the intended results. A valid scale has simple, clear and coherent items that represent the construct mostly immediately.

Content validity explains that the scale represents the items which cover all the necessary components of the social situation or it truly reflects the concept in the situation under investigation. This aspect could be ensured through establishment of subject related experts in the relevant field. In this current study, the content validity was ensured by sharing the content of the scale including the items adopted with five experts in higher education. Based on the expert opinion of the experts, the scale was further piloted and then used in the field for data collection. After the content validity we evaluated the construct validity for which we used factor analysis approaches as mentioned in the methodology part of this below. In these stages, the scale validation was subjected to different tests and model checking as discussed below that confirmed the suitability of the approaches for construct validation of the scale.

Aim of the Study

Though, many studies have tested the GOS for measuring goal orientation of students in different fields of studies worldwide (Etnier *et al.*, 2004; Meissel & Rubie-Davies, 2016; Sideridis, 2005), however, little is known about the validation of the scale in Pakistani context. Hence, the current study aimed to validate the GOS for measuring the goal orientations of Pakistani students in teacher education. Teacher education is an important professional field in Pakistani but its quality is going down in the current times. This situation has created concerns among scholars, teaching job market employers and researchers. The validation of the scale in Pakistani context provides new insights about the orientation of students in teacher education fields and the issues of motivation towards

teaching profession. Using EFA and CFA approaches, the dimensions of GOS were re-determined in the Pakistani context along with measure of reliability. The psychometrics of the scale such as indicators of construct validity, convergent and discriminant validity were also analyzed.

Aim of Study

This study aims at assessing the Goal Orientation Scale (GOS) in Pakistani higher education context.

Method

Participants

For data collection, 278 students both male and female were selected by convenience from education departments of two public sector universities of KP, Pakistan. The students came from wider ranges of socio-economic backgrounds. The students were selected from different semesters of the education curriculum.

Measure

The GOS was taken from the work of Skaalvik (1997). Translation was done for the instrument from English into Urdu and back to English through academic and language experts. As a result, minor differences were found which were rectified through the experts. Finally, the scale was distributed among five experts in the education field for content and face validation. Based on the given feedback, the items were finalized. The final scale consisted of 20 items scale consisting of four dimensions. The response format of the scale was designed on five-point Likert scale ranging from Strong agree=SA (5) to Strongly Disagree=SD (1). However, for further clarity of items ambiguity or possible misunderstanding of the respondents, the scale was pilot tested on 30 students. The previous reliability values for the sub-scales or dimensions were .81, .86, .89 and .93 (Skaalvik, 1997) on a four-point response scale. The current study measured the responses of the students on the 5-point Likert scale. The overall alpha for the 20-item scale was .93. The alpha for all the five dimensions of the scale in the context of teacher education of Pakistan was separately calculated and found to be .89(task orientation), .86 (self-enhancing orientation), .88(self-defeating orientation) and .70(avoidance orientation).

Data Analysis

Factor analysis was used for validation of the scale. For this purpose, EFA and CFA approaches were used as analysis techniques. The analysis was conducted in two separate phases. During phase 1, exploratory factor analysis was employed to assess the instrument in SPSS version 21. Through Principal Component Analysis (PCA), the factor structure was evaluated. The preliminary requirements were checked for determining the sample adequacy for the factor analysis. Next, the CFA was applied to AMOS version 18 for testing the four-factor model. Different model fit indices were used for assessing the fit statistics based on Chi-square, GFI, AGFI, CFI, TLI and RMSEA(Ab Hamid *et al.*, 2011). The convergent and discriminant validity were determined by considering the Average Variance Extracted (AVE) along with Cronbach's alpha and composite reliability for reliability assessment. Also, descriptive statistics, item total correlation, correlation of the scale with AVE and reliabilities were calculated based on the total sample of the study.

Results

Phase 1. Exploratory Factor Analysis

The 20 items scale was subjected to factor analysis. In the first stage, the EFA was performed restricting the extraction to the four predetermined factors. Varimox rotation method was used followed by PCA that yielded a four-factor solution. A threshold criterion of .40 was used for retaining or deleting factor items in the scale.

