DOI: 10.4025/jphyseduc.v31i1.3116

Original Article

TEACHING SELF-EFFICACY AND FACTORS ASSOCIATED WITH THE TEACHING PRACTICE OF PHYSICAL EDUCATION FACULTY

AUTOEFICÁCIA DOCENTE E FATORES ASSOCIADOS À PRÁTICA DOCENTE DE PROFESSORES UNIVERSITÁRIOS DE EDUCAÇÃO FÍSICA

William das Neves Salles[1], Alexandra Folle[2], Gelcemar Oliveira Farias[2] and **Juarez Vieira do Nascimento[1]**

[1]Federal University of Santa Catarina, Florianópolis-SC, Brazil.
[2]Santa Catarina State University, Florianópolis-SC, Brazil.

RESUMO

A autoeficácia (AE) docente diz respeito à crença que o professor tem em sua própria capacidade de exercer efeito relevante sobre o envolvimento e a aprendizagem do estudante, sendo importante indicativo do comportamento pedagógico. Este estudo empírico associativo-preditivo teve como objetivo investigar o perfil de AE docente e os fatores associados à prática docente de professores universitários de Educação Física (EF). A Escala de Autoeficácia Docente do Professor Universitário foi aplicada a 43 professores de uma universidade pública brasileira, e os dados foram analisados tanto descritivamente quanto por meio do teste Qui-Quadrado e da Regressão Logística Binária (α=5%) no software SPSS 25. Os resultados revelaram elevados níveis de AE docente, tanto no âmbito geral quanto nas dimensões específicas da prática profissional (planejamento de ensino; engajamento dos estudantes; promoção de interações nas aulas; avaliação da aprendizagem e autoavaliação), além de evidenciarem fortes associações entre as dimensões da AE docente. A AE para o planejamento do ensino foi capaz de explicar 34,40% da variação do comportamento docente, o que indica a necessidade de realizar novas investigações que analisem com maior abrangência a influência exercida por outros fatores de ordem pessoal, profissional e contextual sobre as percepções de AE docente no contexto universitário em EF.

Palavras-chave: Autoeficácia. Docentes. Educação Superior. Educação Física.

ABSTRACT

Teaching self-efficacy (SE) refers to the belief that teachers/professors have in their own ability to exert a relevant effect on their students' engagement and learning, which is an important indicative of their pedagogical behavior. This associative, predictive empirical study aimed to investigate teaching self-efficacy profiles and the factors associated with the teaching practice of Physical Education (PE) faculty. The College Teaching Self-Efficacy Scale was applied to 43 professors from a Brazilian public university, and data were analyzed by descriptive statistics, the Chi-Squared test, and Binary Logistic Regression (α=5%) on SPSS 25 software. Results revealed high teaching SE levels, both in the general scope and in the specific dimensions of professional practice (teaching planning, student engagement, in-class interaction promotion, learning assessment and self-assessment), besides evidencing strong associations between teaching SE dimensions. SE for teaching planning explained 34.40% of the variation in the professors' behavior, which indicates a need to carry out new investigations with a more in-depth analysis of the influence exerted by other personal, professional and contextual factors on the perceptions of teaching SE within the PE university context.

Keywords: Self-Efficacy. Faculty. Higher Education. Physical Education.

Introduction

The initial period in university training presents opportunities for students to learn more about the profession for which they are preparing themselves, build their professional identity, socialize with their peers and acquire/develop the professional competences required for their practice[1]. With their teaching practice, professors can positively contribute to the personal and professional development of their students in the course of their training, which can result in a better apprehension of studied contents and optimization of the teaching-learning process[2,3].

An educator's reflection on their own professional performance is a key element in the process of consolidating knowledge and enhancing teaching practice, as it allows teachers and professors to adopt behaviors that meet their specific needs in the educational context in which they act[3]. Specifically, the analysis that this professional undertakes about their own

capability of exerting a relevant effect on the engagement and learning of students is called teaching self-efficacy (SE)[4,5].

Teaching SE level is an important indicative of an educator's pedagogical behavior, as it allows having a clearer understanding of their decisions, as well as of the amount and intensity of effort mobilized when they are faced with barriers, with the goals set for themselves and for students, and with professional performance[4,6]. Thus, the conduction of studies focused on teaching SE beliefs in the educational context has become ever more evident and valued[7], since it seeks to reinforce the mediating role that such beliefs have on the behavior of this professional[8].

The consulted literature points to a diversification in the objectives of research involving teaching SE, analyzing the correlations of this construct with personal aspects, such as sex and experience level[9]. When it comes to sex, the evidence from the consulted studies 10-12 reveals no association of the former with teaching SE. On the other hand, experience level seems to be positively associated with an increment in certain dimensions of teaching SE[11,12], although this correlation is not always linear[9,13]. SE also appears to be a component present in the process of professional identity construction of educators, since self-efficient teachers and professors tend to perceive the mutual relationship between interest in and identification with the job and their perceived teaching capability[14].

