*Full research paper*

# HOW DO STUDIES AT THE UNIVERSITY HELP PROSPECTIVE PHYSICAL EDUCATION TEACHERS FORM THEIR PROFESSIONAL IDENTITY?

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## ABSTRACT

This study examines the expression of self-efficacy, academic motivation, study satisfaction of prospective physical education teachers in different years of study, their interrelationships and intends to explain how studies help prospective physical education teachers shape their professional identities. A questionnaire survey was administered to 783 1st to 4th year undergraduate physical education students from four Lithuanian universities. The year of study did not affect changes in students' self-efficacy expectations and intrinsic academic motivation, which may mean that such professional identity indicators are less affected by contextual factors. The correlations among the analysed variables showed that the quality of teaching, clear goals, and the maintenance of autonomy are essential components of the academic environment in order to strengthen the prospective PE teacher's professional identity. The results of the study may encourage physical education teacher educators' deeper analysis of the ongoing feedback on student satisfaction with their studies as an emotional PI indicator.

## KEYWORDS

**Academic motivation, professional identity, self-efficacy, Social Cognitive Career Theory, study satisfaction, teacher education**

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***Highlights***

- *The study expands the existing knowledge about the formation of physical education teachers' professional identities in the first period of their professional careers – at university.*
- *It has revealed the importance of the teacher as a component of the academic environment for students' self-determination to pursue a professional career.*
- *Teacher educators have to carry out a much deeper analysis of students' satisfaction with their studies as an indicator of their emotional professional identity.*

## INTRODUCTION

The current scientific literature shows that teacher identity is an essential part of the teaching profession (Pérez Gracia, Serrano Rodríguez and Pontes Pedrajas, 2022). Preparation for the professional activity of a teacher begins at university (Mäkelä and Whipp, 2015), although professional career development begins in childhood and lasts a lifetime. Research data has shown that the formation of PI in the first stage of the career in preparation for professional activities is considered an essential bridge between higher education and future employment and acts as an enabling and potentially empowering force (Tomlinson and Jackson, 2021). In this process, various personality traits, skills, experiences are shaped, which influences the individual's professional identity (PI).

Experience makes a significant contribution to PI formation (González-Calvo et al, 2021; Nickel and Zimmer, 2018). Individual biographies of would-be physical education (PE) teachers, their previous experiences are related to their beliefs about PE teaching (Davis, 2020; González-Calvo et al, 2021; Matanin and Collier, 2003) and self-confidence as well as perceived competence to teach PE (Barber et al, 2020). The school experience of PE can have a greater impact on shaping PE teachers' perceptions of their future

profession and PE practice than teacher education programs (Ferry, 2018; Haynes, Miller and Varea, 2016). Therefore, in modelling PE Teacher Education programs, it is important not only to identify and understand students' motives for physical education teacher education choices, their expectations, experiences, and perceptions of PE, but also to understand that prospective PE teachers' experiences and perceptions may need to be redesigned and supplemented with new activities and pedagogical experiences, thus meeting the current needs of today's school (Ferry, 2018). Studies analysing PE teacher identity issues (Amaral-Da-Cunha, Batista and Graça, 2014; González-Calvo et al, 2021; Keating et al, 2017) showed that there is scarce research on the PI of PE teachers. The above-mentioned authors reveal the importance of the PE teacher's identity for educational practice and acknowledge that a deeper analysis of these issues could help higher education institutions to teach higher-quality PE teachers.

Although PI is defined differently by different authors, for most researchers, PI is self-awareness when performing professional roles. Teachers' PI is important for understanding their professional lives and career decisions, and this relates to teachers' self-perceptions, self-awareness, knowledge, values, confidence, and interactions with colleagues, students, and families (Pérez Gracia, Serrano Rodríguez and Pontes Pedrajas, 2022). PI formation is manifested by studying professional alternatives, commitment to the chosen alternative and reconsideration of commitments and professional alternatives (Porfeli and Lee, 2012). PI is dynamic and consists of several interrelated identities (Amaral-Da-Cunha, Batista and Graça, 2014; Keating et al, 2017). Learning to teach is a complex process in which an interaction between personal values and professional demands of teaching takes place, thus, tensions between personal and professional identities are often possible (Leeferink et al, 2019). Each person's PI development is individual and unique as a result of their different experiences and their negotiation for adaptations (García-Martínez and Tadeu, 2018). Pérez Gracia, Serrano Rodríguez and Pontes Pedrajas (2022) meta-analysis showed that during the period of initial education, while studying in a higher education institution, the construction and evolution of PI is influenced by a wide range of factors (personal, professional and contextual).

When analysing the concept of teacher identity, Beltman et al (2015) note that this concept, regardless of different authors and theories, has several common elements: identity develops under the influence of many personal and contextual factors; these factors are reciprocal and dynamic; thus, personal identity is constantly changing. Therefore, in order to understand identity, it is necessary to analyse it in a specific context and at a specific time. Thus, the analysis of teacher PI in the early stages of a professional career while studying at university can contribute to a better understanding of how young people's self-awareness as a teacher develops, revealing the links between personal and external factors that strengthen or inhibit their career choices. Students' satisfaction with their professional choice is very important as it is associated with a higher probability of not dropping out of studies and preparing to work in their speciality (Casanova et al, 2021; Castro-Lopez et al, 2022; Urbanavičiūtė, 2009). Satisfaction with studies (SS) is related to commitment to the profession, so it can have an impact on students' academic achievements, their creativity, and attitudes towards their future work (Ekin, Yetkin and Öztürk, 2021). Some authors tend to consider SS as one of the indicators of academic success (Guo et al, 2022; Naylor, Bird and Butler, 2021).

