

VALIDATION OF THE PHYSICAL EDUCATION TEACHERS' PHYSICAL ACTIVITY SELF-EFFICACY SCALE WITH A TURKISH SAMPLE

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The main purpose of this study was to determine the validity and reliability of the Physical Education Teachers' Physical Activity Self-efficacy Scale (PETPAS), developed by Martin and Kulinna (2003), in a Turkish setting, and to test if there are any differences according to gender and teaching experience of Turkish PE teachers. The Turkish version of the PETPAS was administered to 227 physical educators from 3 cities in Turkey. Exploratory factor analysis showed that the scale consists of 4 dimensions, as does the original. Cronbach's alpha was .86, and both the Equal-Length Spearman Brown split-half coefficient ($r = .72$) and Guttman's split-half coefficient ($r = .73$) showed good results. The independent t test results revealed that there were significant gender differences in *space*, *time*, and *institution* subscales. One way ANOVA results also indicated that *student* and *space* subscales significantly differed according to teaching experience of the PE teachers. These results indicated that the PETPAS is a valid and reliable scale for Turkish culture.

Keywords: teacher self-efficacy, physical educator, physical activity, teaching experience, Turkey, validity, reliability, PETPAS.

For many years, physical educators focused their attention on physical *fitness*. More recently, their attention has changed to encouraging physical *activity* (Morrow & Jackson, 1999). Physical activity during the school day has the potential to develop into positive exercise behaviors in children, and participation in such activity could lead to increased physical activity for children outside of school (Daley, 2002). Physical educators recognize the importance of promoting

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physical activity among students and are looking for ways to promote student activity levels (Vincent & Pangrazi, 2002).

Physical education focuses on the whole child, including cognitive and affective aspects as well as psychomotor aspects. Physical educators know and strive to achieve national standards in physical education. The instructional program helps develop the fundamental skills needed to be physically active. Physical activity is the content and product of the physical education program, which supports many important related content areas. The goal of physical education is participation in health-enhancing physical activity for a lifetime (Monti, 2004). School physical education is available to most young people and provides a context for regular and structured physical activity participation. Regular physical activity can have immediate health benefits by positively affecting body composition and musculoskeletal development (Malina, Bouchard, & Bar-Or, 2004).

Physical education programs should provide a significant amount of time for all students to actively participate. Physical activity education promotes physical activity outside the class setting as an outcome of choosing a healthy, satisfying lifestyle (Monti, 2004). Understanding how teachers promote physical activity through physical education is vital, as leading health and physical activity organizations have all emphasized the importance of providing physical activity in school physical education (Martin & Kulinna, 2003).

Bandura (1986) proposed that self-efficacy beliefs contribute to psychosocial behavior in distinct ways. These beliefs will influence how people behave, their thought patterns, and emotional reactions in various situations. People will avoid situations they believe they are not capable of handling. Their level of efficacy will determine how much effort they put forth and how long they persist in the face of failure. One's efficacy regarding stress, attentional demands, and effort affects one's thoughts and emotional reactions. People with high self-efficacy can focus their attention on the task at hand and expend more effort than those with low efficacy who may be stressed and tend to divert attention from possible solutions. Bandura cautioned that efficacy judgments are believed to be a major determinant of behavior only when requisite skills and proper incentives are present.

Teachers are critical in determining the activities children engage in during physical education classes. They can decide to implement curriculums and teach lessons that focus on social skills, sport skills, or health related fitness. The choices teachers make about day-to-day lesson content clearly have an impact on how much activity children will take part in during class (Martin & Kulinna, 2003).

The validation of the Turkish form of the Physical Education Teachers' Physical Activity Self-efficacy Scale (PETPAS) is an important contribution to physical

education research because it offers a theoretically sound and methodologically valid and reliable test score for assessing physical education teachers' physical activity self-efficacy for teaching physically active lessons in both middle and high school physical education settings in Turkey.

