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Perceived expertise among physical education teachers: the role of personal and contextual factors

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ABSTRACT

This article focuses on teacher perceived expertise (TPE) influenced by both contextual and individual characteristics. By using a validated questionnaire based on two dimensions of TPE, i.e. subject matter and pedagogical expertise, the present study compares TPE in physical education (PE) to that of other subjects and examines the role of selected key personal variables and teaching context characteristics in TPE. Following a $2 \times 2 * 2$ MANCOVA, data on 482 teachers revealed a significant main effect of teacher sex and subject taught and a significant interaction effect between teaching context and subject taught on TPE, with a notably higher level of perceived subject-matter expertise for other-subject teachers than for PE teachers and for French other-subject teachers (than for French and Swiss PE teachers and Swiss other-subject teachers). This study discusses the importance of pedagogical expertise in TPE and of the interaction effects between personal and contextual factors on subject-matter expertise.

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Perceived expertise; physical education; sex; teaching context

Introduction

This paper focuses on teacher perceived expertise (TPE). TPE is recognized as an important component of professional identity that is influenced by both contextual and educational constraints and individual characteristics (e.g. Douwe, Meijer, and Verloop 2004; Lentillon-Kaestner et al. 2018). TPE is also involved in teacher well-being (Cece et al. 2022) and in teachers' capacities to deal with educational changes and implement new teaching practices (Douwe, Meijer, and Verloop 2004; Inoue et al. 2019; Rich 1993). TPE has been defined in relation to the role of teacher and can be measured because of a recently validated questionnaire allowing us to consider two domains, i.e. perceived subject-matter expertise and pedagogical expertise. Owing to the specific characteristics of physical education (PE) in schools, this case study aimed to improve the understanding of PE TPE in secondary schools compared to TPE for other subjects and of the effect of selected key personal

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variables (i.e. teaching experience, sex) and teaching context characteristics (i.e. France vs. the State of Vaud in Switzerland) on TPE. We considered that the marginal position of PE in the school structure, the gender connotation of teaching and PE, and differences in teaching conditions between the two selected contexts may influence TPE.

Teacher perceived expertise: subject-matter expertise and pedagogical expertise

The literature underlines a variety of components in teacher expertise, and its definition remains obscure (Raduan and Na 2020). As underlined by Palmer et al. (2005, 21), ‘expertise in teaching is a complex construct that has been associated with instructional effectiveness, teaching experience, what and how teachers think, and how teachers behave’. Compared to nonexpert teachers, experts demonstrate more complex, well-integrated knowledge about teaching and the classroom setting, better adaptability, automaticity, flexibility, problem-solving strategies, greater respect for students, more passion for teaching, etc (e.g. Berliner 2004; Raduan and Na 2020). In this article, and in line with a number of studies (e.g. Douwe, Meijer, and Verloop 2004; Lentillon-Kaestner et al. 2018), TPE is considered a facet of teacher professional identity and is defined in relation to its role. Expertise generally refers to the distinct know-how that is related to different professions. Expertise embodies knowledge, but it also embodies skills and attitudes for application in practice (Eaude 2014). Two core domains have been identified in teacher expertise (often with different labels) (e.g. Berliner 1986; Douwe, Verloop, and Vermunt 2000; Elliott 2009; Inoue et al. 2019; Kansanen 2003; Lentillon-Kaestner et al. 2018; Moss and Petrie 2019; O’Sullivan and Doutis 1994; Ropo 2004; Sorensen 2017; Traianou 2006; Wade 1998). One domain is directly related to teacher–student relationships (i.e. ‘pedagogical’ and ‘interpersonal’ expertise: skills and knowledge to support students’ social, emotional and moral development), and the other domain is related to teaching content (i.e. ‘subject-matter expertise’, with a distinction made at times between ‘content knowledge’, ‘academic subject content’, and ‘didactical’, plus ‘teaching and learning’ expertise: skills and knowledge to support students’ learning content).

Notably, the cognitive approach has dominated expertise research (Ropo 2004; Wade 1998) and ‘historically, knowing has been more valued than the art of doing’ (Wade 1998, 95). In the literature, notably in Anglo-Saxon educational literature (e.g. England, United States, New Zealand), pedagogy has encountered difficulties in being recognized and valorized at the same level as education directly related to content and student learning (e.g. Dillabough 1999; Kansanen 2003; Moss and Petrie 2019; Wade 1998). For example, in the theoretical perspective advanced by Shulman (1986), a knowledge base for teaching is content-related, and even ‘general pedagogical knowledge’ (e.g. knowledge of structuring lessons, motivating or assessing students) is content-related. Dillabough (1999) denounced the devaluation of feminine social characteristics in teaching and the overvaluation of masculine ones, such as rationality and instrumental action. However, in some other countries, such as Continental Europe, e.g. Germany (i.e. ‘Geisteswissenschaft pedagogy’, didactic triangle) (e.g. Kansanen 2003) or France (e.g. Lentillon-Kaestner et al. 2018), the pedagogical relation, i.e. the relation between teacher and student (not related to content, ‘social pedagogy’, ‘interpersonal relationships’, and ‘soft skills’), has been

considered as important as the didactic relation, i.e. the relation between content and students (Moss and Petrie 2019).

Teacher personal and contextual factors influencing teacher-perceived expertise

Researchers underline that perceived expertise, in both pedagogical and subject-matter domains, is situated and that it reflects the influences and interplay between individual and contextual factors (e.g. Berliner 2004; Douwe, Meijer, and Verloop 2004; Douwe, Verloop, and Vermunt 2000; Iannucci and MacPhail 2018; Lentillon-Kaestner et al. 2018; Lux and McCullick 2011; Roux-Perez 2005; Traianou 2006). However, research on the role of personal and contextual factors in TPE is currently lacking. Douwe et al. (2000) studied influential factors on TPE by combining three aspects of expertise (i.e. subject matter, didactical, pedagogical expertise) and comparing five groups of teachers (i.e. subject matter experts, didactical experts, pedagogical experts, balanced group, high on two aspects). Even if some differences in TPE emerged with regard to teacher subject, sex, and expertise, the mean scores of the teacher groups on the three influencing factor scales did not differ significantly. These authors underlined the necessity of developing future research to better understand the relationships between these influential factors and TPE. Based on previous studies on TPE and on potential personal and contextual influential factors (e.g. Berliner 2004; Demetriou, Wilson, and Winterbottom 2009; Douwe, Meijer, and Verloop 2004; Ropo 2004), four key variables were retained in this case study as insightful and interrelated factors that can influence TPE: teacher experience, subject taught (i.e. physical education vs. other school subjects), teacher sex (i.e. male vs. female teachers), and teaching context (i.e. State of Vaud in Switzerland vs. France).

The role of teaching experience in teacher expertise

As underlined in many studies (e.g. Berliner 1986; Ropo 2004; Winkler 2001), teaching experience is necessary but insufficient for developing teacher expertise. The number of years of experience is among the criteria used to identify expert teachers, but there is no consensus on the number of years of experience required for expertise in teaching (Palmer et al. 2005).