In this study, students' academic motivation (AcM), SS and self-efficacy (SE) are presented as PI indicators for prospective PE teachers. Although these indicators do not reflect the whole construct of PI, the analysis of their expression and interrelationships in different academic years can help to better understand the extent to which PI is affected by the study environment and students' experiences during the study period. At the beginning of the studies, the evaluation of the field of professional activity is based more on imagination, while in the last year – on experience (Nickel and Zimmer, 2019; Urbanavičiūtė, 2009). In addition, the quality of teaching has a positive and significant influence on students' satisfaction and intention to continue their studies in higher education (Amos and Hassan, 2017). Therefore, students' learning experiences, their satisfaction or dissatisfaction with their studies may encourage students to become more committed to the profession or to review their career goals. Research shows that students' AcM decreases during the study period (Arslantas, 2021; Brouse et al, 2010; Hakan and Münire, 2014) and their teaching motivation changes: intrinsic motivation increases, however, their altruistic type of motivation tends to decrease predominantly, e.g., motivation to work with children/adolescents (König et al, 2016). It has been established that higher intrinsic motivation (IM) of students studying in pedagogical study programs and those entering them is related not only to involvement in the study process and intention to work as a teacher, but also to career continuity (Rots and Aelterman, 2009). It is known that students who have graduated from higher education institutions and do not identify with the chosen professional field often leave it, do not even start working there, or do not realize their opportunities while working. This may be influenced by the absence of students' self-identification with the chosen field of study and future profession while studying in a higher education institution. It is necessary to consider whether students' vision of their future work is accurate and whether their expectations are adequate. The main reasons why students leave university without a degree are mostly related to their interests and expectations about the study programme and performance outcomes (Behr et al, 2021). Expectations can have a bearing on choosing a profession and exploring professional opportunities (Betz, 2007; Matanin and Collier, 2003), as well as the intention to continue the chosen professional activity and be satisfied with that (Casanova et al, 2021; Castro-Lopez et al, 2022). Therefore, a deeper analysis, revealing how the study period affects the PI of prospective teachers, can help to better understand the impact of individual and social environmental factors on

professional careers in different study periods as students engage in building their PI. In addition, PI development can be influenced by education (Hahl and Mikulec, 2018; Nickel and Zimmer, 2019), therefore, the results of this study can guide the educational process in higher education institutions to be supplemented with measures and conditions that strengthen the PI of prospective teachers, and this can affect teacher retention, teacher resilience and teacher effectiveness, especially in the first years of their profession (Mansfield, Beltman and Price, 2014).

## Theoretical framework

Social Cognitive Career Theory (SCCT) (Lent, Brown and Hackett, 1994; Lent and Brown, 2006; Lent, 2013; Lent et al, 2019) was chosen as the theoretical basis of the study aiming to explain how professional interests are formed, how the choice of profession takes place and how professional goals are set. The SCCT emphasizes the relatively dynamic, situation-dependent, individual and environmental factors that are important both for an individual's choice of profession and for further career planning (Lent, Brown and Hackett, 1994; Lent, 2013). This approach foregrounds that the individual and the environment are changing, and those changes can sometimes be very significant. Therefore, this theory can help to explain how students' perceived academic environment in different study periods affects their self-determination for the chosen profession and helps to develop their PI.

The SCCT consists of models of academic and career interest, choice, performance, and satisfaction and involves three interacting cognitive-person variables that partly enable the exercise of agency in career development: SE beliefs, outcome expectations, and personal goals (Lent, 2013). The article briefly describes how these cognitive-person variables will be reflected in the results of the study.

## Self-efficacy

SE is the belief in the extent that an individual has the ability to perform the actions necessary to achieve a particular goal (Bandura, 1977). The perceived SE construction reflects optimistic self-confidence (Schwarzer, 1993), it is the belief that a person can perform new or complex tasks and achieve the desired results. Tschannen-Moran, Woolfolk Hoy and Hoy (1998) adapted Bandura's SE concept to the teaching context, defining it as teachers' beliefs about their ability to successfully convey different teaching tasks through various actions, however, researchers such as Cocca and Cocca (2021) have taken into account the changes that educational systems experienced in recent years and adjusted the original measure to better reflect the current state of teaching and learning processes in the classroom. Perceived SE facilitates goal setting, investment of effort, perseverance in the face of obstacles and recovery from failures. Teacher self-efficacy is a strong predictor of early career teachers' commitment and decision to stay or leave the profession (Bandura, 1997; Kim, Youngs and Frank, 2017**).**

SE influences behaviour directly and through its effects on expected outcomes of the behaviour, the setting of relevant and challenging goals, and perceived barriers to and facilitators of the target behaviour (Bandura, 1997). SE has four sources (or types of learning experience): mastery experiences, vicarious learning, verbal persuasion and physiological and affective states at the time of the behavioural opportunity (Bandura, 1997; Lazarides and Warner, 2020). Both the sources of SE and the mechanisms through which it influences behaviour are specified and can be used to design behavioural interventions, thus strengthening the PI of prospective PE teachers.

The SCCT individual's beliefs about his/her SE are considered to be one of the main factors of professional development directly related to the setting and pursuit of professional goals (Lent, Brown and Hackett, 1994; Lent, 2013). Lazarides and Warner (2020) point out that teachers may have very different beliefs about their self-efficacy in different behavioural domains, their beliefs about their own efficacy are malleable, so they can be strengthened by educational interventions and social support. Research shows that SE changes during the period of studies (Bümen and Özaydin, 2013; Lazarides and Warner, 2020), and it is significantly influenced by direct teaching experience during their internship practice (Kuhn et al, 2020). SE is related to both extrinsic and intrinsic AcM of students (Chowdhury and Shahabuddin, 2007; Wu et al, 2020). Azila-Gbettor et al (2021) found a positively significant relationship between SE and autonomous motivation, which the authors identify with intrinsic motivation. A study performed by van Rooij, Fokkens-Bruinsma and Goedhart (2019) showed that undergraduate students' SE was positively related to commitment and negatively – to workload and stress.

In our study, we chose to analyse general SE. It is generally argued that the assessment of general SE is not expedient (Bandura, 2006; Betz, 2007) because SE is always focused on a specific field of activity and determines to what extent an individual is convinced that he/she is capable of performing. General SE was selected for the study because it may explain a wider range of human behaviours and experiences when the context is less specific. This can be useful when focusing on multiple behaviours at the same time (Luszczynska, Scholtz and Schwarzer, 2005). According to Pajares (2002), it is likely that if a person has successfully coped with a task in one area, then his/her confidence in his/her abilities in another area will be higher. SE affects essentially all areas of human life (Pajares, 2002), it develops throughout life as it accumulates successes and failures in performing various tasks in different fields. Thus, general SE captures individuals' perceived ability to perform a variety of tasks in a broad context, which we believe is important in the teaching profession.

