



Sense of fairness and social attitude among adolescents-validation of Ukrainian version of Fair Play questionnaire

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Abstract

The aim of this study is to assess the development of fair play soft skills by means of validated tools in the native language for the target group of adolescents. Fair Play in Physical Education Questionnaire (FPQ-PE) was completed by 450 secondary school students from the 9–14 age group, 490 secondary school students aged 9–13 years and 725 students aged 18–21 years. Linguistic validation was provided. Psychometric properties were assessed by exploratory and confirmatory factor analysis. The final version of the translation was the result of review process according to consultation with translators, redactor of scientific literature, and results of pilot testing. The general internal consistency was 0.861, indicating the good consistency of the instrument. In terms of test-retest validity of FPQ-PE, scores at first and second-time points have no significant differences. The CFA indicated a good model fit ($\chi^2/df = 2.15$, RMSEA = 0.074, SRMR = 0.058, CFI = 0.949). The results showed good test-retest reliability (Spearman's rho = 0.80, $p < 0.01$). In the age group 9–14 years old males had higher level of antisocial skills, but also a higher index according to "Convention" scale. For another group (18–21 years old) females had better prosocial skills according to results of "Respect towards teammates," "Gamesmanship," and "Cheating" scales. Our data confirm the validity and reliability of FPQ-PE for the young Ukrainian population. Strong correlation between subscales "Gamesmanship" and "Cheating" ($r = 0.85$), it could be recommended to analyze antisocial behaviour for Ukrainian adolescents.

Keywords: validation, fair play, translation, social behaviour, adolescents, physical education

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INTRODUCTION

Soft skills contribute many notable benefits that bring health and well-being. Soft skills are the broad set of skills, behaviours, personal qualities, and competencies that allow people to interact effectively and productively in their environment, both within the workplace and outside of it, to relate with others and achieve goals. Some examples of soft skills are interpersonal communication, adaptability, friendliness, teamwork, critical thinking, time management, and goal setting [1,2]. Nowadays, soft skills are becoming the new hard skills. According to investigations, up to 75% of long term job success depends upon soft skills mastery and only 25% on technical skills [3].

Mastering of soft skills helps students achieve such important affective outcomes as respect for others, acceptance of rules, prosocial values, communication skills, and positive social interaction [4–6]. As with cognitive skills, soft skills need to be explicitly taught, reinforced and promoted [7–9]. Physical education (PE) is getting special attention because of the benefits that it gives to a person [10]. A strategy in PE called the fair play can be useful for promoting and development of soft skills [11–14]. Fair play was defined as “not just playing by rules, but also respecting others, always participating with the right spirit and attitude, valuing equal opportunity and behaving with responsibility towards a teammate or a player” [15]. International Olympic Committee determines fair play as a set of actions dealing with: “Be true” (always do your best, do not try to fix an event), “Be safe” (never bet for your sport or your competition), “Be careful” (do not share information that could be used for betting purposes), “Be open” (if you are approached to cheat, do not keep silent, speak out) [16]. Fair play comprises and embodies a number of fundamental values, it provides opportunities to formulate positive behaviours regardless of life circumstances, learn how to achieve short- and long-term goals, and increase self-efficacy, and all this is relevant to soft skills [17].

Hassandra et al. created a 16-item survey tool (Fair Play in Physical Education Questionnaire, FPQ-PE) to evaluate prosocial and antisocial values [18]. The questionnaire was presented in English and Greek [19], Turkish [20], and Albanian language [21], the exploratory and confirmatory factor analysis was performed to establish construct validity and to understand the psychometric properties of the survey tool. This tool was used to examine attitudes towards fair play in PE classes [20], to examine fair play behaviours in middle and high school, and for young futsal players [22].

Currently, no valid and reliable Ukrainian version of the questionnaire is available for evaluation behaviours related to fair play in native Ukrainian speaking youth. Such a questionnaire is an indispensable tool for social, pedagogical, and research purposes of assessing interventional programs in PE that provide opportunities to form positive behaviour. Though the instrument's outcomes, its structure, and the meaning of components may vary depending on the culture. Research instrument has to be evaluated on validity and reliability, taking into account culture background. Subsequently, the aim of a study was to determine the validity and test-retest reliability of the Ukrainian translation of FPQ-PE.

METHODS

Participants

With the aim of analyzing the stability of psychometric indicators as well as influence of age and gender, three samples from distinct moments in time were used. First, a sample I (pilot sample) was used to provide language adaptation, ensure a proper understanding of the questionnaire, and to obtain evidence for validity and reliability. The psychometric properties of the questionnaire additionally were analyzed additionally in the other two samples (sample II and III).