The specificity of PE compared to other subjects: a marginalized subject

The subject area is a domain that is thought to influence TPE (Douwe, Meijer, and Verloop 2004; Douwe, Verloop, and Vermunt 2000). Douwe et al. (2000) underlined some differences in the development of TPE between teachers from different subject areas (i.e. language, science and mathematics, social studies and humanities). Compared to subjects associated with mental labour (academic-oriented subjects), such as mathematics and science, PE, such as music or art (special activity-oriented subjects or cross-curricular activities), has historically been considered a singular and lower-status subject and peripheral to the primary mission of schooling (e.g. Gaudreault, Richards, and Mays Woods 2018).

One of the main differences between PE and other school subjects is that movement and motor skills are central in PE lessons, with content that is based on sport domains (and not intellectual domains). In contrast to other teachers who use personal and assigned seats, PE teachers are continually standing and moving and confronted with

students in movement. In addition, PE teachers usually assume multiple roles in the school community, i.e. teaching and coaching roles, such as extracurricular/afternoon commitments (Macdonald 1995). Finally, PE teachers are marginalized by their specific curriculum and sports attires, and they are commonly and physically separated from other colleagues in school structures, with a specific PE teachers' room in the gym (Lux and McCullick 2011).

This marginalized status of PE in schools influences the way that teachers feel about themselves and their jobs. Teachers may feel frustration and disappointment in not being considered 'real' teachers, thus creating obstacles to professional development (Gaudreault, Richards, and Mays Woods 2018; Iannucci and MacPhail 2018; Lux and McCullick 2011; Macdonald 1995; Mierzejewski 2016; Whipp, Tan, and Tin Yeo 2007). For example, Whipp, Tan, and Tin Yeo (2007) showed how some PE teachers suffered from this marginalization, sometimes leading them to resign; they were dissatisfied because of the lack of 'genuine' opportunities to participate in educational debate and decision making and the limited respect from administrators and parents. Gaudreault, Richards, and Woods (2018) revealed that while many PE teachers communicated feelings of mattering, they often felt as if they mattered more in noninstructional capacities (interpersonal connections and, in particular, students). The specificity of PE results in the privilege of being close to students but distant from the school's intellectual values. Mierzejewski (2016) underlined that, compared to other-subject teachers, PE teachers were more satisfied with their pedagogical relationships with students, more in agreement with the idea that the future of the school is linked to the pedagogy, and less likely to consider that this future lies in learning fundamental knowledge. The global development of pupils has become a central element in PE teachers' philosophies and practices, and they view sport not as the central aspect of the subject but as a vehicle for health promotion (Ferry 2018; Green and Thurston 2002; Roux-Perez 2004). On the other hand, O'Sullivan and Doutis (1994) critiqued the concept of expertise in teaching in PE and proposed the term 'virtuoso' for teaching as a more appropriate term to describe those who engage expertly with students in the teaching-learning process. 'Teachers who are virtuosos are described as not only having sophisticated content knowledge and pedagogical content knowledge structures but also demonstrating a commitment to the social, political, and moral agendas of teaching physical education' (O'Sullivan and Doutis 1994, 176). In sum, the importance of pedagogical expertise among PE teachers is evident. However, to date, no previous study has investigated the differences in TPE between PE teachers and teachers of other subjects.

Differences in teaching contexts

As underlined by various researchers, teacher expertise is situated and developed over long periods of time within a specific context (Berliner 2004; Siedentop and Eldar 1989). Previous studies highlighted differences in the development of TPE owing to teaching context characteristics, such as 'school culture', as well as work relationships with head teachers, other colleagues, PE teams, and students (e.g. Cece et al. 2022; Flores 2001; Gaudreault, Richards, and Mays Woods 2018; Roux-Perez 2005) or owing to the content taught (e.g. Berliner 2004). There is a lack of knowledge about PE TPE differences or similarities between macro-teaching contexts and, more precisely, between countries or

states. However, teaching context characteristics differ between countries and may also influence TPE.

Some similarities emerged between the two selected teaching contexts. The structure of secondary schools in both contexts was similar (from 11 to 18 years old, seven years in France; from 12 to 18 or 19 years old, six or seven years in the State of Vaud). The contents of PE teacher training were also comparable in both contexts (few sport practices and mostly theoretical content related to sport and PE based on various disciplinary perspectives: psychology, physiology, etc.) (Siedentop and Eldar 1989).

However, being a PE teacher in France is not the same as being a PE teacher in the State of Vaud. In secondary schools in France, PE teachers specialize only in PE. In contrast to France, Swiss PE teachers primarily teach another school subject (e.g. mathematics or English). Thus, Swiss PE teachers (but not French PE teachers) learn and develop competencies in another more academic subject that may influence their perceptions of expertise in their job. Iannucci and MacPhail (2018) showed among postprimary PE teachers that the role of teachers may be complicated when they are asked to teach a marginal subject such as PE and another school subject. However, the teaching of another subject has been suggested as a way to improve PE teacher development and expertise (Lux and McCullick 2011).

In addition, four other main differences are notable between the two selected teaching contexts (France and the State of Vaud in Switzerland). First, Swiss PE teachers have teaching hours per week similar to those of other-subject teachers, whereas in France, the hourly commitment of PE teachers is higher than that of both Swiss PE teachers and French teachers of other subjects. Second, the number of students per class is higher in France than in the State of Vaud in Switzerland (see Table 1). Third, some differences emerge specifically in PE between these two contexts. PE in the state of Vaud is not graded, and an

Table 1. Comparison of teaching conditions between France and Switzerland (the State of Vaud).

	Switzerland (State of Vaud)	France
Teaching conditions	<i>n</i>	<i>n</i>
Number of students per class		
Lower secondary school	18.8 ^a	25.1 ^c
Higher secondary school	24 ^b	29.9 ^c
Number of teaching hours per week for PE teachers		
Lower secondary school	18.75	20
Higher secondary school	16.5	17
Number of teaching hours per week for other-subject teachers		
Lower secondary school	18.75	18
Higher secondary school	16.5	15

Note. In Switzerland, the teaching period is 45 minutes: 25/22 periods of 45 min – 16.5/18.75 hours – per week in lower/higher secondary schools. In France, the 20/17 teaching hours for PE teachers include three hours of teaching in optional school sports.

^a<http://www.scris.vd.ch/Default.aspx?DocID=5353&DomId=2612>.

^bArticle 23, para. 2 of higher secondary school settlement.

^c<https://www.insee.fr/fr/statistiques/4277757?sommaire=4318291&q=élèves+par+classe>.

assessment book is used, while in France, it is certified. Finally, a PE teaching diploma in France is obtained following a competition (selection based first on written exams) at the end of a six-year training; in the State of Vaud, a university diploma is obtained without competition at the end of a five- or six-year training (for lower and higher secondary school).

Teacher sex and gender norms

Masculinity and femininity are historically and socially constructed within schools and the broader society and are not genetically determined by sex; however, ‘emphasis on gender norms is placed as if they were genetically determined’ (Zikhali and Maphosa 2012, 220). As underlined by West and Zimmerman (1991, 14), individuals organize their interactions through gender codes; they ‘do gender’ as they engage in ‘a complex of socially guided perceptual, interactional, and micropolitical activities that cast particular pursuits as expression of masculine and feminine “natures”’.

