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Beliefs and Attitudes Toward Inclusion of Student Teachers and Their Contact With People With Disabilities

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Inclusive schooling has been a key issue in special needs education for the last 20 years. In this context, teacher's attitudes toward inclusion is an essential factor in professional competence. It is therefore in the interest of an inclusive school system that inclusion-related beliefs and attitudes are cultivated in basic teacher education. Although some studies report positive effects of basic teacher education on successful inclusion processes and outcomes at school, the findings on attitude changes in teacher education are inconsistent. Multiple factors influence inclusion-related attitudes and beliefs. Among them, personal contact with people with disabilities is important. The present study at the University of Teacher Education in Zurich, Switzerland, examines the influence of previous contact with people with disabilities on attitudes toward inclusion after initial teacher training modules. An online survey ($N = 443$) was conducted before (T0) and after (T1) a training module on inclusive education/inclusive teaching. Validated scales on attitudes toward inclusion were used. The findings show that the student teachers report significantly more positive contact with people with disability than negative ones. At the same time, student teachers who are in contact with people with disabilities report a significantly more positive attitude toward inclusion at the beginning of the term, and a higher self-efficacy in dealing with disruptive behavior and interdisciplinary cooperation, as well as an individualizing teaching structure. They also report fewer concerns and negative attitudes than student teachers without such contact. Contact with people with disabilities was significantly related to an anticipated willingness to take on an inclusive class. However, no moderating effect of contact over the term was found. Additionally, we identify a considerable heterogeneity on positive attitudes toward inclusion within the respective groups (i.e., more positive or negative

contact) *via* multigroup latent profile analysis. In particular, higher levels on self-efficacy in dealing with disruptive behavior and individualizing teaching structure were central indicators for positive attitudes toward inclusion; this held for both contact groups.

Keywords: attitudes, contact, inclusion, teaching, teacher education

INCLUSIVE SCHOOLS IN SWITZERLAND

Inclusion has been a key issue in special needs education across Europe for the past 20 years. The term is generally understood to mean the joint education of children and young people, regardless of their learning and behavioral requirements or any special educational needs. In Switzerland, the ratification of the UN-BRK (United Nations, 2006) has increased significantly the commitment to the inclusive school. In Switzerland, authority over education lies within the 26 states, each of whom have unilateral decision-making powers. This leads to differences in the design of the 26 education systems, especially in the specific implementation of school-based inclusion. The state of Zurich, where the University of Teacher Education is located and where the PROFIS project was conducted, has been implementing inclusive support for pupils with special educational needs since 2007. Inclusion is legally established and implemented in two different tracks of inclusive support:

(1) A first low-threshold track of support for pupils *in situ*ations where they do not necessarily require an individual diagnosis or a proven and attested special educational need is known as inclusive support. The resources for this are allocated to each school in accordance with the total number of pupils. The pupils may have mild learning difficulties, such as delays in the acquisition of written language, problems in learning mathematics, or a lack of learning and working strategies. This support is provided by school-based special educational needs teachers who are permanently employed at the school. Their workload is based on the total number of pupils, and is not linked to the individual identification of specific support needs of individual children. The corresponding resources are managed autonomously by the school team [teacher, special educational needs (SEN) teacher and therapist] and are under the responsibility of the school management (e.g., school principal). This means that in this model the SEN teachers are not necessarily responsible for individual pupils, but for supporting the whole school. This also includes prevention and counseling tasks.
(2) The second, high-threshold track is known as inclusive special education. This form of support deals with more serious issues; the children or young people concerned are usually diagnosed with a proven disability and have been assigned special school status (high threshold measure). This often refers to children or young people with a mental disability, physical, sensory or multiple disabilities, or serious behavioral disorders. The relevant encouragement and support is provided by a school-based remedial teacher or a school-based SEN teacher who is employed specifically to promote the child or young person concerned, and it is usually financed through additional resources for special education.

ATTITUDES TOWARD INCLUSION AND CONTACT THEORY IN TEACHER EDUCATION[1]

Teachers' attitudes are essential elements in professional competence (Baumert and Kunter, 2006). Positive attitudes toward inclusion play a significant role in the implementation of the inclusive school (Yuen and Westwood, 2001; Avramidis and Norwich, 2002; European Agency for Special Needs Inclusive Education, 2014; Hellmich and Görel, 2014; Gebhardt et al., 2015). Research on teachers' attitudes reveals the use of a variety of terms with inconsistent theoretical references (Ruberg and Porsch, 2017). The present study uses the terms beliefs, attitudes, and assessed competences. It focuses on the promotion of inclusion-specific attitudes and assessed competencies of student teachers at the Zurich University of Teacher Education (Switzerland).

