

2021

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### Recommended Citation

Fischer, B., & Golenia, M. (2021). Motivation Profiles in the Selection of a Study Program: Why do Physical Education Students Decide to Choose Teacher Education?. *Australian Journal of Teacher Education*, 46(11). <https://doi.org/10.14221/ajte.2021v46n11.1>

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<https://ro.ecu.edu.au/ajte/vol46/iss11/1>

## Motivation Profiles in the Selection of a Study Program: Why do Physical Education Students Decide to Choose Teacher Education?

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*Abstract: Students' motivation to select a study program is an important factor that influences the professional development of student teachers. The exploratory study intended to clarify whether different study choice motivation profiles can be distinguished for PE students and how these profiles can be characterized. The analysis is based on 816 German PE students from 12 universities. The identification of different profiles was carried out by means of latent profile analysis. Among the PE students who were examined, four profiles can be identified concerning the motivation for the selection of a teacher education. The findings differ from most non subject-specific findings, mainly in the number of identified profiles. Further studies need to address whether this finding is subject-specific by comparing different subjects. Furthermore, it is necessary to examine the relevance of the identified profiles with respect to the development of competence of PE students.*

### Introduction

The motivation for the selection of a study program and career<sup>1</sup> is nationally and internationally a key variable of teacher education research. Besides cognitive abilities and personality traits, motivation for the selection of a study program belongs to the individual motivational characteristics of student teachers, which – according to theoretical presuppositions – have an influence on the development of competences during the university phase of their teacher education (Kunter et al., 2011; Watt & Richardson, 2008). Some studies provide empirical evidence that the motivation for the selection of a study program has a (distal) influence on student teachers' performance in university (Eberle & Pollak, 2006; König & Rothland, 2013). In addition to cognitive learning and performance prerequisites, the motivation for choosing teacher education is a predictor for students' contentment with their studies as well as their use of learning and development opportunities during their studies (Künsting & Lipowsky, 2011). Furthermore, a link between the motivation for choosing teacher education and the experience of stress during the first phase of teacher education has been identified (Reichl et al., 2014). Empirical findings indicate a correlation between the study choice and criteria of successful occupational action, such as classroom management (Berger et al., 2017) or instructional practice (Paulick et.al, 2013),

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<sup>1</sup> Since the introduction of polyvalent Bachelor and teaching-specific Masters Programs in teacher education in most German states as of 1999, the decision to pursue a teaching career is no longer formally predetermined by enrolling in a Bachelor program. In practice, however, many students in Bachelor programs exhibit goal-oriented motivation for their selection of a career, paired with high levels of certainty regarding their decision (Rothland, 2014).

but also with regard to indicators of professional engagement (Lauermann et al., 2017). Thus, the motivation for the selection of a study program is also relevant for the later career. Consequently, it is also considered a relevant factor in the discussion concerning the selection and recruitment of teachers.

The various motivations for choosing teacher education can be assigned to intrinsic and extrinsic motivations. Overall, with regard to professional development and professional behaviour, intrinsic motivations are considered positive, whereas the findings are less clear for extrinsic motivations (Dörrenbächer-Ulrich et al., 2019). However, a variable-centred approach ignores the fact that intrinsic and extrinsic motivations are not mutually exclusive and that, consequently, different combinations with different effects – due to compensation effects – are conceivable at the individual level (Dörrenbächer-Ulrich et al., 2019). Person-centred approaches provide a foundation for a more differentiated view on the motivational starting point of student teachers. Accordingly, in the non-subject-specific research on the motivation for choosing teacher education, the focus is now increasingly on person-centred approaches that make it possible to analyse the heterogeneity between prospective teachers (Affolter et al., 2015; König et al., 2018).

Present studies, which use a person-centred approach to identify the motivation for the selection of a study program, can show different motivation profiles among student teachers (Affolter et al., 2015; Biermann et al., 2019; Billich-Knapp et al., 2012; Dörrenbächer-Ulrich et al., 2019; Kiel et al., 2015; König et al., 2018; Thomson et al. 2012; Weiß et al., 2016). Although three profile solutions outweigh the others, one cannot speak of consistent findings regarding the profile characteristics (König et al., 2018). Subject-specific analyses are a research desideratum, especially for student teachers with the subject physical education (PE). Up to now, there have been no person-centred analyses of the motivation for choosing teacher education by this group of student teachers. Nevertheless, it can be assumed that PE students – like other students – do not represent a homogeneous subgroup of student teachers. At least person-centred analyses of other individual prerequisites of competence acquisition show that different subgroups of German PE students can be differentiated and consequently there is no homogeneity with regard to a combination of characteristics (Fischer & Raven, 2018; Fischer et al., 2018). In addition, qualitative studies also indicate a certain heterogeneity, at least among PE teachers. For example, Hapke (2017) was able to identify different types of PE teachers with regard to their subject didactic orientations. Differences in identifiable profile characteristics compared to student teachers of other subjects are also conceivable. Variable-centred studies point to differences in the relevance of motivations for choosing teacher education between PE students and student teachers of other subjects (Fischer et al., 2019). Thus, in a first step it is the aim of this study to examine which motivation profiles concerning the selection of a teacher education can be identified for PE students at the beginning of their studies.

