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VALIDITY AND RELIABILITY OF THE LEARNING AND PERFORMANCE ORIENTATIONS IN PHYSICAL EDUCATION CLASSES QUESTIONNAIRE: TURKISH SECONDARY SCHOOL STUDENTS

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ABSTRACT

This study examined the validity and reliability of the Turkish form of the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ), which was developed to determine the students' achievement orientation in Physical Education classes. A total of 292 secondary school students (130 girls, 162 boys) participated in the study. The Exploratory Factor Analysis (EFA) and Confirmatory Factor Analysis (CFA) were used to determine the validity of the measurement instrument. In the EFA analysis, the structure with 27 items and five factors was reached as in the original form. The two-step analyses carried out in the scope of the CFA revealed that both the five-factor first order model and the two-factor hierarchical structure are compatible with the data. Coefficients of internal consistency, regarding the sub scales of the scale and the results of the item analysis on the mean differences between the 27% lower and upper groups of the statements making up the scale, indicated that the scale was reliable. The findings show that the LAPOPECQ is a reliable and valid measuring instrument to be used to measure Turkish secondary school students' learning and performance orientation in Physical Education classes.

Key words: Physical Education; Achievement goal; Learning; Performance; LAPOPECQ; Psychometric properties.

INTRODUCTION

The findings of long-term studies have put forward the argument that Physical Education classes contribute to the development of students in multiple ways, namely cognitive, affective and psychomotor (Barney & Deutsch, 2009). Because of its high potential, the aim of Physical Education is to provide students participating in the classes with positive experiences through physical activities (Liukkonen *et al.*, 2010) and to establish necessary motivation for engagement in physical activities in an active lifestyle (Chatoupis & Emmanuel, 2003; Chen & Ennis, 2004).

Regular participation in sport activities is closely related to issues such as natural ability, achievement, motivational factors and psychosocial development (Smith *et al.*, 2009). It is extremely important to examine the relationship between motivational theories and cognitive, affective and behavioural mechanisms which are thought to develop through Physical Education classes considered as a fun activity (Liukkonen *et al.*, 2010). Therefore, Physical

Education classes have become the focus of important studies in the field of education (Silverman *et al.*, 1998).

Motivation sets the fundamental structure in realising a successful learning experience (Butterworth & Weinstein, 1996). Motivation is considered to be a complex and highly effective factor for individuals in time management, regulating energy, shaping their ideas and desires and putting them into effect and it is also studied as a part of human psychology and behaviour (Urdan & Schoenfelder, 2006).

In the academic literature, one of the most frequently focused research fields concerning student motivation is Achievement Goal Theory studies (Pintrich *et al.*, 2003). Achievement Goal Theory, which is accepted as the most influential approach in modern achievement motivation literature (Elliot, 1999) and is a socio-cognitive structure developed in order to determine the direction of ability evaluations and achievement perception (Nicholls, 1989), aims at determining the intensity of learning orientation of students intended for the goals defined by practices (Stornes *et al.*, 2008). Achievement Goal is defined by Eccles *et al.* (1983) as the common goal of children in learning or in different activities they wish to do. In the framework of this theory, two main types of orientation being "task/learning" and "ego/performance" can be mentioned (Papaioannou, 1994; De Backer & Nelson, 2000; Mattern, 2005; Rogers *et al.*, 2008).

These two different goal perspectives do not exclude each other, despite including significant differences in terms of behaviour (manner). Each student has these different goal orientations at various levels (Shen *et al.*, 2007). Among achievement orientations ego/performance orientation involves outclassing others with little effort, while task orientations involves developing abilities through learning (Treasure & Roberts, 1994; Xiang *et al.*, 2003). Individuals who refer to task orientations when determining their personal goals base their skill development on learning, whereas those referring to ego orientations shape skill development in a result-oriented way (Hoang, 2007; Spittle & Byrne, 2009). In their study, Ames and Archer (1988) state that the learning environment is extremely important when determining task and performance goal orientations. Achievement motivation theoreticians agree that the motivational climate created by other individuals is extremely important for the development of individuals' cognitive, affective and behavioural patterns (Papaioannou *et al.*, 2008). Motivational climate implies the perceptions generated between the students and the teacher and other students toward the goals and aims settled (Stornes *et al.*, 2008).

