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Title: Socialization into teaching physical education – Acculturative formation of perceived strengths

Year: 2015

Version:

Please cite the original version:

Valtonen, J., Reunamo, J., Hirvensalo, M., & Ruismäki, H. (2015). Socialization into teaching physical education – Acculturative formation of perceived strengths. *The European Journal of Social & Behavioural Sciences*, 12(20 January 2015), 1683-1695. <https://doi.org/10.15405/ejsbs.151>

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The European Journal of
Social and Behavioural
Sciences EJSBS
(eISSN: 2301-2218)

Socialization Into Teaching Physical Education – Acculturative Formation Of Perceived Strengths

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Abstract

We studied if and how gender, the histories of physical activity (PA = activity level and social form of physical activity) and success in physical education (PE) are related to pre-service class teachers' (PCTs) perceived strengths in teaching PE (PSTPEs). Various backgrounds were considered to be environments of teacher socialization. The six data based categories of PSTPEs used in this study were: sportiness, teaching skills, positive attitude, encouragement, empathy and set no stress. The data from 386 first year Finnish PCTs were collected before their formal PE studies. Cross tabulation and binary logistic analyses were executed to expose the relationships and effects.

The main findings of this study showed that pre-service teachers with more team oriented physical activity histories enter the formal teacher education perceiving to possess discipline-focused *teaching skills* as their asset. On the contrary, the respondents with more individually oriented PA backgrounds perceived pupil-focused *set no stress* as their strength. Suggestive findings, that physically active, successful and team oriented

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pre-service teachers perceive more discipline-focused strengths (especially sportiness) while their colleagues with opposite histories perceived pupil-focused strengths (especially empathy) were also discussed.

This study adds the existing data to information of the effects of acculturative formation of perceived strengths before the influence of formal teacher education studies in PE.

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Keywords: *teacher socialization; pre-service teacher education; physical activity; physical education*

1. Introduction

It is common that physical education (PE) in primary schools is taught by generalist class teachers. They have been found to possess strong socially constructed beliefs about teaching and their teaching competencies already before they enter formal teacher preparation. These beliefs act as filters when acquiring and interpreting new information thus influencing what is learned during the formal teacher preparation (Capel & Katene, 2000; M. D. Curtner-Smith, 2001; Doolittle, Dodds, & Placek, 1993; Hutchinson, 1993; Lawson, 1983; Lortie, 1975; Matanin & Collier, 2003; Pajares, 1992; Placek et al., 1995; Randall & Maeda, 2010; Richardson, 2003).

The episodes during PE and quite often in PA are interactional, happening in company of and in relation to other children, teachers, coaches or instructors. Perceptions of PE and teachers are consequently socially constructed in different social and physical environments (Lortie 1975), curriculums, teachers, coaches, instructors, lessons and attendance. Acculturation (recruitment, prior to teacher education socialization) into teaching is a phase of teacher socialization covering the time from birth to the beginning of formal teacher preparation (Lawson, 1986). One major mechanism of acculturation is social-cognitive learning what, in terms of observational learning, forms rules of the behaviour guiding the actions in the future (Bandura 1977, 47). The ‘apprenticeship of observation’ presented by Lortie (1975) emphasizes the importance of school years as a pupil and may even be considered as an informal teacher education. Beliefs about teaching PE may also be influenced by observing coaches, instructors and other significant persons in leisure time physical activities (PA). As Bandura stated (1977, 77): “One cannot keep people from learning something they have seen”. Young people consider some qualities of the teachers’, coaches and instructors as good or favourable and some as bad or unfavourable. Consequently, they may subjectively qualify or disqualify themselves as (PE) teachers. They form a picture of what it takes to be a teacher and compare these requirements to their own capabilities (Calderhead & Robson, 1991; Lortie, 1975).