When researching the motivations for choosing teacher education, it is important to bear in mind that in Germany, students who have decided to study PE as a subject must study at least one other subject and also complete an educational science component. In the educational science components, students explore issues of teaching and learning, educating, assessing and advising, and innovating in a non-disciplinary manner. The teaching subjects are chosen before the start of the study program, whereby there are partly educational policy restrictions regarding the combination of subjects. Consequently, a distinction must be made among first-year students between a general motivation for choosing teacher education and the teaching profession and a motivation for choosing individual teaching subjects. The focus of this study is the motivation of PE students for taking up a teacher education, but not the specific reasons for choosing the subject PE. This differentiation appears to be significant for the investigation of study choice motivations of PE students in Germany due to the multi-

subject study, although studies are still lacking the evidence how selective or independent the two choice decisions are from each other. In specialist literature one can find studies on the motivation of PE students that explicitly differentiate between the motivation for choosing teacher education and the motivation for choosing the subject PE (Heim, 1996) or at least take general teaching-related motivations and the PE teaching component of the job into account (Spittle & Spittle, 2014; Tosheva, 2016). It should also be pointed out that, due to the federal education system in Germany, there is no uniform teacher education system beyond the requirement to study at least two teaching subjects. The models differ in terms of whether school-levels specific courses (e.g. Secondary Education Level) or school-form-specific courses of study (e.g. Realschule) are to be completed and whether they are so-called undergraduate programs (state examination degree) or consecutive programs (polyvalent Bachelor's degree followed by a teaching profession-specific Master's degree). The entrance requirement is the so-called Abitur, which is the highest school-leaving qualification in Germany. With regard to the motivation for choosing teacher education, it should also be taken into account that the teaching profession in Germany offers a high level of job security and is mostly accompanied by a civil service appointment after a corresponding education. Compared to a sport-related field of activity outside school, the remuneration for teachers who teach PE in particular can be described as good (Menzel & Hartmann-Tews, 2015). Outside the classroom, teachers in Germany have the possibility to organise their time quite freely.

### **Profiles in the Motivation for the Selection of a Teacher Education**

Recently, some studies have been published that carry out person-centred analyses. However, in addition to motivational factors, other factors such as living conditions (Chin & Young, 2007), professional plans, satisfaction level, demographic characteristics and perceptions (Watt & Richardson, 2008), security of career choice (Weiß et al., 2011), knowledge and beliefs (Gramzow et al., 2011), self-esteem, self-efficacy and lifestyle (Boeger, 2016) as well as teacher personality and integration into higher education (Dietrich & Latzko, 2016) are taken into account to identify profiles.

Currently eight studies can be identified, which are carried out with student teachers and which only use study and career choice motivations for profile identification (Tab. 1). Regarding the number of determined profiles respectively classes or clusters, these studies show a clear trend towards a three-profile solution. Only two studies identify a four-profile solution (Dörrenbächer-Ulrich et al., 2019) or five class solution (König et al., 2018). However, the five classes are summarized by the authors due to the class size to three classes as well.

The profiles identified in the studies show differences and similarities in terms of their characteristics. It should be noted, however, that a comparison is fundamentally difficult, since the seven studies use six different survey instruments, which have a quite different way of determining the number and content of factors. In addition, different statistical methods are used for person-centred analysis. The following striking similarities can be observed:

All studies identify a profile, in which intrinsic motivations for the selection play a predominant role, while aspects of extrinsic motivation are of less importance. Within this type of profile, the studies differ in ranking either the pedagogical and subject specific motives as highly significant (Kiel et al., 2015; Weiß et al., 2016) or mainly the pedagogical and to a lesser extent the subject specific motivations as relevant for the selection (Affolter et al., 2015; Billich-Knapp et al., 2012). The motivational premises of those profiles are estimated to be more advantageous by the authors, in view of the accomplishment of teacher

education (or future professional requirements). Furthermore, the percentage of this type of profile among students differs clearly with 16.7% to 54.0% depending on the respective study.

Seven of the eight studies established a profile showing fewer manifestations of the intrinsic or all facets of motivation for the selection of studies compared to other profiles, partly combined with a selection based on the expectation of little difficulty of teacher education (e.g. Billich-Knapp et al., 2012; Dörrenbächer-Ulrich et al., 2019) or with the highest measurements values for the selection of a teacher education as a fallback option (König et al., 2018). The authors rank the motivational characteristics of this type of profile critical or disadvantageous in regard to the accomplishment of the teacher education or its subsequent impact upon the teaching profession. The percentage of this type of profile among students varies from 8.7% to 48.4% in the studies.