The motivational climate created in Physical Education classes directly affects students' achievement orientations and strategies (Treasure & Roberts, 1995). In the process of education and learning performed within the scope of physical activity, setting the goals with the aim of maximizing the students' efforts is a significant responsibility of Physical Education teachers (Papaioannou & Kouli, 1999). However, most of the Physical Education programs currently in practice are extremely poor in terms of equality, giving individual responsibility to students and most importantly in goal setting (Cothran, 2001). Performance-oriented approaches of Physical Education teachers will make the class a practice which values the result to be obtained rather than skill development of students; while task-oriented approaches will make it a social and cooperative practice which features students' skill development (Xiang *et al.*, 2003). In other words, developing the motivational climate in

accordance with task orientation will bear more positive results in student development in comparison to performance-oriented practices (Papaioannou, 1994). In addition, the intensive employment of performance-oriented learning strategies currently performed by schools may well cause students to lose motivation in time (Carlton & Winsler, 1998).

The necessity for Physical Education teachers to create a task/learning-oriented motivational climate in their classes has been highlighted (Salvara *et al.,* 2006). In this respect, Physical Education teachers should employ affective strategies and techniques in order to create the necessary motivational climate for students' development of skills and learning (Shen *et al.,* 2007). Moreover, academic research on the subject is extremely important to show both theoretically and practically how motivation is oriented in accordance with the goals to be set (Ommundsen & Kvalø, 2007; Shen *et al.,* 2007; Sproule *et al.,* 2007).

Furthermore, achievement goal orientations of students affect their learning conditions and achievement at school (Long *et al.,* 2007). Studies on goal orientation in education are very important as they form a basis for the studies to be carried out in the field of sport and exercise (Rogers *et al.,* 2008). According to Papaioannou and Kouli (1999), the LAPOPECQ measurement instrument may also be used to measure the efficiency of procedural interventions to orient the students' current perceptions of the motivational climate as well as to help them assess the motivational climate in Physical Education classes. This measurement instrument may be used to show possible motivational differences in future studies by which individual/competitive and cooperative/goal task orientations will be compared practically. The objective of this study is to examine the reliability and validity of the Learning and Performance Orientations in Physical Education Classes Questionnaire (LAPOPECQ), which was developed by Papaioannou (1994) and has been translated and adapted into different European (Cervelló *et al.,* 2010) and Asian (Sproule *et al.,* 2007) languages, on a Turkish-speaking sample.

METHODOLOGY

Participants

The data used in this study were collected with a simple random sampling method in the 2011 to 2012 academic years. Within the scope of the adaptation, a total of 292 secondary school students whose average age was 14.31±0.92 participated in the practices in this study. Of the total sample, 130 (44.5%) were girls and 162 (55.5%) were boys.

Instrument

The LAPOPECQ, developed by Papaioannou (1994), consists of 5 subscales, which are divided into 2 main scales as performance orientation (Students' competitive orientation, Students' worries about mistakes, Outcome orientation without effort) and learning orientation (Teacher-initiated learning orientation, Students' learning orientation). The LAPOPECQ consists of 27 items of which 5 items are for 'competitive orientation' and 'worries about mistakes' subscales, 4 items for 'outcome orientation without effort' subscale, 6 items for 'teacher-initiated learning orientation' subscale and 7 items for 'students' learning

orientation' subscale. The statements are rated on a 5-point Likert-Type scale with the options of 5 for 'strongly agree' and 1 for 'strongly disagree'.

In the scale development studies carried out on two different sample groups by Papaioannou (1994), the following Cronbach's Alpha coefficients of internal consistency were obtained for the first (n=1393) and second (n=394) sample respectively: 0.71 and 0.65 for Students' competitive orientation, 0.67 and 0.71 for Students' worries about mistakes, 0.65 and 0.64 for Outcome orientation without effort, 0.79 and 0.80 for Teacher-initiated learning orientation and 0.84 and 0.83 for Students' learning orientation (Papaioannou, 1994; Papaioannou & Kouli, 1999).

