Full research paper

VALIDATION OF THE TEACHERS' PERSONAL AND PROFESSIONAL SKILLS QUESTIONNAIRE IN THE CZECH PHYSICAL EDUCATION SETTING

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ABSTRACT

Personal (PSs) and professional (PRs) skills are necessary to any physical education (PE) teacher, potentially having an impact on the quality of teaching and students' engagement in PE. In recent years, the Teachers' Personal and Professional Skills Questionnaire (TPPS-Q), composed of two 5-item dimensions (PSs and PRs), has been developed and tested. This study aims to test the validity of the TPPS-Q in the Czech school context. The analysis of the questionnaire and its structure, which was based on responses from 135 pupils enrolled in the last grades of Czech primary schools, was performed using the software AMOS for structural equation modeling. Results suggest that the structural model is appropriate after removing two items (CFI = .981; RMSEA = .058; SRMR = .041). Internal validity was good for both PSs (Alpha = .811; Omega = .814) and PRs (Alpha = .795; Omega = .794). Reliability was also found to be good (PSs: ICC = .888; PRs: ICC = .760). Additional scores were assessed for convergent and discriminant validity. The final 8-item version is valid and can be used in the Czech school environment.

KEYWORDS

Personal skills, physical activity, physical education, professional skills questionnaire

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Highlights

- *The instrument was adapted following the scientific Translation, Review, Adjudication, Pre-testing, Documentation (TRAPD) method.*
- *The Czech version of the TPPS-Q is scientifically sound after the removal of two items.*
- *TPPS-Q is a unique instrument for assessing perceived teachers' skills in the classroom, filling an important gap in literature.*

INTRODUCTION

Teachers are the cornerstone of the teaching-learning process and, in a broader way, of the effectiveness of any educational system; for success, they must possess not only excellent pedagogical skills and practical experience but also an appropriate personal attitude (Dytrtová, 2018). Excellence in the teaching profession lies in the synergy between these two aspects, i.e., in combining and effectively using professional and personal skills (Farahmand, 2022). For physical education (PE) teachers, these two sets of skills become increasingly important compared to other subjects since they influence academic achievement and students' choice to be active or inactive in their lives (Martins et al., 2018).

According to Setiana et al. (2019), professional and personal skills include, among others, knowledge of the tasks and ability to manage them; planning skills; engagement in the activities; positive and fair attitude; as well as proper communication skills and high responsibility. Yanova et al. (2021) add that mutual understanding with the students, knowledge of creative and innovative methods and technologies, or the ability to propose new techniques may also be considered as important professional and personal skills for PE teachers. Baumgartner (2022) underlines that teachers can acquire and improve these skills using professional training and practice. Hence, developing high-quality skills may lead to more effective and successful job performance, which can create a positive environment for the recipients and increase personal and professional development (Doraisamy & Rahman, 2023). Additionally, these skills enable teachers to solve various problems during the development of their lessons (Yanova et al., 2021). Some

authors further emphasize the need for teachers to integrate professional and personal skills and use them simultaneously to be able to apply them properly (Ahmad, 2021).

Given the importance of these skills for PE teachers' professional success and for their students' engagement in PE and adherence to physical activity (PA) – hence, the promotion of active habits, a stream of studies has focused on developing instruments that may accurately measure them. Among them, a recently published work by Cocca et al. (2023) presents a novel questionnaire based on students' perception of their teachers' skills, the Teachers' Personal and Professional Skills Questionnaire (TPPS-Q), which has the advantage of gathering information on both professional and personal skills simply and quickly. The instrument is based on a work by Brettschneider et al. (2005), who had originally generated a pool of twelve questions focused on the above-mentioned skills within the framework of a project on school sports. For their creation, the authors carried out an in-depth analysis of PE, performing observations and interviews with all actors involved in the teaching-learning process, including parents and education specialists. The final version of the TPPS-Q is composed of five items for each type of skill. Students are asked to rate their teachers' characteristics (professionalism or empathy) using a scale from 1 to 5. The original questionnaire is presented in German, and Cocca et al. (2023) tested it in a sample of adolescents, finding excellent internal consistency and structural validity parameters.

The significance of properly assessing teachers' skills in the PE environment is clear, and this may be even more essential within the Czech educational environment, in which most PE teachers are usually asked to teach at least an additional school subject, thus needing to differentiate their skills and how they use them based on whether they are at the sports hall or in a regular classroom. Implementing the TPPS-Q, a tool that shows excellent validity at the same time as it is easy and quick to use in schools, could be of great use in this sense. Hence, the present work aims to verify its validity in the Czech educational setting.

