

ORIGINAL RESEARCH

The Physical Activity Class Satisfaction Questionnaire (PACSQ) in Greek educational context: Psychometric properties

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Abstract

Background: The Greek bibliography does not provide researchers with a credible measurement instrument that can estimate satisfaction as a multi-dimensional concept, in the frame of a physical education lesson. **Objective:** The main aim of this study was to cross-validate the Greek version of the Physical Activity Class Satisfaction Questionnaire (PACSQ) in a Greek educational context. The internal consistency of the PACSQ was also examined as well as the levels of satisfaction, gender, and grade of studies as factors that differentiate lesson satisfaction from lesson attendance. **Methods:** A total of 459 elementary school students (220 boys and 239 girls) aged between 11 and 12 years, across the country joined in the study. The Greek version of PACSQ was used. The statistical analysis included descriptive analysis, confirmatory factor analysis, reliability analysis and discriminant and convergent validity, and one-way multivariate analysis of variance. **Results:** The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant χ^2 (3311.55), normed fit index (.95) and comparative fit index (.96). The root mean square error of approximation (.62) was also considered to assess the degree of fit of the model. Composite reliability ($\geq .879$) and variance extracted ($\geq .586$) of all dimensions of the PACSQ demonstrated an acceptable reliability coefficient. **Conclusions:** From the analysis of the results, we came to the following conclusions. The PACSQ constitutes an instrument credible enough to measure the satisfaction of elementary school male and female students. Students seem to be quite satisfied by the cognitive process. Gender is a differentiation factor only as far as Normative Success is concerned. Students in the 6th grade (12 years old) appear to be more satisfied by their participation in a physical education lesson.

Keywords: lesson satisfaction, elementary students, class attendance, physical education

Introduction

Schools provide a unique space for children and adolescents to respond to physical activity suggestions since they are capable of offering suitable knowledge in order to improve the students' motor skills as well as their education and health through a lifetime physical exercise, as promoted during physical education (PE) lessons (McKenzie, 2007). Physical activity at school is also linked to a variety of positive results such as satisfaction from school, self-appreciation, and achievement capacities (Digelidis & Papaioannou, 2004).

Scientific research supports that PE lessons at school may influence both male and female students' motives. As a result, students who are more motivated and enjoy exercising are more inclined to become active out of school (Yli-Piipari, 2011). When children and adolescents are satisfied from PE lessons, they are positive in participating in general physical activities and continue participating

during their adulthood (Dishman et al., 2005). Similar research concerning the subject of PE has shown that the most important factor for taking up physical activity is the pleasure and satisfaction one draws from it (Subramanian & Silverman, 2007). Dishman et al. (2005) have also reported that enjoyment during PE lessons resulted in higher levels of participating in physical activities on a daily basis, as can be seen in a sample of girls in the 9th and 10th grades. Sallis et al. (2000) have found that the pleasure experienced during PE lessons is a strong foreseeing factor in relation to students' active participation in the subject as well as in other forms of physical activity, for students from the 4th up to the 12th grade. In a USA study with 4th to 12th grade students, enjoyment during PE lessons was one of the strongest and consistent reasons for participating in the subject (Sallis et al., 1999).

One of the most decisive factors for the children's active participation in a PE lesson and their further engagement in physical activity is the satisfaction/ pleasure they get from

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participating in the subject (Yli-Piipari, 2011). Previous scientific researchers have supported that satisfaction is an essential element that motivates children and adolescents to participate in PE lessons and commit themselves to further engaging in physical activities (Barr-Anderson et al., 2008). It is therefore important for students to feel satisfied and enjoy PE lessons (Baena-Extremera et al., 2012).

Satisfaction is described as the positive influence which reflects general feelings of delight and entertainment (Scanlan & Simmons, 1992). Delight is considered as an inherent emotional element that is connected to motivation for active participation in physical activities and sports (Dishman et al., 2005). In relation to physical education at school, delight represents a direct and tangible influence for the students' participatory behavior, providing a direct reward for participating in the subject (Vallerand & Fortier, 1998). More recently, Hashim et al. (2008a) describe delight as a multi-dimensional structure related to enthusiasm, love, joy, ability perceptions, cognitive skills, and attitudes towards a certain activity.

Judging from the bibliography on PE, research about satisfaction/pleasure have been carried out mainly within the frame of internal motivation (Deci, 1975) according to which people who feel satisfied and autonomous while executing an activity are bound to experience higher levels of internal motivation which, in turn, leads to a great possibility to maintain the activity later on in life. Also, drawing pleasure from PE lessons has been examined from the point of fluctuation theory (Csikszentmihalyi, 1975) which describes subjective pleasure as a result of the balance between challenge and skills. Using this model in relation to PE, Mandigo et al. (2008) supported those children who felt balanced between their skills and the challenge of an activity reported higher levels of enjoyment in comparison with those who perceived disparity between their skills and that activity.