Beliefs about SE play a key role in motivational processes (Bandura, 1997). Therefore, SE is often associated with behavioural changes precisely because of its influence on motivation. Based on these statements, the aim of this article was to reveal the links between general SE and AcM as well as SS, as it will depend on the SE whether the student will reach his/her full potential while studying. SE is directly related to the career adaptability of prospective teachers, which shows an individual's ability to cope with career planning, adapting to new challenges, and career optimism, which affects career satisfaction and outcomes (McLennan, Perera and McIlveen, 2017). This confirms the importance of SE for the independent management of students' careers and the construction of

their PI. We believe that general SE contributes positively to changes in the AcM of prospective PE teachers, which also affects students' self-determination for further professional careers, i.e., PI.

## Academic motivation

Researchers apply the term *Academic Motivation* to study motivation in the context of education (Vallerand et al, 1992; Wilkesmann, Fischer and Virgilito, 2012). Self-determination Theory (SDT) sees motivation as an incentive, impulse, or energy to do something (Ryan and Deci, 2000), thus, AcM can be perceived as an incentive, impulse to learn or perform other activities related to the academic environment.

We selected a widely used Academic Motivation Scale (AMS) to research students' AcM (Vallerand et al, 1992) because it is designed to establish intrinsic and extrinsic AcM and amotivation. SDT (Ryan and Deci, 2000; 2017) maintains that different types of motivation reflect different levels of personal self-determination (*autonomous regulation and controlled regulation)*, i.e., the extent and degree of the behaviour that arises from the person himself/herself. Autonomous motivation is highly volitional, and it is characterized by engagement in activities out of a sense of interest, valuing, and volition (Ryan and Deci, 2017). Thus, students demonstrate autonomous regulation in the study process when they think that studies in higher education institutions meet their interests, are pleasant and interesting, and provide satisfaction (i.e., IM) or when they consciously identify the value of study activities, personally endorse them and therefore experience a relatively strong desire to act accordingly (i.e., identified regulation). Thus, with autonomous regulation, students' behaviours are more internalized and show greater determination to pursue a professional career.

In contrast, undergraduate students are characterized by controlled motivation (i.e., external regulation, introjected regulation), when their behaviours and activities during studies are initiated not by internal but by external factors, for example, in order to obtain reward, perceived approval from others or to avoid punishment or the feeling of guilt. Students who engage in activities for controlled reasons feel a sense of responsibility and pressure and are likely to continue the activity as long as the external contingency is present. Thus, controlled motivation suggests that students are less prone to behavioural self-regulation.

Students differ not only in the type of motivation they display, but also in the intensity of motivation. In SDT, the term *Amotivation* is used to describe the extent to which a person feels ineffective, without purpose, or internally resistant toward an action (Ryan and Deci, 2017). For students, amotivation can result from the lack of perceived competence to perform, or lack of value or interest. Amotivation can be a strong negative predictor of engagement, learning, and wellness (Ryan and Deci, 2020), therefore, in order to better understand students' PI, their professional expectations, it is important to analyse the changes in amotivation indicators during the study period.

SCCT distinguishes *outcome expectations* as one of the variables which refer to beliefs about the consequences or outcomes of performing particular behaviours (Lent, 2013; Lent et al, 2019). This variable can be measured indirectly by assessing the subject's value orientations and relating them to expectations (Lent, 2013). In the context of this study, professional expectations are revealed through the prism of AcM: why this profession is attractive or unattractive to the student and how they imagine the value of the result of the chosen profession.

SDT emphasizes the effect of social factors on different types of motivation and the influence of these factors in meeting certain psychological needs of a person (Ryan and Deci, 2020). According to SDT, the social context and the relationship between teachers and students in the educational process significantly contribute to the transformation of autonomous motivation into controlled motivation, or vice versa. It depends on the extent to which teachers support student autonomy and the extent to which a person's basic psychological needs (autonomy, competence and relatedness) are met (Ryan and Deci, 2000). For skills and knowledge to have an impact on motivation levels and learning outcomes, they should be developed in an environment that supports autonomy and allows people to communicate (Duchatelet and Donche, 2019; Wu et al, 2020). Thus, the autonomous motivation of PE undergraduate students and the academic environment that supports student autonomy are important factors in the development of students' academic achievements.

## Study satisfaction

SS is considered an important indicator of PI in this study. The authors (Goegan and Daniels, 2021; Mäkelä and Whipp, 2015; Richardson and Watt, 2018), who analyze teachers' professional career, argue that it is influenced by factors of the personal environment and the organizational environment. Thus, the academic environment as a factor of the organizational environment can enhance or reduce students' self-determination in their chosen profession. Therefore, students' SS research can help reveal the most important components of the academic environment that increase or inhibit the decision to become a teacher, and highlight strategies that help meet students' expectations and strengthen their PI.

Some authors (Kim and Tanis, 2022; Sinclaire, 2014; van Rooij, Jansen and van de Grift, 2018) tend to consider SS as one of the indicators of academic success. Students' SS is associated with a commitment to the profession, especially an emotional commitment that can affect students' academic performance, creativity, and attitudes toward their future work (Conklin, Dahling and Garcia, 2013; Wilkins-Yel et al, 2018). SS, also known as academic satisfaction, includes personal conviction to act independently, expectations about the results, progress made towards achieving the goals, and perceived academic and social support (Guo et al, 2022).

The SCCT emphasizes that the ability to perform a particular activity, SE, the expectations of the consequences of the activity, and the personal goals are formed in a broader context, which may include a variety of variables that reflect the individual's social environment. The aim of this study was not to directly measure the influence of the contextual factor – *the academic environment* – on the PI of prospective teachers, but the indirect effect of the academic environment is highlighted

by revealing the links between AcM and SS. We believe that SS increases AcM, which may enhance students' professional expectations and PI.

