A study of the teaching environment, motivation, and motivational strategies of physical education teachers in the countries of the Carpathian Basin

Abstract of PhD Thesis

Ágnes Csordás-Makszin

Doctoral School of Sport Sciences
Hungarian University of Sports Science

Doctoral supervisors:	Dr. Pál Hamar professor, DSc
	Dr. István Soós research professor, PhD
Doctoral reviewers:	Dr. László Révész professor, PhD
	Dr. Róbert Paic assistant professor, PhD

Budapest
2026

I. Introduction

Over the past fourteen years, physical education in Hungary has received increasing attention in educational policy. The introduction of daily physical education in 2012 expanded lesson time and created new opportunities not only for the development of motor skills but also for the enhancement of students' emotional, mental, and social competencies. In practice, however, physical education has remained largely focused on physical development, with teaching often characterized by strong teacher control.

Contemporary pedagogical approaches, in contrast, emphasize students' active participation, autonomy, and intrinsic motivation. A key theoretical framework is Self-Determination Theory (SDT), which highlights the importance of supporting students' basic psychological needs for autonomy, competence, and relatedness in fostering intrinsic motivation (Deci & Ryan, 2000; Ryan & Deci, 2000). Accordingly, motivational teaching strategies aim to promote engagement and long-term commitment to an active lifestyle.

However, most motivation research has been conducted in Anglo-Saxon cultural contexts, where autonomy and individualistic values are more prominent. In Eastern European settings, including Hungary, teaching practices and role conceptions may differ, and cultural traditions may shape how motivational strategies are implemented and how effective they are.

This issue is particularly relevant in the Hungarian-speaking educational context of the Carpathian Basin, which shares common cultural foundations but operates within different national education systems. While previous research has examined minority Hungarian teachers, empirical studies on the motivational characteristics of physical education teachers remain limited.

The aim of this study is to explore the motivational characteristics of Hungarian physical education teachers in some countries of the Carpathian Basin and to examine how perceived work environment and student motivation influence teacher motivation and the use of motivational teaching strategies. The study also investigates regional differences across Romania (Transylvania), Slovakia (Highland), Serbia (Vojvodina) and Hungary.

II. Aim of the study

The aim of this study is to examine the motivation, teaching environment, and motivational strategies of physical education teachers across different regions of the Carpathian Basin. The dissertation pursues two main objectives: first, to validate and adapt the measurement models of the questionnaires applied in the study, and second, to explore the relationships among teacher motivation, teaching environment, and need-supportive motivational strategies. In addition, the study aims to investigate whether differences can be identified in the work motivation of physical education teachers across the regions of the Carpathian Basin.

II.1 Research Questions

1. Are the factor structures of the applied questionnaires reliable and valid for a sample of physical education teachers?
2. What relationships can be identified among physical education teachers' teaching environment, motivation, and need-supportive motivational strategies?
3. Are there differences in teachers' work motivation based on region, gender, or teaching experience across the Carpathian Basin?

II.2 Theses

Validation of Measurement Instruments

Thesis 1

The Hungarian version of the Teaching Environment questionnaire (TE), measuring the work environment of physical education teachers, demonstrates adequate reliability and factor structure.

Thesis 2

The Hungarian version of the Teacher as Social Context Questionnaire (TASCQ), assessing three need-supportive motivational strategies, shows satisfactory reliability and factor structure.

Thesis 3

A structural model based on path analysis confirms the influence of the teaching environment on teacher motivation and its relationship with need-supportive motivational strategies.

The Role of the Teaching Environment

Thesis 4

Pressures of the teaching environment negatively affects the satisfaction of basic psychological needs.

Thesis 5

Opportunities for professional development and perceived student motivation positively influence the satisfaction of basic psychological needs.

Thesis 6

Satisfaction of basic psychological needs has a direct positive effect on teachers' autonomous motivation.

Thesis 7

Teachers' autonomous motivation shows a differentiated relationship with motivational teaching strategies: it is positively associated with the involvement strategy but negatively related to autonomy-supportive motivational strategy.

Thesis 8

Controlled motivation is negatively associated with the involvement motivational strategy.

Regional Differences

Thesis 9

Teachers' work motivation differs significantly across regions of the Carpathian Basin.

Thesis 10

No significant gender differences are observed in the levels of teachers' motivation.