From this perspective, investigations have shown that teaching SE can indeed influence the teaching practice of professors[15,16], especially in the following dimensions: planning, student engagement, interaction promotion, and self-assessment[5,11]. In general, educators with higher SE levels strive to master the content they teach and have confidence in their ability to influence the learning of their students. Such professionals tend to dedicate more time to planning and to change the course of their classes with greater flexibility and naturality whenever necessary, in addition to being more open to new ideas and teaching methods that meet the students' needs. As for strategies towards promoting student engagement, more self-efficient teachers and professors tend to establish a positive climate for learning and have a good relationship with their students. Concerning (self-)assessment), they are used to diagnose their students' learning progress based on various evaluation strategies, as well as discuss with them the results achieved. Finally, these educators seek to be constantly evaluating their own practice in order to reach ever-increasing excellence levels[11].

Despite a more frequent presence of studies on teaching SE in the Basic Education being observed[9,14,17-19], few investigative initiatives of this nature have been found for Higher Education, both generally speaking[10,12] and particularly about Physical Education (PE), especially in Brazil. Investigations involving this education level are believed to be of singular importance because this is the initial stage in the training of new PE professionals. In this sense, considering the investigative gap concerning this theme in the Brazilian literature, and that teaching SE is potentially related to teaching practice, with the latter greatly influencing the behavior and engagement of students towards the course, this study aimed to investigate teaching SE profiles and factors associated with the teaching practice of PE professors.

Methods

Study Characterization

This study is classified as empirical and associative, of the predictive type[20]. The predictive-associative strategy seeks to explore possible functional relations between variables in order to estimate a prognosis for their behavior[20]. This research adopted the simple correlational design, which does not use any means for controlling possible strange variables affecting the functional relationship between investigated variables[21]. Bearing its specificities

in mind, the present study also sought to comply with the latest recommendations on scientific writing for articles of quantitative nature proposed by the Work Group for Standardization of Reports on Quantitative Scientific Articles [*Grupo de Trabalho em Padronização de Relatórios de Artigos Científicos Quantitativos*] - JARS-Quant[21].

Participants

The target population was composed of 59 professors working at the Physical Education Department of a Brazilian public Higher Education institution in 2014. The participant selection process was intentional, seeking to include all professors (permanent and substitute) regularly teaching classes for both initial training courses (licentiate (teaching) and bachelor's) offered by the Institution throughout the second semester of 2014. Therefore, those who were not performing regular teaching activities in undergraduate courses were not invited to participate. Considering the established criteria, 49 professors were deemed eligible and received participation invitations via e-mail in September and October 2014. Out of those, 43 consented to join the study (88%) after reading and manifesting their agreement on the Free and Informed Consent Form by signing it.

Instruments

The data collection instruments used were a characterization form specifically prepared for studying the College Teaching Self-Efficacy Scale[5]. Said scale, which seeks to identify the perceptions of professors on teaching SE (perceived capability for acting - PC) and teaching practice (frequency of teaching behaviors (FR)), consists of 39 items randomly distributed into four dimensions: didactical strategies for planning teaching (11 items); didactical strategies for actively engaging students with the learning process (10 items); didactical strategies for favoring in-class interaction (8 items); and didactical strategies for assessing learning (10 items). The respondent checks, for each one of the items, to which extent they feel capable of performing the action (PC), as well as how often they perform it (FR). In the validation process5, the scale obtained a Cronbach's Alpha of 0.9475, indicating that it presents enough internal consistency for application to scientific investigations[22].

For both perception categories (PC and FR), an assessment scale from 0 to 6 is considered, in which 0 represents the perception of lowest PC or lowest FR as to a certain action, while 6 indicates the perception of highest PC or highest FR. In order to suit the assessment scale to the criteria adopted by the institution for grading students in the undergraduate disciplines and, consequently, facilitate the professors' comprehension, a small adaptation to the original scale of the instrument was suggested: the respondent should check, on a scale from 0 (perception of lowest PC or FR) to 10 (perception of highest PC or FR), to which extent the statement matched their own perception.

Procedures

Initially, the research project was submitted for appreciation to the Ethics Committee on Research Involving Human Beings of a public university in the state of Santa Catarina, being later approved under legal opinion No 800.318/2014. Afterwards, authorization was requested from the direction board of the Education Center to which the DEF was linked in order to make data collection possible at their facilities. With the authorization in hands, a survey was conducted along with the DEF to identify the professors who were performing teaching activities in PE bachelor's and/or licentiate courses at the Institution in the second semester of 2014, as well as to obtain their e-mail addresses. In the subsequent week, all selected professors were contacted via e-mail so that the objectives and nature of the study could be explained, the voluntary nature of their participation could be stressed, and all due consents could be obtained.