### Study aim

Experience makes a significant contribution to PI formation (González-Calvo et al, 2021; Nickel and Zimmer, 2018). Content of studies differs in different study periods, students accumulate some academic experience, which affects their professional expectations and allows them to assess the study process and their professional choice from a new perspective (Beltman et al, 2015; Horgan and Gardiner-Hyland, 2019; Urbanavičiūtė, 2009). The aim of this study was to reveal the manifestation of prospective PE teachers' SE, AcM, SS in different study periods, as well as their interrelationships, and to explain how studies help prospective PE teachers shape their PI.

## MATERIALS AND METHODS

### Participants

The sample included 1st-4th year full-time undergraduate students from four Lithuanian universities preparing PE teachers using stratified random sampling method. The sample was stratified on two characteristics: university and gender identity. The sample size for each year of studies was calculated assuming a 95% confidence level and ±5% confidence interval. The study sample consisted of 784 informants: 62% ($n$ = 485) were males and 38% ($n$ = 299) were females. According to the year of studies, the research sample was split in the following way: the first year $n$ = 216, the second year $n$ = 230, the third year $n$ = 189 and the fourth year $n$ = 149. Table 1 presents the demographic characteristics of prospective PE teachers included in the sample.

| Variables | | Year of studies | | | | |
|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | Total |
| Number | | 216 | 230 | 189 | 149 | 784 |
| Age | Mean | 19.19 | 20.93 | 22.10 | 22.91 | 21.31 |
| | Std. Dev. | 1.25 | 1.16 | 1.23 | 1.61 | 1.61 |
| Average marks in the last exam session (points, 10-point system) | Mean | 7.61 | 8.07 | 8.24 | 8.30 | 8.03 |
| | Std. Dev. | 0.95 | 1.05 | 0.97 | 1.15 | 1.06 |
| Work during studies (%) | You are/have been working in a sport-related field | 26.9 | 29.7 | 35.5 | 45.1 | 33.3 |
| | You are/have been working in a field not related to sport | 22.1 | 27.5 | 24.7 | 29.9 | 25.8 |
| | You are not/have not been working | 51.0 | 42.8 | 39.8 | 25.0 | 40.9 |
| Attitudes towards the future profession during the study years (%) | Changed positively | 46.8 | 38.9 | 36.7 | 44.5 | 41.6 |
| | Did not change | 47.2 | 48.9 | 37.8 | 32.9 | 42.7 |
| | Changed negatively | 6.0 | 12.2 | 25.5 | 22.6 | 15.7 |

**Table 1: Demographic characteristics of participants (source: own calculation)**

The average age of participants was 21.31 (*Std. Dev.* = 1.61, range 18–27) years. The average academic achievement grade of subjects in the last examination session was 8.03 (*Std. Dev.* = 1.06), 33.3% of students had worked or worked in sports-related areas during their studies, and 25.8% worked in areas not related to their studies. The attitudes of 42.7% of the respondents towards their future profession did not change during their studies, those of 41.6% changed positively, and those of 15.7% of respondents – negatively.

### Measures and procedure

Prior to data collection, the Research Ethics Committee of the Lithuanian University of Educational Sciences approved the study. Cross-sectional study questionnaire survey design was used in this research. For data collection, group-administered anonymous paper-and-pencil questionnaires were used. The survey was conducted at the universities of the authors of this research article in 2017 and 2018 in the spring semester (in March) during the lectures having received a prior agreement from the university administration and the university teachers. The questionnaires took the participants on average 25 minutes to complete. Before handing out the surveys, the researchers explained the purposes of the study and informed that all data would be confidential. Students' participation was voluntary, and the participants could withdraw at any time. Twenty-eight incomplete responses were rejected owing to their failure to answer several key survey items. During the research period, the four Lithuanian universities where PE teachers were trained provided study programs accredited by an international expert team in 2014. This means that the study objectives, outcomes and content set in the study programs of all universities met the quality requirements of the Standards and Guidelines for Quality Assurance in the European Higher Education Area, as well as the Law of the Republic of Lithuania on Education and the Law on Higher Education and Research of the Republic of Lithuania and also the resources (human, material and methodological) and study quality management were adequate to achieve the intended learning outcomes provided in the study program. In Lithuania, the volume of the first cycle studies of the PE teachers is 240 study credits and the teaching practice of at least 30 study credits has to be performed. Teaching practice includes three practices: teaching assistant practice, teaching practice under the guidance of a mentor, and independent teaching practice. In all PE teacher training programs, the first teaching practice is provided in the 2nd year, the second in the third year, and the third in the fourth year of study.

A survey to measure the constructs relevant for prospective PE teachers' sense of their PI (SE, AcM, SS) was developed.

***Self-efficacy.*** This was measured with the 10-item General Self-Efficacy (GSE) Scale (Schwarzer and Jerusalem, 1995; Luszczynska, Scholtz, and Schwarzer, 2005). Each item referred to successful coping and implied an internal-stable attribution of success. Possible responses were *not at all true* (1), *hardly true* (2), *moderately true* (3), and *exactly true* (4), yielding a total score between 10 and 40. A higher score indicated more SE of a person.

***Academic motivation***. AMS (Vallerand et al., 1992) was used to assess students' AcM. The AMS consists of 28 items related to seven different subscales (4 items per subscale) of motivation. Three subscales measure various types of IM (to know, toward accomplishment, to experience stimulation), three subscales measure various types of extrinsic (identified, introjected, external regulation) motivation (EM) and one measures amotivation. Participants were asked to indicate to what extent each question corresponded to the reason they were studying at the university. The students responded on a 7-point scale ranging from 1 (*does not correspond*) to 7 (*corresponds exactly*). The mean indicators for each subscale were calculated by summing the indicators for all items and dividing by the number of items, which were four in each subscale. An overall estimate of autonomous and controlled forms of motivation was calculated. Intrinsic motivation (to know, toward accomplishment, to experience stimulation) and identified motivation are classified as autonomous. Introjected motivation and external regulation motivation are classified as controlled motivation. Autonomous and controlled motivation indicators were obtained by summing the indicators of the respective AMS subscale items and dividing them by the number of items. AMS was adapted to the contexts of many countries, such as Croatia (Koludrović and Ercegovac, 2014), Greece (Barkoukis et al, 2008), Poland (Areńska et al, 2016), and elsewhere, as well as in Lithuania (Kairys et al, 2017).