Sample I. A total number of 450 secondary school students in the 9 to 14 years age group (male: $n=231$, age 11.41 ± 0.07 ; female: $n=219$, age 11.5 ± 0.07) studying in Lviv region (Ukraine) in 2018–2019 academic year participated in the study.

Sample II. This sample included 490 secondary school students aged 9–13 years (male: $n=230$, age 10.82 ± 0.05 ; female: $n=260$, age 10.90 ± 0.09) who studied in secondary schools in Lviv region in 2019–2020 academic year.

Sample III was composed from 725 students aged 18–21 years (male: $n=413$, age $=19.51\pm 0.05$; female: $n=312$, age 19.92 ± 0.07) who were attending universities in the Lviv region during 2020–2021 academic year.

All the students, schoolchildren and their guardians were informed about the purpose and design of the study and gave voluntary informed consent to participate in research. They were also briefed on the confidentiality of their personal data.

Data collection instrument

Fair Play in Physical Education Questionnaire (FPQ-PE) was created to assess self-reported fair play behaviours [18]. This questionnaire was used to assess the student's conception of fair play and the level of its formation in the process of physical education. The validity and reliability of the questionnaire were conducted by Hassandra et al. on the 10–12-year-old group [19].

The instrument consists of 16 items assessing four sub-scales (two prosocial and two antisocial), in particular, "Respect to teammates," "Respect for conventions," "Cheating," and "Gamesmanship." The questionnaire is assessed using a 5-point Likert scale (1 – never, 5 – always).

Hassandra et al. offered several ways to analyze the score of the questionnaire: 1. Calculate the means for each factor; 2. Calculate the means of all the prosocial items (respect to teammates, and conventions) and then the scores of all the antisocial items (gamesmanship, and cheating); 3. Calculate one total score for all items taking into account the need to reverse the antisocial items [19]. Assessment of results was done separately for each scale. The higher scores from the first two sub-scales and the lower scores for the other two sub-scales were accepted as positive. To apply the FPQ-PE, permission from the author, M. Hassandra, was obtained to conduct translation, cross-cultural validation, and further survey.

Translation and cross-cultural adaptation

Translation and cross-cultural adaptation of the FPQ-PE were carried out by guidelines [23–25]. Firstly, M. Hassandra authorized and recommended validating FPQ-PE. Secondly, cross-cultural validation was performed. Linguistic validation was a four-step process and consisted of forward translation, backward translation, cognitive interviews, and proofreading (Table 1).

Two professional native Ukrainian translators translated the English version of FPQ-PE independently into Ukrainian (forward translation). Each translator produced his/her own translation of the original items. The main priority of this step was to produce one joint translation version that is conceptually equivalent to the original questionnaire and use the language that is colloquial and easy for understanding. Both versions were discussed with the local coordinator, a consensus for the first Ukrainian version (V1) was reached.

Backward translation of V1 was performed by local professional translators, native speakers of the English language, bilingual in the Ukrainian language. Translators did not have access to the original version of the questionnaire. The obtained version was compared with the original instrument, all misunderstandings, mistranslations, inaccuracies in the V1 were discussed between backward translators and local coordinator, and then the V2 version was created. The V2 version was tested on a group of 20 children that was extracted from sample I. The participants could discuss any general or specific questions with the investigator controlling the pilot procedure. Testing was performed through individual interviews, during which the main priority was to obtain information about whether the participants had any difficulties in understanding the questionnaire; also, participant's interpretation of all items was checked. Results of the pilot testing were taken into consideration when producing the third Ukrainian version. For avoiding any typing, spelling, or grammatical mistakes, proofreading was made. For this process, editor of scientific literature whose native language is Ukrainian was involved.

Data analysis and management

All data analyses were completed using IBM SPSS Statistics V. 23 (SPSS Inc., Chicago, Illinois, USA) and AMOS V. 23.0.0 (Amos Development Corporation, Crawfordville, Florida, USA). Initially, the descriptive statistics (mean scores, standard deviation, average error, the item-total correlations, Cronbach alphas if the items were deleted) for each item were calculated. For the reliability analysis,

the Cronbach alpha test, average variance extracted (AVE), and reliability coefficient (CRC) were calculated.

For the validity analysis and to check whether the data could be used to factor analysis, the Kaiser-Meyer-Olkin measure of sampling adequacy and Bartlett's test of sphericity were calculated. Values lower than 0.05 of significance probability indicate a satisfactory factor analysis.