Those who sent back their favorable opinion received, via e-mail, the characterization form and the College Teaching Self-Efficacy Scale. To facilitate the response collection process, the instruments were distributed in print (each professor's mailbox). This way, they could choose to answer any of the versions, whenever they judged more convenient. Finally, the first author of this study made himself available to solve any doubts that could arise during the completion of the instruments. In accordance with instructions provided to the professors, the printed instruments were collected weekly, at the bureau of the department itself, during a period of 60 days, counting from the date of delivery in the mailboxes.

Data Treatment and Analysis

The collected information was analyzed by means of descriptive statistical resources (mean, standard deviation and median; minimum and maximum values; asymmetry and kurtosis coefficients; absolute and relative frequencies) and inferential statistical resources (Chi-Squared test; Cramer's V coefficient; Binary Logistic Regression). First, the internal consistency of the Teaching SE Scale was analyzed from Cronbach's Alpha, which revealed a value of 0.97 and, therefore, confirmed the reliability of the instrument. The 'age' (up to 47 years old; + 47 years old) and 'experience in Higher Education Teaching' (up to 15 years; + 15 years) variables, the teaching SE means in each one of the PC dimensions (lowest SE; highest SE) and the FR means in each one of the dimensions (lowest FR; highest FR) were categorized dichotomically based on the percentile 50 (median) obtained in the descriptive analysis. To analyze the association level between the SE and FR perceptions of the investigated professors, the one-sample chi-square test was applied, with Yates's correction for continuity for 2x2 tables. In the cases of statistically significant associations ($p \leq \alpha$), Cramer's V coefficient and adjusted standardized residuals (AR) were considered for interpreting the strength of each association. A 5% significance level (α) was adopted for interpreting the results (p) of the Chi-square tests and of the V coefficients.

Binary logistic regression was applied for analyzing the factors associated with the overall FR among the investigated professors. In the descriptive analysis, the prevalence (absolute and relative frequencies) of FR (dependent variable) was presented as a function of these independent variables: sex, age, employment relationship, stage in the course, experience time, SE for planning, SE for engagement, SE for interaction, SE for assessment, and overall SE. In the inferential analysis, initially, crude binary logistic regressions were performed between the overall FR and each one of the independent variables. As a criterion for inclusion of independent variables, a 20% significant level was considered ($\alpha=0.20$). Then, adjusted binary logistic regression (Forward Wald method) was applied for testing the final model with the independent variables included from the crude regressions. As a criterion for inclusion of independent variables in the model, as well as for odds ratio (OR) interpretation, a 5% significance level was considered ($\alpha=0.05$). The reference category of each independent variable was the one that presented the lowest prevalence of 'highest FR' in the descriptive analysis. GraphPad Prism 7 program was used for running the descriptive analysis of teaching SE means and for building the boxplot, while SPSS Statistics 25 helped carry out association analyses (Chi-square) and prediction analyses (Binary Logistic Regression).

Results

The group of 43 investigated professors was mostly composed of male individuals (69.8%) aged on average 45.53±12.19 and with experience time in higher education teaching of 16.01±12.96 years. At the moment of data collection, most of them integrated the

permanent staff (79.1%) and were teaching disciplines (78 total) arranged in the first half (four first stages) of the PE courses offered by the University (41.9%).

Teaching SE Profile

The analysis of the investigated professors' teaching SE means (PC) (Figure 1) evidenced a predominance of scores above 9.00 in all dimensions. The greatest concentration of values above the means is confirmed by the negative coefficients of asymmetry in all SE dimensions, with highlight to planning (-0.86). The planning dimension obtained the highest mean score for teaching SE (9.15) and the lowest standard deviation (0.67), while the assessment and self-assessment dimension presented the lowest mean scores (8.77) and the greatest variability between teaching perceptions (0.92). No occurrence of missing data and outliers was observed, hence all collected data being considered in the statistical analysis conducted in this study.