***Study satisfaction.*** The CEQ consisted of 24 items divided into 5 scales: *Quality of teaching* (6 items), *Clear goals and standards* (4 items), *Appropriate workload* (5 items), *Appropriate assessment* (4 items), *Autonomy* (5 items). *Quality of teaching* focuses on teachers' feedback, motivation, attention, understanding of problems and skills in explaining concepts. *Clear goals and standards* measure students' perceptions of the clarity with which teachers communicated expected academic standards and program goals. *Appropriate workload* scale measures students' perceptions of the appropriateness of their program workloads. *Appropriate assessment* scale measures students' perceptions about the extent to which assessment stresses the recall of information rather that other intellectual skills. *Autonomy* scale focuses on students' perceptions about the given opportunities to choose how to study and perform tasks, to choose and delve into areas of interest to them. Participants rated their agreement with items on a 5-point scale: *1 - strongly disagree (-100), 2 - disagree (-50), 3 - neither agree nor disagree (0), 4 - agree (+50), 5 - strongly agree (+100)*. Scores of less than 0 indicate that respondents have a negative perception of their program in the context of the general issue addressed by the item. A score above 0 indicates a positive response. For each scale, the mean score of all items were calculated. An overall assessment of SS in this study was also calculated: it was obtained by summing all the indicators of the CEQ items and dividing them by the number of items.

## Data analysis

The statistical analysis was conducted using SPSS 22.0 software. Descriptive statistics was applied and arithmetic means (*M*), standard deviations (*Std. Dev.*) were calculated. Inferential statistics was used to compare data by exchange the years of study and to determine correlations between variables. Pursuing to determine the differences in students SE, AcM and SS of the year of studies, one-way ANOVA test was used, and Fisher's (*F*), Post Hoc criteria were applied. Pearson's correlation coefficients were calculated to examine the interrelationship between students' SE, AcM and SS variables. Cronbach's alpha coefficient was used to measure the internal consistency of GSE, AMS, CEQ scales, as well as the internal consistency of every AMS, CEQ subscale. In the present study, the internal consistencies of the scales were good: GES Cronbach's $\alpha$ =.826; AMS Cronbach's $\alpha$ =.878; CEQ Cronbach's $\alpha$ =.742.

## RESULTS

General SE data are presented in Table 2. It was found that students' SE indicators did not differ statistically significantly in the aspect of the year of study. The data of students' AcM (Table 2) show that students' IM does not differ in terms of the year of study.

| Variables | Current year level | | | | | | | | *F* | *p* |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1st year (*n* = 216) | | 2nd year (*n* = 230) | | 3rd year (*n* = 189) | | 4th year (*n* = 149) | | | |
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | | |
| IM - know | 5.34 | 1.11 | 5.20 | 1.14 | 5.34 | 1.00 | 5.05 | 1.15 | 2.564 | .054 |
| IM - toward accomplishment | 4.86 | 1.24 | 4.80 | 1.11 | 4.88 | 1.07 | 4.63 | 1.19 | 1.571 | .195 |
| IM - experience stimulation | 4.31 | 1.32 | 4.52 | 1.47 | 4.45 | 1.31 | 4.51 | 1.29 | 1.092 | .351 |
| EM - identified | 5.43 | 1.17 | 5.19 | 1.14 | 5.26 | 1.28 | 4.85 | 1.27 | 7.329 | .001 |
| EM - introjected | 5.08 | 1.34 | 4.90 | 1.45 | 5.04 | 1.29 | 4.90 | 1.35 | .925 | .428 |
| EM - external regulation | 5.18 | 1.12 | 4.88 | 1.27 | 5.16 | 1.23 | 4.73 | 1.18 | 6.065 | .001 |
| Amotivation | 2.17 | 1.39 | 2.66 | 1.62 | 2.83 | 1.63 | 2.82 | 1.52 | 8.064 | .001 |
| GSE | 34.08 | 4.02 | 34.28 | 3.90 | 34.51 | 3.62 | 33.93 | 3.66 | .759 | .517 |

**Table 2: Indicators of general self-efficacy and academic motivation of physical education students by the year of study** (source: own calculation)

Significant differences were found according to the year of study in *EM – identified* and *EM – external regulation*. *EM – identified* of the 4th year students was statistically significantly lower compared to those of the 1st ($p < .001$), 2nd ($p = .034$) and 3rd ($p = .008$) year students. The *EM – external regulation* was significantly lower among the 4th year students compared to the 1st year ($p = .003$) and 3rd year ($p = .006$) students. A statistically significant difference was recorded in this subscale when comparing the data of 1st and 2nd year students, they were higher for the 1st year students ($p = .043$). Amotivation was the lowest among the 1st year students, the results differed statistically significantly from those recorded for the 2nd ($p = .004$), 3rd ($p < .001$) and 4th ($p < .001$) year students.

Table 3 presents student SS by the year of study. There were statistically significant differences of 1st year students in the *Quality of teaching* variables, they were statistically significantly higher compared to those of the 2nd ($p = .003$), 3rd ($p = .002$) and 4th ($p < .001$) year students. First-year students scored higher on the *Clear goals and standards* compared to 2nd ($p = .006$) and 4th ($p < .001$) year students. *Appropriate workload* variables of the 4th year students were statistically significantly lower compared to those of the 1st ($p = .022$), 2nd ($p = .008$) and 3rd ($p = .009$) year students. *Autonomy* was higher of the 1st year students compared to that of the 3rd ($p = .002$) and the 4th ($p = .001$) year students.