An exploratory factor analysis (EFA) was performed with the use of sample I to understand the structure of the translated survey. Maximum likelihood estimation and varimax rotation were applied. Students were chosen through convenience sampling methods for factor analysis, and then standardization was conducted. This step aimed to standardize the range of the continuous initial variables so that each one of them contributes equally to the analysis. Mathematically, this was done by subtracting the mean and dividing by the standard deviation for each value of each variable. The single variable extreme values were determined. Z-score for each item was calculated, and some lines were excluded from the data set. Accordingly, the sample size for EFA was 211. The profile of the participants is presented in Table 2.

Then confirmatory factor analysis (CFA) in the different samples were conducted. It was performed for verification of the structure of the obtained model. Root mean square error of approximation (RMSEA), standardized root mean square residual (SRMR), chi-square (χ^2), comparative fit index (CFI), normed fit index (NFI), Tucker-Lewis index (TLI), Incremental fit index (IFI) were to confirm the model. A cutoff criterion equal or higher than 0.9 was recommended for CFI, NFI, and TLI [26–28]. In addition, RMSEA values need to be 0.06 to 0.08, SRMR \leq 0.08 [29], χ^2/df acceptable values are considered those lower than 3 [30].

Finally, the convergent and discriminant validity was tested, and the centiles of the scores according to sex and age were calculated. Data was compared with Kolmogorov–Smirnov test.

For estimating the questionnaire's stability, repeated testing, and further assessment using rho-Spearman's correlation coefficient was conducted. The final version of the questionnaire was tested on 30 respondents from sample I. All participants completed all questions at two time points; the length of the test-retest interval was either two weeks. The significance level was set a priori at 0.05.

Bioethical approval

Ethics approval was obtained from the Ethics Committee of Lviv State University of Physical Culture (protocol number – LSUPC#2019-02-0406). Written informed consent for participating and publishing the results was obtained from every child and a parent or a guardian.

Table 1. The process of linguistic validation of the questionnaire in Ukrainian.

Steps	Result	Duration
Forward translation (translation of English version into Ukrainian)	First Ukrainian version (V1)	2 weeks
Backward translation (translation of first Ukrainian version into English)	Second Ukrainian version (V2)	2 weeks
Testing on respondents	Third Ukrainian version (V3)	3 weeks
Proofreading	Final Ukrainian version (V4)	1 week

Table 2. Sample I characteristics of participants for EFA and CFA (after standardization).

Variables		EFA	CFA
		% (n)	
Gender	Females	48.60 (104)	45.58 (103)
	Males	51.40 (110)	51.41 (109)
Grade	5	38.14 (69)	31.60 (67)
	6	40.19 (86)	40.57 (86)
	7	24.77 (53)	25.94 (55)
	8	2.80 (6)	1.89 (4)

RESULTS

Translation

The final version of FPQ-PE is shown in Table 3. During the translation process, some changes were made to improve the flow of the sentence in Ukrainian. For example, according to the rules of Ukrainian grammar, the sentence “I shake hands with opponents no matter if I lose or I win” has another word order (English equivalent – “No matter if I lose or I win, I shake hands with opponents”). Some items required additional discussion for word choice and meaning. Based on the review of forward and backward translations, problems with the translation of some words (“opponent,” “good performance,” “gamesmanship,” “cheating”) were detected. The version presented as the final Ukrainian version was the result of the review process and consultation with translators, editor of scientific literature, and pilot testing results.

Table 3. Final version of FPQ-PE.

English version	Ukrainian version
In my PE class when we play games:	На заняттях фізичного виховання, коли ми граємо в ігри
Respect towards teammates	Повага до товаришів по команді
I support my teammates	Я підтримую моїх товаришів по команді
I help my teammates	Я допомагаю моїм товаришам по команді
I reward the good efforts of my teammates	Я відзначаю хороші зусилля моїх товаришів по команді
I side to my teammates	Я на боці моїх товаришів по команді
Conventions	Домовленості
I congratulate opponents when I lose the game	Якщо я програв гру, то вітаю свого суперника
I shake hands with opponents no matter if I lose or I win	Незалежно від результату, я потискую руки своїм суперниками
I congratulate the opponents on their good performance	Я вітаю суперника з добре виконаною роботою
I shake hands with opponents when the game ends	Коли гра завершується, я потискую руки суперникам
Gamesmanship	Хитрування
I try to annoy the opponents	Я намагаюся вивести з рівноваги своїх суперників
I swear at my opponents	Я ображаю своїх суперників
I try to upset the opponents	Я намагаюся засмутити своїх суперників
I try to make my opponents angry	Я намагаюся розсердити своїх суперників
Cheating	Обман
I want to cheat	Я хочу обманювати
I cheat if I am sure that I will not get caught	Якщо я впевнений, що не попадуся, то обманюю
I cheat	Я обманюю
I cheat if it helps me win	Я обманюю, якщо це допомагає мені перемогти