Attitudes refer to evaluative qualities of relationships with facts and a person's reactions to them (Eagly and Chaiken, 1993, p. 1). They refer to constellations of attitudes that are relevant to the action (Feyerer and Reibnegger, 2014; Kuhl et al., 2014, p. 114). Teachers' beliefs focus specifically on school-related assessment patterns (Fischer, 2014, p. 69) and on lesson design (Kuhl et al., 2013, p. 3). Competencies are understood to mean job-relevant skills that only become visible in an actual, current realization of action in the sense of an (assumed) performance (Seifried and Heyl, 2016, p. 32). The concept of attitude refers to the multidimensional, social-psychological three-component model, according to which assessments include cognitive, affective, and behavioral dimensions (Seifried and Heyl, 2016; Ruberg and Porsch, 2017, p. 395). The anticipated personal willingness and ability to take part in inclusive instruction (EFI-L; Seifried and Heyl, 2016) is regarded as a behavioral component. In the present study, attitudes are classified as predictive of behavior (Ajzen and Fishbein, 2000, 2005).

Attitudes are considered to be relatively stable and resistant to change (Fischer, 2014, p. 69; Kuhl et al., 2014); at the same time, they can be influenced (Forlin et al., 2010; Kuhl et al., 2014). It should be possible to influence inclusion-related beliefs and attitudes during basic teacher training (Forlin et al., 2011). Although some studies report positive effects of basic teacher training on successful inclusion processes and outcomes at school

[1]Sections of this chapter form part of the theoretical part of an article on countrywide comparison using data from the same research project "PROFIS": Graf et al., in press.

(Ruberg and Porsch, 2016), the findings on attitudes in teacher training are inconsistent (Avramidis and Norwich, 2002; Sze, 2009; de Boer et al., 2011). A general experience of efficacy (Soodak et al., 1998), contact with people with disabilities in the classroom, and positive experiences in this regard are conditions for changing one's own attitudes (Avramidis and Norwich, 2002; Praisner, 2003; Sharma et al., 2006). Personal contact with people with disabilities is important for both framing attitudes and improving teacher efficacy (Forlin et al., 2010), but whether it influences beliefs and attitudes toward inclusion is unclear. Prior experience of students with disabilities is directly linked with more positive attitudes by teachers toward inclusion (Burke and Sutherland, 2004).

Attitudes toward persons with disabilities are influenced by previous experience of personal contact (Cloerkes, 1985; Yuker, 1988). The relationship between personal contact and attitudes toward people with disabilities is described in the contact theory (Allport, 1954; Pettigrew and Tropp, 2000). Its central idea is that persons who have contact with people with disabilities show more positive attitudes than those who do not (Cloerkes, 2007, p. 146). However, contact in a professional setting does not automatically lead to more positive attitudes. It can even exacerbate already negative attitudes and reinforce prejudice (Aberson, 2015). The effects of personal contact depend on its quality, as well as on the context of the situation (Cloerkes, 2007). Nevertheless, a positive relationship between private contact, professionally organized contact, and students' attitudes toward people with disabilities have been demonstrated in several meta-analyses (Lindsay and Edwards, 2013; MacMillan et al., 2014; Armstrong et al., 2017). Rademaker et al. (2020) point out that contact theory can serve as a rationale for interventions that aim to promote positive attitudes and thereby foster the social participation of students with disabilities. Their review shows how the intervention components of contact and information are related to attitudes and to the social participation of students with disabilities. The results indicate that interventions combining contact and information are associated with more positive attitudes (Rademaker et al., 2020). On this basis, the present study examines the influence of students' previous positive contact with people with disabilities (*via* one's own school biography, family, or group of friends) on attitudes toward inclusion after initial training modules at inclusive schools.

The findings, as with the common competence models of teachers (Baumert and Kunter, 2013), reflect professional values, important subjective theories, and normative preferences (Seifried and Heyl, 2016). These determine specific teacher actions and therefore the interactions between pupils and the teachers' creative will (Horowitz et al., 2005). Attitudes and the assessed competences should be influenceable or attainable within the framework of basic teacher training (Forlin et al., 2010). Among the conditions under which people change their attitudes, contact with people with disabilities is especially important (Forlin et al., 2010). Accordingly, in the present study we ask about the effects on the respondents, who are participants of positive contact with people with disabilities, and about the effects of basic teacher education.