Teachers are influenced by normative discourses: caring, affection, and warmth for women and instrumentality, rationality, control, and knowledge for men (Ankers de Salis et al. 2019; Demetriou, Wilson, and Winterbottom 2009; Montecinos and Nielsen 2004). For example, Demetriou, Wilson, and Winterbottom (2009) showed that female teachers were better at the emotional component of teaching and had a greater capacity to empathize than male teachers. In contrast, male teachers internalized more emotions, were less patient, and coped less well when confronted with unmotivated students. Throughout the world, teaching is considered to be a feminine profession and is a female-dominated job in primary school (Ankers de Salis et al. 2019; Sak 2015), but there are similar proportions of male and female teachers in secondary schools (Ankers de Salis et al. 2019; Mills 2004). Teachers in secondary schools specialize in one or more subjects that are considered either masculine or feminine. In secondary schools, the additional layers of ‘masculine’ and ‘feminine’ subjects lead to male teachers being more likely to teach in masculine subject areas, such as science, mathematics, manual arts, or PE, consistent with gender norms (Mills 2004; Spangenberg and Myburgh 2017). As underlined by Montecinos and Nielsen (2004), ‘the sex of the teacher influences the job of teaching; the job, in turn, has gender characteristics, which influence the people who perform it’.

Owing to its association with sports, PE is considered a masculine subject (Ankers de Salis et al. 2019; Dowling 2006; Macdonald 1995). By interviewing female PE teachers, Macdonald (1995) underlined that some declared suffering from sexual harassment from male colleagues and a lack of collegiality and respectful staff relationships. In addition, some female PE teachers reported unjust treatment of students by their colleagues, e.g. some boys were called ‘poofters’ because they did not fit into the hegemonic masculinity model (Macdonald 1995). Thus, it may be worthwhile to explore the combined role of both teacher sex and PE subject (connoted as masculine) in TPE.

Study relevance and purpose

This case study on PE teachers aimed to improve the understanding of TPE (i.e. perceived pedagogical expertise and subject-matter expertise) in secondary schools and to estimate the effects of selected key influential factors on TPE. More precisely, we compared PE teachers with other-subject teachers (considering the marginalized

status of PE teachers at schools) and considered the role of teacher sex (in relation to gender norms), teaching experience, and teaching context characteristics in TPE (France vs. the State of Vaud).

To date, it has been difficult to establish clear relationships between these variables (i.e. subject taught, teacher sex, teaching context) and TPE for various interrelated reasons. First, perceived pedagogical expertise has had difficulties being considered and valorized in the literature on teacher expertise and notably in the Anglo-Saxon literature. Second, previous studies on TPE or perceptions of profession among PE teachers were mostly qualitative, focused on PE teachers only, and based on various theoretical backgrounds (Gaudreault, Richards, and Mays Woods 2018; Lux and McCullick 2011; Macdonald 1995; Roux-Perez 2005; Whipp, Tan, and Tin Yeo 2007), thus preventing us from estimating the main or interaction effects of different personal or contextual variables on TPE.

With regard to existing studies, this case study allows us to fill a gap in the literature and contributes to a better understanding of TPE among PE teachers and associated individual and contextual factors. Four hypotheses were proposed:

- (1) Because of the marginalized status of PE (e.g. Gaudreault, Richards, and Mays Woods 2018; Lux and McCullick 2011, Mierzejewski 2016), we posited a main effect of subject taught on TPE: PE teachers were hypothesized to perceive higher pedagogical expertise and lower subject expertise than teachers of other school subjects;
- (2) Similar to Lux and McCullick's (2011) suggestion that teaching another subject may be a way to improve TPE among teachers of a marginalized subject (such as PE), a significant interaction between the subject taught and teaching context was postulated. TPE was expected to be more similar between PE teachers and other-subject teachers in the State of Vaud in Switzerland than in France.

Finally, based on the feminine layer of caring (e.g. Ankers de Salis et al. 2019; Demetriou, Wilson, and Winterbottom 2009) and the masculine layer of PE (e.g. Ankers de Salis et al. 2019; Dowling 2006; Macdonald 1995), we posited a significant main effect of teacher sex and a significant interaction effect between subject taught and teacher sex on TPE: (3) female teachers were expected to perceive higher pedagogical expertise than male teachers, and (4) the difference between males and females in TPE was postulated to be larger in subjects other than PE.

Method

Sample

The sample of the present study consisted of 482 volunteer secondary school teachers ($M = 42.24$ years, $SD = 9.62$), including 160 teachers from the State of Vaud in Switzerland ($M = 40.12$ years old, $SD = 9.65$) and 322 teachers from France ($M = 43.29$ years old, $SD = 9.43$). Sample characteristics by teaching context, teacher sex, and subject taught are presented in Table 2. The mean teaching experience was 16.33 years ($SD = 9.48$).

Table 2. Sample characteristics by teaching context, teacher sex, and subject taught.

Teacher characteristics	Switzerland (State of Vaud)		France		Total	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Sex						
Male	67	41.88	118	36.65	185	38.38
Female	93	58.12	204	63.35	297	61.62
School subject						
PE	66	41.25	172	53.42	238	49.38
Other	94	58.75	150	46.58	244	50.62

Note. 'PE' refers to PE teachers intervening only in PE in France and to teachers intervening in PE and in another subject in the state of Vaud. 'Other' refers to teachers intervening in subjects other than PE in both France and the State of Vaud.

Measurements

An 11-item questionnaire on TPE validated in the French context (the QIPPE)¹ (Lentillon-Kaestner et al. 2018) was used. This scale includes two individual components of professional identity: perceived pedagogical expertise (6 items, e.g. 'I take care of the well-being of my students from the beginning of the lesson') and perceived subject-matter expertise (5 items, e.g. 'I update my skills in my field in a self-taught way or by following training'). Teachers rated each item on a 5-point Likert scale ranging from 1 = *never* to 5 = *always*. The average value was computed for each subscale (see Table 4). Notably, this questionnaire has been validated in various samples of teachers of various subjects; moreover, it measures global teacher perceived expertise in pedagogical and subject-matter domains in the teaching profession without specifying the subject that is taught. Lentillon-Kaestner et al. (2018) established the construct validity of the QIPPE scale using exploratory factor analyses, hierarchical confirmatory factor analysis, and exploratory structural equation modelling and met the cut-off criterion values: $\chi^2 = 87.16/76.40$; CFI = .93/.93; TLI = .91/.90; RMSEA = .05/.06. They also reported good internal consistency (Cronbach's alpha) in two different French-speaking teacher samples, with one sample in the French-speaking area of Switzerland and one sample in France (.70/.74 for pedagogical expertise and .73/.76 for subject-matter expertise).

In the teacher questionnaire, some additional demographic questions focused on teacher sex, number of teaching years, and subjects taught, allowing us to distinguish PE teachers from teachers of other subjects and estimate their teaching experience.

Procedure

Permission to conduct the study was granted by the ethics board of the host universities in France and in the State of Vaud in Switzerland. Teachers were recruited on a volunteer basis through various methods, including professional teacher associations, school departments and directions, continuing training initiatives, and social networks. The questionnaire was completed online. Teachers were informed that their participation was voluntary, their responses would be confidential, and they could withdraw from the study at any time. Participants provided written informed consent by email. They completed the questionnaire during their free time. They needed 20 minutes to complete the questionnaire.

Data analysis

Teachers' responses were aggregated according to the two dimensions of TPE, i.e. perceived pedagogical expertise and perceived subject-matter expertise.

