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VALIDITY AND RELIABILITY OF AMPET GREEK VERSION: A FIRST EXAMINATION OF LEARNING MOTIVATION IN GREEK PE SEETINGS

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RESUMEN

El propósito de este estudio fue desarrollar una versión griega del Achievement Motivation in Physical Education Test (AMPET) que podrían aplicarse a entornos griegos educativos. La conversión de AMPET fue probado a través de análisis factorial confirmatorio y el uso de la medida del α de Cronbach. El análisis se basó en los datos recogidos a partir de dos pruebas diferentes de toma de datos. En la primera sesión, 41 estudiantes de entre 13-21 años, hicieron la prueba y, el mismo grupo de estudiantes, la repitieron después de dos semanas con el fin de poner a prueba la fiabilidad. La versión final de AMPET griego (después de algunas modificaciones que se realizaron sobre la base de las dos sesiones de prueba piloto) se administró a 1333 estudiantes de entre 12-16. Los resultados de CFA mostraron que no había evidencia para rechazar estructura de Nishida de factores motivo de aprendizaje y que puede ser reducido a un modelo más económico que describe adecuadamente el motivo de aprendizaje en la educación física

ABSTRACT

The purpose of this study was to develop a Greek version of Achievement Motivation in Physical Education Test (AMPET) that could be applied to Greek educational settings. The conversion of AMPET was tested via confirmatory factor analysis and the use of Cronbach's α measure. Analysis was based on the data collected from two different test taking sessions. In the first session, 41 students aged 13-21, took the test and the same group of students repeated the test after two weeks in order to test the reliability. The final Greek version of AMPET (after some modifications that took place based on the two pilot test sessions) was administered to 1333 students aged 12-16. The results of CFA showed that there was no evidence to reject Nishida's structure of motivation learning factors and it can be reduced to a more economical model which adequately describes motivation learning in physical education.

PALABRAS CLAVE: motivación, test AMPET, validación, confiabilidad.

KEY WORDS: Motivation, AMPET test, validation, reliability

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INTRODUCTION

As it is widely accepted, exercise contributes to the improvement of people's health regardless of age or gender, leading to the improvement of physical condition and promotion of general well being of each individual. Students' attitudes and behavior towards physical education (PE) in the school context depend on the PE teachers' teaching approach as well as on the amount and type of motivation that students receive from teachers[1].

Motivation is a psychological phenomenon that explains the expression or absence of certain behaviors that emanate from each individual's inner world. Consequently, the study of motivation can explain, to a certain degree, students' participation in PE lessons. As knowledge is formulated both on personal experience and on the information and/or feedback available in each individual's social environment, the PE teacher can make an essential contribution to children's behavior and attitude towards life by choosing the right tools and teaching styles to motivate students[2].

Referring to learning motivation in physical education (PE), Nishida[3,4] focused on the need to create a testing instrument which could objectively measure learning motivation so as to promote empirical research in this field. Consequently, he developed a model based on previous studies by, Atkinson[5], and Weiner[6]. According to Atkinson's theory,

[1] PAPAIOANNOU, A.; THEODORAKIS, Y.; GOUDAS, M. For a better Physical Education. Thessaloniki: Salto. 2003. [Παπαϊωάννου, Α., Θεοδωράκης, Ι.,&Γούδας, Μ. (2003). Για μια καλύτερη διδασκαλία φυσικής αγωγής. Εκδόσεις Salto, Θεσσαλονίκη].[in Greek]

[2] PAPAIOANNOU, A.; MARSH, H.; THEODORAKIS, Y. "A multilevel approach to motivational climate in physical education and sport settings: An individual or group level constructs". *Journal of Sport & Exercise Psychology*. 2004, vol. 26, p. 90-118.

[3] NISHIDA, T. "A study on standardization of the Achievement Motivation in Physical Education Test". *Japan Journal of Physical Education*. 1989, vol. 34, p.45-62.

[4] NISHIDA, T. "Reliability and factor structure of the Achievement Motivation in Physical Education Test". *Journal of Sport & Exercise Psychology*. 1988, vol. 10, p. 418-430.

[5] ATKINSON, J. W. *An introduction to motivation*. *Princenton*, NJ: Van Nostrand, 1964.