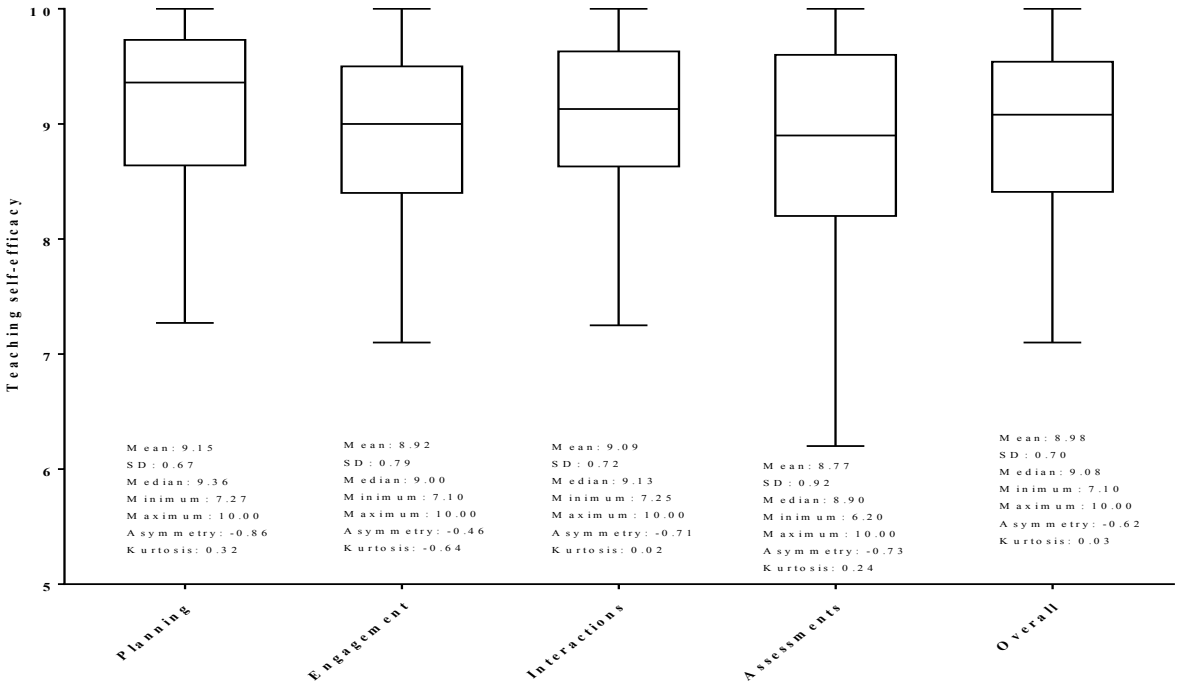

Figure 1. Distribution of the investigated professors' teaching SE means
Source: The authors

Association between SE and FR

The analysis of the relationship between the investigated professors' SE and FR perceptions (Table 1) revealed statistically significant ($p \leq \alpha$) and relatively strong ($0.40 \leq V \leq 0.59$)23 or strong ($0.60 \leq V \leq 0.79$)23 associations between the corresponding dimensions, except for assessment ($X^2=0.56$; $p=0.46$). The strongest association between SE and FR was found in the in-class interaction promotion dimension ($X^2=16.96$; $V=0.68$; $RA=\pm 4.4$), while the weakest one was found in the general dimension ($X^2=5.21$; $V=0.40$; $RA=\pm 2.6$). Concerning the associations between different dimensions, the strongest ones occurred between SE for planning and FR of interactions ($X^2=12.29$; $V=0.58$; $AR=\pm 3.8$), between SE for engagement and FR of interactions ($X^2=10.24$; $V=0.54$; $AR=\pm 3.5$), and between SE for planning and overall FR ($X^2=10.15$; $V=0.53$; $AR=\pm 3.5$)

Table 1. Associations between teaching SE and FR dimensions

Teaching self-efficacy	Frequency of performance				
	Planning	Engagement	Interactions	Assessment	Overall
Planning	X^2=8.38 V=0.49 AR=±3.2	X^2=10.10 V=0.53 AR=±3.5	X^2=12.29 V=0.58 AR=±3.8	X^2=2.79 p=0.10	X^2=10.15 V=0.53 AR=±3.5
Engagement	X^2=3.92 V=0.35 AR=±2.3	X^2=8.48 V=0.49 AR=±3.2	X^2=10.24 V=0.54 AR=±3.5	X^2=3.92 V=0.35 AR=±2.3	X^2=5.21 V=0.40 AR=±2.6
Interactions	X^2= 5.21 V=0.40 AR=±2.6	X^2=10.10 V=0.53 AR=±3.5	X^2=16.96 V=0.68 AR=±4.4	X^2=0.20 p=0.65	X^2=6.62 V=0.44 AR=±2.9
Assessment	X^2=1.88 p=0.17	X^2=4.48 V=0.37 AR=±2.5	X^2=3.98 V=0.35 AR=±2.3	X2=0.56 p=0.46	X2=2.63 p=0.11
Overall	X^2=3.92 V=0.35 AR=±2.3	X^2=8.48 V=0.49 AR=±3.2	X^2=6.71 V=0.44 AR=±2.9	X^2=3.92 V=0.35 AR=±2.3	X^2=5.21 V=0.40 AR=±2.6

Note: Associations followed by the V coefficient and AR were statistically significant (p≤α)
Source: The authors

Factors associated with teaching FR

In the analysis of overall FR prevalence, considering the independent variables (Table 2), a predominance of higher FR was found among female professors (61.5%) and with higher SE levels in all dimensions. The highest FR percentages were found among the professors with higher levels of SE for planning lessons (75.0%) and for promoting in-class interactions (70.0%).