Statistical analyses were performed as follows. First, preliminary analyses were conducted with the data, i.e. analyses of the skewness and kurtosis values and verification of the internal reliability of the QIPPE subscales with Cronbach's alphas. Levene's tests were also computed to examine the similarity of variances across teacher sex (male vs. female), country (France vs. the State of Vaud in Switzerland), and the subject taught (PE vs. other subjects) for subject-matter expertise and perceived pedagogical expertise.

Second, four independent variables were considered in this study: three categorical variables, i.e. teacher sex (male vs. female), subject taught (PE vs. other subjects), and teaching context (France vs. State of Vaud in Switzerland), and one continuous variable, i.e. teaching experience (years of experience, as a control variable). Differences between Swiss and French samples in the four independent variables were verified using χ^2 tests for categorical variables and one-way ANOVA for teaching experience (a continuous variable). Finally, a $2 \times 2 \times 2$ multivariate analysis of covariance (MANCOVA) was used to examine the main and interaction effects of teaching context (i.e. State of Vaud in Switzerland vs. France), teacher sex (i.e. females vs. males), and subject taught (i.e. PE vs. other subjects), with teaching experience as a covariate, on the two QIPPE subscales, i.e. perceived pedagogical expertise and subject-matter expertise. Pillai's F statistic was used for MANCOVA to determine the statistical significance of the multivariate model because it controlled for the type I error rate with unequal sample sizes (Ntoumanis and Myers 2015). A follow-up $2 \times 2 \times 2$ factorial analysis of covariance (ANCOVA) was then conducted for perceived pedagogical expertise and subject-matter expertise separately based on the statistical significance of the MANOVA results (Warner 2012). Tukey's HSD was used for post-hoc tests. Statistica, version 8.0, was used for all statistical analyses.

Results

Preliminary analyses

Analysis of the skewness (−.28 to −.82) values revealed that the data were moderately skewed to symmetric. Analysis of the kurtosis (−0.02 to 1.73) values revealed that the data were normally distributed. Levene's tests revealed a similarity in the variances across gender ($F(1, 480) = 1.65$ and 0.08 , $p = .20$ and $.78$ for subject-matter expertise and perceived pedagogical expertise, respectively), country ($F(1, 480) = 0.60$ and 0.05 , $p = .44$ and $.83$ for subject-matter expertise and perceived pedagogical expertise, respectively) and subject taught ($F(1, 480) = 0.46$ and 1.21 , $p = 0.50$ and $.27$ for subject-matter expertise and perceived pedagogical expertise, respectively).

The internal consistencies of the QIPPE subscales were good, with Cronbach's alphas of .73 and .77 for pedagogical expertise and .73 and .72 for subject-matter expertise in French and Swiss samples, respectively.

Finally, the results of the χ^2 tests showed significant differences in terms of teaching experience and subject taught between Swiss and French samples (see

Table 3. MANCOVA results: main and interaction effects of teaching context, teacher sex, and subject taught, with teaching experience as a covariable.

Effects	Pillai Trace	F(2, 472)	p	η^2
Intercept	.968	7069.34	<.001	.968
Teaching experience	.003	0.63	.534	.003
Teaching context	.009	2.25	.107	.009
Teacher sex	.016	3.91	.021	.016
Subject taught	.030	7.37	<.001	.030
Teaching context*Teacher sex	.001	0.15	.861	.001
Teaching context*Subject taught	.031	7.56	<.001	.030
Teacher sex*Subject taught	.003	0.63	.531	.003
Teaching context*Teacher sex*Subject taught	.002	0.40	.671	.002

Table 2). There were significantly more PE teachers in the French sample than in the Swiss sample (53.42% vs. 41.25%), $\chi^2(1) = 6.29$, $p = .012$, $V_{\text{cramer}} = .115$. The level of teaching experience was higher among French teachers ($M = 17.91$ years, $SD = 9.26$) than among Swiss teachers ($M = 13.17$ years, $SD = 9.14$), $F(1, 480) = 28.290$, $p < .001$, $\eta^2 = .056$. No difference related to teacher sex was identified between the two samples, $\chi^2(1) = 1.236$, $p = .275$, $V_{\text{cramer}} = .051$.

Main analyses

The $2 \times 2 \times 2$ MANCOVA results revealed significant effects of selected factors on perceived subject-matter expertise, $F(8, 473) = 4.10$, $p < .001$, *adjusted* $R^2 = 0.05$, and marginal significance for perceived pedagogical expertise, $F(8, 473) = 1.76$, $p = .08$, *adjusted* $R^2 = 0.01$. More precisely, there was a significant main effect of teacher sex and subject taught and a significant interaction effect between teaching context and subject taught on QIPPE scores. No further significant effect was found (see **Table 3**).

In the follow-up $2 \times 2 \times 2$ factorial ANCOVA for perceived subject-matter expertise, there was a significant main effect for teacher sex, $F(1, 473) = 5.086$, $p = .024$, $\eta^2 = .011$: female teachers perceived higher subject-matter expertise than male teachers (see **Table 3**). In addition, there was a significant main effect for subject taught, $F(1, 473) = 5.215$, $p = .023$, $\eta^2 = .011$: PE teachers perceived lower subject-matter expertise than teachers of other subjects (see **Table 4**). A significant interaction between teaching context and subject taught was also observed, $F(1, 473) = 5.260$, $p = .022$, $\eta^2 = .011$. More precisely, French other-subject teachers perceived significantly higher subject-matter expertise than French PE teachers, $p < .001$, Swiss PE teachers, $p = .005$, and Swiss other-subject teachers, $p = .004$ (see **Table 4** and **Figures 1 and 2**).

In the follow-up factorial $2 \times 2 \times 2$ factorial ANCOVA for perceived pedagogical expertise, there was a significant main effect of teacher sex, $F(1, 473) = 6.400$, $p = .012$, $\eta^2 = .013$, which indicated that female teachers perceived higher pedagogical expertise than male teachers (see **Table 4**).

Discussion

The purpose of this case study on PE teachers was to contribute to a better understanding of the effect of selected contextual and personal variables on TPE in secondary schools. Because of the marginal status of PE in school, we compared the TPE of PE teachers to that

Table 4. Descriptive statistics of QIPPE scores by teacher context, teacher sex, and subject taught and their interactions.