There are many studies showing that different kinds of backgrounds, as environments of teacher socialization, are connected to attitudes, perceived strengths and ways of teaching PE. The active engagement in the PA prior to teacher education has been shown to be positively connected to pre-service class teachers’ (PCTs) attitudes of teaching PE (Katene, Faulkner, & Reeves, 2000; Webster, Monsma, & Erwin, 2010; Webster, 2011) and their intentions to teach PE (Faulkner, Reeves, & Chedzoy, 2004; Penttinen, 2003). Also, active engagement in and successful experiences of PA result directly in better physical competence (Faulkner & Reeves, 2000; Garrett & Wrench, 2007; Webster et al., 2010) through increasing physical capacity (fitness), motor and sports skills and knowledge which are the central elements of content knowledge of PE. Consequently, a strong knowledge of the subject matter is a benchmark

(Allen, 2003; Darling-Hammond, 2002; Hart, 2005; Mitchell, Doolittle, & Schwager, 2005) and weak content knowledge a barrier for quality teaching of PE (DeCorby, Halas, Dixon, Wintrup, & Janzen, 2005); (Petrie, 2010). Furthermore, higher perceived physical competence is connected to positive attitudes to teach PE (Faulkner & Reeves, 2000; Webster et al., 2010). Because of the small number of PE lessons in schools, the basic elements of physical competence need to be practiced during their leisure time if the pupils are to be competent during their PE classes. This stresses the importance of leisure time PA as a factor of socialization into teaching PE.

The individuals with a physically active background may have an increased perceived self-efficacy of their abilities to teach PE. Callea et al. (2008) found a positive connection between participating in sports and PA and perceived self-efficacy to teach fundamental motor skills. The sources of perceived self-efficacy (Bandura, 1997) are most likely drawn on by those who are physically active and competent (Callea, Spittle, O'Meara, & Casey, 2008). The physically confident PCTs have been found to be more engaged in their studies during their formal teacher education resulting in better skills to teach whilst the least confident benefit less from their education (Pickup, 2012; Webster, 2011). Consequently, better skills in teaching are likely to increase teaching confidence. When a low level of confidence to teach PE is combined with a weak content knowledge we have a barrier to quality teaching (DeCorby et al., 2005; Morgan & Bourke, 2008) the confident and self-reliant teacher may be effective in demanding environments (Allen, 2003).

There are findings suggesting that PA backgrounds may socialize into particular focuses and priorities in teaching PE. Even though, a physically active background may result in better teaching of PE (Murphy & Cosgrave, 2010), higher perceived competence and confidence in teaching abilities may also narrow focuses on syllabuses, emphasizing the physical activities that are familiar to them (Carney & Chedzoy, 1998; M. D. Curtner-Smith & Meek, 2000; McKenzie, LaMaster, & Sallis, 1999). Furthermore, PCTs with no experience in playing (in sports) have been found to pay more attention to general pedagogical knowledge and children while PCTs with physically more active history focus on pedagogical content knowledge (Mitchell et al., 2005). Rich (Rich, 2004) argued that PE teachers with successful PE backgrounds may even be alienated from the experiences of pupils who are not interested in PE.

School PE experiences, for instance in the form of memories of their previous PE teachers practices, can be strong and long-lasting (Randall & Maeda, 2010). Skilful and successful pupils are more likely to have positive PE experiences (Callea et al., 2008) linked to participating in teams, praise and experiences of success and competence (Pickup(I. Pickup, 2005). PE experiences affect the formation of PCTs' predispositions about teaching PE and later the quality of their teaching practices (Matanin & Collier, 2003; Morgan & Bourke, 2008) through teaching confidence, perceived teaching competence and attitudes towards teaching PE (Chedzoy, 2000; Morgan & Bourke, 2008; Morgan & Hansen, 2008; Webster, 2011). In the contrary, negative PE experiences may lead to not valuing PE as a school subject, avoidance of teaching diverse skills or teaching PE at all, favouring the non-teaching strategy or forwarding the negative experiences to their own pupils (Morgan & Hansen, 2008). Teachers may also try to avoid repeating the negatively experienced models and instead to forward the positive ones (Morgan & Bourke, 2008; Morgan & Hansen, 2008; Murphy & Cosgrave, 2010; Pickup, 2005). The negative experiences may also increase teachers' sensitivities for observing and taking into

consideration the needs of pupils with lower levels of physical competence (Allen, 2003; Allen, 2005; Morgan & Hansen, 2008). Additionally, the curriculums or syllabuses of PE during school years as a pupil have been found to be connected to in-service teachers' teaching contents in a similar way as their PA backgrounds. They seem to hang on to contents that are familiar and safe for them (Green, 2002; Morgan & Hansen, 2008).