| Variables | Current year level | | | | | | | | *F* | *p* |
|---|---|---|---|---|---|---|---|---|---|---|
| | 1st year (*n*=216) | | 2nd year (*n*=230) | | 3rd year (*n*=189) | | 4th year (*n*=149) | | | |
| | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | Mean | Std. Dev. | | |
| Quality of teaching | 29.70 | 31.27 | 17.98 | 36.60 | 17.15 | 37.63 | 9.35 | 34.45 | 10.642 | .001 |
| Clear goals and standards | 22.55 | 26.83 | 13.15 | 32.53 | 15.83 | 31.35 | 8.30 | 29.59 | 7.197 | .001 |
| Appropriate workload | 4.62 | 33.79 | 5.61 | 35.17 | 6.02 | 36.27 | -5.97 | 32.92 | 4.387 | .005 |
| Appropriate assessment | 2.26 | 29.28 | 1.79 | 34.64 | 3.77 | 30.04 | 3.02 | 29.77 | .157 | .925 |
| Autonomy | 16.51 | 28.99 | 11.00 | 31.25 | 5.93 | 28.88 | 4.35 | 29.42 | 6.502 | .001 |

**Table 3: Physical education students' satisfaction with study indicators by the year of study** (source: own calculation)

## Relationships between academic motivation, satisfaction with study and self-efficacy

As Table 4 illustrates, the IM and EM variables were correlated positively statistically significantly ($r$ ranged between.309 and.741; $p < .01$), and correlations among *Amotivation* and other AMS variables were significantly adverse ($r$ ranged between -.077($p < .05$) and -332; ($p < .01$)). The relationship was not statistically significant between *Amotivation* and *IM-experience stimulation.* Students' SE scores were directly significantly associated with all IM and EM subscales and inversely related to *Amotivation*.

Examining the correlations among the variables of SS, we can see (Table 4) that *Quality of teaching* is more strongly related to *Clear goals and standards* ($r = .602$; $p < .01$) and *Autonomy* ($r = .549$; $p < .01$) compared to *Appropriate assessment* and *Appropriate workload* variables. *Quality of teaching, Clear goals and standards* and *Autonomy* variables showed a weak direct statistically significant relationship with all IM and EM variables and a very weak correlation with SE. The interrelationships between derived variables of autonomous and controlled AcM as well as overall SS suggest that SS was more strongly associated with autonomous than with controlled AcM.SE were also more strongly positively related to autonomous than controlled AcM. A very weak statistically significant positive relationship was found among SE and SS variables.

## DISCUSSION

The study aimed at revealing how studies helped the formation of PI of prospective PE teachers and explaining how students' perceived academic environment in different periods of studies was related to their decisions about their chosen profession. The results of the study can provide a better understanding of how the main academic and career interests of prospective PE teachers developed in the early stages of professional growth, how personal and contextual factors interact while seeking academic and career success, and how prospective teachers construct and redesign their PIs.

SCCT identifies the person's SE as one of the three important components of career development, so in the study we hypothesized that the person's SE positively contributes to changes in AcM, which also affects the person's PI. Research has shown that students' SE does not change during the study period, although some researchers (Bümen and Özaydin, 2013; Chan, 2008) established changes in SE during the study period. Such contradictory results demonstrate the importance of further research in this area. Nonetheless, SE beliefs are not intentions to behave or intentions to attain a particular goal. A SE belief is the belief that you can perform the behaviour or behaviours that produce the outcome (Maddux, 2017). Like Nickel and Zimmer (2018), we established sufficiently high SE scores for freshmen that did not change substantially during the study period. This allows us to assume about the career adaptability of prospective PE teachers (McLennan, Perera and McIlveen, 2017) so that they will be able to overcome emerging difficulties, better adapt when starting work at school and stay longer in their careers.

Still, according to SCCT, SE is seen as complementing, not substituting for, ability. SCCT does not assume that SE will compensate for inadequate task ability (Lent, 2013). It does, however, predict that the performance of individuals at the same ability level will be facilitated by stronger versus weaker SE beliefs. Van Rooij, Fokkens-Bruinsma and Goedhart (2019) found that highly self-efficacious students were more committed to the teaching profession, perceived a lower workload and less stress. However, a large overestimation

| Variables | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. IM – know | .613** | .741** | .670** | .531** | .513** | -.323** | .892** | .567** | .387** | .294** | .121** | .066 | .271** | .359** | .370** |
| 2. IM – toward accomplishment | - | .566** | .604** | .638** | .544** | -.141** | .803** | .362** | .402** | .319** | .054 | .057 | .298** | .292** | .328** |
| 3. IM – experience stimulation | | - | .455** | .355** | .309** | -.037 | .860** | .645** | .290** | .229** | .096** | .056 | .262** | .354** | .232** |
| 4. EM – identified | | | - | .584** | .653** | -.332** | .805** | .670** | .395** | .304** | .050 | .099** | .310** | .362** | .264** |
| 5. EM – introjected | | | | - | .696** | -.077* | .621** | .930** | .295** | .208** | .024 | .053 | .245** | .258** | .244** |
| 6. EM –external regulation | | | | | - | -.155** | .594** | .911** | .261** | .210** | -.009 | .045 | .206** | .222** | .199** |
| 7. Amotivation | | | | | | - | -.240** | -.124** | -.134** | -.094** | -.032 | -.014 | -.060 | -.106** | -.142** |
| 8. Autonomous motivation | | | | | | | - | .660** | .436** | .339** | .096** | .083* | .340** | .406** | .352** |
| 9. Controlled motivation | | | | | | | | - | .303** | .227** | .009 | .053 | .246** | .261** | .242** |
| 10. Quality of teaching | | | | | | | | | - | .602** | .150** | -.028 | .549** | .723** | .190** |
| 11. Clear goals and standards | | | | | | | | | | - | .183** | .067 | .453** | .715** | .151** |
| 12. Appropriate workload | | | | | | | | | | | - | .290** | .226** | .594** | .005 |
| 13. Appropriate assessment | | | | | | | | | | | | - | .105** | .439** | -.022 |
| 14. Autonomy | | | | | | | | | | | | | - | .720** | .104** |
| 15. Satisfaction with study | | | | | | | | | | | | | | - | .135** |
| 16. Self-efficacy | | | | | | | | | | | | | | | - |

*IM- intrinsic motivation; EM – extrinsic motivation; * - p <.05; ** - p <.01*

**Table 4: Pearson's correlations between all variables included in the study (source: own calculation)**

of SE may be self-defeating because without a realistic evaluation of their abilities, students can set unrealistically high performance goals, which can lead to failure, loss of confidence and optimism, and cause motivational problems.