Teacher Characteristics	Pedagogical expertise				Subject-matter expertise			
	M	SD	95% CI		M	SD	95% CI	
			LL	UL			LL	UL
Teacher sex								
Male	4.24*	0.03	4.18	4.30	3.82*	0.04	3.75	3.89
Female	4.33*	0.02	4.28	4.38	3.96*	0.03	3.90	4.01
Subject taught								
PE	4.33	0.03	4.28	4.38	3.82*	0.03	3.76	3.88
Other	4.27	0.03	4.21	4.32	3.99*	0.03	3.92	4.05
Teaching context* Subject taught								
France								
PE	4.35	0.03	4.29	4.40	3.82***	0.04	3.74	3.89
Other	4.25	0.04	4.17	4.32	4.07**/***	0.04	3.99	4.15
Switzerland (State of Vaud)								
PE	4.28	0.05	4.17	4.39	3.83**	0.05	3.73	3.93
Other	4.30	0.04	4.22	4.38	3.86**	0.05	3.75	3.96
Teacher sex* Subject taught								
Male								
PE	4.29	0.04	4.22	4.37	3.79	0.04	3.71	3.87
Other	4.17	0.05	4.08	4.27	3.86	0.07	3.73	4.00
Female								
PE	4.36	0.03	4.29	4.42	3.85	0.04	3.77	3.94
Other	4.31	0.03	4.24	4.37	4.04	0.03	3.97	4.11
Teaching context/Teaching context*Teacher sex/Teaching context*Teacher sex*Subject taught								
France	4.30 ^a	0.02	4.26	4.33	3.94	0.03	3.88	3.99
Male	4.24	0.04	4.17	4.32	3.85	0.05	3.75	3.94
PE	4.31	0.04	4.23	4.40	3.78	0.05	3.68	3.89
Other	4.11	0.06	4.00	4.23	3.96	0.09	3.78	4.14
Female	4.33	0.03	4.27	4.39	3.99	0.03	3.92	4.05
PE	4.37	0.04	4.30	4.44	3.84	0.05	3.75	3.95
Other	4.30	0.04	4.21	4.38	4.11	0.04	4.03	4.19
Switzerland	4.30	0.03	4.25	4.34	3.84	0.03	3.77	3.92
Male	4.24	0.05	4.13	4.35	3.78	0.06	3.65	3.90
PE	4.24	0.08	4.07	4.41	3.81	0.07	3.66	3.95
Other	4.24	0.07	4.09	4.39	3.75	0.10	3.55	3.96
Female	4.33	0.04	4.25	4.41	3.89	0.05	3.80	4.00
PE	4.32	0.07	4.17	4.46	3.85	0.08	3.70	4.01
Other	4.33	0.05	4.24	4.43	3.92	0.06	3.80	4.04

Note. CI = confidence interval; LL = lower limit; UL = upper limit.

^aMeans shown are weighted averages.

* $p < .05$, ** $p < .01$, *** $p < .001$.

of teachers of other subjects. Teacher sex, experience, and teaching context were also taken into account in the analyses. First, teaching experience did not influence perceived pedagogical or subject-matter expertise. This result agreed with that of Douwe et al. (2000). In line with previous studies (e.g. Berliner 1986; Ropo 2004; Siedentop and Eldar 1989; Winkler 2001), this study found that increasing teaching experience is not sufficient to develop expertise. The other results revealed significant effects of personal and contextual factors on perceived subject-matter expertise and a marginal significance for perceived pedagogical expertise. More precisely, the results showed a significant main effect of teacher sex and subject taught and a significant interaction effect between teaching context and subject taught on QIPPE scores.

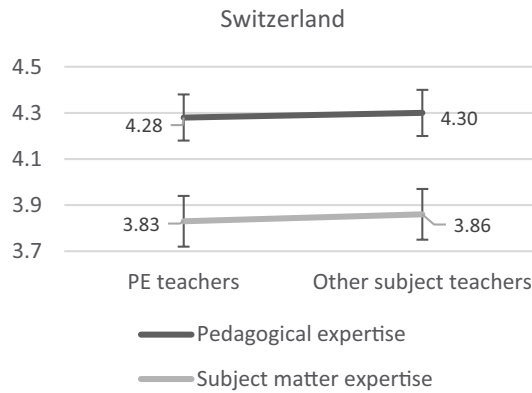


Figure 1. The QIPPE scores of Swiss PE teachers and other-subject teachers. This figure represents the means of pedagogical and subject-matter expertise for Swiss PE teachers and other-subject teachers (line extremities) with 95% confidence intervals (vertical bars).

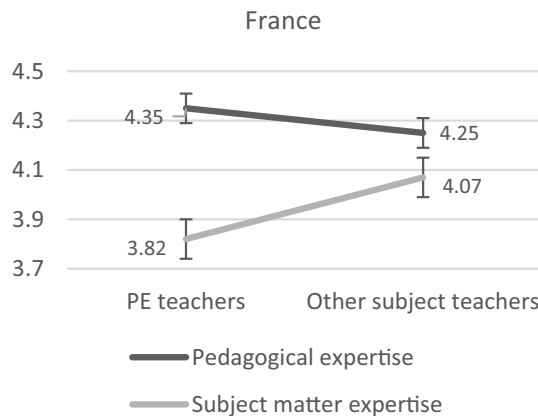


Figure 2. The QIPPE scores of French PE teachers and other-subject teachers. This figure represents the means of pedagogical and subject-matter expertise for French PE teachers and other-subject teachers (line extremities) with 95% confidence intervals (vertical bars).

Our first hypothesis, expecting a main effect of subject taught on TPE, was partially validated. As expected, regardless of teacher sex, teaching context, and experience, PE teachers perceived lower subject-matter expertise than other-subject teachers but similar pedagogical expertise. This result may be related to the negative effects of the marginalized status of PE, influencing the perception of subject-matter expertise to a greater extent than pedagogical expertise (Iannucci and MacPhail 2018). Our result confirms the words of Siedentop and Eldar (1989, 258) underlining that 'PE teachers would rank much lower in subject matter competence than would counterparts in mathematics, science, foreign language, and music'. They explained that the undergraduate curriculum integrates considerably more varied disciplinary perspectives (e.g. history, psychology, physiology) than direct experience in learning the subject matter itself (e.g. athletics, gymnastics, soccer). To improve subject-matter expertise among PE teachers, it would be necessary to increase preparation in PE subject matter (e.g.

basketball, gymnastics) (Schempp et al. 1998; Siedentop and Eldar 1989). Even if interpersonal relationships and students' well-being have been underlined as central for PE teachers (Gaudreault, Richards, and Mays Woods 2018; Mierzejewski 2016; O'Sullivan and Doutis 1994; Schempp et al. 1998; Siedentop and Eldar 1989), no difference was observed in perceived pedagogical expertise among PE teachers and other-subject teachers. This result was opposite to our hypothesis but was in line with Douwe's et al. (2000) results comparing teachers of four school subjects (i.e. language, science and mathematics, social studies and humanities, and arts). Previous studies underlying the importance of soft skills among PE teachers were mostly qualitative and conducted no comparison with other-subject teachers. Future research is needed to verify this result in other samples and contexts.

In addition, a significant interaction effect emerged between subject taught and teaching context on TPE, which validated our second hypothesis. In the State of Vaud in Switzerland, TPE was similar between PE teachers and other-subject teachers. In France, PE teachers perceived lower expertise than other-subject teachers. Consequently, in addition to ignoring the messages of marginality or taking action to challenge and/or change these messages, as proposed in Lux and McCullick (2011), teaching another subject seems to offer a helpful solution to improve TPE and reduce the negative effect of PE's marginalized status in the school community on TPE. The other differences concerning PE between the two teaching contexts, such as in assessment modalities or in teaching diplomas, seem not to affect PE TPE since no difference emerged between PE teachers from France and those from the State of Vaud.