A growing number of researchers supported that satisfaction should not be considered as synonymous with internal motivation (Garn & Cothran, 2006), since such feelings minimize external factors that are equally important for being satisfied by a PE lesson, but as a broader and more inclusive structure. The general educational content, the teachers' behavior, the students' perceptive ability, the chances for social interaction, the improvement of the students' health in general as well as parental encouragement have been accredited as reasons which affect and enforce students' satisfaction in PE lessons (Fairclough, 2003; Garn & Cothran, 2006; Hashim et al., 2008b; Stevens et al., 2000). Other researchers have supported that the main focus should be on the elements connected to the process of an activity itself while others, that evaluations of both process and performance are equally important and consequently, they have a positive impact on the students' attitude towards PE and contribute to a general possibility for further engagement in physical activity (Hassandra et al., 2003; Standage & Treasure, 2002).

The relatively poor understanding of the processes that constitute the basis of satisfaction is partly attributed to the lack of adequate measurement instruments (Wiersma,

2001). A common instrument that is used to measure pleasure is the Intrinsic Motivation Inventory (McAuley et al., 1989). Concerning young people's sports, Scanlan et al. (1993) developed a measurement instrument that estimates pleasure with six factors: the perceptive ability, the enjoyment of sports, the positive interaction among the members of a team, the positive interaction between parents and coaches and finally, the effort and mastery. Others, such as Treasure and Roberts (1998), have utilized a multi-dimensional measure of satisfaction consisting of mastery experiences, social approval, and normative success. However, this measure does not consider aspects of satisfaction and enjoyment.

Despite the superiority of satisfaction in the frame of a PE lesson, the instruments that measure it can be considered one-dimensional or multi-dimensional according to the number of satisfaction dimensions they include. The Greek bibliography does not provide researchers with a credible measurement instrument that can estimate satisfaction as a multi-dimensional concept, in the frame of a PE lesson.

As a result, the aim of this study was to cross-validate the Greek version (Masadis et al., 2019) of the Physical Activity Class Satisfaction Questionnaire (PACSQ; Cunningham, 2007) in a Greek educational context. The internal consistency of the PACSQ was also examined as well as the levels of satisfaction, gender, and grade of studies as factors that differentiate lesson satisfaction from lesson attendance.

Methods

The research was approved by the Ethics Committee of the Democritus University of Thrace and the Greek Ministry of Education. Informed consent was signed by the parents of the students.

Participants

From elementary schools, 459 students of the final two grades, aged between 11 and 12 years, across the country joined in the study. Of a total of 220 male students, 106 were from the 5th and 114 from the 6th grade whereas the female participants came to 239, of whom 101 were from the 5th grade and 138 from the 6th grade (Table 1). The schools were chosen at random but considering the demographic proportion of the rural (33%), urban (39%) and suburban (28%) areas of the country. More specifically, first was the random choice of the 6 prefectures (out of 52) followed by the schools to be used as samples.

Instrument

The Greek version (Masadis et al., 2019) of PACSQ (Cunningham, 2007) was used. The original scale consisted of 45 items, that composed the nine factors of satisfaction. The first factor is named Mastery Experiences and it consists of five statements, for example "I am satisfied with the opportunity to learn new skills". The second factor is named Cognitive Development and it consists of five statements, for example "I am satisfied with what I learned concerning the technical aspects of the activity". The third

Table 1 Distribution of the sample by gender and class attendance

	5 th grade		6 th grade		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Boys	106	23.09	114	24.84	220	47.93
Girls	101	22.00	138	30.07	239	52.07
Total	207	45.09	252	54.91	459	100.00

factor is named Teaching and it consists of five statements, for example “I am satisfied with the instructor’s enthusiasm during the class”. The fourth factor is named Normative Success and it consists of five statements, for example “I am satisfied with how I am able to perform better than other students in the class”. The fifth factor is named Interaction with Others and it consists of six statements, for example “I am satisfied with the opportunity to make new acquaintances in the class”. The sixth factor is named Fun and Enjoyment and it consists of four statements, for example “I am satisfied with how much fun I had in the class”. The seventh factor is named Improvement of Health and Fitness and it consists of five statements, for example “I am satisfied with the class’s contribution to my overall health”. The eighth factor is named Diversionary Experiences and it consists of six statements, for example “I am satisfied with how I feel exhilarated during the class”. Finally, the ninth factor is named Relaxation and it consists of four statements, for example “I am satisfied with the way I am able to relax during the activity” (Cunningham, 2007).