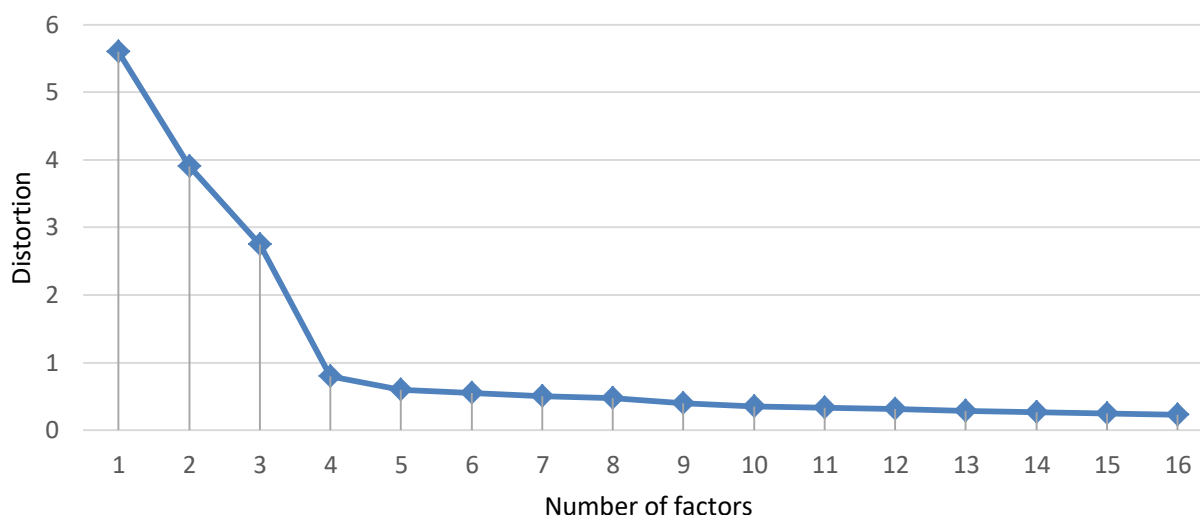


Figure 1. Principal component analysis.

Analyses of items and reliability

The 16 items from the FPQ-PE questionnaire were analyzed from all samples. Table 4 presents the mean scores, standard deviation, the item-total correlations, the Cronbach alphas, and alpha value if the item were deleted.

According to the results, each of the elements of the questionnaire makes a significant contribution to the result of the scale, and α -Cronbach does not improve significantly, provided that the element by eliminating any of the items if the Cronbach alphas of first sample are considered ($\alpha=0.847-0.937$, $0.772 < \alpha < 0.917$) as well as second ($\alpha=0.753-0.864$, $0.655 < \alpha < 0.864$) or third sample ($\alpha=0.829-0.905$, $0.778 < \alpha < 0.782$). Additionally, composite reliability coefficient (CRC) and average variance extracted (AVE) are adequate in all samples (for first sample: CRC = 0.68–0.91, AVE = 0.39–0.72; for second sample: CRC = 0.79–0.89, AVE = 0.48–0.67; for third sample: CRC = 0.81–0.87, AVE = 0.52–0.63).

Construct validity

Exploratory factor analysis

In order to find out whether the data collected was appropriate to exploratory factor analysis, Kaiser-Meyer-Olkin (KMO) coefficient and Bartlett test of sphericity value were calculated (KMO = 0.887, $\chi^2 = 2442.196$, $p = 0.000$). The principal component analysis was used, and the screen plot line table was analyzed (Fig 1). Then, varimax rotation was performed to detect the number of factors. Elbow method was used to determine an optimal number of factors from eigenvalue. The point where the line is curved most is 4, which serves as an optimal number of factors. The number of factors was 4 (two in prosocial and two in antisocial items) – $\chi^2 = 74.746$, $p=0.129$. The factor loadings are presented in Table 5. All r values associated with factorial weight showed statistical significance ($r < 0.001$).

The factor loading of the items forming the sub-scale “Respect toward teammates” was between 0.598 and 0.853, for the sub-scale “Respect convention” factor loadings were 0.784–0.855, for the antisocial scales factor loadings were 0.536–0.631 (“Gamesmanship”) and 0.662–0.867 (“Cheating”).

The eigenvalue of the first factor was 5.541, the explained variance ratio – 34.633; the eigenvalue of the second factor was 3.967, the explained variance ratio – 24.796, the eigenvalue of the third factor– 1.787, the explained variance ratio – 11.167; the eigenvalue of the fourth factor– 0.872, the explained variance ratio – 0.872. The variance ratio of the total questionnaire was 76.047.