Table 1. KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.926
Bartlett's Test of Sphericity	Approx. Chi-Square	4517.200

	Df	190
	Sig.	.000

All the. requirements for conducting factor analysis was met as shown in Table 1 above.

Table 2. Dimensions / Factor Extraction

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.419	52.096	52.096	6.307	31.533	31.533
2	1.565	7.823	59.919	4.746	23.731	55.265
3	1.207	6.036	65.955	2.015	10.075	65.340
4	1.043	5.214	71.169	1.166	5.829	71.169
5	.862	4.310	75.479			
6	.714	3.571	79.050			
7	.653	3.265	82.315			
8	.599	2.995	85.310			
9	.437	2.184	87.495			
10	.423	2.117	89.612			
11	.344	1.719	91.331			
12	.302	1.509	92.840			
13	.292	1.458	94.298			
14	.249	1.246	95.544			
15	.220	1.099	96.643			
16	.179	.897	97.540			
17	.166	.832	98.373			
18	.135	.677	99.050			
19	.116	.582	99.632			
20	.074	.368	100.000			

Table 2 indicates that four factors were extracted based on PCA method. The 4 dimensions collectively explain 71.16% in the total variance. Individually, the first factor (task orientation) explained 52.09% of the variance. The second factor (self-enhancing orientation) explained 7.82% of the variance, the third factor (self-defeating orientation) explained 6.03% and the fourth factor (avoidance orientation) 5.21% of total variance.

Table 3. Rotated Component Matrix[a]

	Components			
	1	2	3	4
St 1		.875		
St 2		.738		
St 3		.807		
St 4		.784		
St 5		.525		
St 6	.548			
St 7	.664			
St 8	.742			
St 9	.735			
St10	.845			
St11			.834	
St12			.841	
St13			.720	
St14			.503	

St15	.699	
St16		.523
St17		.420
St18		.847
St19		.772
St20		.514

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 6 iterations.

Table 3 shows that Rotated Component Matrix indicating the factor loadings for each of the dimensions of the scale. It also gives a clear indication about the correlation of the variables and loadings on the four factors. The values of the variable less than 0.4 were suppressed in the analysis. Thus, form the RCM, the variables from 6 to 10 loaded on the first factor. The variables from 1 to 5 had loadings on factor 2. The variables 11 to 15 had loadings on factor 3 and variables 16 to 20 had loadings on factor 4.

Table 4. Factors Loadings of GOS

Items	Factor loadings	Item-Total Correlation	Mean	SD
St 1	.875	.744	2.86	1.131
St 2	.738	.715	2.45	.970
St 3	.807	.754	2.57	.999
St 4	.784	.761	2.76	1.085
St 5	.525	.577	2.82	1.070
St 6	.548	.484	2.45	.924
St 7	.664	.742	2.46	.956
St 8	.742	.760	2.41	.937
St 9	.735	.780	2.60	1.099
St10	.845	.820	2.55	1.076
St11	.834	.825	2.62	1.155
St 12	.841	.831	2.58	1.120
St13	.720	.722	2.55	1.021
St 14	.503	.693	2.81	1.120
St 15	.699	.455	2.18	.935
St 16	.523	.705	2.40	.904
St 17	.420	.751	2.73	1.053
St 18	.847	.739	2.74	1.057
St 19	.772	.492	2.59	.941
St 20	.514	.495	2.55	.947

Table 4 indicates that all the factor loadings were above .40, the item total correlations are significant ranging from (r=.484 to r= .831). All the items are considered valid and reliable indicators of students' goal orientation.

Phase 2. Confirmatory Factor Analysis

The CFA was done for construct validation and testing of the identified four-factor hypothesized model for GOS on the sample used for EFA.