In seven of the eight studies a profile that is characterized by (very) high expression of intrinsic motivations for the selection alongside with medium to high meaning of extrinsic motivations for the selection, was detected. Billich-Knapp et al. (2012) rank this motivational characteristic as beneficial or even ideal looking at the teacher education and the future profession<sup>2</sup>. In the studies, the percentage of students with this type of profile varies considerably from 24.1% to 58.8 %.

Only the study with the four profile solution determines a profile with consistently low scores in all intrinsic as well as extrinsic scales. In the study 15.7% of the students can be assigned to this profile (Dörrenbächer-Ulrich et al., 2019).

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<sup>2</sup> The studies cited partly base their assessment of motivational profile relevance on variables used for validation (e.g. study- and performance motivation; knowledge; personality features).

Criteria	Kiel et al. (2015)	Weiß et al. (2016)	Billich-Knapp et al. (2012)	Dörrenbächer-Ulrich et al. (2019)	Biermann et al. (2019)	König et al. (2018)	Affolter et al. (2015)	Thomson et al. (2012)
County	Germany	Germany	Germany	Germany	Germany	Germany + Austria	Switzerland	USA
Number of universities/TTC	1	4	1	1	2	19 + 11	16	1
Sample (N)	1490	482	209	312	801	4402 + 1585	1394	215
Semester	Semester 1+2	Semester 1+2	Semester 1	M = 4.8 (SD 3.44)	M = 4.6 (SD 3.17)	Semester 1	Semester 1	Freshman up to Senior
Study program	SE (22.6%) PS (19.7%) GS-M (6.9%) GS-R (8.9%) GS-G (41.9%)	ECE (39%) PS (45.6%) SE (15.4%)	PS (100%)	PS (16.7%) SEL I (18.3%) SEL I + II (57.1%) VS (6.7%)	PS (43.7%) SEL I (29.3%) SEL II (26.9%)	*	PS (87.2%) SEL I (12.8%)	Specification: different study directions and specializations
Subjects	not named	not named	not named	not named	Different (not named)	*	Mathematics	not named
Gender (Percentage of women)	74.8%	89.4%	84.2%	67%	78.5%	*	86.2% (PS) 61.2 % (SEL I)	80%
Age in years (M (SD) or range)	21.2 (3.35)	22.0 (4.44)	21.16 (3.31)	22.8 (4.55)	22.7 (4.29)	Not specified	Not specified	18-41
Questionnaire	Career choice motives scale (own construction)	Career choice motives scale (own construction)	FEMOLA (Pohlmann & Möller, 2010)	modified FEMOLA (Pohlmann & Möller, 2010)	modified FEMOLA (Pohlmann & Möller, 2010)	Fit -Choice Scale (König & Rothland, 2012, German Version)	Study choice motives (Denzler & Wolter 2008) and Career choice motives scale (own construction)	Reasons for Teaching Scale (Kyriancou et al., 1999)
Determined Profils/Cluster	3	3	3	4	3	3 (5)	3	3

**Table 1: Sample overview of previous studies with profile analyses on study choice motivation. Annotation: ECE = early childhood education, GS-G = grammar school (higher secondary school/“Gymnasium”), GS-M = middle school (lower secondary school/“Mittelschule”), SEL I = secondary education level I, SEL II = secondary education level II, PS = primary school, GS-R = middle school (intermediate secondary school/“Realschule”), VS = vocational school, SE = special education; \*Indicated that in terms of the factor this is a representative sample for the respective target population; TTC = teacher training colleges**

## **Expectancy-Value Theory**

The expectancy-value model developed by Eccles and her colleagues (Eccles, 2005; Wigfield & Eccles, 2000) is a commonly used theoretical framework to describe and explain educational career decisions, such as the participation in a teacher training program. It is assumed that decisions are influenced directly by the expectation to be able to successfully carry out an activity and by the value that is attributed to an activity or the achievement of objectives. The expectancy component refers to the assessment whether and how well a task can be mastered. It largely depends on the self-concept of one's own abilities and the perceived difficulty of the task. Transferring this to the decision to study teaching, it depends on the teacher self-concept and the anticipated difficulty of the studies. The value component reflects whether the task or the engagement with a subject matter is an incentive for the person. This includes the aspects of interest and usefulness. Interest as an intrinsic value refers to the content as well as to the execution of a task and its related affects. Transferring this to the motivation for choosing teacher education, these are pedagogical and subject specific interests. The usefulness refers to the consequences of mastering a task in the sense of its contribution to the achievement of objectives (Eccles, 2011), in this particular case the usefulness of the teaching profession regarding financial and leisure related objectives. In addition, other factors, such as a person's stable characteristics or the beliefs and the behaviour of their social environment, can influence the decision directly and/or with the help of expectancy and value components (Eccles, 2011).