Procedures

In the process of translating the LAPOPECQ into the Turkish language, three linguists and three field experts were consulted. The scale was first translated into Turkish by the linguists, and then by re-translating it into English, it was evaluated in terms of syntax and semantics. Items with their finalised Turkish versions were examined by field experts and checked for expediency and were given their final form. The scale, which was assessed in terms of intelligibility and expediency, was prepared to be applied on students. The study was initiated by taking necessary permissions from the directing boards of schools. In the scope of the study, the responses acquired in line with the subjects' opinions about Physical Education classes in which they participated and Physical Education teachers were subjected to reliability and validity analysis.

Analysis

In the scope of the validity and reliability analysis made in the study, in order to estimate the EFA, item analysis and internal consistency coefficients, SPSS 13.0; and the CFA were carried out to determine structural validity where the Lisrel 8.51 package programs were utilised.

RESULTS

Validity of the LAPOPECQ

In order to test the validity of the LAPOPECQ measurement instrument, exploratory and confirmatory factor analyses were carried out.

Exploratory factor analysis

The Kaiser-Meyer-Olkin (KMO) value of the study group was calculated as 0.80. The first findings obtained from factor analysis revealed that factor loadings of the 27 items on the scale ranged between 0.381 and 0.919, and were distributed between 6 factors whose eigenvalues were higher than 1 and which explains 68.13% of the total variance. This shows that analysis results obtained were different from the factor structure of the original scale.

In Figure 1, the first 5 factors have eigenvalues higher that 2, which is clearly higher than the 6^{th} factors' eigenvalue. The amount of variance explained by the 6^{th} factor was also

considerably lower than the first 5 factors. Further, it can be concluded that the number of items of 6th factor was not enough to measure. Therefore, exploratory factor analysis was repeated by limiting it to 5 factors as in the factor structure of the original scale.

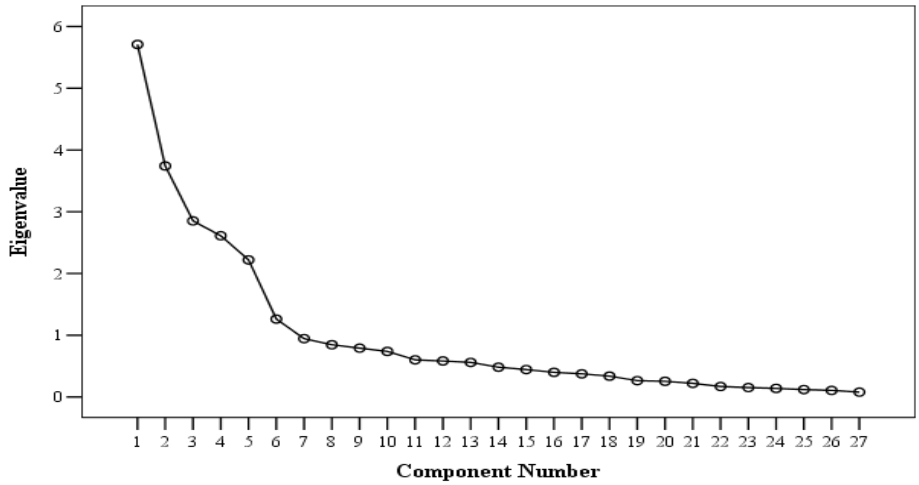

***FIGURE 1*: SCREEN PLOT OF THE LAPOPECQ-tr**

***TABLE 1*: PRINCIPAL COMPONENTS ANALYSIS OF THE LAPOPECQ-tr**

Students' learning orientation		**Students' competitive orientation**		**Students' worries about mistakes**		**Teacher-initiated learning orientation**		**Outcome orientation without effort**	
Item No.	Factor loading	Item No.	Factor loading	Item No.	Factor loading	Item No.	Factor loading	Item No.	Factor loading
14	0.910	**12**	0.923	**10**	0.923	**3**	0.727	**23**	0.874
24	0.901	**20**	0.908	**6**	0.896	**11**	0.718	**7**	0.824
4	0.897	**2**	0.906	**27**	0.863	**13**	0.705	**1**	0.807
18	0.882	**22**	0.876	**9**	0.847	**19**	0.683	**8**	0.754
26	0.592	**25**	0.399	**15**	0.471	**17**	0.678		
16	0.571					**5**	0.590		
21	0.563								
Percentage of variance									
21.14%		13.85%		10.56%		9.67%		8.22%	
Eigenvalue									
5.70		3.74		2.85		2.61		2.22	
Kaiser-Meyer-Olkin measure of sampling adequacy								0.804	
Bartlett's Test		**Approximate Chi-Sq. of hericity**				**df**		**Significance**	
		4941.10				351		0.000	

At the end of the second analysis the Varimax rotation technique was applied and the 5 factors' rate of explaining total variance was found to be 63.46%. Moreover, it was observed that the factor loadings of the items making up the scale range between 0.399 and 0.923, and that factor distributions were in compliance with the distribution on the original scale (Table 1).