Therefore, the objective in this research was to test the validity and reliability of the PETPAS in the Turkish context in the area of physical education. Further objectives were to analyze the effects of gender and teaching experience on the PETPAS results.

METHOD

TRANSLATION

The English version of the PETPAS items were translated into Turkish, followed by a back translation procedure widely described in the literature (Hambleton & Kanjee, 1995). Initially, translation from English to Turkish was done separately by three bilingual researchers. Thereafter, translation discrepancies between the three translated forms were discussed in order to develop an initial Turkish version of the scale. A second bilingual translator whose native language was English and who had not seen the original English version of the PETPAS translated this initial Turkish version of the scale from Turkish back to English. The back-translated versions were then compared with the original English version and any inconsistencies, errors, biases, and incongruences highlighted.

Prior to carrying out this research, a pilot study with 21 physical educators was designed to control possible semantic instrument concerns. As an additional check, the translated instruments were independently reviewed by the jurors to confirm whether each item served the purpose of the instrument (Brislin, 1980). The approximate time necessary to complete the instrument was 10 minutes.

PARTICIPANTS AND SETTINGS

Participants consisted of 227 physical education teachers (164 males and 63 females) who were randomly selected from secondary and high schools in three Turkish cities (Kahramanmaraş, Mersin, and Elazığ). After schools had been chosen, permission was requested and granted from the Ministry of Education to conduct the study in these schools. The questionnaires were administered to physical education teachers in the school settings by the researcher. These were 79 early career teachers (5 years' experience or less), 63 mid career teachers (6–10 years' experience), and 85 late career teachers (11 years experience or more), with ages ranging from 23 to 59 years ($M = 33.93$; $SD = 7.41$).

INSTRUMENT

Physical Education Teachers' Physical Activity Self-efficacy Scale (PETPAS)

The PETPAS was developed by Martin and Kulinna (2003) for measurement of physical education teachers' physical activity and included four subscales and 16 items. The scale was developed based on Bandura's (1997) recommendations and is in line with other psychometrically sound self-efficacy instruments used in educational and human movement settings. The barrier items were transformed into questions addressing teachers' beliefs in their own efficacy in overcoming these barriers to physically active classes. Teachers read a header: "How confident are you that you can provide large amounts of physical activity (i.e., at least 50% of class time) in your lessons under the following conditions?" This was followed by the 16 questions. For example, one question read, "My students do not enjoy spending large amounts of class time being physically active". Each question was placed on a Likert scale anchored by 0% = *not at all confident* and 100% = *very confident*. Participants then circled one of 11 numbers, which were distributed over intervals of 10.

The questionnaire had four subscales labeled *student* (4 items), *space* (4 items), *time* (4 items), and *institution* (4 items). The *student* factor reflected teachers' efficacy for teaching physically active lessons when their students didn't enjoy, value, or want to participate in classes with a great deal of physical activity. The *time* factor was indicative of teachers' efficacy when they didn't have enough time during individual lessons, or across the week or semester, to adequately teach lessons with high levels of physical activity. The *space* factor was reflective of teachers' efficacy perceptions that they had difficulty teaching physically active lessons because they didn't have enough space due to small facilities or too many students. Finally, the *institution* factor was composed of questions that represented teachers' beliefs that a lack of funds, equipment, and collegial support presented obstacles to their ability to teach physically active lessons (Martin & Kulinna, 2003).

Sociodemographic variables In addition, a series of sociodemographic variables were included in the questionnaire to investigate the following: sex, age, and teaching experience.

STATISTICAL ANALYSIS

The descriptive statistics (means, standard deviations, skewness, and kurtosis) for the PETPAS items are shown in Table 1. KMO and Barlett tests were conducted. Principal component factor analysis with varimax rotation was used to analyze instrument structure, followed by a reliability analysis. To examine the internal consistency and reliability of the PETPAS, Cronbach's alpha and Spearman-Brown split-half coefficient analysis was performed. The Guttman's split-half technique for reliability of the instrument was also calculated.