METHODS

Sample

A total of 135 (girls = 55.6%) high school students, selected using a convenience sampling strategy, participated in the study. Students' ages ranged from 15 to 18 years old. Inclusion criteria for the selection of participants were as follows: (a) pupils enrolled in high schools whose principals had provided permission to carry out the research; (b) actively engaged in PE classes; (c) regularly participated in PE in the six months preceding the data collection, i.e., missed no more than 10% of the total PE sessions. Criteria for the exclusion of participants included (a) the impossibility of responding to the questionnaire due to medical or non-medical reasons, (b) holding a waiver for the PE subject, and (c) not in possession of informed consent signed by their parents/legal guardians. The data was collected from two secondary schools in the Moravian-Silesian region, the Czech Republic.

Instrument

A Czech-translated version of the TPPS-Q (Cocca et al., 2023) was used to record students' perception of their PE teachers' professional and personal skills. As described above, the tool is composed of 10 items equally distributed in two sub-scales (professional and personal skills) using a Likert-type scale ranging from 1 (strongly disagree) to 5 (strongly agree). For each sub-scale, average scores below 2.5 indicate perceived low teachers' skills, whilst scores higher than 2.5 are considered as indicating that students perceive their teachers' skills as high. Table 1 shows the items in the original language and their corresponding translation in the Czech language.

German version (English)	Czech translation
Selbstsicher (Self-confident)	Sebevědomý
Freundlich (Friendly)	Přátelský
Verständnisvoll (Understanding)	Chápající
Ungeduldig (Impatient)	Nedočkavý
Gerecht (Just)	Spravedlivý
Engagiert (Dedicated)	Zapálený
Humorvoll (Funny)	Vtipný
Sportlich (Athletic)	Atletický
Vorbereitet (Prepared)	Připravený
Fachlich gut (Professional)	Profesionální

Table 1: Original, English, and translated items of the Teachers' Personal and Professional Skills Questionnaire (TPPS-Q)

Procedure

The first step was to translate the original questionnaire into Czech using the Translation, Review, Adjudication, Pre-testing, Documentation (TRAPD) method.

Following this method, the original questionnaire was given to three linguists who specialized in German-Czech translations and provided independent forward translations. The results of the three independent translations were then compared, and any incongruence among them was settled during joint meetings with translators and the research team to create a single Czech version. A back translation was then requested from three linguists (different than those in charge of the forward translations). These back-translations were compared to each other and the original questionnaire, and incongruences were again settled by means of discussion tables with the translators and the research team. As a result of this process, an initial

Czech version of the TPPS-Q was generated. During the second step, this Czech TPPS-Q was pre-tested with a sample of 21 students with the same characteristics as the validation sample to verify whether all items were clear and understandable for the target population.

A final version of the Czech TPPS-Q resulted from this process and was used with the validation sample in the following step of the work. Before completing the questionnaire, all respondents were allowed to withdraw from the questionnaire and were informed that they could withdraw at any moment during the tool filling. Instructions and important information were verbally provided before the start of the data collection to avoid potential confusion or biases, such as the anonymous condition of the answers and the fact that results would not be directly shared with or overseen by the involved teachers. Researchers also responded to any additional questions from the participants.

Data Analysis

All analyses were carried out using the IBM SPSS and IBM Amos software. For the analysis of the structural validity (model fit), the following indexes of goodness of fit were examined: CFI (threshold above .95); RMSEA (threshold below .08); SRMR (threshold below .09); and TLI (threshold above .90). In case of poor model fit, two parameters were verified before any adjustment was made: item loadings, with values above .50 considered as good, values between .50 and .40 as acceptable, and values below.40 as inadequate (Hu & Bentler, 1999); and standardized residual covariances (SRC) between items, if higher than 2 (Collier, 2020; Fabrigar et al., 1999). Internal consistency was tested by calculating Cronbach's alpha and McDonald's omega for each sub-scale separately. For both parameters, values below .60 are insufficient, values between 0.60 and 0.80 are sufficient, and values above 0.80 are satisfactory (Cortina, 1993; Nunnally & Bernstein, 1994). Test-retest reliability was verified with a smaller sub-sample of the participants who responded to the TPPS-Q twice within fifteen days. The Intraclass Correlation Coefficient (ICC) was calculated for this purpose: values of ICC between 0.50 and 0.75 indicate moderate reliability; values between 0.75 and 0.90 indicate good reliability; any value below 0.50 indicates that the data are not reliable (Bobak et al., 2018). Regarding convergent validity, Average Variance Extracted (AVE, threshold above .50) (Fornell & Larcker, 1981) and Composite Reliability (CR, threshold above .70) (Hair et al., 2014) were calculated. Finally, discriminant validity was evaluated by comparing the AVE scores for each sub-scale with the quadratic correlation between that sub-scale and the other (Chai et al., 2022). To confirm discriminant validity, values from the former must be higher than the latter (Chai et al., 2022).