Because of the feminine connotation of caring, we expected a main effect of teacher sex on TPE, and this fourth hypothesis was validated: female teachers perceived higher pedagogical expertise than male teachers. However, they also perceived higher subject-matter expertise than male teachers, regardless of the subject, teaching context, and teaching experience. This result did not confirm the results of Douwe et al. (2000), showing no significant difference in sex between the five TPE groups identified. The widespread perception of teaching as a feminized occupation (Haase 2008; Sak 2015) may explain the higher QIPPE scores among female teachers than among male teachers. As underlined by O'Connor (2008, 119), 'teaching has traditionally been seen as a "caring" profession rather than a high-status one'. A male teacher is generally expected to be a stricter and more effective disciplinarian (especially by parents), to be a 'real man' (Sargent 2001) and to conform to masculine norms. Male teachers suffer from pressures (social or institutional) that can lead them to see their caring role as problematic (Haase 2008; Mills 2004) and place them in a more difficult position than female teachers (Ankers de Salis et al. 2019; Montecinos and Nielsen 2004; Sargent 2001).

In addition, contrary to our fifth hypothesis, there was no interaction effect between teacher sex and subject taught. The results highlighted a stronger influence of the feminine aspect of teaching than the masculine aspect of PE on perceived subject-matter expertise and pedagogical expertise. Even if some qualitative studies highlighted the gendered perceptions and behaviours of PE teachers who were disfavoured by female teachers (Dowling 2006; Macdonald 1995), the TPE of female PE teachers seems not to be negatively impacted. Treating teacher sex as a unitary category is problematic, especially in the context of PE. In sports, there is an emphasis on hegemonic masculinity (Mills 2004), and female teachers are sporty and often integrate masculine norms (Couchot-Schieh

2007; Dowling 2006). It would be more useful to take into account gender identity in future studies based on teachers' perceptions, i.e. the integration or thereof of masculine and feminine stereotypes (Couchot-Schiex 2007; Montecinos and Nielsen 2004). For example, Couchot-Schiex (2007) showed that masculine-typed female teachers (who integrated masculine stereotypes) used the same authoritative strategies as masculine-typed male teachers, e.g. they asserted physical dominance and quickly and calmly addressed stigmatized disruptive male and female students.

In sum, significant differences in TPE between teachers with different personal or contextual characteristics were observed with several low standard deviations within each of the teacher categories that were compared (0.02 to 0.05). TPE is considered a facet of professional identity (e.g. Douwe, Meijer, and Verloop 2004; Lentillon-Kaestner et al. 2018), and as underlined by Virta (2015, 86), 'professional identity is a form of collective identity [...] briefly, it expresses the professional ethos of the group'. Furthermore, on average, perceived pedagogical expertise was higher and less influenced by personal or contextual factors than perceived subject-matter expertise. Teachers' beliefs about their role in caring for students are a crucial part of their identity (Devine, Fahie, and McGillicuddy 2013; O'Connor 2008) and need to be taken into account in TPE (e.g. Elliott 2009; Kansanen 2003; Schoone 2020; Sorensen 2017; Traianou 2006). Persons who choose to become teachers probably have an initial interest in interpersonal relationships and others' well-being. We can suppose that pedagogical expertise is more related to teacher personality and is consequently less influenceable than subject-matter expertise, which needs to be fully acquired. In the study by Devine, Fahie, and McGillicuddy (2013), teachers in primary and secondary schools (and mostly female teachers) highlighted the importance of 'passion for teaching and learning', love for children and the social and moral dimension of teachers' constructs of good teaching. Beyond TPE, the relevance of pedagogical expertise has been underlined in other studies, notably for implementing nontraditional, innovative pedagogy (Douwe, Meijer, and Verloop 2004; Inoue et al. 2019; Rich 1993). For example, Inoue et al. (2019) showed that expertise in implementing inquiry-based teaching was highly related to teachers' commitment to promoting their whole-person development and creating an inclusive learning community.

Finally, this case study showed the necessity of not solely considering the main effects of personal and contextual variables on TPE but also considering their interaction effects, notably on perceived subject-matter expertise. Indeed, teaching context (France vs. State of Vaud in Switzerland) did not have a main effect on TPE but had a significant interaction effect with subject taught. Therefore, teaching context characteristics should be taken into account when focusing on the effect of the subject taught and vice versa. Thus, the combined findings of this case study contribute to a better understanding of TPE and provide evidence of the role of both personal and contextual factors.

Limitations and perspectives

This case study has some limitations, and future research needs to be performed to address them.

First, in this study, the TPE was estimated with a validated questionnaire distinguishing two domains of expertise (i.e. perceived pedagogical and subject-content

expertise). The use of a questionnaire presented some advantages, notably allowing us to estimate the main and interaction effects of some influential factors. However, the crossing of qualitative and quantitative data and the use of a longitudinal design would be interesting in future research considering the complexity and dynamics of TPE (e.g. Douwe, Meijer, and Verloop 2004; Douwe, Verloop, and Vermunt 2000; Gaudreault, Richards, and Mays Woods 2018). In addition, this study highlighted the importance of pedagogical expertise (not related to content), i.e. soft skills, in TPE. However, in regard to the importance of teacher knowledge in the development of TPE and professional identity, other theoretical backgrounds more developed in Anglo-Saxon countries (e.g. Shulman 1986) could be used in future research to develop deeper insights into teacher knowledge in French-speaking teaching contexts.

Second, we focused on two different teaching contexts at the country/state levels. School contexts and the type of content taught have also been shown to influence TPE (Berliner 2004; Cece et al. 2022; Gaudreault, Richards, and Mays Woods 2018). Future research needs to analyse the effects of the school community and the quality of colleagues' relationships on the development of TPE and to estimate the main and interaction effects between macro (e.g. teaching context/state/country) and micro (e.g. school, content) contextual factors.

Third, TPE seems to be an important factor in well-being (Cece et al. 2022), professional development, and the ability and willingness to cope with educational changes and implement innovations in teaching practice (Douwe, Meijer, and Verloop 2004; Inoue et al. 2019; Rich 1993). Further quantitative and longitudinal studies are needed to verify the influence of TPE on professional life, well-being, burnout, and career decision making.

Fourth, in future studies, it would be insightful to consider the influence of gender identity on TPE and to not consider sex as a unitary category (Couchot-Schiex 2007; Montecinos and Nielsen 2004).

Fifth, the present study was based on a variable-centred approach. However, considering the interpersonal variability in teaching psychological experience (e.g. Cece, Guillet-Descas, and Lentillon-Kaestner 2021), it seems relevant to employ a person-centred approach (i.e. analyses allowing the identification of different sub-groups in a global sample, e.g. cluster analyses, latent profile analyses) in further studies to facilitate a deeper investigation of the differences in TPE.

Sixth, this case study focused on TPE among PE teachers with regard to the marginalized status of PE in schools. Other-subject teachers were grouped in the same category, even if TPE among other-subject teachers also presents some specificities (Douwe, Verloop, and Vermunt 2000). Further studies are needed to perform in-depth comparisons of the TPE of other-subject teachers (e.g. mathematics teachers vs. English teachers) to better understand the effect of each teaching subject on TPE.

Conclusion

This case study on PE teachers aimed to better understand the determinants of TPE and showed the need to consider both perceived pedagogical and subject-content expertise and the main and interaction effects between personal and contextual

factors on TPE. Female teachers perceived higher pedagogical and subject-matter expertise than male teachers. PE teachers emerged as having only a marginalized TPE in France, wherein they specialized in PE. Teaching another subject allowed for an improved TPE in marginalized school subjects, such as PE. Future research on TPE should integrate other personal (e.g. teacher burnout) and contextual variables (e.g. work relationships).