CONTEXT OF THE STUDY

Research in this field has indicated the importance of structures and teaching-learning formats for changes in student teachers' attitudes (Ruberg and Porsch, 2017, p. 410). Therefore, the Zurich University of Teacher Education is described as context of the reported study (Graf et al., in press).

The Zurich University of Teacher Education (hereafter PHZH) is the training location for all teachers in the state of Zurich. There were on average 3,177 student teachers studied at pre-school, primary school, and secondary school level between 2017 and 2020. The basic concern of the PHZH regarding inclusive education is the implementation of schools for all pupils, accounting for the individual needs of children as well as the learning requirements, and providing appropriate support (Kunz and Hollenweger, 2016). According to the European Agency for Special Needs Inclusive Education (2014) (Project Teacher Education for Inclusion 2009–2012), the following four key points in the work of teachers (Profile of Inclusive Teachers) are particularly important in inclusive education: valuing learner diversity, supporting all learners, working with others, and personal professional development. PHZH offers student teachers the opportunity to pursue these four key issues in several teacher training modules. The following questions (among others) are addressed in the teacher training modules: What is an inclusive school in practice? What does inclusion mean in concrete terms in everyday school life for the students, for the teachers, and for teaching, and what does multi-professional cooperation mean? This approach is reflected in "Inclusive Education and Teaching" (Luder et al., 2019), which is obligatory reading at PHZH.

The module "inclusive education," that is relevant to the present study is a part of all training programs at pre-school, primary, and secondary levels. By 2019, this 2 h per week third semester module taught the basics of an inclusive education system to cross-level module groups of ∼25 student teachers each. It is based on a concept of disability based on the bio-psycho-social model of the ICF (International Classification of Functioning, Disability and Health[2]; WHO, 2005); knowledge of the current state of research on separation, integration, and inclusion as well as the support currently available for children with special needs in the state of Zurich; knowledge of selected effective methods; and options for action to take account of special needs in inclusive education. The development of competence in the module involves the self-regulated study of suitable texts and learning materials, thematic lectures focused on basic knowledge, and case studies in lecturer-led seminar groups. In addition, a seminar event with guest lecturers affected by disability is held on the topic of the current implementation of inclusion in Switzerland with reference to the UN-BRK. In advanced semesters, student teachers can choose modules that build on and deepen their knowledge of special needs education in an inclusive teaching setting.

[2]https://www.who.int/standards/classifications/international-classification-of-functioning-disability-and-health

RESEARCH QUESTIONS

The present study examines the kind of contact experiences, inclusion-specific attitudes, and competences student teachers bring with them, and how they are influenced by training modules with special needs education content. The following research questions are addressed:

- What influence does personal contact with people with disabilities have on attitudes toward inclusion among student teachers, as well as on their willingness and ability to implement inclusive teaching in their future schools?
- Do the related teacher training modules at the University of Teacher Education have an impact on said attitudes? If yes, is this impact moderated by personal contact of the student teachers with people with disabilities?
- Are there specific patterns in individual attitudes and contact-related factors that can be identified as central indicators for positive attitudes toward inclusion?

DESIGN AND METHODS

The data focus on one teacher education university (PHZH), and are part of a broader binational Swiss-German study on teacher education "PROFIS" (Graf et al., in press). The study presented here is based on the research design of a pre-post comparison (t0 at the beginning, t1 at the end of term) by means of a written online survey of 443 student teachers at the PHZH (winter terms 2017/2018; 2018/2019; and 2919/2020). The surveys were conducted using the Collector online survey tool from the Survalyzer[3] company. They were sent directly to the participants in the second week of the term and penultimate week, before the end of term. Reminders were sent to increase the response rate; the first and last week of term were not selected because experience shows that the number of participants in the courses tends to vary too much then. The anonymized allocation of each person's datasets was guaranteed by means of individualized unique subject codes.