Thesis 11

Teaching experience is not associated with significant differences in teachers' motivation.

III. Methodology

III.1 Sample and Data Collection

The study was conducted as an empirical questionnaire-based investigation among Hungarian-speaking physical education teachers working within the educational context of the Carpathian Basin. Data collection took place between 2018 and 2021 in Hungary, Romania (Transylvania), Slovakia (Highland), and Serbia (Vojvodina).

A total of 376 physical education teachers employed in public education participated in the study. The sample was obtained using convenience sampling. Of the respondents, 195 were female (52%) and 181 male (48%). The mean age was 41.8 years, and the average teaching experience was 16.29 years.

Participation in the study was voluntary, and respondents' anonymity was ensured. Ethical approval was granted by the Research Ethics Committee of the Hungarian University of Sports Science (TE-KEB/No02/2024).

III.2 Measures

Several questionnaires grounded in Self-Determination Theory (SDT) were used in the study. The teaching environment was assessed using the Teaching Environment questionnaire (TE; Taylor & Ntoumanis, 2007), while students' perceived motivation was measured using the instrument developed by Goudas et al. (1994).

Teachers' psychological need satisfaction was assessed with the Basic Need Satisfaction at Work scale (BNSAW; Deci et al., 2001), and work motivation was measured using the Work Motivation Inventory (WMI; Blais et al., 1993). Motivational teaching strategies were examined using the teacher version of the Teacher as Social Context Questionnaire (TASCQ; Taylor et al., 2008).

Hungarian adaptations of the TE and TASCQ instruments were developed within the framework of this study.

III.3 Statistical Methods

Data analysis included descriptive statistics and reliability analysis (Cronbach's α), as well as exploratory and confirmatory factor analyses (EFA, CFA). Relationships among variables were

examined using path analysis. Regional differences were analysed using multivariate and univariate analyses of variance (MANOVA, ANOVA).

IV. New Scientific Contributions

The findings of the empirical study can be summarized in five interrelated scientific contributions, the logical relationships of which are illustrated in the figure below.