Throughout the process the questionnaire appeared highly cohesive, with Cronbach’s α for Mastery Experiences .91, Cognitive Development .93, Teaching .90, Normative Success .93, Interaction with Others .94, Fun and Enjoyment .92, Improvement of Health and Fitness .95, Diversionary Experiences .93, Relaxation .85 (Cunningham, 2007). The answers were given on a 5-point Likert-type scale ranging from 1 (*no satisfaction*) to 5 (*very satisfying*).

The questionnaire was first applied to the Greek educational circles by Masadis et al. (2019) in a survey involving 132 boys and 141 girls from the 5th and 6th grades, and it was translated into Greek according to Banville et al. (2000; back-to-back translation). In the process of standardization, several methods were carried out, including exploratory factorial and reliability analysis and *t*-test for independent sample. The exploratory factorial analysis brought to the fore the nine factors recommended by the questionnaire’s manufacturer. These factors justified 77.47% of the total variance. Their cohesion was also remarkable Cronbach’s α ranged between .89–.97. The factors Mastery Experiences (3.89), Cognitive Development (3.72) and Improvement of Health and Fitness (3.69) are experienced with the most considerable tension while those who collected the least were Normative Success (3.31), Teaching (3.33) and Relaxation (3.39).

Data analysis

The statistical analysis included descriptive analysis, confirmatory factor analysis, reliability analysis, discriminant and convergent validity and one-way multivariate analysis of variance.

In the factorial analysis, firstly variables’ suitability was assessed. For this purpose, we used specific statistical criteria such as the partial correlation coefficient, which is controlled with the value of Kaiser-Meyer-Olkin and Bartlett’s test of sphericity, and measure of sampling adequacy (values close to 1 indicate the suitability about the use of a variable). The value of measure of sampling adequacy has been taken into account to check out if all indicators are appropriate for this model.

A confirmatory factor analysis was performed on the 45 items of the PACSQ. The method of estimating parameters is that of maximum likelihood (Bentler, 1995). The hypothesized model consists of nine latent variables, namely Mastery Experiences, Cognitive Development, Teaching, Normative Success, Interaction with Others, Fun and Enjoyment, Improvement of Health and Fitness, Diversionary Experiences, and Relaxation. The fit indices, which were considered, and their acceptable values are: namely minimum discrepancy (CMIN or χ^2), *df*, minimum discrepancy divided by the degrees of freedom (χ^2/df) < 5, root mean square error of approximation (RMSEA) < .08, standardized root mean square residual (SRMR) < .05, and incremental indices comparative fit index (CFI) > .90, normed fit index (NFI; Bentler, 1990).

Factors’ reliability control was realized by using the indicator composite reliability (Aguirre-Urreta et al., 2013; Hair et al., 2018). The reliability of the factor is acceptable when the indicator’s values are $\geq .70$. To assess the discriminant and convergent validity was taken into account the indicator average variance extracted. Values $\geq .50$ are acceptable.

One-way multivariate analysis of variance was used for the comparison of values in girls and boys.

Results

Suitability of data and variables

From the results is obvious that the statistical criterion of Kaiser-Meyer-Olkin is remarkably high (.91) and indicates a high enough correlation between the data of research. Furthermore, Bartlett’s test of sphericity rejects the zero hypothesis that the correlation’s table is the unitary one (the value of control function 19788.6, *df* = 990, *p* = .001).

According to the results, all the indicators are within the limits of the criterion above, the index ranges between .84, and .91, because the values .90 and .80 are appropriate, while values from .60 to .70 are acceptable but not so reliable, and finally those who are close to $\leq .50$ have to be deleted and not to be taken into consideration at the analysis to come (Hair et al., 1998).

Confirmatory factor analysis

The results of the confirmatory factor analysis demonstrated that the hypothesized model produced a significant χ^2 (3311.55), and χ^2/df (3311.55/909) = 3.64, p = .001. The NFI and CFI were found to be .95 and .96, respectively. The RMSEA was also considered to assess the degree of fit of the model. The RMSEA value for the hypothesized model was found to be .062 and SRMR = .046.

Composite reliability and average variance extracted

All of the dimensions of the PACSQ demonstrated an acceptable reliability coefficient ($\geq .879$; Table 2).