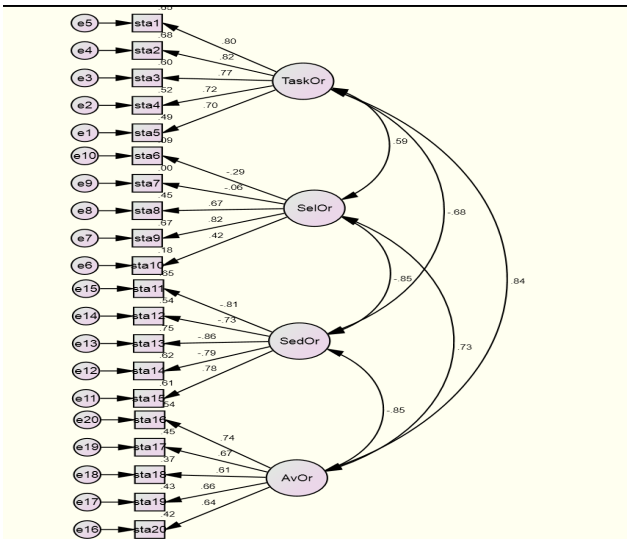

Figure 1: Measurement Model

Figure 1 indicates the measurement model for the multidimensionality of the scale. The model-fit analysis was run several times in order to achieve the acceptable model fit statistics. All the items had good factor loadings.Thus the measurement model with 20 items in the model indicated a good model fit to the data. There was a high correlation among all the factors in measurement model.

Table 5. Goodness of Fit Statistics for GOS

	Fitness Indices	Obtained values
Fit Statistics	χ^2	408.793
	DF	164
	CMIN/DF	2.493
	GFI	.922
	RMR	.034
	RMSEA	.103
	NFI	.880
	TLI	.912
	CFI	.928
	AGFI	.856

Table 5 shows that all the threshold values for model fit are within the acceptable level (Hair et al, 2006).

Table 6. Convergent and Discriminant Validity

	CR	AVE	SedOr	TaskOr	SelOr	AvOr
SedOr	0.889	0.673	0.820			
TaskOr	0.882	0.653	0.992	0.808		
SelOr	0.902	0.652	0.742	0.758	0.807	
AvOr	0.837	0.575	0.765	0.789	0.789	0.758

Square root of AVE

Table 6 indicates that all the values of AVE and the correlations of each variable are within the acceptable levels. The values of AVE are greater than squared correlations between the constructs (Hair *et al.*, 2006). The

composite reliabilities are also above .50 for all the factors. This provides an evidence for convergent and discriminant validity of the scale.

Discussion

The main aim of this paper was to validate the Goal Orientation scale in higher education context of Pakistani. The analysis results based on EFA and CFA approaches support the reliability and validity of the scale. The obtained values confirmed the values obtained on the original scale and results of previous studies (Midgley *et al.*, 1998; Skaalvik, 1997; Wolters, 2004). The findings of the current further increase our understanding of the critical reflection on the goal patterns and the academic outcomes of students in relation to these goals and developing viable and appropriate strategies or interventions relating to different profiles of students in higher education. The results of this study further support the findings of previous study results (Forsythe & Jellicoe, 2018; Lau & Lee, 2008; Pintrich, 2000). For example, the significant correlations among all the dimensions of the GOS also support the results of previous research (Honicke *et al.*, 2020; Kaur *et al.*, 2018; Spinath & Stiensmeier-Pelster, 2003). It provides clear evidence for the construct validity of the scale in Pakistani higher education context. Using AVE method showed that all the values were within acceptable ranges. The reliability values also showed satisfactory internal consistency for the scale and all its dimensions.

Conclusion

Although, the present scale was intended for higher education context, however, it can be equally used for improving the goal orientations of students at primary or secondary level education. There is clear dearth of literature on goal orientation in the context of Pakistani higher education which did not allow us to further relate the findings of this study to the existing research. This investigation provided significant evidence regarding usefulness of GOS as a measure of goal orientation of students in Pakistani context, however, goal orientation is a changing variable which can be influenced by culture, context and nature of curriculum and so on. Therefore, it is recommended that GOS should be tested in other contexts for obtaining more robust results for its validation. Future research may also explore the ego-orientation of students for addressing the developing issues relating to goal orientation. Based on the result of this study it is suggested that the scale may be tested in other fields of study to get more comprehensive and deeper understanding of the motivation factor among learners. The study lacked in terms of adequate sample; hence it is further studies may use a larger sample to test the current model for obtaining more robust and sound results.

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