Confirmatory Factor Analysis

The 5-subscale structure obtained from the Exploratory Factor Analysis (EFA) and the 2-factor hierarchic structure stated in the original scale, were tested by Confirmatory Factor Analysis (CFA) respectively. In the scope of CFA, the first order factor structure consisting of 5 sub-scales was analysed in the first place. Fit indexes of the structure were composed of the sub-scales of Competitive orientation, Worries about mistakes, Outcome orientation without effort, Teacher-initiated learning orientation and Students' learning orientation.

***TABLE 2*: FIT INDEXES OF MODEL 1 AND MODEL 2 OF LAPOPECQ-tr**

Model	χ^2	df	χ^2/df	RMSEA	SRMR	NNFI	CFI	IFI	GFI
Model 1 (First order model)	691.83**	314	2.20	0.064	0.054	0.91	0.92	0.92	0.85
Model 2 (Hierarchical model)	695.42**	318	2.18	0.064	0.056	0.91	0.92	0.92	0.85

**p<0.01 RMSEA= Root Mean Square Error of Approximation SRMR= Standardised Root Mean Square Residual NNFI= Non-Normed Fit Index CFI= Comparative Fit Index IFI= Incremental Fit Index GFI= Goodness-of-Fit Index

In the fit indexes concerning the first order factor analysis were: chi square value= 691.83; degrees of freedom= 314 (χ^2/df= 2.20) and RMSEA= 0.064, SRMR= 0.054, NNFI= 0.91, CFI= 0.92, IFI= 0.92 and GFI= 0.85. In this hierarchic structure, Chi square value= 695.42 and degrees of freedom= 318 (χ^2/df=2.18). In the fit indexes, RMSEA= 0.064, SRMR= 0.056, NNFI= 0.91, CFI= 0.92, IFI= 0.92 and GFI= 0.85 (Table 2).

At the end of the first order analysis, λ-values of the 27 items ranged between 0.47 and 1.33, δ-values between 0.14 and 0.89, R^2-values between 0.11 and 0.86 and t-values in the range of 5.83 and 20.80 (p<0.01). The hierarchic structure formed upon these findings was tested by CFA being a 5 sub-scale structure with performance and learning super scales. Within the scope of hierarchic structure, λ-values of the 5 sub-scales ranged between 0.32 and 0.62, R^2-values between 0.10 and 0.39; and t-values ranged from 3.62 to 4.92 (p<0.01) (Table 3).

The amount of variance extracted by factors which were calculated via λ and δ were 0.67 for Teacher-initiated learning orientation, 0.87 for Students' competitive orientation, 0.85 for Students' worries about mistakes, 0.88 for Outcome orientation without effort and 0.80 for Students' learning orientation.