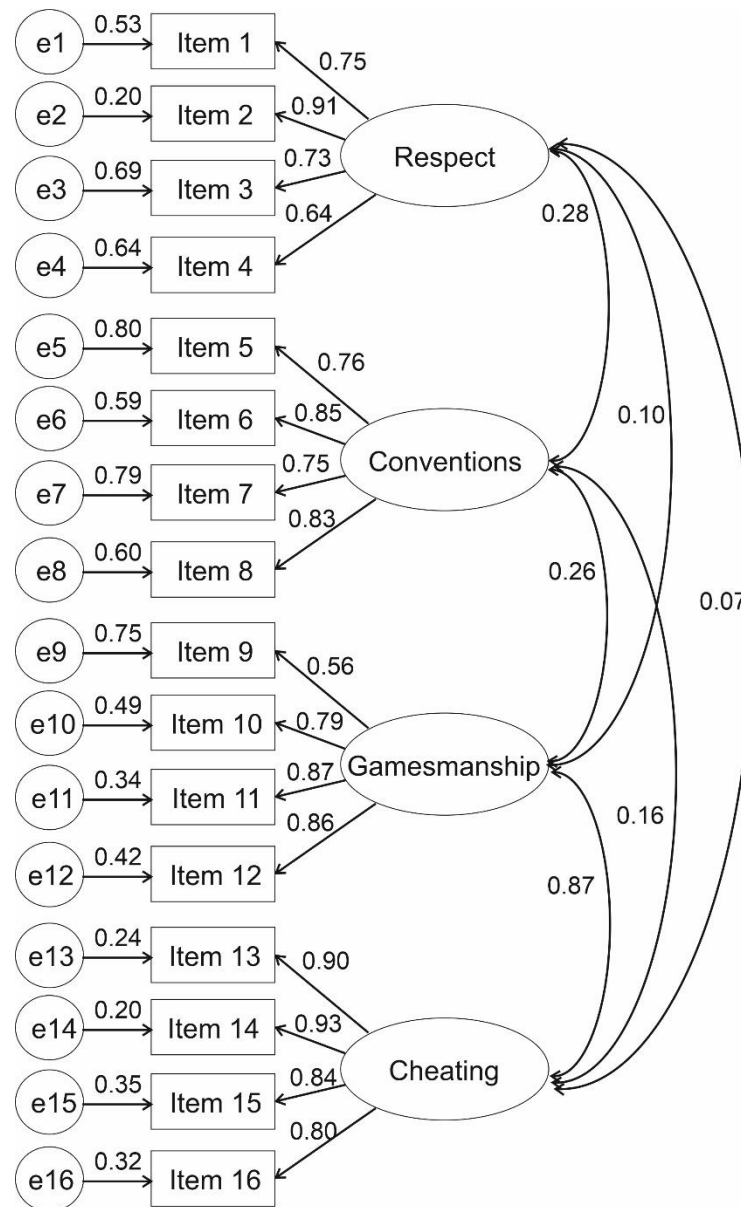


Figure 2. Visualization of CFA model of FPQ-PE. e1-16 – error of variance; item1-16 – each question from FPQ-PE; values are 230 representing correlation value between selected variables.

Confirmatory factor analysis

For determining whether the proposed model (Fig 2) fits the data, different indicators were used. Table 6 provides fit statistics for the CFA model that was constructed in this study. Second, we also observed the adequacy of the data from other samples using the KMO test (0.868 for sample II and 0.847 for sample III) and Bartlett's test of sphericity ($p < 0.001$ in all samples). The obtained results of CFA appear to justify the construct validity of the questionnaire in the different samples (Table 6). The Fornell-Larcker criterion, which is used in various scientific studies, was also used as a basis [31-34]. According to this approach, convergent validity can be assessed using AVE and CRV, then it is important for discriminant validity that the square root of AVE is higher than the correlation between factors. The results displayed in Table 7 suggest acceptable convergent and discriminant validity in all samples.

Table 4. Item analysis of FPQ-PE questionnaire.