Table 2. Prevalence of overall FR, considering the independent variables

Factors	Categories	Frequency of performance	
		Lowest - n(%)	Highest - n(%)
Sex	Male	18(60.0)	12(40.0)
	Female	5(38.5)	8(61.5)
Age	Up to 47 years old	11(50.0)	11(50.0)
	Over 47 years old	12(57.1)	9(42.9)
Experience time	Up to 15 years	12(54.5)	10(45.5)
	Over 15 years	11(52.4)	10(47.6)
Employment relationship	Substitute	7(77.8)	2(22.2)
	Permanent	16(47.1)	18(52.9)
Stage in the course	First half	9(50.0)	9(50.0)
	Second half	7(43.8)	9(56.3)
	Both	7(77.8)	2(22.2)
Planning	Lowest SE	18(78.3)	5(21.7)
	Highest SE	5(25.0)	15(75.0)
Engagement	Lowest SE	16(72.7)	6(27.3)
	Highest SE	7(33.3)	14(66.7)
Interactions	Lowest SE	17(73.9)	6(26.1)
	Highest SE	6(30.0)	14(70.0)
Assessment	Lowest SE	17(65.4)	9(34.6)
	Highest SE	6(35.3)	11(64.7)
Overall	Lowest SE	16(72.7)	6(27.3)
	Highest SE	7(33.3)	14(66.7)

Source: The authors

The Adjusted Binary Logistic Regression analysis revealed statistical significance ($p<0.001$) and explained 34.40% (R2 Nagelkerke = 0.344) of the FR variance among the investigated professors (Table 3). SE for teaching planning was the only predictor variable of FR in the adjusted analysis. Specifically, the chance of a professor presenting higher FR in their teaching practice is 10 times higher compared to when they perceive themselves as more self-efficient for planning their teaching (OR = 10.80) than when they do not perceive themselves as very capable of executing this task. The other variables included in the crude analyses (considering $\alpha \leq 0.2$) did not confirm significant association ($p \leq 0.05$) with FR in the adjusted analysis.

Table 3. Factors associated with the overall FR01 of the professors' professional practice

Factors	Crude regression		Adjusted regression	
	Odds Ratio (95% CI)	p	Odds Ratio (95% CI)	p
Sex				
Male	1	0.19	N/A	0.47
Female	2.40(0.63-9.12)			
Employment relationship				
Substitute	1	0.12	N/A	0.34
Permanent	3.93(0.71-21.76)			
Planning				
Lowest SE	1	<0.001	1	<0.001
Highest SE	10.80(2.62-44.52)		10.80(2.62-44.42)	
Engagement				
Lowest SE	1	0.01	N/A	0.86
Highest SE	5.33(1.45-19.67)			
Interactions				
Lowest SE	1	0.004	N/A	0.53
Highest SE	6.61(1.74-25.11)			
Assessment				
Lowest SE	1	0.05	N/A	0.5
Highest SE	3.46(0.96-12.47)			
Overall				
Lowest SE	1	0.01	N/A	0.33
Highest SE	5.33(1.45-19.67)			

Note: [1]Answer Variable: Frequency of performance (1=Highest; 0=Lowest); [2]Selection method for factors/independent variables: Forward Wald; *Statistically significant result (considering α=5%)
Source: The authors

Discussion

The analysis of the investigated professors' teaching SE profile revealed a predominance of high scores (above 9), both overall and in the specific dimensions of professional teaching practice. The high scores found can be understood by analyzing the contextual characteristics of the Education Center investigated at the moment of data collection. The bachelor's and licentiate courses of this Institution scored 4 (1-5 scale) in the 2013 and 2014 editions of the National Student Performance Exam24, while the Graduate Program scored 6 (1-7 scale) in the latest triennial evaluation (2013-2016) of the Coordination for the Improvement of Higher Education Personnel [*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*] (CAPES)[25]. Said quality indicators, though limited, reflect a favorable scenario for the conduction of teaching, research and extension activities in the

investigated university, reinforcing the idea that teaching SE is not only cause but also consequence of the educational process[15], and can be nurtured from social persuasion – one of the four sources that can contribute to incrementing SE[6]. Indeed, social persuasion is capable of motivating the individual to strive, develop action strategies and persevere towards success, especially if the persuasive agent (in this case, the Education Center) represents credibility and trust[6]. However, persuasion alone does not cause a lasting increase in SE levels because it does not have an authentic basis in individual experience[6], which must be taken into account when interpreting the high teaching SE scores found in this study.

Another factor that can explain the scores obtained by the educators investigated in this study is the predominance of permanent staff, as to employment relationship, at the University during data collection. In this sense, it is worth noting that the very security provided by the career stability in Public Teaching can contribute to professors feeling more confident to perform their professional activity[26], which, consequently, can lead to higher SE levels. It is important to stress that direct experiences, observation (vicarious) experiences, and physiological and emotional states, the three other sources of SE6, were not investigated in the present study, which stands as a limitation.