Sample

A total of 1,777 questionnaires were sent out over the 3 years to all student teachers in the third term in which the module "inclusive education" took place. Of these 3 full-year surveys, 800 student teachers completed the questionnaire at t0, which represented a response rate of 45.01%. The respondents who had answered questionnaires at both t0 and t1 were selected. This amounted to a total of 443 respondents (student teachers), which corresponds to a response rate of 24.93% in terms of the total number of 1,777 questionnaires sent out. Given the number of completed questionnaires for t0 ($N = 800$), this corresponded to a participation rate of 55.38% in the longitudinal section ($N = 443$).

In relation to the total average number of student teachers over the 3 years of 3,177 per year, they were drawn from all levels of education and training, a total of 800 student teachers for t0, mentioned above, represented a response rate of 25.18%.

The mean scale values of the overall sample on t0 and the longitudinal sample t0-t1 did not differ significantly from each other in the scales considered, except for two (the subscales of attitudes toward inclusion: "personal willingness and ability for inclusive teaching" and "social inclusion"). In the subscale "personal willingness and ability for inclusive teaching" the effect size (Cohen, 1992) of 0.08 was not significant [$t_{(662.563)} = -1.970$, $p = 0.049$] and in the subscale "social inclusion" the effect size of 0.12 was low [$t_{(695)} = -3.195$, $p = 0.001$]. Therefore, we can assume that the self-selection of student teachers in the longitudinal sample was comparable with that of the first data collection, with a small effect in terms of a slightly more positive attitude toward the benefits of inclusion compared with a separated schooling of children with special needs in terms of social inclusion.

The study sample comprised the following genders: male ($n = 102$, 23.1%), female ($n = 339$, 76.7%), others ($n = 1$, 0.2%), and missing ($n = 1$, 0.2%). In the period 2017–2020, a total of 72.87% female and 27.13% male teacher students studied at PHZH. The school levels in teacher education of the respondents in this study sample are distributed as follows: pre-school level ($n = 56$, 12.6%), primary level ($n = 232$, 52.4%), and lower secondary level ($n = 152$, 34.3%). In the same period (2017–2020), 12.78% of student teachers pursued pre-school level, 54.51% primary school level, and 32.71% lower secondary school level courses. A representative sample in terms of genders and levels can therefore be assumed.

Instruments

The questionnaire consisted of three sections:

(1) At the first stage, the test person code and personal data were requested.
(2) At the second stage, the student teachers were asked about their contact with people with disabilities.
(3) At the third stage, validated scales on sentiments, and attitudes toward and concerns about inclusion were used (SACIE-R; Feyerer and Reibnegger, 2014; EFI-L; Seifried and Heyl, 2016), as well as the Teacher Efficacy in Inclusive Practice scale (TEIP; Tschannen-Moran and Hoy, 2001; Feyerer and Reibnegger, 2014).

The scales operationalize the categorizations of attitudes, assumed competencies, and performance related to inclusion, and therefore make these constructs measurable. These scales with totally 63 items are briefly presented below.

Contact with people with disabilities was recorded in three situations (leisure, family, studies/internships), and measured quality (positive or negative) and frequency of the experiences. Frequency was rated on a 5-point scale (0 = *have had no contact with disabled people*, 1 = *very rarely*, 2 = *very rarely*, 3 = *very often*, 4 = *very often*).

The Ohio State Teacher Efficacy Scale (OSTES) comprises two subscales of individual self-efficacy that determine specific efficacy expectations. These two scales (for classroom management and student engagement) were validated as a

[3]https://education.survalyzer.com/

part of the OSTES by Tschannen-Moran and Hoy (2001) in short forms containing four items each. They record the subjective conviction that one believes one can cope with difficult challenges. Scales for self-efficacy expectations are used in this project because of their assumed prediction of inclusive attitudes and competences (Bosse et al., 2016). The items were answered on a scale of 1 (*not at all*) to 9 (*exceptional*).

- The subscale "Efficacy for classroom management" consists of items such as *How much can you do to control disruptive behavior in the classroom?* The reliability coefficient was reasonable, at least at t1 (Cronbach's $\alpha_{t0} = 0.64$; $\alpha_{t1} = 0.71$; $\alpha_{\text{scale source}} = 0.79$).
- The subscale "Efficacy for student engagement" consists of items such as *How much can you do to get students to believe they can do well in schoolwork?* The reliability coefficient is good (Cronbach's $\alpha_{t0} = 0.81$; $\alpha_{t1} = 0.83$; $\alpha_{\text{scale source}} = 0.83$).