In research on the motivation for the selection of a study program, such factors influencing the choice of study program are also differentiated into intrinsic and extrinsic motivations. Intrinsic motivations are prevalent if decisions are made due to the study program or the pursued teaching career. Extrinsic motivations are prevalent if decisions are based on incentives or considerations of benefits which are linked to the study program or the pursued career (Pohlmann & Möller, 2010; Thomson et al., 2012). Further aspects which are examined in this context are the selection of a teacher education as a fallback option or influences of the social environment on the decision (Pohlmann & Möller, 2010; Rauin & Meier, 2007; Richardson & Watt, 2006).

## **Objectives and Assumptions**

This study takes up the previous research results by examining whether different motivation profiles in the selection of a teacher education can be identified for students studying PE. It is assumed that like other student teachers PE students take up a teacher education due to a combination of various reasons which differ qualitatively and quantitatively. Due to largely missing subject-specific findings, it is impossible to make justified assumptions what number of motivation-profiles and their specific characteristics exist. Therefore, the approach is explorative.

## **Method**

### **Sample**

The research sample of this analysis consists of PE students in the first semester at 12 German universities (Tab. 2), who were surveyed concerning their motivation for choosing teacher education in the first weeks of their studies (mostly in the context of courses). The

survey was conducted with either an online or a paper version of the questionnaire. Out of the 878 students who were surveyed in two studies, 62 participants were excluded from further analysis due to missing values. The final sample of 816 students is made up of 57% male students and 43% female students. This gender distribution is characteristic for PE students (Statistisches Bundesamt, 2016). The average age of the participants is 20.6 years ( $SD = 2.24$ ; 17–38 years). Concerning the pursued type of teaching degree, most of the surveyed students (66.3%) pursue a teaching degree for higher secondary schools (Gymnasium or Gesamtschule; secondary education level II), followed by a teaching degree for lower secondary schools (Haupt-, Werkreal-, and Realschule; secondary education level I) with 13%, and finally a teaching degree for primary schools with 10.1%. 7% of the surveyed students pursue a teaching degree for vocational schools and 3.4% pursue a teaching degree for special education.

University	Sample ( <i>N</i> )	Gender (%, only for women)	Age <i>M</i> ( <i>SD</i> )	Teaching direction of students (%)					Baccalaureate grade <i>M</i> ( <i>SD</i> )
				PS	SEL I	SEL II	VS	SE	
Augsburg	74	74.3	19.95 (2.00)	59.5	10.8	29.7	-	-	2.4 (0.53)
Bochum	27	37.0	20.15 (1.32)	-	-	100	-	-	2.6 (0.41)
Dortmund	139	41.7	21.02 (2.49)	12.3	13.8	52.2	10.9	10.9	2.6 (0.55)
Frankfurt	14	28.6	21.54 (3.91)	21.4	35.7	35.7	-	7.1	2.3 (0.57)
Heidelberg	37	45.9	20.73 (1.56)	-	-	100	-	-	2.3 (0.50)
Heidelberg (TTC)	6	83.3	20.17 (2.13)	66.7	33.3	-	-	-	2.6 (0.26)
Kiel	71	38.0	20.93 (2.07)	-	1.4	88.7	9.9	-	2.6 (0.50)
Marburg	70	34.7	20.30 (1.81)	-	-	100	-	-	2.5 (0.50)
Münster	105	50.5	20.20 (1.57)	8.6	17.1	71.4	2.9	-	2.4 (0.55)
Paderborn	100	30.0	20.59 (2.18)	1.0	31.0	43.0	25.0	-	2.8 (0.49)
Potsdam	27	51.9	19.74 (1.73)	-	11.1	88.9	-	-	2.0 (0.61)
DSHS Köln	146	37.2	20.92 (2.76)	2.8	13.1	71.0	4.8	8.3	2.5 (0.57)

**Table 2: Overview of the sample composition by university. Annotation: PS = primary school, SEL I = secondary education level I, SEL II = secondary education level II, VS = vocational school, SE = special education, TTC = teacher training colleges, DSHS = German Sport University**