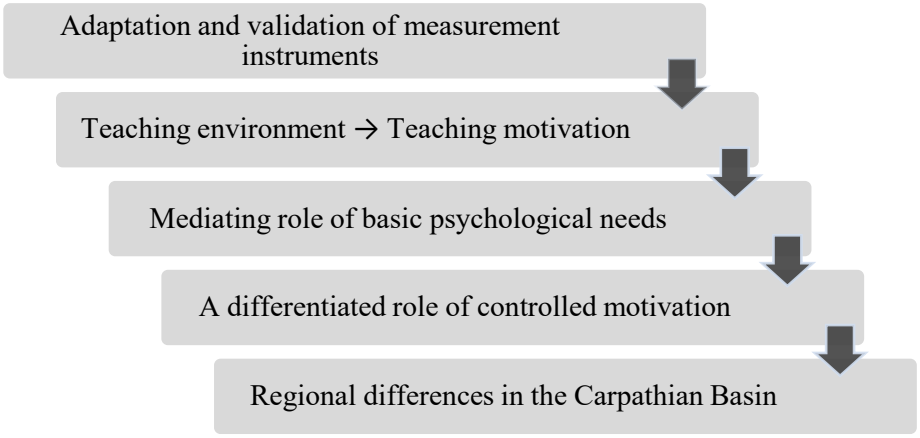


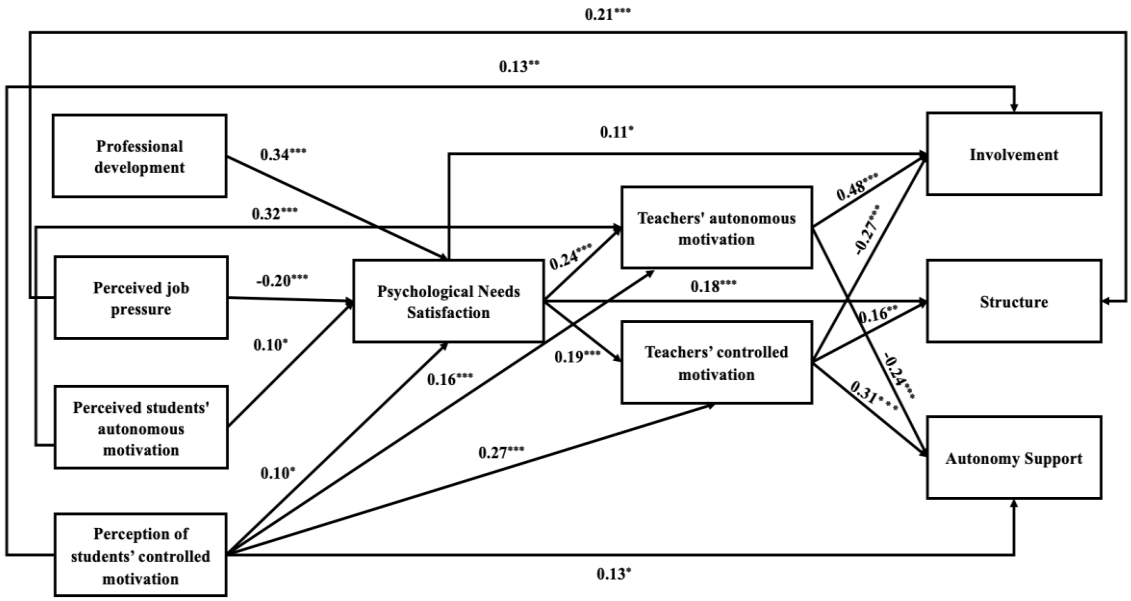
Figure 1. Logical structure of the main findings

Based on the results of the empirical study conducted among Hungarian physical education teachers in the Carpathian Basin, and interpreted within the framework of Self-Determination Theory (SDT), the following novel scientific contributions can be identified:

1. Two SDT-based measurement instruments (TE-H; TASCQ-H) were adapted and validated on the examined sample. The Teaching Environment questionnaire was reduced from four to three factors, while the number of items in the Teacher as Social Context Questionnaire was substantially decreased. Despite these modifications, both instruments demonstrated satisfactory psychometric properties for use in scientific research.

2. Results of the structural model obtained through path analysis confirmed that teachers' perceived teaching environment and perceived student motivation influence teacher motivation both directly and, more importantly, indirectly through the satisfaction of basic psychological needs.

3. The findings also indicate that the satisfaction of basic psychological needs and teacher motivation play a mediating role in the relationship between the teaching environment and the motivational teaching strategies applied by teachers.



Note. * p < 0.05; ** p < 0.01; *** p < 0.001

Figure 2. Results of the path model of the antecedents of physical education teachers' motivational strategies

4. The results of the path analysis indicated that controlled motivation – both perceived students' controlled motivation and teachers' own controlled motivation – was positively associated with several motivational strategies. This finding points to a more differentiated role of controlled motivation in pedagogical practice than is reflected in the classical interpretation of SDT.

5. The findings revealed regional differences in teachers' motivational patterns across the examined regions of the Carpathian Basin. Autonomous motivation was highest in Transylvania, while amotivation showed the highest levels in Hungary.

V. Practical Implications

The present study contributes to the literature by addressing a gap in understanding how environmental factors influence teaching strategies within the specific sociocultural context of Central Europe. The results offer practical implications for improving teacher education and

highlight the importance of supporting teacher well-being, particularly through reducing perceived work-related pressure.

The findings also provide a basis for pedagogical renewal in physical education, especially in promoting autonomy-supportive teaching. As a key condition for the development of intrinsic motivation (Deci & Ryan, 1985; Ryan & Deci, 2000), autonomy support requires instructional strategies that enable student participation, choice, and independent decision-making.

However, the specific characteristics of physical education present challenges for the implementation of autonomy support. Concerns related to physical safety, group management, and the complexity of psychomotor content may limit its practical application. The results suggest that many teachers either do not consider this approach relevant or lack the necessary methodological knowledge for its effective implementation, indicating a clear need for targeted professional development.

VI. Limitations of the Study

Several methodological limitations should be considered when interpreting the findings. The sample was based on convenience sampling, and the geographical distribution of participants was uneven, which may limit the generalizability of the results. In addition, the study involved Hungarian teachers from four different countries, where differences in educational systems and sociocultural contexts may have influenced the interpretation of the questionnaires.