Among the SE dimensions, the professors participating in this study perceived themselves more self-efficient in planning their teaching. At the investigated university, the teaching plans of the disciplines had already been structured as of the curricular redesigning implemented in 2006[27,28], so some aspects such as the syllabus and objectives (general and specific) of the disciplines can only be changed upon approval from the collegiate body. This limited flexibility, which, on the one hand, restricts possibilities for changing the teaching contents to be passed on to the students, on the other can be associated with the higher SE levels precisely for presenting to the professors a previous structure to be followed, which, to some extent, gives them security and confidence to plan the disciplines.

The 'student learning assessment and self-assessment' dimension revealed the lowest teaching SE scores. Moreover, the greatest variability between answers was found in this dimension. Reading the teaching plans of the 78 disciplines taught by the investigated professors, it is possible to detect the presence of different evaluation strategies, such as observation reports (present in 68 disciplines), written tests (54), seminars (38) and practical teaching experiences (23). Indeed, the scope of evaluation possibilities adopted, as well as the different profiles of students in each class, can make the educator not be able to clearly identify an ideal evaluation method, but instead use a combination of different and complementary ways that suit the content taught and the profile of the students attending the discipline during a certain academic semester.

Strong associations were found between SE and FR perceptions, especially in the in-class interaction promotion dimension. Strong associations were also observed between interaction FR and SE for teaching planning and student engagement. The strong associations detected for most of the investigated professors' SE and FR dimensions corroborate the idea that there is a permanent process involving feedback and interaction between SE beliefs and resulting teaching behaviors, which, in their turn, can further strengthen SE and influence subsequent teaching actions[6].

The stronger association between SE and FR, observed in the interactions dimension, may be associated with the very nature of the teaching strategies proposed in the teaching plans of the disciplines. All teaching plans of the disciplines taught by the professors participating in this study included dialogue-lecture classes meant for the active participation of students during the socialization of teaching contents. In addition, 33 plans included group activities, such as sharing of teaching experiences with classmates or the community outside the university, 30 proposed the presentation of theoretical-practical seminars to colleagues, and 18 suggested debates to be held regularly. Interactivity is a striking characteristic of the

teaching profession[12] and an important one for the students' learning results[29]. By promoting systematic interactions between students and showing themselves more inclined to dialogue and communication during classes, teachers and professors contribute to strengthening the motivation and confidence of their students about their own potential[30], favoring the occurrence of a more meaningful learning.

More self-efficient educators tend to assign more active roles to students and establish an environment of greater positivity and confidence towards learning, especially due to the increased confidence the former have on their own potential to make the latter learn. Thus, these professionals do not feel 'threatened' in their certainties or 'challenged' by their students dialoguing with each other or questioning the relevance of a certain content to their own realities. Instead, these educators tend to feel stimulated to mediate the relations that are established in the teaching and learning context so that new sorts of learning can arise from these interactions[30].

The learning assessment and self-assessment dimension was the only one that showed no statistically significant association between PC and FR. Evaluating is indeed a very complex task, as it may involve both implicit and explicit criteria that seek to identify, more accurately, aspects such as the students' potential, intelligence, skills, attitudes and motivations, to which certain concepts are attributed in the form of grades[31]. Educators with higher teaching SE levels tend to show a continuous concern about their students' learning[5]. Besides using various evaluation strategies for recognizing that students have different learning styles and preferences, more self-efficient teachers and professors are used to comment on evaluation results in order to make their students aware of their strengths and weaknesses[5].

The greatest difficulty perceived by the professors in the evaluation dimension may also be related to the fact that it includes teaching practice self-assessment. Educators with higher teaching SE usually ponder about their own professional practice more continuously and systematically in order to identify aspects to be improved[5]. However, the reflective task requires a great effort from them because it demands a great amount of time to be properly performed; for this reason, not all of them are able to adequately engage due to the heavy workload commonly imposed by public universities[32]. Additionally, it is important to point out that reflection can occur at different levels[33], depending on the depth in which it is conducted. The highest level allows a deep understanding of one's own attitudes and can effectively contribute to transforming teaching behaviors. At the same time, this level is also the hardest one to be reached because it requires more time and greater cognitive effort compared to the lower ones[33].

The 'SE for teaching planning' dimension was the only one presenting a predictive relationship with the overall FR of behaviors among the investigated professors; the most self-efficient professors in this dimension have a much higher chance of adopting teaching behaviors that make it easier for their students to learn. In addition to planning diverse teaching strategies, the most self-efficient ones can adapt with greater ease to changes or unexpected issues that might occur as a consequence of their students' motivation and knowledge levels[5]. Although this is oftentimes interpreted as a mere bureaucratic act required from universities, teaching planning is very important because it is a work instrument and a document that states one's commitment with learning, on which it is possible to clarify the expectations, rights and duties of professors and students throughout the discipline. Besides having the technical purpose mentioned, planning can be an educative act by considering the active participation of students, which also contribute to raising its significance and effectiveness[30].