SE beliefs encourage motivation in several ways: they determine the goals people set for themselves, how much effort they expend, how long they persevere in the face of the difficulties, and their resilience to failures (Bandura, 1997). We found that IM and EM increase with increasing SE, indicating that these factors interact with each other. Thus, our data coincide with the findings of Chowdhury and Shahabuddin (2007) that SE is associated with both intrinsic and extrinsic AcM in students. Williams and Rhodes' (2016) founded that perceived SE and the satisfied need for competence are favourable factors for IM. Weak and moderate relationships between all IM and EM variables in our research suggest that students' intrinsic and extrinsic AcM do not conflict. These findings are consistent with previous researchers (Chowdhury and Shahabuddin, 2007; Duchatelet and Donche, 2019; Wilkesmann, Fischer and Virgilito, 2012). In addition, as shown in Chowdhury and Shahabuddin (2007), motivation and SE affect students' academic achievement, and students with the highest academic achievement have high SE and high IM and EM scores.

The involvement of individuals, their efforts and perseverance as well as their ultimate success are partly determined by both their beliefs about SE and the expectations of the outcomes (Lent, 2013). Our study showed that the year of study did not affect changes in students' intrinsic AcM, but it affected extrinsic AcM: the fourth-year students' EM, except for EM – introjected, decreased significantly compared to that of the first-year students. Sivrikaya (2019) also found that prospective PE teachers' internal AcM did not change during the study period, but some authors (Arslantas, 2021; Brouse et al, 2010; Hakan and Münire, 2014) established decreased fourth-year students' indicators of both IM and EM compared to the ones of the first-year students. However, EM-identified indicators are particularly important when analysing students' professional expectations, as they directly reflect how students perceive the value of higher education for their vocational choice. The type of identified motivation is particularly related to perseverance and future intentions (Howard et al, 2021). Our determined high EM-identified indices throughout the study period show that students' behaviours are internalized, which indicates their determination to pursue a professional career and satisfaction with their chosen career. The more internalized motivation, the more it becomes part of the learner's identity (Ryan and Deci, 2020).

According to SCCT, the goals set are strongly related to both the expectations of SE and the expectations of the outcome as people tend to set goals that are in line with their attitudes towards their personal abilities and the results they expect to achieve through certain activities (Lent, 2013). The IM-identified rates of our students were high, but this indicator decreased statistically significantly in the fourth-year students compared to the first-year students. This may have been influenced by the experience gained during the studies, which allows students to better assess their expectations about the future profession and their readiness just after entering higher education institutions. After starting their studies, prospective PE teachers build on their school experience of teaching and developed understanding of the work as a teacher, and for this reason, we observe links between their previous PE experience and the pedagogy they would like to implement (Davis, 2020; González-Calvo et al, 2021; Matanin and Collier, 2003). However, Barber et al (2020) showed that non-competitive, inclusive pedagogical approaches during the study period can have a positive effect on the self-confidence and competence growth of prospective PE teachers and help them review their previous experiences from new perspectives, which may prevent them from applying their negative experiences in teaching PE. Thus, upon graduation, students gain more knowledge about the future profession, and while practicing at school, they come across different practices and situations that may affect the change of their expectations and visions of themselves as a teacher.

It should be noted that the university where the teaching and academic environment start developing PI, provides the first contact with the professional field of PE. The study period, as a process of learning to teach, is very important because it is a time when teachers construct personal images of being a teacher, which are fundamental notions in PI (Castañeda, 2011; Tomlinson and Jackson, 2021). Teacher learning refers not only to subject content, pedagogical strategies or teaching and learning theories, but also to the process of identity formation (Schaafer and Clandinin, 2019). It is clear that teachers' PI develops at different stages of training, from the first steps, through their first experiences with the real practice in their placement periods and afterwards **(**Pérez Gracia, Serrano Rodríguez and Pontes Pedrajas, 2022). While researching how prospective teachers at the beginning of their careers imagined their identity as teachers and what they expected to become, Beltman et al. (2015) found that at the beginning of their studies, students positioned themselves as positive, confident, capable, and happy would be teachers. According to the researchers, first-year students seemed to be able to control their environment and there was no hint that in reality they may have to work in contexts where there will be differences between their own beliefs and the desired teaching realities. Thus, the available experience does not yet allow the first-year students to predict that tensions may arise between their personal and PI (Leeferink et al, 2019). Nickel and Zimmer (2018) also indicated that first-year students idealized portraits of the teachers they aspired to be, and the move from 'ideal self' to 'actual self' occurred primarily during the practicum experience. König et al (2016), studying preservice teachers in Austria, Germany, and Switzerland, found that students' intrinsic motivation to teach decreased during the first two years of study, and this was influenced by the opportunity to learn at school. Pérez Gracia, Serrano Rodríguez and Pontes Pedrajas (2022) meta-analysis has shown that researchers emphasize the need to pay more attention to the context of PI development, as well as mentoring relationships, since these factors give prospective teachers a more realistic approach that strengthens their self-esteem and decreases possible tensions in their future practices.

Research by Herold and Waring (2011) has shown that

prospective PE teachers' perceptions of their role change during their studies. When examining changes in Irish teachers' expectations of themselves as teachers, changes in teaching and learning over three years of study, Horgan and Gardiner-Hyland (2019) found that understanding of the role of the teacher, the value of reflective practice, different learners' needs and attitudes towards pedagogy were expanding.