### Survey Instrument

The motivation for choosing teacher education was recorded using the empirically reviewed survey instrument FEMOLA, which considers study- and occupational-related motivations. The version which was used in the panel for teacher education (Kauper et al., 2012) was utilized in this study. This survey instrument is based on the expectancy-value theory, a motivation-psychological model which asserts that the expectation of being able to perform a task and the value which is ascribed to this task are proximal predictors of decisions (Retelsdorf & Möller, 2012). In order to measure the expectancy component, the participants' perceived teaching ability, which is also known as teacher-related self-concept (example item: "... I can convey subject-specific contents in an interesting manner"), as well as the perceived low task difficulty (example item: "...the study program is not very difficult") are assessed. The educational interest (example item: "... I enjoy working with children and adolescents"), the subject-specific interest (example item: "... I want to learn more about my subjects"), and the perceived utility (example item: "... I can maintain my social contacts due to the flexible working hours of the teaching profession") make up the value component. Social influences, such as the advice of teachers or friends, constitute another component (example item: "...my family recommended that I take up a teaching program") (Pohlmann & Möller, 2010). The



factors can, furthermore, be divided into intrinsic (educational interest, subject-specific interest, beliefs in teaching ability) and extrinsic motivations (utility, perceived low difficulty of the study program, social influences).

The original wording of the items was used in this study. The participants marked their self-assessments on a four-point Likert scale with the end points 1 (*does not apply at all*) to 4 (*fully applies*) using the item prefix “I selected a teacher education because...”. Table 3 displays the descriptive statistical values of the scales and their intercorrelations.

motivation facets	<i>M</i>	<i>SD</i>	Alpha	<i>r it</i>	intercorrelations				
					1	2	3	4	5
1. EI	3.45	.44	.84	.48-.74					
2. SSI	3.21	.47	.60	.32-.47	.334				
3. TA	3.16	.46	.74	.38-.58	.443	.344			
4. UT	3.01	.55	.86	.52-.69	.129	.208	.117		
5. LDSP	1.76	.61	.70	.38-.62	-.139	-.071	-.121	.282	
6. SI	2.53	.63	.78	.37-.60	.125	.170	.190	.428	.331

**Table 3: Means, standard deviations, reliability, item-total correlations and intercorrelations of the sub-scales description. Annotation: EI = educational interest, SSI = subject-specific interest, TA = perceived teaching ability, UT = utility, LDSP = perceived low difficulty of the study program, SI = social influences; all intercorrelations (Pearson correlation, 2-tailed) are statistically significant ( $p < .05$ )**

## Data Analysis

The identification of profiles was carried out by means of latent profile analysis, which was conducted using the statistics program Mplus 8.0. The latent profile analysis groups individuals who have similar response patterns with regard to study choice motivation into homogeneous groups and maximises the difference between the groups (Dörrenbächer-Ulrich et al., 2019).

A comparison of the models with up to five profiles was conducted based on different model fit values. Since there is no single suitable measure for the evaluation of model quality, the following indices were used for the overall assessment: AIC (Akaike Information Criterion), BIC (Bayesian Information Criterion), ssaBIC (sample size adjusted BIC), a Vuong-Lo-Mendell-Rubin Likelihood-Ration-Test (VLMRT), a Lo-Mendell-Rubin Adjusted-Likelihood-Ratio-Test (LMRAT) and a Bootstrap-Likelihood-Ratio Test (BLRT). A low value of the AIC, BIC and ssaBIC indicates a higher model quality. A significant value ( $p \leq .05$ ) for the other tests indicates that the model with one class fewer should be rejected (Naujokat, 2015; Billich-Knapp et al., 2012).

Besides these values, the accuracy of the classification is also relevant: The entropy index should have a value above .70 (Reinecke, 2006 as cited in Roloff Henoch et al., 2015) and the class membership probabilities should have a value  $> 0.8$  (Rost, 2006). Solutions with as few classes as possible are generally to be preferred, especially compared with solutions with one or several very small classes (Geiser, 2010).

Furthermore, it was examined in how far the resulting profiles differ concerning the scales of motivation for the selection of a study program by means of an analysis of variance using the software SPSS 24. The aim of this further analysis was to statistically substantiate the content-based interpretation of the differences of the identifiable latent profiles.

## Results

### Latent Profile Analysis of Motivation for Choosing Teacher Education for PE students

The fit indices for assessing the model quality indicate an overall solution with four profiles: Table 4 shows that the AIC, BIC, and ssaBIC become smaller with a rising quantity of profiles, whereby the margin of difference decreases from the third to the fourth profile. The BLRT is significant for all solutions. In contrast, the VLMRT and the LMRAT are only significant for solutions with up to four profiles. The entropy value is  $> .70$  from a three-profile solution. The highest value and therefore the highest level of classification accuracy exists for the four-profile solution. The average class membership probability for the three-profile solution is .82 to .88. For the four-profile solution, there is an average classification accuracy of .84 to .89. A solution with more than four profiles is less pertinent than in this case, one profile would be comprised of a group of students who make up less than 5% of those surveyed.