Means and standard deviations

As Table 3 shows, the factor Mastery Experiences is experienced by the sample in greater intensity. The factors Cognitive Development and Interaction with Others presented the second and the third higher rate respectively. The next rates presented the factors Fun and Enjoyment, Improvement of Health and Fitness and Diversionary Experiences. Finally, the factors Normative Success, Relaxation and Teaching presented the lowest rates.

Gender

To check whether there were statistically significant differences in gender, a one-way multivariate analysis of variance was performed. The results indicated that statistically significant differences between boys and girls owed to Normative Success ($F(1,458) = 5.520$, p = .02, η^2 = .019) factor. More specifically, boys presented a higher mean (3.45 ± 0.94) than girls (3.21 ± 0.98).

Class attendance

One-way multivariate analysis of variance was conducted to indicate any differences in class attendance of the participants. Results revealed significant statistical differences on the subscales of Mastery Experiences ($F(1,458) = 10.03$, p = .02, η^2 = .028). Students in the 5th grade had a higher score (4.02 ± 0.81) than students in the 6th grade (3.76 ± 0.91). In the Cognitive Development ($F(1,458) = 5.18$, p = .02, η^2 = .019) students in the 5th grade had a higher score (3.83 ± 0.74) than students in the 6th grade (3.64 ± 0.92). In the Teaching ($F(1,458) = 10.71$, p = .02, η^2 = .029) students in the 5th grade had a higher score (3.53 ± 1.34) than students in the 6th grade (3.11 ± 1.39). In the Relaxation

Table 2 Composite reliability and average variance extracted

Factor	Factor loading	Composite reliability	Average variance extracted
Mastery Experiences		.899	.641
Item 1	.92		
Item 2	.77		
Item 3	.81		
Item 4	.77		
Item 5	.82		
Cognitive Development		.879	.592
Item 1	.72		
Item 2	.70		
Item 3	.84		
Item 4	.79		
Item 5	.79		
Teaching		.923	.707
Item 1	.79		
Item 2	.86		
Item 3	.84		
Item 4	.81		
Item 5	.90		
Normative Success		.924	.710
Item 1	.86		
Item 2	.90		
Item 3	.84		
Item 4	.78		
Item 5	.81		
Interaction with Others		.931	.694
Item 1	.84		
Item 2	.80		
Item 3	.88		
Item 4	.79		
Item 5	.90		
Item 6	.78		
Fun and Enjoyment		.893	.677
Item 1	.79		
Item 2	.84		
Item 3	.81		
Item 4	.85		
Improvement of Health and Fitness		.898	.639
Item 1	.76		
Item 2	.83		
Item 3	.78		
Item 4	.76		
Item 5	.86		
Diversionary Experiences		.895	.586
Item 1	.71		
Item 2	.80		
Item 3	.74		
Item 4	.77		
Item 5	.76		
Item 6	.79		
Relaxation		.904	.702
Item 1	.85		
Item 2	.85		
Item 3	.80		
Item 4	.85		

Table 3 Means and standard deviations of factors

Factor	<i>M</i>	<i>SD</i>
Mastery Experiences	3.88	0.89
Cognitive Development	3.73	0.85
Teaching	3.30	1.38
Normative Success	3.33	0.97
Interaction with Others	3.65	0.95
Fun and Enjoyment	3.54	1.06
Improvement of Health and Fitness	3.53	1.08
Diversionary Experiences	3.52	1.00
Relaxation	3.33	1.10

($F(1, 458) = 5.12, p = .02, \eta^2 = .021$) students in the 5th grade had a higher score (3.45 ± 1.06) than students in the 6th grade (3.22 ± 1.13). Finally, in the Fun and Enjoyment ($F(1, 458) = 4.99, p = .02, \eta^2 = .018$) students in the 5th grade had a higher score (3.66 ± 1.06) than students in the 6th grade (3.44 ± 1.06).

Discussion

The main purpose of this study was to cross-validate the PACSQ (Cunningham, 2007) in a Greek elementary educational context. The selection of the specific questionnaire was made because it deals with satisfaction as a multi-dimensional concept. The review of the international bibliography has shown that the researches on the satisfaction felt during a PE lesson were carried out within frames giving emphasis on internal motivation factors as well as on the theory of psychological fluctuation (Csikszentmihalyi, 1975; Deci, 1975). Although the contribution of internal motivation on the satisfaction felt during a PE lesson is undisputable, the simultaneous examination of other external factors is important, in order to fully comprehend satisfaction during PE lessons (Hashim et al., 2008a, 2008b). External factors such as the content and organization of the subject, the treatment and enthusiasm of the teachers, the cognitive process, the perceived ability, the enjoyment felt or the positive interaction among students are specific experiences contributing to the students' satisfaction and should be accounted for seriously (Fairclough, 2003; Wiersma, 2001).