The connections between gender and beliefs of teaching PE are interesting because the teaching profession is dominated by women and because PE has been argued to have a gender bias (Brown, 2005; Williams & Bedward, 2001). Male classroom teachers have been found to have more positive attitudes towards teaching PE (Morgan & Hansen, 2008) and higher perceived subject knowledge (Capel & Katene, 2000). The differences in the amount of perceived subject knowledge are argued to derive from different PE curriculums for boys and girls (Capel & Katene, 2000) and the differences in the syllabuses are common even if the curriculums are similar. In Finland, team ball games are more often the contents of the boys' and individual physical activities of the girls' PE lessons during the basic education (Palomäki & Heikinaro-Johansson, 2011). Additionally, Finnish male PCTs more often have histories of attending team ball games during their leisure time whilst female students most commonly have a background of individual physical activities (Valtonen et al., 2011). As the contents of the PE syllabuses are team ball game oriented it is likely that male teachers perceive more confident to teach them. This may partly explain the findings that the male PCTs possess a higher perceived self-efficacy than their female colleagues to teach PE and particularly to teach fundamental motor skills (Callea et al., 2008). However, Morgan & Hansen (Morgan & Hansen, 2008) did not find any gender differences in the domain of confidence to teach PE. Furthermore, female PCTs emphasize more commonly ethical behaviour and teaching methodology as important for effective teacher characteristics whilst male students focus more on subject knowledge and classroom/behaviour management (Witcher et al., 2001).

Summarizing the findings, gender and the various backgrounds in PE and PA appear to influence PCTs' beliefs about teaching PE, their perceived competencies and consequently teaching practices in multiple ways.

2. Purpose of the Study, Problem Statement and Research Questions

The purpose of this study was to explore if and how the perceived strengths in teaching PE at the primary level vary according to the acculturative influences of gender and various PE and PA backgrounds. According to the previous body of research, we considered that different backgrounds actually are dissimilar socializing environments. For instance having a physically active background most likely tells us about spending time with physically active peers whose beliefs and attitudes towards PA and PE are differently loaded compared to those with physically more passive backgrounds.

Differing from the previous studies, we especially aimed at exposing the pure acculturative, socially constructed perceptions before the impact of formal teacher education into teaching PE. As presented earlier, there are many studies showing the versatile influences of PE and PA backgrounds to teaching PE. However, these studies give no information how socialization through PE and PA influences PCTs' perceived competence of teaching PE in terms of perceived strengths of teaching PE, measured particularly at the beginning of the formal class

teacher education. Teacher educators need to be aware of the perceived strengths to be able to successfully adjust the studies to meet the needs for professional growth of the preservice teachers.

The research questions are: ¹⁾ How the perceived strengths differ between the genders, ²⁾ according to physical activity level, ³⁾ social form of physical activity and ⁴⁾ success in school PE?

3. Research Methods

Participants

The participants consisted of first year pre-service class teachers at the University of Helsinki in Finland. The resulting 386 participants covered 83% of the population (N = 467) of pre-service class teachers (PCTs) during three academic years. The participants comprised 320 (83%) female and 66 (17%) male students which was equal to the total population. The much higher number of female students is typical at the University of Helsinki and similar to gender distribution in other teacher education units in Finland and many other countries. The participants' mean age was 24.7 years, and the mode was 20 years.

Our data is not a sample but almost a total population of PCTs at the University of Helsinki. The results can be suggestively generalized to all Finnish PCTs because the respondents are a good representation of the population of Finnish PCTs.

Data collection

The data were collected as a part of a large online questionnaire completed before the participants began their first course of PE studies during the academic years 2007 - 2010. The respondents were informed that the purpose of the enquiry was firstly to help them to recognize their own PA background as a part of their teacher development and secondly to develop the curriculum of PE studies. Respondents were informed that their answers would be used in a research so that they will not be identified. Both open-ended and multi-choice questions were used and two batches of reminders were sent.

Background variables

According to the previous body of research we considered that the physical activity level, social form of PA and success in PE would be interesting descriptors of acculturative formation of perceived strengths in teaching PE. Operationalization of the background variables has originally been reported by Valtonen et al. (2012).

Gender was used as a background variable because the majority of the pre-service teachers are female.

Activity level of PA: In this study we defined PA to include sports, recreational and non-organized physical activities. Furthermore, the activity levels describe the regularity, frequency and intensity of PA histories before formal teacher education.

Social form of PA: The categories describe three social forms of the most engaged activities. Individual PA embodies physical activities where the performance is not dependent on other individuals' performance but can also be practiced in groups like yoga, modern dance, aerobics and skiing. Team PA emphasizes interaction and co-operation like in team gymnastics,

synchronized skating, cheer leading and team ball games. Furthermore, the respondents with no clear emphasis on either of the previous subgroups were placed into a mixed PA subgroup.