[6] WEINER, B. *Theories of motivation: From mechanism to cognition*. Chicago: Rand-MacNally. 1972.

which is consistent with behavioral theories of learning, motivation achievement depends on the strength of the individual's 'expectations for success and its resultant positive emotions as well as on the strength of the individual's 'fear of failure' and its resultant negative emotions. Therefore, the motives that function within each individual depend on whether each individual within his (rewarding or discouraging) social environment is 'success-oriented' [driven by the need to succeed] or 'failure-oriented' [driven by the fear of failure]. Furthermore, Weiner's theory[7] asserts that an individual's motivation is greater, when he attributes his successes and failures to internal factors (such as lack of personal effort). Conversely, an individual is less motivated to achieve, when he is 'failure oriented', attributing his failure to internal factors (e.g. lacking in ability) and his successes to external factors that he/she is not in position to control (e.g. luck).

Based on this theoretical framework and building on his earlier studies[8], Nishida formulated a multi-dimensional model of motivation achievement in PE learning[9,10] , and developed a standardized measurement named Achievement Motivation in Physical Education Test (AMPET), that was first validated on a Japanese student sample coming from all school years. The internal consistency reliability analyses (Cronbach's a) yielded high coefficients for all subscales ranging from 0.797 to 0.950 whereas the follow-up administration five weeks later yielded test-retest reliability coefficients ranging from 0.651 to 0.883. The analyses demonstrated that the AMPET produced sufficiently reliable results across all educational levels, both in terms of internal consistency (Cronbach's a) and over time (test-retest coefficient).

[7] WEINER, B. Theories of motivation: From mechanism to cognition. Chicago: Rand-MacNally. 1972.
[8] NISHIDA, T., INOMATA, K. "A factor analytical study on achievement motives in sport". *Japanese Journal of Physical Education*. 1981, vol. 26, p. 101-110.
[9] NISHIDA, T. "A study on standardization of the Achievement Motivation in Physical Education Test". *Japan Journal of Physical Education*. 1989, vol. 34, p.45-62.
[10] NISHIDA, T. "Reliability and factor structure of the Achievement Motivation in Physical Education Test". *Journal of Sport & Exercise Psychology*. 1988, vol. 10, p. 418-430.

The AMPET instrument consists of eight factors: a) Learning Strategy (LS), which refers to cognitive learning processes employed by a participant while learning through performing an exercise in PE; b) Overcoming Obstacles (OO), that is, the patience and persistence demonstrated by each individual so as to overcome the obstacles that emerge during athletic/sporting performance; c) Diligence and Seriousness (DS), refering to the intensity and zeal shown by student while focusing on the task; d) Competence Motor Ability (CMA), related to self-perception of motor abilities compared to others; e) Value of Learning (VL), that each participant attributes to PE lessons; f) Anxiety Over Situations that Cause Stress (ASCS) to the participants and affect their performance and g) Failure Anxiety (FA), referring to stressful situations that inhibit individual performance. In addition to AMPET features, a Lie Scale was included in order to test accuracy of participants' claims, related to individuals' tendency to give socially desirable answers.

In a follow-up study, Nishida[11] compared results of AMPET application in school children of different countries such as Japan, England, Canada and the USA, observing that students (depending on their country of origin) were not motivated in the same way. Japanese students had lower levels of achievement motivation and higher levels of failure anxiety. Clearly, results highlighted cultural differences relating to the quality of relationships, students' participation in PE classes, and the learning climate within PE lessons. Based on Doi[12] and Miyamoto and Kato[13], Nishida explained differences as dependent on cultural context given that Japanese students are focused on team participation and team achievement and not on individual achievement.

[11] NISHIDA, T. "Achievement motivation for learning in physical education class: a cross – cultural study in four countries". *Perceptual and Motor Skills*. 1991, vol. 72, p. 1183-1186.
[12] DOI, K. "A two dimensional theory of achievement motivation: Affiliative and non affiliative". *The Japanese Journal of Psychology*. 1982, vol. 52, p. 334-350.
[13] MIYAMOTO, M.; KATO, T. "The relation between achievement motive and affiliation motive". *Journal of Japan Women's University*. 1975, vol. 22, p. 23-28.

Thus, in order to examine the factors that affect participation of students in PE lesson and their achievement motivation, it is necessary to adapt and develop instruments that are appropriate for these aims within countries that do not share the Japanese culture. The purpose of this study was to assess adaptation of AMPET instrument in Greek settings and language, using assessment of factors' internal continuity (Cronbach's a) and confirmatory factor analysis.