RESULTS

After the first evaluation, the model did not meet the established criteria (CFI = .906; RMSEA = 1.103; SRMR = .083; TLI = .875). Two items, "Impatient" and "Self-confident," showed loading values below.40. As a first step, the item "Impatient" was discarded, and the model was re-tested, with parameters showing insufficient model fit (CFI = .911; RMSEA = 1.106; SRMR = .076; TLI = .897). Following, the second conflicting item ("Self-confident") was discarded, and the model with 8 items (4 per each sub-scale) was tested. This model showed acceptable indexes of goodness of fit (CFI = .981; RMSEA = .058; SRMR = .041; TLI = .971). Figure 1 shows the final structure of the Czech TPPS-Q.

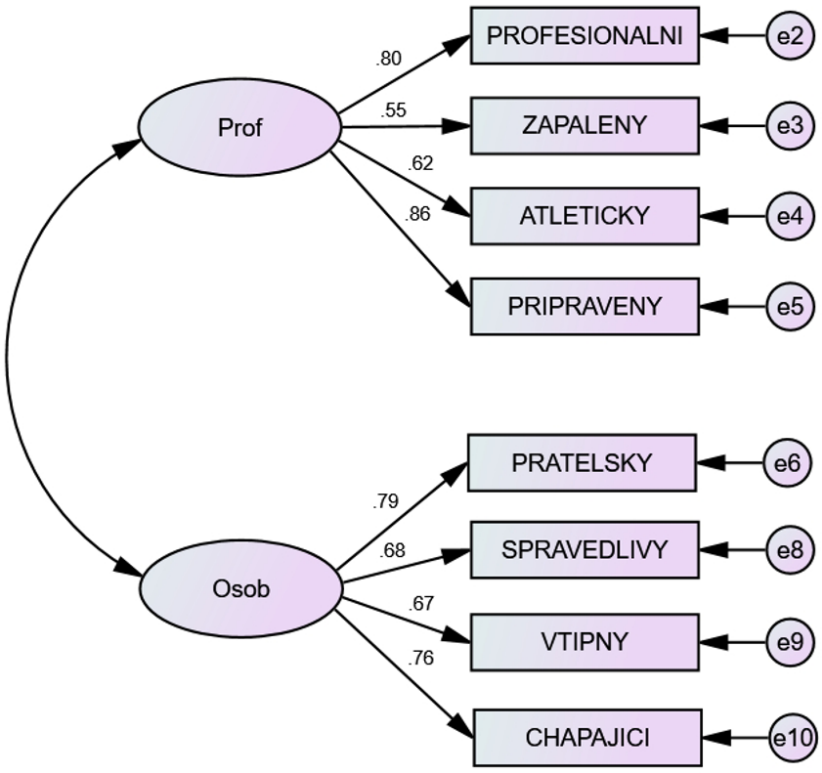

Figure 1: Final structure of the Czech version of the Teachers' Personal and Professional Skills Questionnaire

Cronbach's alpha and McDonald's omega for both 4-item sub-scales showed good scores (professional skills scale: Alpha = .795; Omega = .794; personal skills scale: Alpha = .811; Omega = .814).
Regarding reliability, ICC score for the professional skills sub-scale was good (ICC = .760); the result of the ICC testing was found to be good also for the personal skills sub-scale (ICC = .888).
For convergent validity, the professional skills and the personal skills sub-scales obtained AVE scores of .52 and .53, respectively; and CR scores of.81 and.82, respectively.
Finally, discriminant validity was confirmed for both sub-scales (professional skills sub-scale: AVE = .52; quadratic correlation = .47; personal skills sub-scale: AVE = .53; quadratic correlation = .47). Table 2 presents the model parameters for the tested structures for the Czech TPPS-Q.

	Original version	Version without "Impatient"	Final version
CFI	.906	.911	.981
RMSEA	1.103	1.106	.058
SRMR	.083	.076	.041
TLI	.875	.897	.971
Alpha	-	-	.795 - .811
Omega	-	-	.794 - .814
ICC	-	-	.760 - .888
AVE	-	-	.52 - .53
CR	-	-	.81 - .82

Table 2:Model parameters for the original questionnaire, after removal of the first item, and the final 8-item tool