Items	Sample I				Sample II				Sample III			
	$\alpha=0.866$; AVE=0.580; CRC=0.960				$\alpha=0.811$; AVE=0.582; CRC=0.957				$\alpha=0.840$; AVE=0.585; CRC=0.952			
	M	SD	rjx	α .-x	M	SD	rjx	α .-x	M	SD	rjx	α .-x
Respect towards teammates	$\alpha=0.851$; AVE=0.56; CRC=0.83				$\alpha=0.753$; AVE=0.53; CRC=0.82				$\alpha=0.850$; AVE=0.55; CRC=0.82			
#1	4.07	1.11	0.724	0.797	4.18	1.01	0.621	0.655	4.08	0.95	0.761	0.778
#2	3.94	1.09	0.785	0.772	4.05	1.05	0.617	0.656	4.11	0.93	0.763	0.777
#3	3.78	1.20	0.673	0.820	3.67	1.15	0.469	0.746	3.98	0.96	0.671	0.819
#4	4.15	1.11	0.593	0.851	4.37	0.94	0.504	0.719	4.41	0.79	0.575	0.855
Conventions	$\alpha=0.875$; AVE=0.69; CRC=0.90				$\alpha=0.864$ AVE=0.67; CRC=0.89				$\alpha=0.883$; AVE=0.61; CRC=0.86			
#5	2.92	1.41	0.743	0.875	2.76	1.32	0.640	0.854	3.45	1.14	0.691	0.870
#6	2.93	1.47	0.794	0.856	2.75	1.47	0.788	0.793	3.89	1.20	0.803	0.826
#7	2.87	1.35	0.759	0.869	2.95	1.34	0.723	0.822	3.52	1.14	0.724	0.857
#8	2.69	1.41	0.780	0.861	2.61	1.45	0.701	0.831	3.76	1.25	0.766	0.842
Gamesmanship	$\alpha=0.847$; AVE=0.39; CRC=0.68				$\alpha=0.772$; AVE=0.48; CRC=0.79				$\alpha=0.829$; AVE=0.52; CRC=0.81			
#9	2.62	1.38	0.572	0.840	2.11	1.24	0.389	0.805	2.27	1.19	0.566	0.839
#10	1.87	1.16	0.758	0.799	1.47	0.85	0.610	0.674	1.50	0.82	0.701	0.778
#11	1.88	1.19	0.774	0.791	1.54	0.97	0.640	0.648	1.63	0.99	0.692	0.769
#12	1.96	1.23	0.735	0.806	1.66	1.06	0.624	0.651	1.76	1.06	0.720	0.754
Cheating	$\alpha=0.937$; AVE=0.72; CRC=0.91				$\alpha=0.868$; AVE=0.65; CRC=0.88				$\alpha=0.905$; AVE=0.63; CRC=0.87			
#13	1.59	1.04	0.851	0.911	1.47	0.88	0.700	0.835	1.44	0.81	0.797	0.874
#14	1.72	1.10	0.858	0.908	1.61	0.99	0.738	0.819	1.54	0.90	0.824	0.863
#15	1.74	1.06	0.8829	0.917	1.68	0.90	0.754	0.814	1.65	0.87	0.783	0.878
#16	1.91	1.23	0.843	0.915	1.67	1.01	0.679	0.845	1.58	0.92	0.746	0.892

M - mean, SD - standard deviation, rjx - item-total correlation, α -x - Cronbach's alpha if the item was deleted, α - Cronbach's alpha, CRC - composite reliability coefficient (acceptable CRC ≥ 0.70), AVE - average variance extracted (acceptable AVE ≥ 0.40)

Reliability

In terms of test-retest validity of FPQ-PE, scores at first and second-time points had no significant differences. The results showed good test-retest reliability (Spearman's rho = 0.80, p<0.01).

Scores

To facilitate the interpretation of the obtained data, centiles and means were calculated in the different samples according to gender and age (Table 8). In the age group 9–14 years old males had higher level of antisocial skills, but also a higher index according to "Convention" scale. For another group (18–21 years old) females had better prosocial skills according to results of "Respect towards teammates," "Gamesmanship," and "Cheating" scales.

Table 6. Fit indexes of CFA model.

Fit indexes	Value		
	Sample I	Sample II	Sample III
χ^2	211.070, p = 0.000	270.3, p=0.000	220.5, p=0.000
χ^2/df	2.15	2.75	2.25
RMSEA	0.074	0.063	0.078
SRMR	0.058	0.054	0.056
CFI	0.949	0.944	0.937
NFI	0.910	0.919	0.924
TLI	0.938	0.932	0.923
IFI	0.950	0.945	0.938

Table 7. Correlations between FPQ-PE questionnaire factors.

Factors	Respect towards teammates	Conventions	Gamesmanship	Cheating
Sample I				
Respect towards teammates	(0.75)			
Conventions	0.331	(0.83)		
Gamesmanship	0.095	0.217	(0.62)	
Cheating	-0.07	0.168	0.566	(0.85)
Sample II				
Respect towards teammates	(0.73)			
Conventions	0.448	(0.82)		
Gamesmanship	-0.195	-0.152	(0.69)	
Cheating	-0.256	-0.225	0.546	(0.81)
Sample III				
Respect towards teammates	(0.74)			
Conventions	0.468	(0.78)		
Gamesmanship	-0.110	-0.060	(0.72)	
Cheating	-0.204	-0.132	0.486	(0.79)

* p<0.01. AVE Square root on the diagonal

Table 8. Statistical data according to sex and age.