METHODOLOGY

The statistical analyses were carried out with the use of SPSS 15.0 and EQS 6.1 statistical packages in two phases, that is, content validity analysis and confirmatory factor analysis.

a) 1st Phase: Content validity analysis

During the first phase, the aim was to translate the English questionnaire into Greek language, to make all relevant adjustments and verify content validity of the new instrument. Initially, the translation from English to Greek was carried out by two bilingual translators. The translation was then given to four school students aged 15-17 to test phrasing and understanding of questions. Next, the reverse procedure was followed, and the initial Greek version of AMPET was converted into English by two different independent researchers. Subsequently, the two translations were checked by three independent researchers with expertise on the topic, in order to verify content validity via structured content analysis[14] (Weber, 1990) and ensure through appropriate corrections made that questions represented accurately the concept that each factor aimed to assess.

Participants

The questionnaire was administered to a total of 41 junior and senior high school students, that is, 10 male (M=15.40, SD=2.74) and 31 female (M=18.45, SD=5.45) aged 13 to 21 years old in two phases (test, retest administration). The time span between the two phases was two weeks. The participants were assured that the questionnaires were anonymous, their participation in the study was voluntary, and the collected information would be held strictly confidential. All the participants have given written informed consent for their participation in the study and they could drop out any time with no obligation to explain the reason for their decision.

Results

The internal consistency reliability analyses (Cronbach's a) were carried out for every factor separately. The alpha coefficients ranged from a=.93 for the Anxiety Over Situations that Cause Stress (ASCS) factor to a=.75 for the Lie Scale (LIE) factor. In the retest administration carried out two weeks later, the analyses yielded similar coefficients ranging from a=.94 for the Anxiety Over Situations that Cause Stress (ASCS) factor to a=.67 for the Lie Scale (LIE) factor (Table 1)

Table 1. Cronbach's a test and retest reliability coefficients

Factors	(Cronbach's a) test	(Cronbach's a) retest
learning strategy (LS)	.80	.76
overcoming obstacles (OO)	.89	.83
diligence and seriousness (DS)	.87	.81
competence of motor ability (CMA)	.77	.84

value of learning (VL)	.85	.82
anxiety over situations that cause stress (ASCS)	.93	.94
failure anxiety (FA)	.83	.80
lie scale (LIE)	.75	.67

Tables 2 and 3 show Pearson correlation coefficients between the eight factors of the model in the test and retest administration respectively.

Table 2. Intercorelations between factors (test)

Factors (test)	1	2	3	4	5	6	7	8
Participants n = 41								
1. LS	–	.50**	.41**	.29	.55**	.23	.33**	.42**
2. OO		–	.72**	.29	.80**	.01	-.07	.69**
3. DS			–	.13	.74**	-.02	-.10	.61**
4. CMA				–	.12	-.20	-.12	.26
5. VL					–	.05	.01	.60**
6. ASCS						–	.67**	-.17
7. FA							–	-.16
8. LIE								–

*p < .05 **p < .01

Table 3. Intercorelations between factors (retest)

Factors (retest)	1	2	3	4	5	6	7	8
Participants n = 41								
1. NLS	–	.59**	.44**	.24	.57**	-.07	.29	.61**
2. NOO		–	.52**	.30	.77**	-.08	.08	.66**
3. NDS			–	.26	.55**	-.10	.002	.64**
4. NCMA				–	.19	-.31*	-.43**	.21
5. NVL					–	-.18	.06	.67**
6. NASCS						–	.70**	-.18
7. NFA							–	.02
8. NLIE								–

*p < .05 **p < .01

Table 4 presents correlations of student responses for each factor during the 1st and the 2nd AMEPT administration. The low values of the single correlations for every variable between the first and second phase of the study suggest a low to average positive linear relationship, leading to the conclusion that the test could be further improved (Table 4).

Table 4. Test and retest correlations of each factor

Factors (test-, retest)	NLS	NOO	NDS	NCMA	NVBL	NASCS	NFA	NLIE
Participants n = 41								
1. LS	.379*							
2. OO		.560**						
3. DS			.564**					
4. CMA				.544**				
5. VL					.491**			
6. ASCS						.545**		
7. FA							.613**	
8. LIE								.658**

*p < .05 **p < .01

Subsequently, a comparison between the scores obtained for every factor of the AMPET test in the first and second administration was conducted using the paired samples t-test. The analyses did not detect any statistically significant differences between test and retest measurements for each factor (Table 5).