DISCUSSION

This study aimed to test the validity of the TPPS-Q, a newly developed questionnaire that assesses students' perceptions of the professional and personal skills of physical education teachers in the Czech school environment.
Compared to the original questionnaire on which this work is based (Cocca et al., 2023), the initial Czech version was not satisfactory due to the presence of two conflicting items, i.e., "Impatient", and "Self-confident". Unlike all the other items in the questionnaire, "Impatient" has a negative meaning. Authors such as Shrestha (2020) mention that items with opposite direction than others within the same sub-scale may lead to confusion or, in some cases, to excessively high correlations, inducing a problem of collinearity when using validation-related statistical methods (Shrestha, 2020). When this happens, the assessed tool may suffer from the presence of redundant items, which are considered detrimental because they do not add further information at the same time as they increase the length of the affected instrument (Staffini et al., 2022). Considering that the TPPS-Q represents a relatively new questionnaire and that these statistical issues tend to arise more often in new tools (Staffini et al., 2022), it is possible that the initial Czech version was affected by this problem.
The above may also explain the conflicting results for the "Self-confident" item since authors have underlined that self-confidence is not always perceived as a virtue; in some settings, it may be considered a negative personal characteristic (Spittle, 2012). Hence, respondents in our sample may perceive their PE teachers' high self-confidence as a sign of arrogance or an ego-centric personality (Spittle, 2012).
A further reflection on our results may be provided: in the Czech educational system, the Czech School Inspectorate (*ČŠI*) is a body that focuses on analyzing the work of teachers, evaluating the effectiveness of schools, and assessing conditions, processes, and outcomes of education (*ČŠI*, 2023). Additionally, the *ČŠI* also aims to monitor compliance with educational legislation. Like any other teacher, PE teachers are constantly evaluated by *ČŠI* inspectors, this external scrutiny perhaps placing a higher emphasis on professional skills. Hence, teachers' behavior may be partly affected by the need to satisfy the *ČŠI* parameters, this possibly being reflected in higher than normal impatience towards students – due to the need to obtain positive outcomes –and a willingness to show high self-confidence in the classroom, which may be interpreted by the inspectors as a demonstration of high mastering of the teaching-learning process.
It must also be considered that it is common for context-related versions of the same instrument to present differences directly associated with the diversities that communities inherently have (Huang & Wong, 2014). The Czech educational system and the German one, within which the original questionnaire was validated, may present dissimilarities not only in the structure of the schooling scheme but also in the way education is perceived, as well as the approach and national/regional objectives set for PE (Huang & Wong, 2014). Nonetheless, our results show that, despite potential differences between the two environments, the overall structure of the questionnaire is consistent and valid; therefore, it can be implemented in both systems, and results can be compared for a deeper understanding of PE dynamics in diverse contexts. This is also confirmed by contrasting the indexes of goodness of fit for the German (CFI = .953; SRMR = .053) and the Czech version (CFI = .981; SRMR = .041).

Strengths and Limitations

Among the strengths of this work, it can be mentioned that a scientifically sound Czech version of the TPPS-Q will provide the possibility of obtaining deeper insights into how teachers' sets of skills may have an impact on the quality of PE in the Czech Republic, not only contributing to shaping PE

teacher training for both in-service and pre-service teachers, but also understanding what teachers can do to promote motivation to participate in PE or physical activity, and engagement in the PE classroom. Furthermore, validating an existing questionnaire in the Czech system may strengthen research in this field, particularly in comparing different educational systems and how each may be adapted based on social and cultural differences.

Some limitations can be pointed out for this study. Firstly, the results are based on students' perceptions, which may not fully accurately describe the reality, particularly in the evaluation of teachers' professional skills, which are partially "hidden" from them (for instance, the process of planning a lesson happens out of the lesson time and the students are unaware of how the teacher carries the planning out). Secondly, the answers were collected in just two schools. Although the sample size may be considered sufficient for the validation analysis, reaching a wider and more diverse portion of the population may increase the strength of the validation process. In addition, the schools were classified as "grammar schools", which commonly provide the best education, and many of the students continue their studies at the higher education level (State Administration, 2024). Hence, including students and schools with different conditions, advantages, and disadvantages may be of interest in confirming the validity of the tool and any potential variance in its structure. In line with the above, an additional limitation is that both schools were placed in the same region. Since different Czech regions may have slightly different approaches to education and PE, the instrument may benefit from selecting samples from each area. Indeed, literature confirms that each region within the same country may present specific characteristics and needs that are different from those of the others (Gay, 2015). A final limitation may lay in how the items were interpreted. Although the translation and adaptation process was rigorous and included a pre-test on a small sample with similar characteristics to the target sample, individual differences may still play a role in understanding and interpreting certain concepts (Mustofa & Hidayah, 2020).

CONCLUSIONS

After two conflicting items were removed, the Czech TPPS-Q structure showed suitable parameters for further use within Czech schools. The final version comprises four items for the professional skills subscale and four for the personal skills subscale.

Future data collected using this new instrument may be valuable not only for understanding the current status of teachers' preparation for high-quality PE delivery but can also contribute to shaping future operations within the school system and tertiary education programs focused on training future PE teachers.

Future steps in validating the instrument within the Czech educational system may consider analyzing invariance by gender, socioeconomic status of the school, region, and school type, particularly in terms of how teachers' skills are perceived in grammar, vocational, or traditional high schools and how they correlate with students' active habits inside and outside of the school setting.

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