***TABLE 3*: CONFIRMATORY FACTOR ANALYSIS RESULTS OF LAPOPECQ-tr**

First order model (n= 292)	**Items**	**λ**	**δ**	**R^2**	**t**
Teacher-initiated learning orientation	**3**	0.97	0.53	0.47	12.01**
	5	0.74	0.73	0.27	8.53**
	11	0.95	0.56	0.44	11.40**
	13	0.93	0.60	0.40	10.80**
	17	0.84	0.64	0.36	10.12**
	19	0.86	0.62	0.38	10.54**
Students' competitive orientation	**2**	1.27	0.21	0.80	19.42**
	12	1.30	0.18	0.82	19.85**
	20	1.27	0.20	0.80	19.38**
	22	1.21	0.28	0.72	17.78**
	25	0.47	0.89	0.11	5.63**
Students' worries about mistakes	**6**	1.23	0.16	0.84	20.11**
	9	1.04	0.42	0.58	15.11**
	10	1.23	0.18	0.82	19.62**
	15	0.53	0.85	0.15	6.58**
	27	1.19	0.23	0.77	18.72**
Outcome orientation without effort	**1**	1.13	0.39	0.61	15.06**
	7	1.15	0.37	0.63	15.44**
	8	0.90	0.59	0.41	11.52**
	23	1.27	0.21	0.79	18.10**
Students' learning orientation	**4**	1.32	0.16	0.84	20.33**
	14	1.31	0.15	0.85	20.55**
	16	0.61	0.81	0.19	7.62**
	18	1.28	0.21	0.79	19.38**
	21	0.60	0.82	0.18	7.49**
	24	1.33	0.14	0.86	20.80**
	26	0.66	0.79	0.21	8.19**

Hierarchical model (n= 292)		**λ**	**R^2**	**t**
Performance	Students' competitive orientation	0.32	0.10	3.62**
	Students' worries about mistakes	0.46	0.21	4.94**
	Outcome orientation without effort	0.46	0.21	4.73**
Learning	Teacher-initiated learning orientation	0.62	0.39	4.48**
	Students' learning orientation	0.35	0.12	3.92**

** $p<0.01$

Reliability of the LAPOPECQ

In the scope of the reliability analyses of the LAPOPECQ measuring instrument, calculations of internal consistency coefficient and item analyses were carried out on mean differences of the 27% lower and 27% upper groups.

Internal consistency coefficient calculations

In this part of the study, internal consistency coefficients of 5-scale and 2-scale structures obtained at the end of the factor analyses were calculated. In the results obtained, Cronbach's Alpha values for the first order sub-scales were calculated as 0.78 for Teacher-initiated learning orientation, 0.88 for Student competitive orientation, 0.87 for Students' worries about mistakes, 0.85 for Outcome orientation without effort and 0.89 for Students' learning orientation. Cronbach's Alpha-values of sub-scales of the 2-factors hierarchic structure were calculated as 0.82 for Performance and 0.83 for Learning (Table 4).

***TABLE 4*: DESCRIPTIVE STATISTICS AND ALPHA COEFFICIENTS FOR THE LAPOPECQ-tr (N=292)**

Model	Mean	SD	Skewness	Kurtosis	Cronbach's Alpha
Factors: First order model					
Teacher-initiated learning orientation	3.05	0.99	0.336	-0.242	0.78
Students' competitive orientation	2.85	1.16	0.335	-0.918	0.88
Students' worries about mistakes	3.04	1.11	0.215	-0.987	0.87
Outcome orientation without effort	2.94	1.19	0.302	-0.944	0.85
Students' learning orientation	3.07	1.09	0.225	-0.758	0.89
Factors: Hierarchical model					
Performance	2.95	0.77	0.347	-0.527	0.82
Learning	3.06	0.82	0.607	0.071	0.83

In order to calculate factor's Cronbach's Alpha coefficients of the first order model, all 27 items were recognised. To calculate Cronbach's Alpha coefficients of the hierarchical model 14 items were included into the analyses of the Performance sub-scale (Student competitive orientation, Students' worries about mistakes, Outcome orientation without effort) and 13 items for Learning sub-scale (Teacher-initiated learning orientation, Students' learning orientation).

Item analysis

Within the scope of internal consistency calculations, item analysis was carried out on mean differences of the 27% lower and upper groups (Kelley, 1939). In the analysis concerning at what level the 27 items of the scale can distinguish individuals; the t-test was used for the significance of the mean differences between the lower and upper groups comprising the 27% part. In the results obtained, it can be seen that the t-values of the items ranged between -5.63 and -11.69 and were significant at the level of $p<0.01$ (Table 5).