This was followed by the Sentiments, Attitudes, and Concerns about Inclusive Education Revised scale (SACIE-R; Forlin et al., 2011; Feyerer and Reibnegger, 2014). The respondents' task was to indicate the degree of their personal agreement on a four-point scale from 1 = *not at all* to 4 = *completely agree*. The scale contains 15 items, five of which can be assigned to each of the following three sub-dimensions:

- The sub-dimension, "sentiments," concerns negative attitudes toward impairments (e.g., *I dread the thought that I could eventually end up with disabilities*). It has a reasonable reliability coefficient, at least at t1 (Cronbach's $\alpha_{t0} = 0.68$; $\alpha_{t1} = 0.71$; $\alpha_{\text{scale source}} = 0.64$).
- The second sub-dimension, "attitudes," concerns positive attitudes toward the inclusive school (e.g., *Students who are inattentive should be in regular classes*). It has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.74$; $\alpha_{t1} = 0.80$; $\alpha_{\text{scale source}} = 0.82$).
- The third sub-dimension, "concerns," is related to attitudes toward the concrete implementation of inclusive education (e.g., *I am concerned that it will be difficult to give appropriate attention to all students in an inclusive classroom*). It has a quite reasonable reliability coefficient, at least at t1 (Cronbach's $\alpha_{t0} = 0.66$; $\alpha_{t1} = 0.75$; $\alpha_{\text{scale source}} = 0.70$).

The Teacher Efficacy in Inclusive Practice (TEIP) Scale (Sharma et al., 2012; Feyerer and Reibnegger, 2014), in contrast with SACIE-R, deals specifically with the assessment of one's own competences in the context of inclusion. On a scale of six from 1 = *not applicable at all* to 6 = *fully applicable*, the participants were able to express how highly they assessed their competence in the practical implementation of inclusive education. The TEIP-scale consists of 18 items in three sub-dimensions:

- "Efficacy in using inclusive instructions," or the confidence in one's own abilities for individualized teaching (e.g., *I manage to challenge talented pupils appropriately*) has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.70$; $\alpha_{t1} = 0.76$; $\alpha_{\text{scale source}} = 0.66$).
- "Efficacy in collaboration," or confidence in one's own abilities regarding interdisciplinary cooperation (e.g., *I can support families to help their children make good progress in school*) has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.81$; $\alpha_{t1} = 0.83$; $\alpha_{\text{scale source}} = 0.75$)
- "Efficacy in managing behavior," or confidence in one's own abilities to deal effectively with disruptive behavior (e.g., *I am able to calm disruptive or noisy pupils*) has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.77$; $\alpha_{t1} = 0.82$; $\alpha_{\text{scale source}} = 0.80$).

The survey was completed with the items on teacher attitudes toward inclusion (EFI-L; Seifried and Heyl, 2016), which represents the cognitive, behavioral, and affective components of competences and assumed performance. This EFI-L-scale consists of 15 statements that address, on the one hand, the individual assessment of one's own competencies in the areas of subject-related support and social inclusion, that is, job-related skills (sub-dimensions 1 and 2) based on the instruments EZI (Kunz et al., 2010) and TATI (Palmer et al., 1998; Stanley et al., 2003). On the other hand, with all due caution (Wood and Power, 1987; Ajzen and Fishbein, 2000), it is also about recording the assumed personal performance (sub-dimension 3), understood as the current and actual realization-focused qualification of teachers in an inclusive context. The agreement could be expressed on a six-point scale from 1 = *do not agree at all* to 6 = *agree completely*. The three sub-dimensions make it clear as to which aspects of attitudes are queried:

- "Performance-related support in inclusive settings," with six items (e.g., *Children with special needs would finally be better supported in an inclusive school class*), has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.82$; $\alpha_{t1} = 0.83$; $\alpha_{\text{scale source}} = 0.85$; cognitive judgments).
- "Social inclusion in the classroom," with four items (e.g., *Children with special needs would feel lonely and excluded in an inclusive school class*), has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.85$; $\alpha_{t1} = 0.86$ $\alpha_{\text{scale source}} = 0.85$; cognitive judgments).
- "Personal willingness and ability for inclusive teaching," with five items (e.g., *Due to my previous education I feel qualified to take on an inclusive class*), has a good reliability coefficient (Cronbach's $\alpha_{t0} = 0.83$; $\alpha_{t1} = 0.85$; $\alpha_{\text{scale source}} = 0.81$; affective-behavioral component: self-assessed empowerment of teachers in an inclusion context that is up-to-date and focused on actual realization).