Many statisticians (e.g., Cronbach, 1951; DeVellis, 1991; Nunnally & Bernstein, 1994) conclude that internal consistency is acceptable if a Cronbach alpha value is greater than .70. This guideline was employed in this study. Independent samples *t* tests were used to compare differences by gender and one-way ANOVAs with post hoc test were used to compare differences in teaching experience (independent variable) and subscales of the PETPAS (dependent-variables). The statistical analysis was conducted using SPSS version 15 for Windows.

TABLE 1
DESCRIPTIVE STATISTICS FOR THE PHYSICAL EDUCATION TEACHERS' PHYSICAL ACTIVITY
SELF-EFFICACY SCALE

Items	<i>M</i>	<i>SD</i>	Skewness	Kurtosis
Item 1	35.15	23.22	.64	-.05
Item 2	33.87	22.35	.62	-.06
Item 3	26.96	18.67	.58	.05
Item 4	28.06	20.58	.67	.04
Item 6	54.49	23.48	.25	-.63
Item 7	57.09	25.56	.09	-.81
Item 8	52.55	23.56	.18	-.5
Item 9	56.74	25.04	-.27	-.88
Item 10	61.76	26.54	-.27	-.82
Item 11	56.51	25.94	-.2	-.83
Item 12	44.89	28.11	.29	-.92
Item 13	53.83	25.18	-.18	-.7
Item 14	51.85	26.34	.02	-.68
Item 15	50.57	24.99	.05	-.64
Item 16	36.74	26.11	.5	-.46

RESULTS

PSYCHOMETRIC PROPERTIES OF THE TURKISH VERSION OF THE PETPAS

Exploratory factor analysis The KMO of sampling adequacy test result was .8 and Bartlett's test of sphericity was significant ($\chi^2 = 1013.44$, $df = 105$, $p < 0.01$). These results showed that the sample size was adequate and has shown sphericity. A principal components analysis followed by rotation using the varimax criterion was conducted on the 16 PETPAS items to replicate the four-factor structure reported by Martin and Kulinna (2003). Using the 0.4 cut-off point for excluding items not permitting reasonable interpretation (Tabachnick & Fidell, 2001) in any factor, one item (item 5) was excluded. Together, the four factors explained 71.66% of the variance (see Table 2).

Cronbach's alpha coefficient was .86. The Guttman's split-half coefficient procedure resulted in a good reliability coefficient ($r = .73$). Likewise the

Equal-Length Spearman Brown split-half coefficient showed a good correlation ($r = .72$). These good reliability coefficients infer that the test halves are highly correlated and the questionnaire has good internal consistency (see Table 3). The results from principal components and reliability analyses strongly indicated that a four factor structure for the PETPAS model was appropriate.

TABLE 2
FACTOR LOADINGS FOR PHYSICAL EDUCATION TEACHERS' PHYSICAL ACTIVITY SELF-EFFICACY SCALE

Items	Factor loadings			
	1	2	3	4
Item 1	.84		.1	
Item 2	.86	.18		
Item 3	.79	.2		
Item 4	.89	.15		
Item 6	.11		.18	.9
Item 7		.13	.35	.71
Item 8		.1	.15	.86
Item 9		.16	.75	
Item 10		.18	.83	.17
Item 11		.14	.74	.25
Item 12	.2	.13	.61	.26
Item 13	.17	.74	.33	
Item 14	.24	.83	.27	
Item 15	.1	.82	.2	
Item 16	.2	.76		.19
Eigenvalues	5.11	2.83	1.68	1.11
% of Variance	34.07	18.92	11.21	7.45

Note: Principal components factor analysis with varimax rotation was performed.