Table 5. Comparison between test and retest measurements for each factor

Pairs of factors	Mean	SD	t	p
LS – NLS	21.95 – 22.71	5.62	-.862	.394 ns
OO – NOO	18.61 – 18.59	5.44	.029	.977 ns
DS – NDS	18.49 – 18.24	5.09	.307	.761 ns
CMA – NCMA	24.98 – 26.15	6.37	-1.177	.246 ns

VL – NVL	17.02 – 17.83	5.25	-.982	.332 ns
ASCS – NASCS	23.71 – 23.29	7.33	.362	.719 ns
FA – NFA	25.76 – 26.76	5.10	-1.255	.217 ns
LIE – NLIE	20.76 – 20.93	4.47	-.245	.808 ns

b) Second phase: confirmatory factor analysis

During the second phase, factorial structure was examined through the use of confirmatory factor analysis procedures performed using the EQS software. The Maximum Likelihood (ML) method was used to estimate parameter for the statistical models for the analysis, as it is appropriate for datasets that deviate from the normal distribution (with regard to skewedness and kurtosis values of the scale items). Thus, no other method was considered necessary to implement.

Participants

A sample in junior and senior high schools students, 811 female (M=15.27, SD=1.75) and 522 male (M=15.15, SD=1.45)aged 12 to 16 years old took part in the study, all coming from urban and suburban areas and none of them taking part in the previous phases of the study. The participants were assured that the questionnaires were anonymous and that their participation in the study was voluntary. All the participants have given written informed consent for their participation in the study and they could drop out any time with no obligation to explain the reason for their decision.

Measuring instrument

The Greek version of the AMPET test was used to assess the factors affecting students' participation in PE lessons and their motivation to achieve. The questionnaire consisted of 64 items describing 8 motivation factors with 8 items per factor. Responses were recorded on a 5-point Likert scale ranging from 1('strongly disagree') to 5 ('strongly agree').

Results

The factorial structure was examined through Confirmatory Factor Analysis. Initially, the skewness values and kurtosis values of each factor's items were examined. Both skewness and kurtosis values were between -1 and 1. These values demonstrate that data did not deviate substantially from normal distribution, justifying the decision to use the ML method that requires normal distribution of data or at least minimal deviations from the normal distribution.

The analysis was conducted in two stages. The first stage involved confirmatory factor analysis of the Nishida model[15,16], with 56 variables representing all 7 factors of the model. The 8th variable (Lie Scale) was not taken into account focusing on students' motivation to participate in PE classes rather on individuals' tendency to give socially desirable answers. In the second stage of the analysis, the 7 factors of the model were retained and attention was focused on those variables that had a loading coefficient greater than 0.50 on every factor. As a result, the second model included 7 factors derived from 37 out of the 56 initial items. Next, specific indicators were used to compare the two models in order to assess their suitability as follows:

[15] NISHIDA, T. "Achievement motivation for learning in physical education class: a cross – cultural study in four countries". *Perceptual and Motor Skills*. 1991, vol. 72, p. 1183-1186.
[16] NISHIDA, T. "Reliability and factor structure of the Achievement Motivation in Physical Education Test". *Journal of Sport & Exercise Psychology*. 1988, vol. 10, p. 418-430.

c) Assessment of the suitability of the model

The overall suitability of the Nishida model was examined using the χ^2 test. A non statistically significant value of the χ^2 is a positive indication for the suitability of the model[17]. The χ^2 is sensitive regarding the two parameters of sample size (<200 individuals) and deviation from normal distribution. Due to the fact that the results of our study did not present significant deviations from normal distribution, the use of the χ^2 was considered appropriate. Hoyle and Panter[18] proposed the use of an Absolute Fit Index such as the χ^2 and at least one Incremental Fit Index. However, in order to strengthen the assessment of the overall suitability of our only model, additional indicators were also used. According to Hu and Bentler[19], in order for a model to become acceptable it has to meet particular statistical preconditions, such as a) the ratio of χ^2 to the degrees of freedom must be smaller than two b) the Root Mean Square Error of Approximation (RMSEA) index must have a value smaller than 0.08 and c) the Comparative Fit Index (CFI) must have a value smaller than 0.90 The above indexes are less susceptible to sample size variations and type of calculation method applied (Fan, Thompson, & Wang, 1999).