As the last mentioned sub-dimension shows, this is personally assessed future individual performance. For this reason, and as has already been discussed, this sub-dimension functioned as a dependent variable in the study. The study therefore examined the relationship between it and all other (sub)scales of beliefs, attitudes, and competences.

Data Analysis

The quantitative data were analyzed using the statistical software package SPSS (version 26; IBM), R (version 3.6.3; The R-Foundation, 2020), and Mplus (version 8.1). Descriptive and frequency data were calculated. From the frequency of the contacts experienced as positive in different areas of life—leisure,

family, and studies/internships—a total score was calculated that reflected the intensity of the positive contact in the participants' biographies across different areas of life on a scale of 0 to 12. This overall score (the positive contact score) was used to conduct various analyses. The sum score was used as a split variable in dichotomized form (with the median as the limit) to show the scales' assessment and as a factor in the multiple linear regression model. In addition, the value from 0 to 12 with the entire variance was used for the latent profile analysis (LPA).

Changes in attitudes from t0 to t1 were analyzed using a mixed analysis of variance with repeated measures, and the impact of personal contact on attitudes using a generalized linear mixed-effects model. The calculations were carried out using R and the package lme4 (version 1.1-26; Bates et al., 2020).

Latent profile analysis: The aim of the chosen analytical strategy was to develop and validate, using an empirical approach, multidimensional contact patterns for student teachers. First, we applied LPA to group respondents (student teachers) into distinct classes according to the different scales of attitudes, assumed competencies, and performance related to inclusion reported. In a second step, we ran a variance analysis with *post-hoc* tests of the identified classes to identify significant differences. Latent profile analysis is a typological rather than a dimensional approach, a statistical method used to classify continuous latent variables empirically from a series of continuous observed variables and to form subgroups based on observations that appear to be similar (Hagenaars and McCutcheon, 2002). It is assumed that the observed manifest variables are independent from one another once conditioned on the latent variable. This assumption is known as "local independence" (Hagenaars and McCutcheon, 2002). The respondents were assigned to the different patterns based on their posterior probabilities for class membership on a particular identified profile (class). The analysis was conducted for a range of two to five latent patterns of student teachers. The multigroup LPA models were defined to determine whether there was a significantly differing number of patterns in each subsample of "low contact" ($n = 264$) or "high contact" ($n = 176$). Statistical tests of the model fit can be found in **Table 1**. The estimated models were non-nested, and therefore the procedures chosen for model selection were the sample-adjusted Bayesian Information Criterion (BIC) indicating goodness of fit, with a lower value indicating a more appropriate fit, and Entropy (Celeux and Soromenho, 1996), indicating the certainty in the estimation, with values above 0.7 considered sufficient (Nylund et al., 2007; Geiser, 2009). The final model for an LPA (i.e., how many classes there are) is chosen based on a mix of statistical indicators and extant theoretical considerations (Nylund et al., 2007).

RESULTS

The mean scale values (see **Table 1**) of the longitudinal sample considered here were all significantly above the calculated mean scale value at the time of measurement t0, with one exception: the value was below this for the SACIE-R "Sentiments" scale. This means that, particularly in the case of the negatively polarized scales such as CACIE-R "Sentiments" and SACIE-R "Concerns," negative concerns and thus concerned attitudes with regard to the concrete implementation of inclusive education were assessed as more likely to be present, while sentiments expressed as negative attitudes toward impairments were assessed as more likely not to apply. However, positive attitudes toward the inclusive school were more likely to be present. The student teachers' assessment of their self-efficacy was rather pronounced. This applied both to efficacy in classroom management and in student engagement. The TEIP scale, in contrast with SACIE-R, captures one's own competences in the context of inclusion. All three subscales were within the approved range of the rating scale: efficacy in using inclusive instructions, efficacy in collaboration, and efficacy in managing behavior. The students in this longitudinal study reported a positive attitude toward the implementation of inclusion in teaching. This applied both to the anticipated realization of social inclusion in the classroom and to the anticipated realization of a performance-related support in inclusive settings.