Profile	AIC	BIC	ssaBIC	<i>p</i> VLMRT	<i>p</i> LMRAT	<i>p</i> BLRT	Entropy	< 1%	< 5%
1	7543.018	7599.486	7561.378						
2	7165.279	7254.686	7194.350	.0018	.0020	$\leq .0001$	.644	0	0
3	6907.521	7029.868	6947.302	.0000	.0000	$\leq .0001$	.704	0	0
4	6846.219	7001.505	6896.710	.0327	.0349	$\leq .0001$	.773	0	0
5	6781.670	6969.896	6842.872	.1141	.1184	$\leq .0001$	.717	0	1

**Table 4: Indices for the different solutions of the latent profile analysis. Annotation: AIC = Akaike Information criterion, BIC = Bayesian Information Criterion, ssaBIC = sample size adjusted BIC, VLMRT = Vuong-Lo-Mendell-rubin Likelihood-Ration-Test, LMRAT = Lo-Mendell-Rubin Adjusted-Likelihood-Ration-Test, BLRT = Bootstrap-Likelihood-Ratio-Test**

### Profile Interpretation

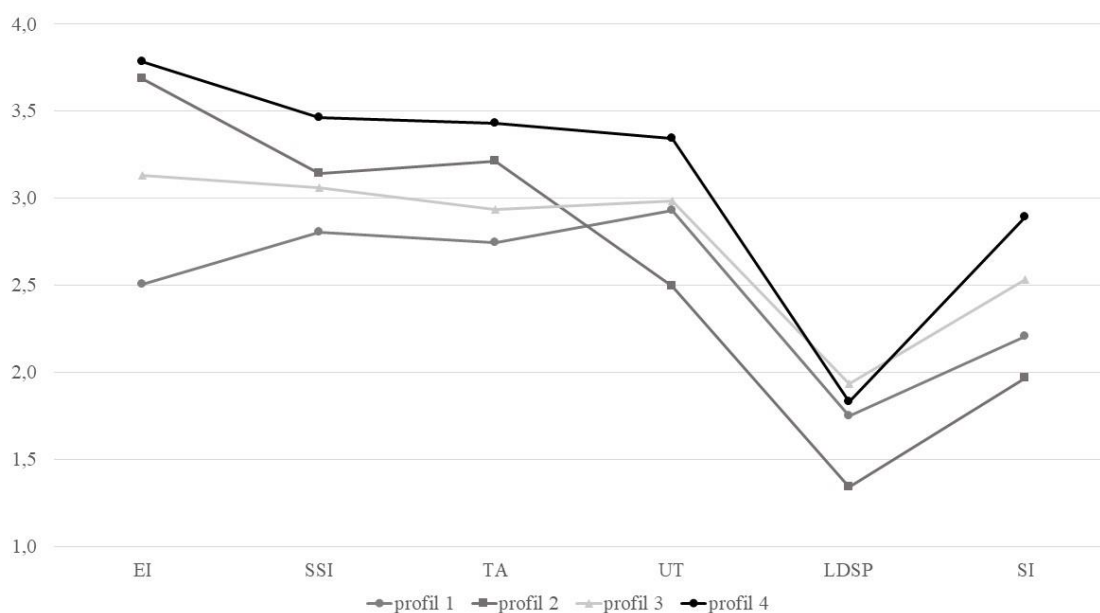
The four profiles in the motivation for choosing teacher education differ in qualitative and quantitative respects from the majority of available findings and can be characterized as shown in Figure 1, where the first profile features lowest levels of intrinsic motivation in comparison to the other profiles. The highest value can be found for utility aspects of the teaching profession in terms of finances and time. We label this profile utility-oriented motivation.

The results of the second profile show rather high levels of intrinsic motivation. The highest value can be found for educational interest. Even the values of subject-specific interest (interest in all subjects studied) and perceived teaching ability are well above the theoretical scale average. Extrinsic facets of motivation are less pronounced in comparison. The desire to take up a study program with perceived low difficulty has the lowest relevance for the selection of a teacher education. The profile can best be described as a mainly pedagogical motivation.

Concerning the third profile, the results show values above the theoretical scale average for educational interest, subject-specific interest (interest in all subjects studied) and perceived teaching ability. Furthermore, the value of factor utility is similar to the intrinsic facets. The results for social influences show values just above the theoretical scale average. Against this background, a suitable profile name is balanced motivation.

Profile four exhibits the highest values for intrinsic facets of motivation for choosing teacher education in comparison to the other three profiles. Furthermore, utility aspects and social influences are of rather high importance in the decision to take up a teacher education for PE students in this profile than for students of other profiles. The values are clearly above the theoretical scale average. In this respect, the profile (also in contrast to profile three) can be labelled as balanced motivation with a pedagogical tendency.

In total, 5.1% of the students were assigned to the first profile, 19.6% to the second profile, 38.2% to the third profile and 37.1% to the fourth profile.