For model 1 (Nishida) the index was χ^2=2224 ($p<0.01$) and the degrees of freedom were [d.f] = 1540. Based on the χ^2 value, the model should be rejected since data did not support the hypothesized model structure. However, because of the sensitivity of χ^2 test to specific parameters, it was advisable to use additional indexes for assessing such models. The additional indexes showed a satisfactory fit of data to the proposed model (χ^2/df=1.44, CFI = .912, GFI =.915, SRMR = .0059, RMSEA =0.32 <0.050) that is in correspondence with the recommended values in relevant bibliography. Item loadings

[17] BOLLEN, K. *Structural equations with latent variables*. New York: Wiley, 1989.
[18] HOYLE, R. H.; PANTER, A. T. "Writing about structural equation models", In R. H. Hoyle (Ed.), Structural equation modelling: Concepts, issues, and applications, p. 158-176. Thousand Oaks CA: Sage.1995.
[19] HU, L.; BENTLER, P. M. "Evaluating model fit", In R. H. Hoyle (Ed.), Structural equation modeling: concepts, issues and applications,p. 76-99. Thousand Oaks, CA: Sage. 1995.

were positive in all factors with their magnitude reaching on some cases substantial levels (e.g. .887 see Table 1).

Table 6. Loading range of items in each factor according to model 1

Factors model 1.	Range of coeficient.	Range R^2
learning strategy (LS)	.412-.573	.170-.329
overcoming obstacles (OO)	.316-.670	.100-.449
diligence and seriousness (DS)	.261-.627	.068-.394
competence of motor ability (CMA)	.156-.695	.200-.483
value of learning ς (VL)	.405-548	.164-.301
anxiety over situations that cause stress (ASCS)	.485-.766	.235-.587
failure anxiety (FA)	.502-.887	.000-.447

d) <u>Model 2</u>

The second model consisted of 37 items describing 7 factors with different number of items characterizing each factor. In model 2, the χ^2 index value was χ^2=1104 ($p<0.01$) and the degrees of freedom [df] = 592. Additional indexes indicated a satisfactory fit of the model to the dataset (χ^2/df= 1.86, CFI = .922, GFI =.934, SRMR = .0057, RMSEA =0.38< 0.050).

Table 7. Loading range of items in each factor according to model 2.

Factors model 2.	Range of coeficient	Range R^2
learning strategy (LS)	.493-.496	.243-.246
overcoming obstacles (OO)	.518-.669	.268-.448
diligence and seriousness (DS)	.521-.603	.271-.415
competence of motor ability (CMA)	. 434-.672	.111-.452
value of learning ς (VL)	.525-.621	.275-.386
anxiety over situations that cause stress (ASCS)	.446-.796	.199-.591
failure anxiety (FA)	.428-.887	.000-.412

e) Comparing the two models

Comparison of the two models according to fit indexes (Table 8) showed that both models yielded satisfactory results that were not rejected by the dataset. Furthermore, it was also evident that model 2 demonstrated a slightly improved fit to the data. The new and revised model was proven to be as strong as the initial model in terms of structure, plus more economical. In cases where the two models are equally strong the simpler model is preferable, since the more complex one does not essentially contribute anything towards further explanation of data relationships[20].

[20] HU, L.; BENTLER, P. M. "Evaluating model fit", In R. H. Hoyle (Ed.), Structural equation modeling: concepts, issues and applications,p. 76-99. Thousand Oaks, CA: Sage. 1995.

Table 8. Suitability indexes of two models

	Suitability Index					
	Absolute Indexes			Alternative Indexes		
	χ^2	χ2/d.f	SRMR	CFI	GFI	RMSEA
Model 1.	2224	1.44	.0059	.912	.915	.032
Model 2.	1104	1.86	.0057	.922	.934	0.38

Item loadings in model 2 present satisfactory item coefficients in each factor ranging from 0.4 to 0.8 and all being statistically significant at the .05 level (Figure 1). Since all 7 factors are statistically significant they are considered as valid indicators, therefore, none of them can be discarded in order to have a comprehensive picture of motivation to participate in PE lessons.