The responding students in this study indicated whether they had any contact or no contact with people with disabilities when the data were collected at the beginning of the term ($n = 139$ and $n = 302$, respectively). The former group reported to a significantly higher extent that they had enjoyed positive experiences in their own biographies in the areas of family life ($n = 139$, $M = 2.07$, $SD = 1.65$ vs. $n = 298$, $M = 0.85$, $SD = 1.23$; $p < 0.000$, effect size $d = 0.89$), leisure time ($n = 139$, $M = 2.66$, $SD = 1.21$ vs. $n = 302$, $M = 1.75$, $SD = 1.30$; $p < 0.000$, effect size $d = 0.73$), or studies ($n = 139$, $M = 1.85$, $SD = 1.56$ vs. $n = 298$, $M = 1.23$, $SD = 1.37$; $p < 0.000$, effect size $d = 0.43$).

For the next step, the frequency of contacts experienced as positive in the different areas of life—leisure, family, studies/internships—and a total score was calculated, which reflects the intensity of the positive contact. This overall score (positive contact score) was used to conduct various analyses. The sum score was used as a split variable in dichotomized form (median with the value 4 as the limit) to show the scales' assessment in two different groups, one with a lower positive contact intensity and the other with a higher positive contact intensity (see **Table 2**). In terms of self-efficacy scales, there is a significant (low effect size, $d = 0.10$) difference in "efficacy for student engagement:" the group with a higher positive contact intensity has a more pronounced self-efficacy [$t_{(436)} = -2.035$, $p = 0.042$]. In terms of attitudes (SACIE-R) toward inclusive school life, we have three significant differences: "concerns" (effect size $d = 0.19$) about implementing inclusive education and "sentiments" (effect size $d = 0.24$) are both lower in the group with a high positive contact intensity ["concerns": $t_{(437)} = 3.956$, $p = 0.000$; "sentiments": $t_{(436)} = 5.060$, $p = 0.000$]. Positive attitudes are also higher in the group with more positive contact [$t_{(438)} = -2.032$, $p = 0.043$, $d = 0.10$]. We have only one significant difference in the case of trust in one's own competences (TEIP): respondents with a high positive contact score had significantly higher values at t0 in relation to trust in their own competences for "interdisciplinary cooperation" in inclusive education than respondents with a lower positive

TABLE 1 | Mean values of the relevant scales at the time of measurement t0 and t1 ($N = 443$).

Scales t0/t1	Rating scale	N t0	M t0	SD t0	N t1	M t1	SD t1
Efficacy for student engagement	1–9	441	6.31	0.86	442	6.46	0.84
Efficacy for classroom management	1–9	443	6.52	0.94	443	6.62	0.88
SACIE-R sentiments	1–4	441	1.94	0.52	441	1.93	0.51
SACIE-R attitudes	1–4	443	2.95	0.52	441	3.05	0.53
SACIE-R concerns	1–4	442	2.64	0.58	442	2.75	0.62
TEIP efficacy in using inclusive instructions	1–6	433	4.55	0.52	425	4.64	0.55
TEIP efficacy in collaboration	1–6	411	4.51	0.74	406	4.55	0.71
TEIP efficacy in managing behavior	1–6	434	4.52	0.56	427	4.53	0.57
EFI-L performance-related support in inclusive settings	1–6	416	3.76	0.76	412	3.93	0.75
EFI-L personal willingness and ability for inclusive teaching	1–6	417	3.89	0.96	411	3.83	0.99
EFI-L social inclusion in the classroom	1–6	420	4.47	0.76	410	4.56	0.80

TABLE 2 | Group comparison at measurement time t0: low contact intensity vs. high contact intensity.

	Positive contact score (lower 0–4)			Positive contact score (higher 5–12)				
	N	M	SD	N	M	SD	Difference	Sig.
Self-efficacy for student engagement	224	6.23	0.86	214	6.40	0.87	0.17	*
Self-efficacy for classroom management	226	6.53	0.94	214	6.52	0.94	−0.01	n.s.
SACIE-R sentiments	225	2.06	0.53	213	1.82	0.47	−0.24	***
SACIE-R attitudes	226	2.90	0.52	214	3.00	0.51	0.10	*
SACIE-R concerns	225	2.75	0.56	214	2.53	0.58	−0.22	***
TEIP efficacy in using inclusive instructions	221	4.50	0.55	209	4.58	0.48	0.08	n.s.
TEIP efficacy in collaboration	206	4.42	0.76	202	4.59	0.71	0.17	*
TEIP efficacy in managing behavior	222	4.50	0.58	209	4.54	0.55	0.04	n.s.
EFI-L performance-related support in inclusive settings	212	3.64	0.75	201	3.88	0.75	0.24	**
EFI-L personal willingness and ability for inclusive teaching	212	3.64	0.96	202	4.14	0.89	0.50	***
EFI-L social inclusion in the classroom	214	4.38	0.79	203	4.55	0.73	0.16	*