Success in physical education was measured using the graduation grade for PE from upper secondary school. The grading scale in Finland is from 4 (fail) to 10 (excellent). Only the categories from seven to ten existed in the respondents' answers.

Also, the correlations between the background variables were estimated. The highest correlation (0.44***) was found between physical activity level and success in PE.

Perceived strengths in teaching PE

According to the previous body of research we presumed that the various acculturations would be exposed in perceived strengths in teaching physical education at the primary level (PSTPEs) reflecting the effects of socialization environments (background variables).

The operationalization of the perceived strengths in teaching physical education at the primary level (PSTPEs) has originally been reported by Valtonen et al. (2014).

The dependent variables, PSTPEs, were requested using an open-ended question: "What do you consider to be your strengths in teaching PE at the primary level? Answer even if you do not have any work experience." Using a content analysis, six data based categories were formed. The answers were binomially coded into the categories based on perceiving or not perceiving to hold that particular strength. Additionally, the categories were divided into the discipline-focused (*sportiness*, *teaching skills* and *positive attitude* towards PE and PA) or pupil-focused strengths (*encouragement*, *empathy* and *set no stress*) what has commonly been used distinction in the studies of teachers' beliefs about learning and teaching (Meirink, Meijer, Verloop, & Bergen, 2009). Sportiness was mentioned by 37 %, teaching skills by 19 %, positive attitude by 32 %, encouragement and empathy by 22 % and set no stress by 10 % of the respondents.

The perceived strengths correlated weakly with each other and the only correlation of at least a moderate level was found between *sportiness* and *empathy* manifesting a negative connection ($r = -0.30^{***}$).

Data analysis

SPSS Statistics 20 software was used to execute the statistical analyses. Cross tabulation was first used to give a good overview of the relations examining the relationships between the background variables and PSTPEs. The significance of differences was studied using the χ^2 test and the effect size was estimated using Cramer's V (V) which is typically used to represent strength of association from χ^2 analyses (Ferguson, 2009).

Because the perceived strengths were binomially coded, we used the binary logistics regression to pull together the associations between the background variables and PCTPEs. Binary logistic regression analysis determines the impact of multiple independent background variables presented simultaneously to predict membership of one or other of the two dependent variable categories and furthermore provides us with the magnitude of the effects in the form of odds ratios.

4. Findings

We present both the statistically significant and the suggestive results of cross tabulation (Table 1) and logistic regression (Table 2) because relying only on the statistically significant results would have missed some interesting findings (Ary, Jacobs, & Sorensen, 2010). The results are presented in the order of research questions.

Gender and PSTPEs

Not any statistically significant findings were made between the gender and PSTPEs. Suggestively, the discipline-focused *sportiness* was slightly more often mentioned by male respondents and the pupil-focused *set no pressure* was twice more often mentioned by female PCTs as their PSTPE. (Table 1)

Table 1. The relationships between background variables and perceived strengths in teaching physical education at the primary level.

		Perceived strengths in teaching PE (PSTPEs)					
		focus on discipline			focus on pupils		
		sportiness	teaching skills	positive attitude	empathy	set no pressure	encouragement
		%	%	%	%	%	%
gender	male	46	18	26	24	5	18
	female	36	19	34	21	11	23
activity level of PA	high	44	19	35	17	9	25
	moderate	32	19	31	22	13	19
	low	22	13	26	39	7	20
social form of PA	team	53	30	35	15	1	20
	mixed	38	18	34	20	9	23
	individual	30	14	31	25	15	22
success in PE	excellent	47	18	33	18	10	19
	very good	38	23	38	18	10	23
	good	32	15	29	26	8	19
	satisfactory	18	18	12	41	24	29

Percentages in bold signify statistically significant relations.

PE = physical education, PA = physical activity

Physical activity level and PSTPEs

The level of physical activity (regularity, frequency, intensity) was related to the perceived strengths in two interesting and opposite ways. Firstly, perceiving discipline-focused sportiness as a perceived strength was twice more common among the PCTs with a high PA level (44 %) compared to those with low activity level (22 %) ($\chi^2(2, n = 382) = 10.67, p < .01, V = .17$).