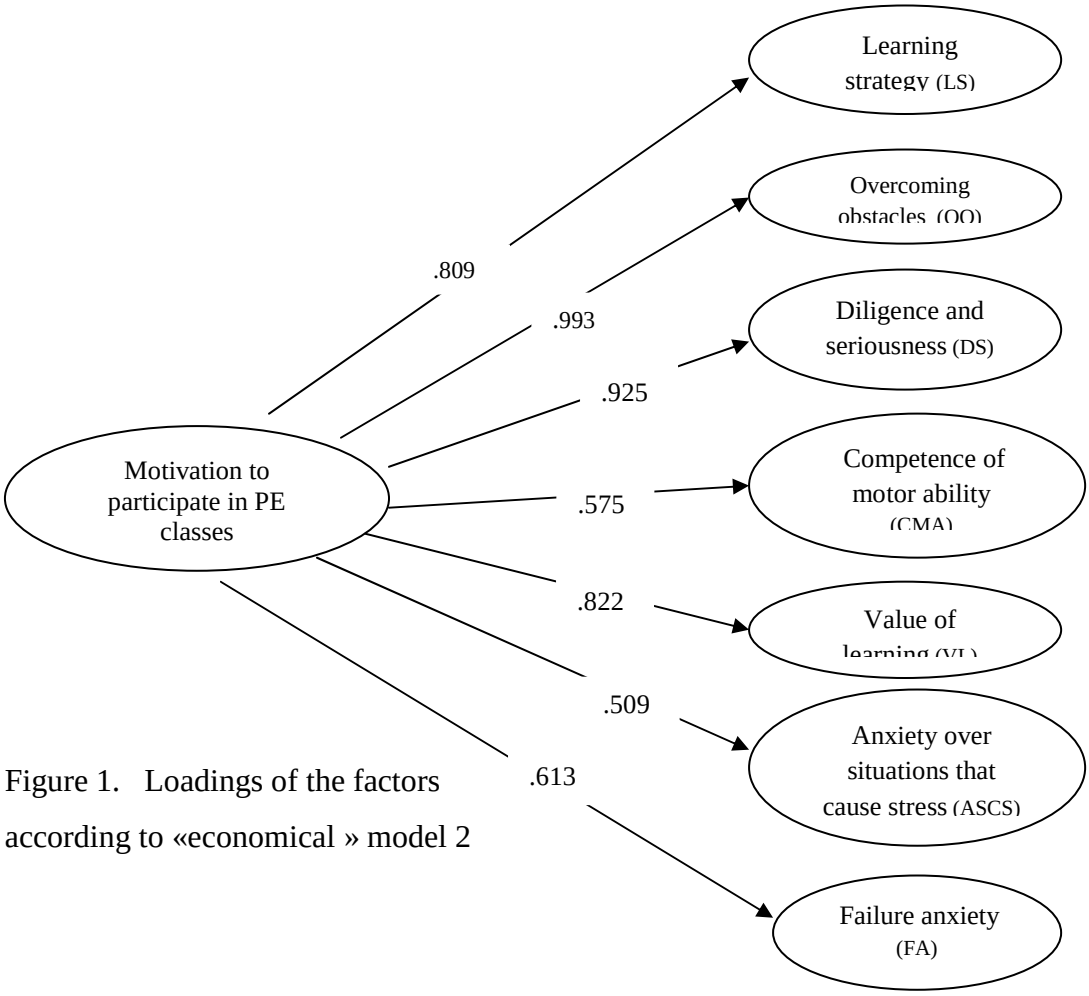

Figure 1. Loadings of the factors according to «economical » model 2

CONCLUSION – DISCUSSION

The results of the first phase analysis and the wide range of intercorrelations among factors show that factors are not related with each other to the same degree, leading to the assumption that they are conceptually different. The greatest differences are observed in the Comparative Motional Ability (CMA) factor, which is not correlated to the other factors in the first measurement, while it is negatively correlated to the factors of Anxiety Over Situations that Cause Stress (ASCS), and Failure Anxiety (FA), indicating that when CMA factor increases the other two factors decrease and vice versa. The conceptual differences arised may be attributed to context differences in which items of each factor refer, in particular, physical level factor (CMA) and cognitive level factors (all other factors).

The correlation of CMA factor with the two stress factors (ASCS and FA) suggests a connection between physical level of abilities and emotions of anxiety, stress, and failure that affect motor performance of students during their participation in PE lessons or sports. More specifically, LS factor referring to learning tools and strategies employed by each student while learning, is significantly correlated (**p< .01) in both measurements with a) the ability of students to overcome obstacles (OO factor) that emerge during PE lessons b) the intensity and zeal with which students focus on the task seriously during the lesson (DS factor) and c) the degree students consider PE lessons and tasks as valuable and useful so as to promote motor skills and learn (VL factor). Moreover, the LS factor is significantly related only with failure anxiety (FA) of student during the first measurement. In the second measurement, no correlation between the two factors was noted probably because students focused their attention on whether learning methods and strategies could affect failure anxiety and vice versa. A statistically significant correlation also emerged between this factor and the lie scale, which was also the case for the other factors as well.

The willingness that students exhibit to overcome obstacles (OO factor) that emerge during PE lessons or play is significantly correlated both in the first and in the second measurement with the intensity, enthusiasm and seriousness (DS factor) with which student focus on task so as to overcome these obstacles and the value student attribute to the things they learn during PE lessons. The significant correlation between the DS and VS factors shows that students are prepared to make a serious effort towards completing a task only if they are convinced about task's usefulness in terms of improving their motor skills and their psychological state of mind during sport competition plus providing the opportunity to develop friendships and enhance socialization through task participation.