**Figure 1: Four-profile-solution for the motivation for the selection of the study program of student teachers with the subject PE.** Annotation: EI = educational interest, SSI = subject-specific interest, TA = perceived teaching ability, UT = utility, LDSP = perceived low difficulty of the study program, SI = social influences

In order to examine the previously presented differences between the identified profiles, a multivariate analysis of variance (MANOVA) was conducted, in which the profiles constituted the fixed factors and the facets of motivation for the selection of a teacher education constituted the dependent variables (Tab. 5).

	Profile 1	Profile 2	Profile 3	Profile 4				
	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>M</i> ( <i>SD</i> )	<i>F</i>	<i>df</i>	<i>p</i>	$\eta^2$
EI	2.45 (.21)	3.70 (.22)	3.12 (.22)	3.79 (.20)	917.075	3	$\leq .001$	.772
SSI	2.76 (.43)	3.13 (.49)	3.05 (.38)	3.48 (.42)	73.319	3	$\leq .001$	.213
TA	2.72 (.47)	3.21 (.56)	2.93 (.38)	3.44 (.37)	102.653	3	$\leq .001$	.275
UT	2.94 (.44)	2.44 (.52)	2.98 (.43)	3.35 (.42)	146.307	3	$\leq .001$	.351
LDSP	1.76 (.60)	1.31 (.36)	1.93 (.57)	1.83 (.63)	44.793	3	$\leq .001$	.142
SI	2.22 (.48)	1.90 (.51)	2.52 (.51)	2.90 (.52)	139.166	3	$\leq .001$	.339

**Table 5: Presentation of the descriptive statistical values as well as the variance-analytical differences between the four profiles from the results of the latent profile analysis in the scales of the motivation for selection of study program.** Annotation: EI = educational interest, SSI = subject-specific interest, TA = perceived teaching ability, UT = utility, LDSP = perceived low difficulty of the study program, SI = social influences

Using the Hotelling trace criterion on a multivariate level, the multivariate analysis of variance indicates a significant main effect with a large effect size (Cohen, 1988) between the profiles ( $F = 220.996$ ,  $p \leq .001$ , partial  $\eta^2 = .62$ ). On the level of the single profiles, the between-subject effects show significant differences between the four profiles concerning all examined facets of motivation for the selection of a study program (Tab. 3). The partial eta-squared points to a large effect size (Cohen, 1992). Five of the 36 conducted Post-Hoc Tests (Scheffé) are not significant for the comparisons of the single groups. Utility reasons do not differ between profile one

(utility-oriented motivation) and profile three (balanced motivation). With regard to the individual importance of choosing with the teacher education an easier course of study, there are no significant differences between profile one (utility-oriented motivation) compared to the third (balanced motivation) and fourth profile (balanced motivation with a pedagogical tendency). This is also evident when comparing this facet of motivation between profile three (balanced motivation) and four (balanced motivation with a pedagogical tendency). The subject specific interest did not differ significantly between profile two (mainly pedagogical motivation) and three (balanced motivation).

## Discussion

The aim of the study was to examine whether different motivation profiles in the selection of a teacher education can be identified for students studying PE. Using latent profile analysis, four profiles in the motivation for choosing teacher education could be identified for PE students. The findings differ from non-subject-specific findings. The majority of the studies presented in chapter 2 (Table 1) could show a differentiation of three profiles. The established four-profile-solution indicates that PE students are a heterogeneous group concerning their decision motivation. Each identified profile refers to one characteristic bundle of motivations. Contrary to variable-centred research, which revealed intrinsic-pedagogical motivation of PE students as well as those of student teachers generally as the main motive for motivation of decision (Fischer et al., 2019; Fischer & Bisterfeld, 2015; Rothland, 2014; Weiß & Kiel, 2010), these results provide a foundation far more differentiated view on the motivational starting point of PE students.

The comparisons between the four-profile-solution and previous findings of student teachers without PE as a subject shows some similarities: Profile one (utility-oriented motivation) demonstrates, that some PE students consider utility more important than intrinsic facets for the selection of a study program. At the same time, intrinsic motivations are least decisive for choosing a teaching degree in the profile comparison. This finding can be linked to the results of existing studies. For example, König et al. (2018) and Dörrenbächer-Ulrich et al. (2019) also found a profile in which intrinsic motives are overall less important compared to the other profiles. PE student teachers, with utility-oriented motivation, show a motivation profile (motivation bundles), which is considered rather unfavourable in the context of teaching education research. Dörrenbächer-Ulrich et al. (2019) were able to show for a similar profile that student teachers in this profile have significantly lower scores on self-assessed profession-relevant characteristics (teacher self-efficacy, self-regulated learning) than students in profiles with high intrinsic motivation. Biermann et al. (2019) found that this group makes significantly less use of learning opportunities in the internship and assesses themselves as less competent than students in profiles with high intrinsic motivation. However, this is the smallest group of PE students in the study shown in the empirical part of the paper.