Secondly, results of opposite direction were found, when the respondents of low PA level more commonly perceived pupil-focused *empathy* as their strength in teaching PE ($\chi^2(2, n = 382) = 10.41, p < .01, V = .17$). (Table 1) In both cases, the effect sizes were low.

Social form of PA and PSTPEs

Social form of PA histories, as well as PA level, seemed to divide the perceived strengths according to their focus. The respondents with team PA backgrounds twice more often mentioned discipline-focused *teaching skills* ($\chi^2(2, n = 378) = 10.44, p < .01, V = .17$) and *sportiness* ($\chi^2(2, n = 378) = 12.42, p < .01, V = .18$) as their PSTPEs.

On the other hand, pupil-focused *set no pressure* was more often mentioned by respondents with individual PA backgrounds ($\chi^2(2, n = 378) = 11.17, p < .01, V = .17$). (Table 1) However, the effect sizes remained low.

Success in PE and PSTPEs

Success in PE was not, on a statistically significant level, related to any of the PSTPEs. However, a positive relationship between success in PE and discipline-focused *sportiness* and a negative relationship to *empathy* were indicative. While every sixth respondent with a satisfactory grade in PE mentioned *sportiness* as their PSTPE, every second of the excellent grade respondents considered it as their perceived strength (Table 1)

Pulling the Results Together with Logistic Regression

Answering to the research questions, only the social form of physical activity background affected, on the statistically significant level, the perceived strengths in teaching physical education at the primary level. The probability to perceive discipline-focused *teaching skills* as a strength increased when the PA background was more team oriented (OR = 1.76, 95% CI 1.22 – 2.56). More precisely, the team oriented respondents perceived more likely *teaching skills* as their strengths when those with an individual PA history considered the pupil-focused *set no pressure* (OR = 0.40, 95% CI 0.22 – 0.73) as their PSTPE. (Table 2)

Table 2. Most effective background (predictive) variables.

background variable	PSTPE	focus	odds ratio	95 % CI
gender female => male	empathy	pupil	1.55	0.74 - 3.13
	sportiness	discipline	1.3	0.71 - 2.34
	set no pressure	pupil	0.63	0.17 - 2.24
activity level of PA low => moderate => high	encouragement	pupil	1.44	0.92 - 2.24
	sportiness	discipline	1.37	0.93 - 2.01
	set no pressure	pupil	1.3	0.73 - 2.31
	empathy	pupil	0.72	0.47 - 1.09
social form of PA individual => mixed => team	teaching skills	discipline	1.76	1.22 - 2.56
	sportiness	discipline	1.29	0.95 - 1.74
	set no pressure	pupil	0.4	0.22 - 0.73
success in PE satisfactory => good => very good => excellent	sportiness	discipline	1.27	0.94 - 1.73
	empathy	pupil	0.82	0.58 - 1.17

Statistically significant relations are in bold text.

PSTPE = Perceived strength in teaching physical education

PE = physical education, PA = physical activity

5. Conclusions

The main finding of this study showed that a history of participating in team-oriented activities socialized into perceiving discipline-focused *teaching skills* as strength in teaching PE at the primary level. This new finding may partly have roots in the PE curriculums and especially in the syllabuses of the respondents PE history. The proportion of team ball games in Finnish PE curriculums is quite high and lessons at the primary and lower secondary levels are most often built on group activities (Palomäki & Heikinaro-Johansson, 2011). Therefore, the students with skills and experience in team ball games and team activities may find the PE curriculum more familiar and thus perceive they more physically competent and capable to teach compared to respondents with individual PA backgrounds. Consequently, perceiving *teaching skills* as a strength may also refer to possessing content knowledge that has been found to be an essential benchmark for quality PE teaching (Allen, 2003; Darling-Hammond & Youngs, 2002; Hart 2005; Mitchell et al. 2005).

Our results also suggested two interesting directions of the effects to be considered, though they did not reach the level of statistical significance. Firstly, the relations between the PA level and success in PE and bringing up discipline-focused *sportiness* as a PSTPE supports the findings of several studies where the students with physically active and successful backgrounds in PE are likely to be more confident about their sports skills and fitness (Faulkner & Reeves 2000; Garrett & Wrench 2007; Hutchinson, 1993; Katene et al., 2000; Morgan & Hansen, 2008; Murphy & Cosgrave, 2010; Penttinen, 2003; Webster, 2011). The positive relationship between activity level and *sportiness* is also in line with the findings of Valtonen et al. (2012) suggesting that the PCTs with a physically active background are likely to mention versatility as a feature of good teaching.