Our research data confirmed the fact that students were constantly rethinking their professional choice. Although we found low indicators of first-year students' amotivation, which coincides with the data of other researchers (Arslantas, 2021; Hakan and Münire, 2014; Sivrikaya, 2019; Spittle, Jackson and Casey, 2009), amotivation increases significantly in the second year, it also increases in the third year, and remains similar in the fourth year. This change in amotivation may be related to unsatisfactory or different expectations and more experience gained. A higher level of amotivation in the third year compared to the first year was also determined by other researchers who studied prospective PE teachers (Spittle, Jackson and Casey, 2009; Spittle, and Spittle, 2014). Thus, this is in line with the SCCT theory maintaining that when a profession is chosen, it is subsequently "reviewed" and considered, as both the individual and the environment are dynamic and new professional alternatives, barriers, or difficulties may arise and individual priorities and values may change (Lent, 2013; Urbanavičiūtė, 2009). The direction these reviews may take – whether the commitment to the profession will strengthen or worsen, and PI at the same time – depends on both personal and contextual factors (Amaral-Da-Cunha, Batista and Graça, 2014; Castro-Lopez et al, 2022). Researchers analysing higher education students' professional identity formation (Tomlinson and Jackson, 2021) emphasize the importance of developing more general sets of identities related to professional life in general, and suggest the use of wider sets of resources, mainly related to social and cultural capital, to strengthen PI in higher education institutions In their view, this is beneficial because it engages students in early forms of professional socialization that can prepare them for the profession and its various ways of practicing it, and, in addition, it can help them navigate their options and create more dynamic connections with employment life.

In our study, we considered SS to be an important PI indicator. Stronger emotional commitment to the profession is more characteristic of those students who are satisfied with their choice and possible career, perceive their professional choice as suitable for them and consider themselves able to make successful career decisions (Casanova et al, 2021; Conklin, Dahling and Garcia, 2013). Our research shows that students' SS changes during the study period. It was found that the indicators of all SS variables in the fourth year, except for *Appropriate assessment*, were statistically significantly lower than the indicators of first-year students. This may be due to the fact that the expectations of students were not met, which may be caused not only by the unsatisfactory academic environment, the quality of studies, but also by the gained experience, which changes their perception of studies and the future profession.

Positive significant relationships between SS as an indicator of emotional PI and autonomous motivation and very weak significant relationships with students' SE show that the academic environment perceived by students as favourable may strengthen their PI. The statistically significant interrelationships between *Quality of teaching, Clear goals and standards,* and *Autonomy* and all IM and EM variables confirm the importance of the university teacher's role and for students' decision to pursue a teacher's professional career. Students' perceptions of the quality of their studies may have an increased likelihood of prospective PE teachers remaining in the profession after entering the profession, as there is a direct link between beginning teachers' perceptions of the quality of teacher education and their intention to remain in the first year of their professional activities *(*Kelly et al, 2019). Although the benefits of university study to employment is recognized by different generations, it is important for higher education institutions to focus on the expectations of different generations and the necessity of continuous development and implementation of improvements based on the changing preferences of generations (Šnýdrová, Depoo and Šnýdrová, 2021). However, people are most likely to develop interest in professional activities where they both feel efficacious and from which they expect positive outcomes (Lent, 2013). Therefore, in order to increase the PI of prospective PE teachers, it is very important that the university teacher helped to develop the interests of students and created a supportive environment in which they could feel competent and effective. It is then likely that the interests of students might turn into goals. SCCT maintains that goals are strongly related to SE and outcome expectations. This means that prospective PE teachers will be inclined to set goals that match their approach to their personal abilities and the results they hope to achieve through their studies.

***Study limitations and future research directions***

This study was not without limitations. One is that, although statistically significant relationships have been identified between many variables, they do not provide evidence of causality, thus explanations for the results may not be what they appear. Another limitation of the research would be that the research data and conclusions cannot be generalized to PE teachers trained in other social contexts, as well as to teachers of other fields of study or other subjects. Teacher identity development is a very personal journey and will not be the same for every prospective teacher (Hahl and Mikulec, 2018; Arvaja, 2016), therefore, in order to understand the PI transformations of prospective PE teachers during the study period and the interaction of personal and contextual factors in the development of PI, the study should be expanded to include more variables as well as a combination of quantitative and qualitative approaches to research. Further research could include a broader context explaining how interactions with members of the vocational learning community, i.e., other students studying together, and their sense of identity help them form PI during their studies.

Despite these limitations, research findings may provide an incentive to conduct research in other contexts. In addition, the findings of the study may be useful from a practical point of view and for further research.

## CONCLUSIONS AND IMPLICATIONS

PI is a complex construct which has a double dimension – individual component and collective component; it is dynamic and is constantly being constructed and reconstructed. Research literature usually deals with the PI of teachers, but rarely with the PI of prospective teachers, including prospective PE teachers. In addition, the study of PIs often focuses on the components of SE and motivation, rarely focusing on SS as an emotional component of PIs, which is very important because identity is the product of the individual's interaction with the social context, their interaction with peers and their interpretation of these experiences. Therefore, our study based on SSCT, analysing PI variables such as SE, AcM and SS, and revealing the dynamics of these variables during the study period as well as their interrelationships, expands the existing knowledge about the formation of physical education teachers' PIs in the first period of their professional careers – at university. Besides, this research expands the concept of how the academic environment helps to form the professional interests and professional goals of would-be PE teachers.

The fact that the study period did not affect the change in students' SE expectations and intrinsic AcM may mean that these PI indicators, if they are at a certain level, are less affected by contextual factors, i.e., factors in the study environment, but this requires further research. However, the students' identified motivation, which directly reflected their perceived value of studies for their professional choice, changed, and in the fourth year it was significantly lower than in the first year. This may also be related to the experience gained, the independent pedagogical internship practice in the last year of study, when students could feel the reality of professional activity and the aspects that may not have met their expectations that they had just entering the teacher training programs. The development of PI in Lithuania's prospective PE teachers may have been influenced by the fact that a large proportion of students had already started their work activities in the first year, which was often related to the sports sector, and about two-thirds of students had work experience in the final year of study. From a practical point of view, research data can stimulate teacher educators to facilitate students' preparation for a teaching career, help them identify their career goals as early as possible, and form PI to become effective teachers. The interrelationships of the analysed PI variables show that the quality of teaching, the formulation of clear goals, and the maintenance of autonomy are essential components of the academic environment to strengthen the commitment of prospective PE teachers to the chosen profession, which increases their identification with the profession. Thus, in order to strengthen PI, student SS is important, encompassing the well-being and enjoyment that students experience in the academic process. However, it is important for university administrators where teachers are trained to understand that teacher identity development is dynamic and requires the constant input of all those involved in the process of becoming a teacher, not just teachers. The results of the study may encourage PE teacher educators' deeper analysis of the ongoing feedback on student SS as an emotional PI indicator.

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