Centiles / M (SD)	Sample I (9–14 years old)				Sample III (18–21 years old)			
	R	C	G	Ch	R	C	G	Ch
Females								
10	10	4	4	4	13	8	4	4
20	13	6	4	4	15	11	4	4
30	15	8	5	4	16	12	4	4
40	16	9	5	4	17	14	5	4
50	17	10	6	5	17	16	5	5
60	17	12	7	5	18	16	6	5
70	18	14	8	6	19	17	7	6
80	20	16	10	8	20	19	8	8
90	20	18	12	11	20	20	10	9
M (SD)	15.95 (3.77)	10.89 (4.88)*	7.24 (3.40)**	5.98 (2.95)**	16.87 (3.01)***	14.49 (4.51)	6.31 (2.76)**	5.79 (2.66)**
Males								
10	11	5	4	4	13	10	4	4
20	13	8	5	4	14	12	4	4
30	15	9	6	4	15	13	5	4
40	16	10	7	5	16	14	6	4
50	17	12	8	6	16	15	7	5
60	18	13	9	8	17	16	8	7
70	19	15	11	9	18	17	9	8
80	20	17	13	12	19	18	11	8
90	20	19	16	15,5	20	20	12	11
M (SD)	16.03 (3.72)	11.95 (4.90)	9.34 (4.53)	7.90 (4.71)	16.36 (3.04)	14.71 (3.71)	7.80 (3.58)	6.54 (3.36)

R – “Respect towards teammates” scale, C – “Convention,” G – “Gamesmanship,” Ch – “Cheating.” Statistically significant difference between result of females and males: * – $p < 0.08$; ** – $p < 0.001$; *** – $p < 0.01$;

DISCUSSION

The present study examined the psychometric properties FPQ-PE tool, validity, and reliability of the FPQ-PE adapted for Ukrainian respondents. This study helped provide a unique tool for the Ukrainian population with no analogs in Ukraine and met the needs of the national educational system. Thus, according to the concept of the political reform “New Ukrainian School,” the standard for school states that a number of core competencies must be formed for a child’s successful future. Among them are civic and social competencies related to the ideas of democracy, justice, equality, human rights, well-being, and a healthy lifestyle, awareness of equal rights and opportunities. They include soft skills – cooperation with others to achieve a common goal, activity in class and school life, respect for the rights of others, the ability to act in conflict situations and counteract discrimination, to appreciate the cultural diversity of different peoples, to care for own health, maintaining the health of others, follow a healthy lifestyle. It is recommended to develop these core competencies within all academic disciplines, including physical education. The implementation of these competencies in physical education is through the involvement of students in team sports, communication in different situations based on respect and sociability; leveling of conflict situations which can arise in the course of sports activity; and compliance with the principles of fair play. Despite numerous developments, many issues remain to be resolved in assessing children and young people’s well-being parameters. For example, parents’ and guardians’ involvement in the assessment process allows for the representation of a child’s level of development and ability according to age [35,36]. However, this assessment is more critical and often does not coincide with the child’s opinion but instead reflects the adult’s

expectations towards the child. It is also quite common that tools developed for adults are usually used without prior adaptation or testing [37–40]. Most of the developed tools focus on the cognitive component of well-being and do not study the affective component, which is key to ensuring adequate personal and social adaptation. Among the limitations of the known methodologies is the low number of cross-cultural adaptations, making it difficult to compare the well-being of children and young people living in different communities and speaking different languages. However, in Ukraine, there are no developed methods and tools for assessing prosocial and antisocial behaviour that would meet international standards and would allow us to assess the formation of soft skills through physical education. Therefore, it is challenging to monitor the effectiveness of the implementation of both local and national programs without tools that allow us to fully understand the contribution of physical education to the development of prosocial and antisocial values.

Several steps were conducted to realize this task: linguistic validation, testing of construct validity, and reliability of the questionnaire. For obtaining the Ukrainian version, forward and backward translation were applied. For the full process of adaptation, coordinated work researches, translators, respondents, and proofreader was organized. After linguistic validation, a 16-item Ukrainian version was used to collect data for exploratory factor analysis. Received data were analyzed for the possibility of using them for EFA. Values of the Kaiser-Meyer-Olkin coefficient, which was higher than 0.8, and Bartlett's test of sphericity that was lower than 0.01, indicated the possibility to use data for factor analysis.