The negative correlation between student' perceptions concerning their motor abilities (CMA) and ASCS factor shows that athlete's positive perceptions are important in order to reduce stress levels and fear of failure in PE settings. On the other hand, a smaller degree of personal belief in motor abilities may lead to an increased failure anxiety which is an expected result given the similarities between ASCS and FA factor within the broader conceptual model of anxiety.

A number of studies reporting results from exploratory factor analysis yielded a different factor structure for the model[21,22]. However, exploratory factor analysis is mostly used in instances where the purpose of the study is the development of a theoretical model, which in this case is already in place. According to Stevens (2002), confirmatory factor analysis based on an already specified theoretical foundation aims to validate the structure of the hypothesized factorial model. In this study, the results of confirmatory factor analysis supports the factorial structure of Nishida's model (1998)

[21] MIYAHARA, M.; HOFF, J.; ESPENES, G.; NISHIDA, T. "Achievement motivation in physical education. Japan versus Norway: A lesson on semantic differences". 10th International Conference of the International Society for Comparative Physical Education and Sport. Tokyo: Japan. 1996.

[22] RUIZ PEREZ, L. M.; GRAUPERA, J.; GUTIÉRREZ, L.; NISHIDA, T. "El test AMPET de motivación de logro para el aprendizaje en educación física: desarrollo y análisis factorial de la versión Española". *Revista de Educación*. 2004, vol. 335, p. 195-211.

and corresponds to the initial classification, plus at the same time a more "economical" model that does not affect this classification and structure is also provided.

In the present study, the strongest factors affecting motivation were Overcoming Obstacles (OO) and diligence and seriousness (DS) with loadings of .993 and .925 respectively. Goal setting is positively related to our performance in various aspects of our life. The acts of individuals are mainly guided by their aims and intentions[23] that affect the efforts and energy applied by a person towards a task. Setting targets can influence a person's performance in a positive way, as it improves attention and concentration, while at the same time stimulates and activates the person to intensify his effort and strengthen his persistence and motivation to keep trying[24]. Actions derived by internal motivation, are characterized by enjoyment and satisfaction without seeking an external reward while adopted behaviors aiming to results and gain of external rewards emerge from extrinsic motivation.

Another important factor is Value-Usefulness of learning (VL) with load .822. Naturally, learning is directly connected to teaching. According to recent thinking in the field of educational psychology[25], the pupil is not a passive being that reacts mechanically without interacting with environmental stimuli, but he/she constitutes an active entity, a producer, a transformer of information offered by the teacher. The learning outcome achieved by each student is a living product that is used to meet individual needs and resolve problems encountered in life.

However, it should be noted that despite the close correlation between learning and teaching, the existence of the first does not automatically imply the existence of the

[23] LOCKE, E.; LATHAM, C.A *Theory of goal setting and task performance*. Englewood Cliffs: Prentice Hall. 1990.
[24] LOCKE, E.; SHAW, K.; SAARI, L.; LATHAM, G. "Goal setting and task performance: 1969-1980". *Psychological Bulletin*. 1981, vol. 90, p. 125-152.
[25] GAGE, N. L.; BERLINER, D. C. *Educational psychology* (6th ed.). Boston, MA: Hougton Mifflin, 1998.

other and vice versa[26]. A useful, effective and high quality teaching requires educators to take into consideration the principles and laws of learning. After all, 'teaching' refers to the entirety of actions that a teacher may perform in order to challenge, stimulate, support and promote learning[27]. Studies showed that students' interest increases when the teacher pays particular attention to personal development through learning and takes into account the different goals that children set. Thus, methodical organization and class management are prerequisites toward an effective teaching[28,29,30,31,32] that requires preparation and planning as the first step to success and positive educational influence[33,34,35,36].

The teaching (learning) strategies with loading .809 constitute another basic component that improve lesson quality and performance and enhance personal development[37]. Physical education can have a major effect on students' cognitive, kinetic and emotional development. However, physical education's impact is conditional upon effective

[26] TRILIANOS T. *Methodology of modern teaching*. (vols. 1-2), Athens. 2003. [Τριλιανός, Θ. (2003). ΜεθοδολογίατηςΣύγχρονηςΔιδασκαλίας: Καινοτομίεςεπιστημονικέςπροσεγγίσειςστηδιδακτική πράξη, Τομ, Α & Β, Αθήνα].[inGreek]

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[30] DEUTSCH, F. "Evaluating teaching effectiveness: Catharsis makes a difference". *The Journal of Psychology*. 1981, vol. 107, p. 147-150.