Profile two (primarily pedagogical motivation) shows a composition of decision motivations, in which intrinsic factors outweigh others, whereupon pedagogical motivations are more relevant than the interest in the chosen subjects. Extrinsic motivations are the least significant compared to the other profiles. The assumed difficulty of the teacher education is significantly less significant for PE students in this profile. A comparable composition of motivations of decision can also be proven in all eight available studies with student teachers of different teaching profession and/or subject area. PE teachers with primarily pedagogical motivation, have motivational entry requirements that are assessed as favourable with a view to education and later career.

With profile three (balanced motivation) and profile four (balanced motivation with a pedagogical tendency), two profiles can be differentiated in the present study which can be

described as balanced, since in addition to the high relevance of intrinsic motivations, extrinsic factors are of medium to high importance for the selection of a teacher education. Such a distinction is found in only one previous study (Dörrenbächer-Ulrich et al., 2019). Six existing studies identify motivational balanced profiles that are more similar to the identified profile four. The following characteristics match: 1) an overall very high importance of intrinsic career choice motivations, 2) a higher relevance of pedagogical motivations than subject-related motivations, whereby the differences in the individual studies are of varying clarity and 3) a likewise high importance of extrinsic career choice motivations. So far, there is only one equivalent for the identified profile three in existing studies. Dörrenbächer-Ulrich et al. (2019) have demonstrated a balanced profile among student teachers from different school types (and subjects) in which intrinsic as well as extrinsic factors are comparatively low, which clearly bears resemblance to the profile three demonstrated in this study.

Up to now, it is largely unclear, whether or to what extent the identified rather one-sided or balanced motivation profiles of PE student are related to the competence development of PE students. Existing studies, which have surveyed learning and performance motives (Affolter et al., 2015), pedagogical knowledge and professional achievements (König et al., 2018) or instructional quality in a first practical phase of their professionalisation (Biermann et al., 2019) for student teachers in general give rise to the assumption that the motivational characteristics of certain motivation profiles (motivation bundles) represent more favourable conditions for the process of becoming a teacher than others. The importance of different profiles with regard to the acquisition of competences and the professional action should be examined in greater depth in subsequent studies.

Even if the majority of previous non-subject-specific studies found a three-profile solution for the compilation of motivations, the result of the identification of four profiles is not necessarily specific to PE students. The fact that Dörrenbächer-Ulrich et al. (2019) also identify four similar profiles argues rather against a subject-specific orchestration of the motivation for choosing a teacher education. Future studies should go beyond the present study and investigate the question if profiles of motivation for choosing teacher education are dependent from the subject, by making a comparison between student teachers of different subjects. Here, the question whether the motivational balanced profile three with medium-high pedagogical, subject-specific and extrinsic study choice motives is typical for PE students, or if student teachers of other subjects can be associated with this profile as well, should be looked at.

In the context of PE teacher education in Germany, where student teachers always study two subjects – unlike in many other countries – different challenges are discussed with regard to entry requirements. They are relevant with regard to the subject specific interest: 1) A relatively low interest in theoretical, scientific examination of the subject (Heim, 1996), which, however, is significant in terms of professional development and, in particular, a reflective habitus. 2) The importance of intense, often competitive, prior experiences and orientations (Pilz et al., 1981) that need to be addressed and deconstructed in education (Merrem & Curtner-Smith, 2019), as they are critical for subsequent PE work in the PE classroom, especially in the face of a heterogeneous student body. 3) The naive expectations of the sport teaching profession possibly in combination with the idea of being able to turn a hobby into a profession (Baur, 1981; Bräutigam, 2003; Reinartz & Schierz, 2007) which could lead to a so-called practice shock or even to reduced educational demands on PE. Current, comprehensive studies on orientations and study motivations of student teachers in PE are lacking for German-speaking countries. It is not clear

whether and how the previous experiences and orientations of PE students correspond more or less to the motivation to choosing a teacher education.

Finally it is also still unclear whether the motive bundles relevant for the initial decision are more stable over time or whether they change in the course of study. Thus Butler refers to a desideratum to clarify whether “motivation[s] for teaching are rather dispositional in nature and thus not likely to change” (Butler, 2017, p. 385). This is important for two reasons: the first being the prognostic prediction of the profiles for the development of dimensions of professional competence and the occupational behaviour, and the second concerning implications for specific interventions. The present data analysis represents an important contribution in the research field of the motivation for the selection of a teacher training program, as it deals with the question of the homogeneity or heterogeneity of PE students on the person-centred level.

### Disclosure statement

No potential conflict of interest was reported by the authors.

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## Acknowledgments

We would like to thank our colleagues Nils Neuber, Miriam Kehne, Daniel Kraft and Rüdiger Heim, with whom we realized the MEE-Study, whose data have been incorporated into this paper.