Note

1. The French acronym for 'Questionnaire sur l'Identité Professionnelle Perçue chez les Enseignants'.

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Specifically, her research themes are articulated around three axes: the influence of the interpersonal context on the behavioural phenomenon of investment and/or sport drop-out in adolescents and in particular, the impact of different socialization agents, such as parents, peers, and the coach. A second axis concerns the analysis of the predictive variables that lead to “burnout” and its consequences in athletes through the theoretical models of self-determination and emotional intelligence. Finally, the third axis focuses on the links between the Sense of Sports Community, commitment, and burnout. The objective is to understand the construction of a sense of community in sport and its influence on the commitment of adolescent athletes.

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References

- Ankers de Salis C., A. Rowley, K. Stokell, and M. Brundrett. 2019. “Do We Need More Male Primary Teachers? Tensions and Contradictions in the Perspectives of Male and Female Trainees.” *Education* 47 (4): 475–489. <https://doi.org/10.1080/03004279.2018.1498997>.
- Berliner, D. C. 1986. “In Pursuit of the Expert Pedagogue.” *Educational Researcher* 15 (7): 5–13. <https://doi.org/10.3102/0013189X015007007>.
- Berliner, D. C. 2004. “Describing the Behavior and Documenting the Accomplishments of Expert Teachers.” *Bulletin of Science, Technology & Society* 24 (3): 200–212. <https://doi.org/10.1177/0270467604265535>.
- Cece, V., E. Guillet-Descas, and V. Lentillon-Kaestner. 2021. “The Longitudinal Trajectories of Teacher Burnout and Vigor Across the Scholar Year: The Predictive Role of Emotional Intelligence.” *Psychology in the schools* 59 (3): 589–606. <https://doi.org/10.1002/pits.22633>.
- Cece, V., G. Martinent, E. Guillet-Descas, and V. Lentillon-Kaestner. 2022. “The Predictive Role of Perceived Support from Principals and Professional Identity on Teachers’ Motivation and Well-Being: A Longitudinal Study.” *International Journal of Environmental Research and Public Health* 19 (11): 6674. <https://doi.org/10.3390/ijerph19116674>.
- Couchot-Schiex, S. 2007. “Observation des pratiques des enseignant(es) d’EPS au regard du genre.” *Recherche et Formation* 54: 151–164. <https://doi.org/10.4000/rechercheformation.951>.
- Demetriou, H., E. Wilson, and M. Winterbottom. 2009. “The Role of Emotion in Teaching: Are There Differences Between Male and Female Newly Qualified Teachers’ Approaches to Teaching?” *Educational Studies* 35 (4): 449–473. <https://doi.org/10.1080/03055690902876552>.
- Devine, D., D. Fahie, and D. McGillicuddy. 2013. “What is ‘Good Teaching? Teacher Beliefs and Practices About Their Teaching.” *Irish Educational Studies* 32 (1): 83–108. <https://doi.org/10.1080/03323315.2013.773228>.
- Dillabough, J.-A. 1999. “Gender Politics and Conceptions of the Modern Teacher: Women, Identity and Professionalism.” *British Journal of Sociology of Education* 20 (3): 373–394. <https://doi.org/10.1080/0142569995326>.
- Douwe, B., P. C. Meijer, and N. Verloop. 2004. “Reconsidering Research on Teachers’ Professional Identity.” *Teaching & Teacher Education* 20 (2): 107–128. <https://doi.org/10.1016/j.tate.2003.07.001>.
- Douwe, B., N. Verloop, and J. D. Vermunt. 2000. “Teachers’ Perceptions of Professional Identity: An Exploratory Study from a Personal Knowledge Perspective.” *Teaching & Teacher Education* 16 (7): 749–764. [https://doi.org/10.1016/S0742-051X\(00\)00023-8](https://doi.org/10.1016/S0742-051X(00)00023-8).
- Dowling, F. 2006. “Physical Education Teacher Educators’ Professional Identities, Continuing Professional Development and the Issue of Gender Equality.” *Physical Education & Sport Pedagogy* 11 (3): 247–263. <https://doi.org/10.1080/17408980600986306>.

- Eaude, T. 2014. "What Makes Primary Classteachers Special? Exploring the Features of Expertise in the Primary Classroom." *Teachers & Teaching* 20 (1): 4–18. <https://doi.org/10.1080/13540602.2013.848513>.
- Elliott, J. G. 2009. "The Nature of Teacher Authority and Teacher Expertise." *Support for Learning* 24 (4): 197–203. <https://doi.org/10.1111/j.1467-9604.2009.01429.x>.
- Ferry, M. 2018. "Physical Education Preservice Teachers' Perceptions of the Subject and Profession: Development During 2005–2016." *Physical Education & Sport Pedagogy* 23 (4): 358–370. <https://doi.org/10.1080/17408989.2018.1441392>.
- Flores, M. A. 2001. "Person and Context in Becoming a New Teacher." *Journal of Education for Teaching* 27 (2): 135–148. <https://doi.org/10.1080/02607470120067882>.
- Gaudreault, K. L., K. A. R. Richards, and A. Mays Woods. 2018. "Understanding the Perceived Matter of Physical Education Teachers." *Sport, Education & Society* 23 (6): 578–590. <https://doi.org/10.1080/13573322.2016.1271317>.
- Green, K., and M. Thurston. 2002. "Physical Education and Health Promotion: A Qualitative Study of Teachers' Perceptions." *Health Education* 102 (3). <https://doi.org/10.1108/09654280210426001>.
- Haase, M. 2008. "I Don't Do the Mothering Role That Lots of Female Teachers Do: Male Teachers, Gender, Power and Social Organisation." *British Journal of Sociology of Education* 29 (6): 597–608. <https://doi.org/10.1080/01425690802423270>.
- Iannucci, C., and A. MacPhail. 2018. "One Teacher's Experience of Teaching Physical Education and Another School Subject: An Inter-Role Conflict?" *Research Quarterly for Exercise & Sport* 89 (2): 235–245. <https://doi.org/10.1080/02701367.2018.1446069>.
- Inoue, N., T. Asada, N. Maeda, and S. Nakamura. 2019. "Deconstructing Teacher Expertise for Inquiry-Based Teaching: Looking into Consensus Building Pedagogy in Japanese Classrooms." *Teaching & Teacher Education* 77: 366–377. <https://doi.org/10.1016/j.tate.2018.10.016>.
- Kansanen, P. 2003. "Studying – The Realistic Bridge Between Instruction and Learning. An Attempt to a Conceptual Whole of the Teaching-Studying-Learning Process." *Educational* 29 (2–3): 221–232. <https://doi.org/10.1080/03055690303279>.
- Lentillon-Kaestner, V., E. Guillet-Descas, G. Martinent, and V. Cece. 2018. "Validity and Reliability of Questionnaire on Perceived Professional Identity Among Teachers (QIPPE) Scores." *Studies in Educational Evaluation* 59: 235–243. <https://doi.org/10.1016/j.stueduc.2018.09.003>.
- Lux, K., and B. A. McCullick. 2011. "How One Exceptional Teacher Navigated Her Working Environment as the Teacher of a Marginal Subject." *Journal of Teaching in Physical Education* 30 (4): 358–374. <https://doi.org/10.1123/jtpe.30.4.358>.
- Macdonald, D. 1995. "The Role of Proletarianization in Physical Education Teacher Attrition." *Research Quarterly for Exercise & Sport* 66 (2): 129–141. <https://doi.org/10.1080/02701367.1995.10762220>.
- Mierzejewski, S. 2016. "Vous avez dit «profs de gym?»" *Sociétés contemporaines* 101 (1): 63–89. <https://doi.org/10.3917/soco.101.0063>.
- Mills, M. 2004. "Male Teachers, Homophobia, Misogyny and Teacher Education." *Teaching Education* 15 (1): 27–39. <https://doi.org/10.1080/1047621042000179970>.
- Montecinos, C., and L. E. Nielsen. 2004. "Male Elementary Preservice Teachers' Gendering of Teaching." *Multicultural Perspectives* 6 (2): 3–9. https://doi.org/10.1207/s15327892mcp0602_2.
- Moss, P., and P. Petrie. 2019. "Education and Social Pedagogy: What Relationship?" *London Review of Education* 17: 393–405. <https://doi.org/10.18546/LRE.17.3.13>.
- Ntoumanis, N., and N. D. Myers. 2015. *An Introduction to Intermediate and Advanced Statistical Analyses for Sport and Exercise Scientists*. Chichester: John Wiley & Sons.
- O'Connor, K. E. 2008. "'You Choose to Care': Teachers, Emotions and Professional Identity." *Teaching & Teacher Education* 24 (1): 117–126. <https://doi.org/10.1016/j.tate.2006.11.008>.
- O'Sullivan, M., and P. Doutis. 1994. "Research on Expertise: Guideposts for Expertise and Teacher Education in Physical Education." *Quest* 46 (2): 176–185. <https://doi.org/10.1080/00336297.1994.10484119>.
- Palmer, D. J., L. M. Stough, T. K. Burdenski, jr., and M. Gonzales. 2005. "Identifying Teacher Expertise: An Examination of Researchers' Decision Making." *Educational Psychologist* 40 (1): 13–25. https://doi.org/10.1207/s15326985ep4001_2.
- Raduan, N. A., and S. -I. Na. 2020. "An Integrative Review of the Models for Teacher Expertise and Career Development." *European Journal of Teacher Education* 43 (3): 428–451. <https://doi.org/10.1080/02619768.2020.1728740>.