***TABLE 5*: ITEM ANALYSIS RESULTS FOR LAPOPECQ-tr**

Item No	Lower 27% (n =79)		Upper 27% (n =79)		t
	Mean	SD	Mean	SD	
1	2.17	1.12	3.72	1.39	-7.646**
2	1.97	0.99	3.60	1.39	-8.474**
3	2.37	1.16	3.88	1.19	-7.998**
4	2.13	1.10	4.11	1.08	-11.322**
5	2.58	1.28	3.94	1.21	-6.856**
6	2.15	0.90	3.92	1.15	-10.742**
7	2.31	1.22	3.79	1.36	-7.184**
8	2.54	1.20	3.51	1.40	-4.680**
9	2.31	1.14	3.79	1.28	-7.635**
10	2.07	0.90	3.89	1.22	-10.643**
11	2.64	1.34	4.00	1.21	-6.618**
12	1.96	0.93	3.67	1.37	-9.120**
13	2.65	1.44	3.97	1.20	-6.201**
14	2.24	1.15	4.15	1.06	-10.811**
15	2.45	1.18	3.81	1.32	-6.782**
16	2.43	1.29	4.02	1.10	-8.304**
17	2.43	1.24	3.72	1.33	-6.271**
18	2.31	1.23	4.15	1.06	-10.008**
19	2.56	1.26	3.91	1.17	-6.889**
20	1.88	0.90	3.60	1.40	-9.136**
21	2.59	1.29	3.91	1.25	-6.492**
22	1.98	0.96	3.59	1.38	-8.469**
23	2.27	1.15	3.84	1.27	-8.124**
24	2.12	1.11	4.15	1.06	-11.692**
25	2.30	1.14	3.54	1.40	-6.083**
26	2.51	1.28	4.00	1.18	-7.509**
27	2.06	0.91	3.81	1.19	-10.312**

** $p<0.01$

DISCUSSION

In this study, it was planned to adapt the LAPOPECQ scale, which was developed by Papaioannou (1994), into Turkish. Reliability and validity analyses were carried out in line with the responses of 292 secondary school students.

The factor distributions of the 27 items, the scale that was developed by the present data, were analysed with the EFA. The KMO-value was found to be 0.804 in order to decide

whether it is appropriate for the given factor analyses. This shows that the data were good in terms of homogeneity (Sharma, 1996). In the item distribution by factors, it was observed that items were distributed in the factors where they belong when it was limited to 5 factors with reference to the original scale.

The 5-factor structure and the 2-factor hierarchic structure were tested by the CFA. It has been seen that the results obtained from the present study were in compliance with the results acquired in the original study (Papaioannou, 1994). According to Chau (1997), the fact that the ratio of Chi square to degrees of freedom was less than 3, reveals that the model complies well with the data. Considering fit indexes, Kelloway (1998), Hu and Bentler (1999), McDonald and Moon-Ho (2002) and Schermelleh-Engel *et al.* (2003) pointed out that RMSEA and SRMR values between 0.05 and 0.08 indicate an acceptable degree of fit. In respect of other fit indexes NNFI, CFI, IFI and GFI values between 0.90 and 0.95 indicate good fit and values between 0.85 and 0.95 are considered to be an indication of acceptable fit (Marsh *et al.*, 1988). In addition, the threshold level of t-values, showing how significantly each variable can be explained by the statements, is 2.576 at p=0.01 significance criteria (Şimşek, 2007). In the fit indexes obtained from the study, it is possible to express that both the first order 5-factor model and the 2-factor hierarchic model comply acceptably with the data (Table 2 & Table 3). The variance extracted values of sub-scales ranged from 0.67 to 0.88. According to Nunnally (1978), the minimum variance extracted values should be 0.50 or larger. These findings show that the 5-factor first order structure and the 2-factor second order hierarchic structure stated in the original scale were valid after exploratory and confirmatory factor analyses.

As for the validity coefficients of the scale, it can be seen that Cronbach's Alpha values of the 5 sub-scales range between 0.78 and 0.69; and that among the hierarchic scales the internal consistency coefficients of Performance and Learning were 0.82 and 0.83, respectively. The fact that Cronbach's Alpha-values were 0.70 shows that the sub-scales were appropriate in terms of reliability (Nunnally, 1978). Finally, it was determined that each item had a significant distinctiveness considering the t-values of all items in the item analysis results regarding the 27% lower and upper groups, which was another criterion for validity. The t-values found to be significant show the ability to distinguish (Tavşancıl, 2005). These findings verify and support the factor analysis results.

Statistical analyses applied show that the LAPOPECQ-tr is a measurement instrument that can be used to determine the performance and learning orientations towards Physical Education of secondary school students in Turkey.

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