Despite planning having been capable of explaining about 1/3 of the FR variation, it is evident that other factors not included in the present study can also be associated with the

behavior of the investigated professors. In this sense, the limitations of this investigation comprehend the use of only one data collection instrument (which focused on an objective/quantitative assessment of teaching SE dimensions and indicators). Moreover, the contextual particularities of the investigated institution suggest that the extrapolation of the presented evidence must be done with caution, bearing in mind the historical-contextual characteristics of the collected information. Another important limitation to be highlighted refers to the scarcity of studies on teaching SE in Higher Education, which made it difficult to compare the results found with those of other similar studies. Finally, it is worth noting that there was no concern about controlling possible mediator variables for the relationship between SE (PC) and FR.

Therefore, this study leaves as a suggestion the broadening and deepening of investigations of quantitative nature on teaching SE in the university context, in order to analyze more accurately the influence exerted by personal, professional and contextual factors on SE perceptions. In this sense, it would be important to expand the investigated universe to other Brazilian universities (public, private, community...) in order to elucidate the particularities and similarities between the SE profiles of PE professors from different institutions. Furthermore, future quantitative investigations could explore the joint application of other instruments other than the Teaching Self-Efficacy Scale used in this study, as well as, for instance, questionnaires covering the motivation and satisfaction of professors with their jobs, which would make it possible to conduct more robust and thorough analyses of factors associated with teaching SE.

In the qualitative context, techniques such as interviews and systematic observation of classes taught by professors could help deepen the comprehension of sources involved in the process of construction of teaching SE beliefs, as well as of the reasons that lead educators to adopt certain practices and behaviors in their teaching process. Another suggestion, on that note, would be conducting interviews with professors that presented different SE profiles based on the responses to the teaching SE scale used in this study.

Finally, investigating the SE level of university students is judged pertinent because, in their relationship with professors, they play an important role in constructing the professional journey of the latter and in the development of their own SE beliefs. Thus, identifying student SE can provide evidence that contributes to structuring institutional actions aimed at creating an organizational environment that is favorable to interaction, to reflection and to SE strengthening through the engagement of all participants in the educational process at this educational level.

Conclusions

By analyzing quantitatively the teaching SE perceptions of PE professors and their relationship with certain sociodemographic and professional characteristics, this investigation initiative becomes important for being an initial stage of comprehending the role of teaching SE in the university environment. Certain teaching SE beliefs, in addition to presenting strong associations with each other, correlate directly with the corresponding behaviors (FR) of the investigated professors.

Nevertheless, the fact that only 34.40% of the variation in overall FR of teaching behaviors is explained by SE (planning) indicates a need to deepen the investigation on other factors associated with the effective teaching practice of PE professors. A qualitative study on how SE sources (direct and vicarious experiences, social persuasion, and physiological/emotional states) interact to shape and change these beliefs over time is also suggested in order to advance the scientific literature on teaching SE in initial PE training.