The study relied on self-report data; therefore, the findings reflect teachers' perceptions. Due to the cross-sectional design, causal relationships cannot be conclusively established. Furthermore, data collection took place over an extended period (2018–2021), partly during the COVID-19 pandemic, which may have influenced participants' responses.

VII. Directions for Future Research

The findings suggest several directions for future research. Further studies should examine the relationships among teaching environment, teacher motivation, and instructional strategies using larger and more balanced samples, as well as comparative regional designs. Quantitative approaches could be complemented with qualitative methods, such as interviews or focus

groups, to provide deeper insights into teachers' interpretations and experiences of autonomy support.

In addition, longitudinal studies would contribute to a broader understanding of how teacher motivation and teaching environment interact over time.

VIII. References

Blais, M., Lachance, L., Vallerand, R., Briere, N. M., & Riddle, A. S. (1993). L'inventaire des motivations au travail de Blais. *Revue québécoise de psychologie*, *14*(3).

Deci, E. L., & Ryan, R. M. (2000). The „What" and „Why" of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, *11*(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01

Deci, E. L., Ryan, R. M., Gagné, M., Leone, D. R., Usunov, J., & Kornazheva, B. P. (2001). Need Satisfaction, Motivation, and Well-Being in the Work Organizations of a Former Eastern Bloc Country: A Cross-Cultural Study of Self-Determination. *Personality and Social Psychology Bulletin*, *27*(8), 930–942. https://doi.org/10.1177/0146167201278002

Goudas, M., Biddle, S., & Fox, K. (1994). Perceived locus of causality, goal orientations, and perceived competence in school physical education classes. *British Journal of Educational Psychology*, *64*(3), 453–463. https://doi.org/10.1111/j.2044-8279.1994.tb01116.x

Ryan, R. M., & Deci, E. L. (2000). Intrinsic and Extrinsic Motivations: Classic Definitions and New Directions. *Contemporary Educational Psychology*, *25*(1), 54–67. https://doi.org/10.1006/ceps.1999.1020

Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, *99*(4), 747–760. https://doi.org/10.1037/0022-0663.99.4.747

Taylor, I. M., Ntoumanis, N., & Standage, M. (2008). A Self-Determination Theory Approach to Understanding the Antecedents of Teachers' Motivational Strategies in Physical Education. *Journal of Sport and Exercise Psychology*, *30*(1), 75–94. https://doi.org/10.1123/jsep.30.1.75

IX. Publications related to dissertation topic

Peer-reviewed articles

Csordás-Makszin Á., Spray, C. M., Berki, T., Hamar, P., Karsai, I., Soós, I. (2025). Antecedents of physical education teachers' motivational strategies in Central Europe. *European Physical Education Review.* https://doi.org/10.1177/1356336X251337075 (D1)

Csordás-Makszin Á., Hamar P., Berki T., Soós I. (2025). Testnevelő tanárok tanítási motivációjának összehasonlító elemzése a Kárpát-medencében. *Magyar Sporttudományi Szemle*, 26(1), 11–19.

Csordás-Makszin Á., Karsai I., Hamar P., Soós I. (2023). A Tanítási környezetet és a Tanár Oktatási Hatásrendszert vizsgáló kérdőívek hazai adaptációja kelet-közép-európai mintán. *Magyar Pedagógia* 123: (2) pp. 51-66. https://doi.org/10.14232/mped.2023.2.51

Hamar P., Karsai I., Prihoda G., **Csordás-Makszin Á**., Boros-Bálint I. (2017). Physical education teachers' views of best practice on physical education teaching in Hungary in the period of introducing daily physical education. *PedActa*, (2) pp. 1-10.

Csordás-Makszin Á., Makszin I. (2017). A minőségi testnevelés a köznevelés típusú sportiskolák igazgatóinak szemszögéből. *Fejlesztő Pedagógia*, 28: (3–6) pp. 114-118.

Conference proceedings

Makszin I., **Csordás-Makszin Á**. (2018). A testnevelés tanítási gyakorlatok hatékonyságának vizsgálata. *Kis Jenő emlékkonferencia konferenciakötet.* Testnevelési Egyetem pp. 49-60.

Books

Makszin I., **Csordás-Makszin Á**., Gombocz G., Gombocz J., Ökrös Cs., Besenyői A., Szabóné Balogh J. (2015). *Testnevelő tanári kézikönyv.* Gulliver Lap- és Könyvkiadó.