- Rich, Y. 1993. "Stability and Change in Teacher Expertise." *Teaching & Teacher Education* 9 (2): 137–146. [https://doi.org/10.1016/0742-051X\(93\)90049-M](https://doi.org/10.1016/0742-051X(93)90049-M).
- Ropo, E. 2004. "Teaching Expertise." In *Professional Learning: Gaps and Transitions on the Way from Novice to Expert*, edited by H. P. A. Boshuizen, R. Bromme, and H. Gruber, 159–179. Dordrecht: Springer Netherlands.
- Roux-Perez, T. 2004. "L'identité professionnelle des enseignants d'EPS: entre valeurs partagées et interprétations singulières." *Staps* 63 (1): 75–88. <https://doi.org/10.3917/sta.063.0075>.
- Roux-Perez, T. 2005. "Dynamiques identitaires à l'échelle du temps: une étude de cas chez les enseignants d'Éducation Physique et Sportive." *Movement & Sport Sciences* 56 (3): 75–96. <https://doi.org/10.3917/sm.056.0075>.
- Sak, R. 2015. "Comparison of Self-Efficacy Between Male and Female Pre-Service Early Childhood Teachers." *Early Child Development & Care* 185 (10): 1629–1640. <https://doi.org/10.1080/03004430.2015.1014353>.
- Sargent, P. 2001. *Real Men or Real Teachers? Contradictions in the Lives of Men Elementary School Teachers*. Harriman, TN: Men's Studies Press.
- Schempp, P. G., D. Manross, S. K. S. Tan, and M. D. Fincher. 1998. "Subject Expertise and Teachers' Knowledge." *Journal of Teaching in Physical Education* 17 (3): 342–356. <https://doi.org/10.1123/jtpe.17.3.342>.
- Schoone, A. 2020. "Returning to the Heart of Teaching: Social Pedagogy as Phenomenological Pedagogy." *International Journal of Social Pedagogy* 9: 13. <https://doi.org/10.14324/111.444.ijsp.2020.v9.x.013>.
- Shulman, L. S. 1986. "Those Who Understand: Knowledge Growth in Teaching." *Educational Researcher* 15 (2): 4–14. <https://doi.org/10.3102/0013189X015002004>.
- Siedentop, D., and E. Eldar. 1989. "Expertise, Experience, and Effectiveness." *Journal of Teaching in Physical Education* 8 (3): 254–260. <https://doi.org/10.1123/jtpe.8.3.254>.
- Sorensen, N. 2017. "Improvisation and Teacher Expertise: Implications for the Professional Development of Outstanding Teachers." *Professional Development in Education* 43 (1): 6–22. <https://doi.org/10.1080/19415257.2015.1127854>.
- Spangenberg, E. D., and C. Myburgh. 2017. "Comparing South African Female and Male Pre-Service Teachers' Beliefs About the Nature of Mathematics." *Africa Education Review* 14 (20): 1–16. <https://doi.org/10.1080/18146627.2017.1292828>.
- Traianou, A. 2006. "Understanding Teacher Expertise in Primary Science: a Sociocultural Approach." *Research Papers in Education* 21 (1): 63–78. [10.1080/1356215980030107](https://doi.org/10.1080/1356215980030107).
- Virta, A. 2015. "In the Middle of a Pedagogical Triangle' – Native-Language Support Teachers Constructing Their Identity in a New Context." *Teaching & Teacher Education* 46: 84–93. <https://doi.org/10.1016/j.tate.2014.11.003>.
- Wade, S. 1998. "In Search of the Expert Teacher: An Analysis of the Literature in Relation to Expertise in Adult Teaching, with Reference to a Similar Work Undertaken by Nursing." *Teaching in Higher Education* 3 (1): 90–102. <https://doi.org/10.1080/1356215980030107>.
- Warner, R. M. 2012. *Applied Statistics: From Bivariate Through Multivariate Techniques*. Los Angeles: Sage Publications.
- West, C., and D. H. Zimmerman. 1991. "Doing Gender." In *The Social Construction of Gender*, edited by J. Lorber and S. A. Farrell, 13–37. Newbury Park, CA: Sage.
- Whipp, P. R., G. Tan, and P. Tin Yeo. 2007. "Experienced Physical Education Teachers Reaching Their 'Use-By Date' Powerless and Disrespected." *Research Quarterly for Exercise & Sport* 78 (5): 487–499. <https://doi.org/10.1080/02701367.2007.10599448>.
- Winkler, G. 2001. "Reflection and Theory: Conceptualising the Gap Between Teaching Experience and Teacher Expertise." *Educational Action Research* 9 (3): 437–449. <https://doi.org/10.1080/09650790100200168>.
- Zikhali, J., and C. Maphosa. 2012. "Towards Gender Equality in the Workplace: How Male Lecturers View Their Female Counterparts in Zimbabwean Teacher Training Colleges." *Journal of Social Sciences* 31 (2): 219–227. <https://doi.org/10.1080/09718923.2012.11893031>.