References

1. Milistetd M, Galatti LR, Collet C, Tozetto AVB, Nascimento JV. Sports coach education: guidelines for the systematization of pedagogical practices in bachelor program in Physical Education. J Phys Educ 2017;28(1):1-14. Doi: 10.4025/jphyseduc.v28i1.2849
2. Masetto MT. Inovação na aula universitária: espaço de pesquisa, construção de conhecimento interdisciplinar, espaço de aprendizagem e tecnologias de comunicação. Perspectiva 2011;29(2):597-620. Doi: 10.5007/2175-795X.2011v29n2p597
3. Masetto MT. Competência pedagógica do professor universitário. São Paulo: Summus; 2012.
4. Tschannen-Moran M, Hoy AW. Teacher efficacy: capturing an elusive construct. Teach Teach Educ 2001;17:783-805. Doi: 10.1016/S0742-051X(01)00036-1
5. Navarro LP. Autoeficacia del profesor universitario: Eficacia percibida y prática docente. Madrid: Narcea; 2007.
6. Bandura A. Self-efficacy: The exercise of control. New York: W. H. Freeman and Company; 1997.
7. Klassen RM, Tze VMC, Betts SM, Gordon KA. Teacher efficacy research 1998–2009: Signs of progress or unfulfilled promise? Educ Psychol Rev 2011;23(1):21-43. Doi: 10.1007/s10648-010-9141-8
8. Iaochite RT. Crenças de eficácia docente e suas origens. Psicol Ensino & Form 2014;5(2):81-102.
9. Klassen RM, Chiu MM. Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. J Educ Psychol 2010;102(3):741-756. Doi: 10.1037/a0019237
10. Tschannen-Moran M, Hoy AW. The differential antecedents of self-efficacy beliefs of novice and experienced teachers. Teach Teach Educ 2007;23(6):944-956. Doi: 10.1016/j.tate.2006.05.003
11. Riascos OV. Las creencias de autoeficacia en la práctica pedagógica del docente universitario de humanidades, ciencias sociales, educación y ciencias contables, económicas y administrativas. [Tese]. Valência: Universitat de València; 2011.
12. Mehdinezhad V. Faculty members' understanding of teaching efficacy criteria. Education Inquiry 2012;3(1):49-69. Doi: 10.3402/edui.v3i1.22013
13. Hoy AW, Spero RB. Changes in teacher efficacy during the early years of teaching: A comparison of four measures.Teach Teach Educ 2005;21(4):343-356. Doi: 10.1016/j.tate.2005.01.007
14. Castelo LB, Luna IN. Crença de autoeficácia e identidade profissional: estudo com professores do ensino médio. Psicol Argum 2012;30(68):27-42. Doi: 10.7213/psicolargum.v30i68.19827
15. Holzberger D, Philipp A, Kunter M. How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. J Educ Psychol 2013;105(3):774-786. Doi: 10.1037/a0032198
16. Dibapile WTS. A review of literature on teacher efficacy and classroom management. J Coll Teach Learn 2012;9(2):72-92.
17. Ferreira LCM. Crenças de autoeficácia docente, satisfação com o trabalho e adoecimento. Psicol. Ensino & Form 2014;5(2):19-37.
18. Iaochite RT, Azzi RG, Polydoro SAJ, Winterstein PJ. Autoeficácia docente, satisfação e disposição para continuar na docência por professores de Educação Física. Rev Bras Ciênc Esporte 2011;33(4):825-839. Doi: 10.1590/S0101-32892011000400003.
19. Iaochite RT, Costa Filho RA. Teacher efficacy beliefs during the practicum experiences in physical education classes. Motriz 2016;22(3):183-189. Doi: 10.1590/S1980-6574201600030009
20. Ato M, López-García JJ, Benavente A. Un sistema de clasificación de los diseños de investigación en psicología. Anal Psicol 2013;29(3):1038-1059. Doi: 10.6018/analesps.29.3.178511
21. Appelbaum M, Cooper H, Kline RB, Mayo-Wilson E, Nezu AM, Rao SM. Journal article reporting standards for quantitative research in psychology: The APA publications and communications board task force report. Am Psychol 2018;73(1):3-25. Doi: 10.1037/amp0000389
22. Marôco J. Análise estatística com o SPSS Statistics. 5. ed. Pero Pinheiro: Report Number; 2011.
23. Kotrlik JW, Williams HA. The incorporation of effect size in information technology, learning, and performance research. J Info Tech Learning and Perf 2003;21(1):1-7. Doi: 10.1.1.331.4489
24. Brasil. Base Nacional Comum Curricular. Brasília: MEC; 2018.
25. Capes. Relatório de avaliação quadrienal (2013-2016) da educação física. Brasília: Ministério da Educação; 2017
26. Melo MMR, Valle IR. Professoras catarinenses: Razões para escolher e permanecer na carreira. Rev Bras Hist Educ 2012;12(3):199-228. Doi: 10.4322/rbhe.2013.009
27. Fensterseifer ACB, Jesus JF, Nascimento JV, Nahas MV, Moraes PLO. Projeto de implantação do curso de bacharelado em Educação Física. Florianópolis: UFSC; 2005.
28. Fensterseifer ACB, Jesus JF, Nascimento JV, Nahas MV. Projeto de reformulação do curso de licenciatura em Educação Física. Florianópolis: UFSC; 2005.
29. Lakkala M, Toom A, Ilomäki L, Muukkkonen H. Re-designing university courses to support collaborative knowledge creation practices. Australas J Educ Tec 2015;31(5):521-536. Doi: 10.14742/ajet.2526

30. Weimer M. Learner-centered teaching: Five key changes to practice. San Francisco: Jossey Bass; 2002.
31. Brown G, Bull J, Pendlebury M. Assessing student learning in higher education. New York: Routledge; 2005.
32. Lemos D. Trabalho docente nas universidades federais: Tensões e contradições. Caderno CRH 2011;24(esp.):103-118. Doi: 10.1590/S0103-49792011000400008.
33. Moon JA. A handbook of reflective and experiential learning: Theory and practice. London: Routledge Falmer; 2004.

Authors' **ORCID:**
William das Neves Salles: https://orcid.org/0000-0001-6410-0332
Alexandra Folle: https://orcid.org/0000-0001-8972-6075
Gelcemar Oliveira Farias: https://orcid.org/0000-0003-3552-3437
Juarez Vieira do Nascimento: https://orcid.org/0000-0003-0989-949X

Received on Dec, 14, 2018.
Reviewed on Oct, 08, 2019.
Accepted on Dec, 10, 2019.

Author address: William das Neves Salles. Servidão das Jaboticabeiras 210, Bairro Córrego Grande, Florianópolis/SC, CEP 88037-542. E-mail: williamdnsalles@gmail.com