For all the above reasons, the instrument selected for the measurement of satisfaction during PE lessons was the Greek version (Masadis et al., 2019) of the PACSQ (Cunningham, 2007) which considers satisfaction as a multi-semantic factor, not a one-dimensional concept. In most cases, high levels of satisfaction seem to be the reason that students participate in extra-curricular physical activities (Papaioannou et al., 2006). Yet, according to Emmons and Diener (1986), satisfaction is closely related to the time spent on recreational activities.

As far as reliability is concerned, there are findings showing that the required internal consistency of the scale is high, which are similar to the findings of Cunningham and as well as those of Alvaro et al. (2014). The factors gathering the highest means in the students' preferences were Mastery Experiences, Cognitive Development, Interaction with Others and Fun and Enjoyment. What emerges from the analyses results is that students seem to be satisfied with the offered knowledge and are willing to further develop their kinetic skills using the acquired experiences connected to health, social interaction, and satisfaction during the lesson, which were the factors with the highest means. The results of the research are in accordance with those of similar researches which recorded that PE teachers should organize their lesson with educational strategies that provide students with suitable knowledge so as to develop their kinetic skills, creating a pleasant and enthusiastic environment that will satisfy all of them (Chen, 2014; O'Reilly et al., 2001). From this respect, it is indispensable that the

given tasks should be considered challenging and exciting. It is also important that teachers create a cognitive environment that favours positive interaction among the students and promotes various social factors concerning teachers and fellow students. Such strategies are said to enhance the students' knowledge and emotional implication while the lack of positive interaction and acceptance among students could lead to disappointment and indifference for the lesson (Azzarito & Ennis, 2003).

The second aim of the research was to examine the perceived satisfaction of 5th and 6th grade primary school students during PE lessons and whether there are statistically significant differences concerning gender and grade. In relation to gender, the results showed that there are no statistically significant differences concerning satisfaction during PE lessons, except for the factor Normative Success. These results agree with those of similar research according to which there are no significant differences in the perceived satisfaction concerning gender. Groves and Laws (2000) supported that the nature of the activity is of utmost importance for the pleasure felt by 11- to 16-year-old students, while Prochaska et al. (2003) argued that the differences of activities preferred by male and female students could explain the different levels of satisfaction during PE lessons. The same point was also made by Fairclough (2003) who observed that male students usually prefer team activities while female students individual ones. In a similar study, Westerståhl et al. (2005) reported that girls tend to select activities with lower tension than boys.

In relation to the study grade, students in the 5th grade presented higher means in all satisfaction factors than those of the students in the 6th grade. The results of the research agree with the views of other researchers (Barkoukis et al., 2010; Mowling et al., 2004; Ntoumanis et al., 2009) who support that the satisfaction felt during a PE lesson is gradually reduced as students grow older. Various researchers have supported that this reduction of satisfaction could be attributed to the lack of understanding of the procedures and stressed the importance of further analyses so that PE programs are more focused on maximizing satisfaction (Dishman et al., 2005). When students and adolescents have positive experiences and feel satisfied during a PE lesson, they are due to retaining physical activity even during adulthood (Dishman et al., 2005). Further comprehension of the procedures enacted could also help researchers and professionals invert the existing model.

It should be mentioned that the study concerned a specific group in terms of age and culture. Particular attention should be paid to age as a differentiation factor of satisfaction taking into consideration the current findings of the research. The results suggest that the only discrepancy based on gender refers to the Normative Success Factor whereas other studies state that in adults there is a considerable fluctuation of the received satisfaction they experience during physical activities. This is highly likely to happen due to the specific questionnaires that treated satisfaction narrow-mindedly, that is only as entertainment instead of a wider outlook which is the case with this survey.

The findings were drawn from a single resource, which was the 5th and 6th grade primary school students who participated in PE lessons. Therefore, further investigation is needed in order to evaluate whether satisfaction alters with time or with the different characteristics of various teachers.

The Greek version of the PACSQ could be applied to other educational scales (junior or senior high school) in the frame of the subject of PE but in different educational environments or in organized physical activities. In addition, the questionnaire users could thus evaluate the effectiveness of school programs, including a variety of subjects.

Conclusions

The results showed that the Physical Activity Class Satisfaction Questionnaire which was used in the present research is a valid and credible measurement instrument for evaluating the multiple factors related to satisfaction during PE lessons. It is highly advisable that PE teachers introduce the questionnaire in the class in order to confirm the effectiveness of the methods they use. By doing so, they might be able to review and modify them for the best possible results.

Conflict of interest

The authors report no conflict of interest.

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