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teaching approaches. Teachers' main goal in designing physical education lessons is to achieve a remarkable and permanent change in students' behavior so that this change is aligned with learning goals stated in the official curriculum. Teachers' effectiveness is positively related to better learning outcomes for students. Quality interaction between teachers and students is contingent upon mutual communication and true interest (both from teachers and students) in individual learning and deriving satisfaction from school[38].

Therefore, the gradual reduction of interest to participate in PE classes when children shift from primary to high school education can be attributed to the reduction of emphasis given by the teacher[39,40]. On the other hand, Toboulouglou and Papaioannou[41] highlight that student' broader social environment (parents, teachers and trainers) should be involved in supporting the goal of promoting learning, without actually making excessive demands on students, as that could lead to the adoption of avoidance targets, with all the negative implications for the psychological well being and behaviour of children.

According to Nicholls[42], some people have the tendency to use the distinct concept of ability more regularly than others and assess their ability by comparing their performance to that of other children carrying out the same or a similar activity. Indeed, perceptions of participants concerning their motor ability was another factor with a

[38] SIEDENTOP, D.; TANNEHILL, D. *Developing teaching skills in physical education*, (3rd ed). Mountain View: Mayfield, 1991.
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loading of 575. Clearly, personal improvement strengthens the sense of perceived ability and success which is directly dependent on personal effort with individuals who are oriented towards group work being capable to maintain their motivation at a high level for a greater length of time without worrying about failure.

According to McKenzie, Marsha, Sallis, και Conway[43], participation in PE lessons within school context is particularly important for adopting future positive behaviors toward an active and healthy way of life that includes physical activity engagement in sports. Unfortunately, very often the school environment constitutes a significant source of daily stress-inducing experiences of various types, with success often related to correct answers and high or low marks achieved[44,45]. Compared to students in junior or senior high school, primary education students' experience more stress over issues such as not being chosen for the school team or not managing to win nor achieving a high performance in sport activities, thus, getting a lower mark in PE lessons[46]. The competitive climate fostered by the educational system itself is also evident when it comes to who is the 'top student' in class or school[47]. Thus, stress is the process where an event or outcome leads an individual to judge his own ability to confront a situation and, later on, this judgment affects his behavior[48]. Stress is also caused when the

[43] McKENZIE, T.; MARSHA, S.; SALLIS, J.; CONWAY, T. "Leisure-time physical activity in school environments: An observation study using SOPLAY". *Preventive Medicine*. 2000, vol. 30, p. 70-77.
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demands imposed by the social environment exceed individual's ability to meet them according to his perception[49]. Not all students are equally able to recognize and balance between the kind of stress that relates to challenge and motivation and the kind of stress that relates to pressure to achieve a goal, nor all students are in a position to distinguish the difference between success and avoidance of failure. Consequently, only few students achieve 'top pupil' status and the rest simply experience a sense of failure and alienation[50].

The fear of failure is often referenced as a significant factor that inhibits people from trying to reach and achieve the maximum of their potential[51,52]. In order to avoid situations that cause anxiety, various teaching methods should be used to promote a sense of sufficiency to students, concerning their perceived level of abilities that in turn will lead students to see their efforts as a determining factor of their success[53]. In this way, they will not be subjected to stress that is assessment related every time they make mistakes during a physical activity. The fear of failure emerges in all instances where the criteria for achieving the goal set are defined by other people's judgments. The consequences of this fear may be different depending on whether or not it is related to problems in achievement, mental and physical health and moral development. Among the negative consequences of failure are the experience of embarrassment and shame, a reduced self-esteem and a sense of insecurity over an uncertain future[54] .

[49] LAZARUS, R. S.; FOLKMAN, S. *Stress, appraisal and coping.* New York: Springer. 1984.
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PE class as a learning environment sometimes promotes individualism that undermines the effort to motivate students[55]. The PE teacher constitutes a fundamental contributor concerning the creation of a positive motivation climate within school class by finding better and easier ways to assess motivation of children, highlighting the goals to be achieved, and influencing children's personal orientation[56,57]. In this way, students will form a clearer picture in their minds regarding what they are able to achieve. Through encouragement and avoidance of competitive climate the attractiveness of the lesson will increase, directing the children towards the broader aim of personal development.

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