Secondly, the pre-service teachers of lower activity level and modest grades in PE tended to emphasize pupil-focused *empathy* as their perceived strength. This is in line with the finding that the PCTs with no experience in playing paid more attention to general pedagogical knowledge and children instead of the contents (Mitchell et al. 2005). Furthermore, the experiences of poor quality PE have been found to lead to increase teachers' sensitivity to observe and notice the needs of pupils with lower levels of physical competence (Morgan & Hansen, 2008). In accordance with these findings, the first-year PCTs with a passive PA background favoured child centeredness and safety as qualities of good PE (Valtonen et al. 2012). Focusing on pupils instead of the discipline may be a result of factually not possessing the sports and teaching skills and experience. However, it may be a result of negative experiences in PE and PA like failure, fear, losing, not being selected for games and activities etc. These students may be more sensitive and understand pupils in similar situations during PE classes whilst a successful background may even alienate the PE teacher from the experiences of pupils who are not interested in PE (Rich 2004).

We did not find any statistically significant differences between male and female students suggesting that acculturation as boys and girls had not differently affected their perceived strengths in teaching PE. However, the perceived strength of *sportiness* seemed to be slightly more common among male students what is in line with the findings of Capel & Catene (2000). In this study, perceiving *teaching skills* as a PSTPE was slightly more probable among female respondents while Morgan & Hansen (2008) did not find any gender differences in their

confidence to teach PE. Female respondents more often mentioned pupil-focused PSTPEs in congruence with the indicative findings of Valtonen et al.(2012) suggesting that female PCTs emphasize 'softer values' as criteria for good PE than their male colleagues. Our indicative findings suggesting that female respondents are more pupil-focused (with the exception of *empathy*) are also in line with several studies. (Callea et al., 2008; Capel & Katene, 2000; Valtonen et al., 2012). Furthermore, the findings that female PCTs more commonly emphasize ethical behaviour and teaching methodology as effective teacher characteristics (Witcher et al., 2001) whilst white male students emphasize subject knowledge and classroom/behaviour management (Minor, Onwuegbuzie, Witcher, & James, 2002) are in line with our results.

Limitations of the study should be noted. Collecting the PSPE data using an open-ended question did not provide the researchers with the weights of the perceived strengths. Furthermore, when mentioning their perceived strengths in teaching PE at the primary level, the students did not directly claim that the other categories are their weaknesses. However, we considered open-ended questions to be good method for getting authentic and formal-education-free data of PCTs' perceived strengths in teaching physical education. In this piece of research, we did not study, the exact mechanisms occurring in the acculturative socialization environments. Instead, we tried to take a wider grip of the effects. The effect sizes in the cross tabulation were quite small varying from .14 to .28. , which is over the cut-off level of a weak effect (.10) but below the cut-off level of medium effect size (.30) suggested by Cohen (1992). However, the effect sizes in the social sciences are quite often very small (Cohen, 1992; Rosnow & Rosenthal, 2003) and there is no agreement about their magnitude levels.

In conclusion, only one of the background variables (social form of PA) affected significantly the perceived strengths in teaching PE at the primary level. Pre-service teachers with a more team oriented physical activity history enter the formal teacher education considering possessing discipline-focused *teaching skills* as their assets. On the contrary, the respondents with more individually oriented PA backgrounds perceived pupil-focused *set no stress* as their strength. More widely interpreted, the results also suggested a socially constructed twofold division of perceived strengths: physically more active, team oriented and successful pre-service teachers seem to perceive discipline-focused *sportiness* as their strength in teaching PE whilst their peers with opposite backgrounds tended to bring up pupil-focused *empathy* as their asset. These results support the findings of earlier studies that PE and PA histories influence socialization into teaching PE in multiple and complex ways.

Our study adds to the existing research information of the acculturative formation of perceived strengths before the formal teacher education studies in PE what is important for the effective teacher education. Considering gender, physical activity level, social form of PA and success in PE as social and socializing environments is quite new and calls for further studies. The discipline- and pupil-focuses of the perceived strengths may also be useful in the forthcoming studies. This study suggests that we should deepen research of acculturative socialization and follow it up into the professional and organizational phases of growing to be a generalist teacher of physical education. Various socialization environments, before entering the formal teacher education, need to be studied carefully to precisely expose their mechanisms and effects.

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