We used data from a cohort of the Ukrainian youth population. We found that the FPQ-PE questionnaire is a reliable and valid instrument for this population. The internal consistency reliability coefficient of each domain and questionnaire, in general, indicated good internal consistency: 0.842 for respect towards teammates, 0.875 for conventions, 0.847 for gamesmanship, 0.937 for cheating. In general, reliability for all questionnaire was 0.861. Comparing the results with the original questionnaire, translated and validated tools into Albanian [21], and Turkish [20] languages, we can approve that the Ukrainian version is reliable. In proposed in other languages questionnaires, the results are conducted between 0.66 and 0.89 (original study), 0.61 and 0.77 for the Albanian language, 0.37 and 0.86 for the Turkish version.

CFA showed the acceptable fit of this model for the Ukrainian research population, and it is acceptable for a young person. We used various goodness-of-fit tests to assess a model. They allow us to decide whether to accept or reject the model that was tested in confirmatory factor analysis. There is no consensus on which indicators should be used. Some scientists [41] recommend using at least three different tests to reflect different criteria, while another [42] proposed a minimum of four tests, such as a chi-square; GFI, NFI, or CFI; NNFI; and SRMR. One of the main values that are most often analyzed is chi-square; according to the recommendation, if this index is < 0.05 , the researcher's model should be rejected. However, since the chi-square is too conservative, the researcher may well not take into account the negative result of the chi-square if other indicators of compliance support the model.

It is believed [43] that for a good fit, the RMSEA should be ≤ 0.05 , and for satisfactory fit ≤ 0.08 . Hu & Bentler [44] proposed $RMSEA \leq 0.06$ as a cutoff for a good fit to the model. SRMR is the average difference between predicted and observed variances and covariates in a model based on standardized residuals. The standardized residuals are the matched residuals divided by the standard deviation of the residual (this assumes a sufficiently large sample to ensure the stability of the standard error). The smaller the SRMR, the better the fit of the model. SRMR equal 0 indicates perfect, < 0.05 good, and < 0.08 satisfactory compliance. The NFI reflects the proportion in which the researcher's model improves compliance over the null model (random variables for which the chi-square is maximal). Traditionally, NFI values > 0.95 are considered good (e.g., according to [43], between 0.90 and 0.95 are acceptable, and < 0.90 indicates the need for model re-specification. To adopt the model, the CFI, and IFI should be no lower than 0.90. Investigators [43,44] proposed that $TLI \geq 0.95$ be considered as a cutoff for good model fit; values of < 0.90 indicate the need for model re-specification.

For CFA, results can only be compared to the Albanian version [21]. Despite differences in the strength of the correlation, the same tendency was maintained. Sub-scale "Gamesmanship" showed the weakest correlation with sub-scale "Cheating" after testing on the Albanian population ($r = 0.29$).

Similar results were obtained for the Ukrainian version of the questionnaire. The highest correlation coefficient was between “Gamesmanship” and “Cheating” sub-scales in both versions ($r = 0.57$ and $r = 0.87$, respectively). As the weakest correlation between sub-scales is better in an ideal model, due to cultural differences and its impact on language, there are difficulties with direct translations, as some behaviour can be valued differently among different cultures, even if they all originated from Europe as in this case [45]. Terminology is the main vehicle by which facts, methods and knowledge are represented and conveyed [46,47]. One of the problems during the translation and linguistic interpretation was establishing a semantic difference in the Ukrainian version of the questionnaire between words “gamesmanship” and “cheating.” Ukrainian translations of these words were interpreted as synonymous and were perceived as semantically similar for participants during individual interviews. Due to the results of EFA and CFA obtained model had 4-scale structure, similar to other language versions of the questionnaire, all fit indices met the standards. However, due to the strong correlation between subscales “Gamesmanship” and “Cheating” ($r = 0.85$), it could be recommended to analyze antisocial behaviour for Ukrainian adolescents according to the combined results of the two sub-scales.

CONCLUSIONS

Our research confirmed the validity and reliability of the Fair Play Questionnaire in Physical Education (FPQ-PE) for the young Ukrainian population. This 16-item survey was validated using a rigorous analytical approach, employing both exploratory and confirmatory factor analysis. This validated survey tool which consists of four scales (“Respect towards teammates,” “Convention,” “Gamesmanship,” and “Cheating”) can be used to measure fair play behaviour of Ukrainian children between 9–14 years old and youth (18–21 years old), evaluate the effectiveness of physical education for the formation of prosocial and antisocial behaviour according to key domains.

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