TABLE 3
CRONBACH'S ALPHA COEFFICIENTS, SPEARMAN-BROWN COEFFICIENT AND GUTTMAN SPLIT-HALF COEFFICIENT FOR PETPAS

Subscales	Number of items	Cronbach alpha	Spearman-Brown coefficient	Guttman split-half coefficient
Student	4	.88	.85	.85
Space	3	.84	.82	.73
Time	4	.79	.7	.7
Institution	4	.86	.79	.78
Total	15	.86	.73	.72

PEARSON CORRELATION ANALYSES

Pearson's product moment correlations were performed to test the extent to which the PETPAS subscale scores were validated. *Institution* and *space* had a significant positive correlation with *student* ($r = .4$ and $.14$ respectively, $p < .05$)

while *time* was only related significantly to *space*, with a positive correlation ($r = .49$; $p < .01$).

TABLE 4
MEAN SCORES, STANDARD DEVIATION, AND PEARSON CORRELATIONS FOR PETPAS

Subscales	<i>M</i>	<i>SD</i>	Student	Space	Time
Student	31.01	18.41	-		
Space	54.71	21.03	.14*	-	
Time	54.9	20.69	.12	.49**	-
Institution	48.24	21.51	.4**	.27**	.43**

Note: * $p < .05$, two-tailed. ** $p < .01$, two-tailed.

GENDER DIFFERENCES IN THE PETPAS

The difference between gender and the PETPAS subscales was tested by independent samples *t* test. The test results showed that there were significant differences between gender and *space* ($t(2, 225) = -2.06$, $p = .041$), *time* ($t(2, 225) = -2.69$, $p = .008$), and *institution* ($t(2, 225) = -2.59$, $p = .01$). The tests also revealed that the *space* scores of females were significantly lower than those for males (50.1 vs. 56.48, respectively). The same applied for the *time* (49.08 vs. 57.24) and *institution* (42.34 and 50.51) dimensions.

ONE-WAY ANOVAS RESULTS OF THE PHYSICAL EDUCATORS

The final analysis was conducted to determine whether efficacy judgments of physical education teachers differed according to their teaching experience. One-way ANOVA test results indicated that *student* ($F(2, 224) = 4.246$, $p = .015$) and *institution* ($F(2, 224) = 4.48$, $p = .012$) scores differed significantly depending on teaching experiences. The *student* subscale scores for mid career teachers were significantly lower than those for late career teachers ($M = 27.57$ vs. 35.5, respectively) while the *institution* scores for mid career teachers were significantly lower than those for late career teachers ($M = 41.9$ vs. 52.5, respectively).

DISCUSSION

The purpose of this study was to examine whether the PETPAS could be used among Turkish physical education teachers. The results suggest that the PETPAS-Turkish form is a valid and reliable instrument that could be used in studies in Turkey. Developed from the original PETPAS (Martin & Kulinna, 2003), this Turkish version of the PETPAS has proved valid and reliable with a similar four factor structure (and the elimination of one item, item 5).

The second purpose of this study was to analyze according to gender and teaching experience differences in PETPAS in Turkish physical education teachers. A gender difference was found in that female teachers had lower scores

for *space*, *time*, and *institution* factors than did males. It is possible that females perceive *space*, *time*, and *institution* as being less significant as barriers to their physical activity self-efficacy than do male teachers. In terms of teaching experience, one-way ANOVA test results indicated that the teachers with 6-10 years experience had lower barriers for *student* and *institution* factors than did teachers with both less (≤ 5) or more (≥ 11) experience.

Based on the current findings, researchers can be confident that the PETPAS can produce reliable and valid scores when used to assess PE teachers' physical activity self-efficacy in Turkey. Validation is a continuous process however, so future research should continue examining other psychometric properties of the PETPAS with larger and more diverse samples.

The purpose of this study was to translate, validate, and adapt a measure that could be used to assess physical education teachers' physical activity self-efficacy in Turkey. The results strongly support the validity and reliability of the PETPAS, and it could be used in Turkey in studies about physical education teachers' self-efficacy for teaching physically active lessons.

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