*Signif. codes: *p < 0.05, **p < 0.01, ***p < 0.001.*
Effect size: d (Cohen, 1992).

contact intensity [$t_{(406)} = -2.259$, $p = 0.024$, $d = 0.11$). The anticipated teaching reality (EFI-L) in inclusive schools differs significantly from t0 between the groups with low or high positive contact in the three sub-scales "anticipated personal willingness and ability for inclusive teaching" [$t_{(412)} = -5.497$, $p = 0.000$, $d = 0.26$], "performance-related support in inclusive settings" [$t_{(411)} = -3.280$, $p = 0.001$, $d = 0.16$], and "social inclusion in the classroom" [$t_{(415)} = -2.180$, $p = 0.030$, $d = 0.11$].

The results of a multiple regression analysis are described below (**Table 3**). The table shows the estimates for the independent variables influencing the attitudes toward inclusion as well as their statistical significance. The significant factors explaining attitudes toward inclusion (at t1) are the intensity of positive contact with people with disabilities (dichotomized positive contact score; see above) and a high belief in one's ability to engage in inclusive teaching. The regression model containing the (nonsignificant) factors of self-efficacy in addition explains a little more than 12 % of the variance in the individual attitudes toward inclusion (adjusted R-squared = 0.126).

The results of an analysis of variance for repeated measures (t0–t1) using a generalized mixed model are shown in **Table 4** below. Attitudes toward inclusion (focusing on the sub-dimension "performance related support," because this was the main focus of the teacher training module) were analyzed in relation to the time of measurement [before and after the module (as a within-factor)] and the contact to people with disabilities at t1 (as a between-factor).

In **Table 4**, the results are presented explaining the variance of the dependent variable (attitudes toward inclusion) by the influence of the time of measurement as well as by the contact to people with disabilities. In the generalized mixed model, the time of measurement is treated as a so called "within-factor", for it describes variance within the same person at different points of time (before and after the teacher training module). The intensity of contact to people with disabilities as a so called "between-factor" describes variance between persons belonging to different groups (e.g., high or low contact intensity). In the model, the combined influence of within- and between-factors on the variance of the dependent variable is computed. The

TABLE 3 | Coefficients: attitudes toward inclusion (EFIL).

	Estimate	Std. Error	*t*-value	*p*-value
(Intercept)	2.03019	0.34018	5.968	5.37e-09***
Contact intensity (positive contact)	0.04375	0.01056	4.144	4.18e-05***
Self-efficacy (teaching)	0.06852	0.04332	1.582	0.115
Self-efficacy (managing behavior)	−0.02797	0.03959	−0.707	0.480
TEIP efficacy in using inclusive instructions	0.34815	0.06880	5.061	6.43e-07***

*Signif. codes: *p < 0.05, **p < 0.01, ***p < 0.001. Residuals: Min 1Q Median 3Q Max. −2.61446 −0.36244 0.02154 0.38516 1.87955. Residual standard error: 0.6412 on 393 degrees of freedom (45 observations deleted due to missingness).*
Multiple R-squared: 0.1354, Adjusted R-squared: 0.1266.
*F-statistic: 15.38 on 4 and 393 DF, p-value: 1.068e-11***.*

TABLE 4 | Analysis of variance (generalized mixed model).

	Df	Sum Sq	Mean Sq	*F* value	*P*
Between					
Time	1	0.7	0.720	0.834	0.36153
Contact	1	8.2	8.164	9.466	0.00223**
Residuals		432	372.6	0.862	
Within (time)					
Time	1	5.40	5.403	24.75	9.85e-07***
Residuals		386	84.26	0.218	

*Signif. codes: *p < 0.05, **p < 0.01, ***p < 0.001.*
Effect size: d (Cohen, 1992).

results show a significant influence of the time measurement, meaning that attitudes toward inclusion are significantly higher (more positive) at the end of term than at the beginning of the module. Furthermore, contact intensity with people with disabilities significantly influence attitudes toward inclusion in a positive way. However, there was no significant between-factor for contact intensity, so no moderation effect of contact on the development of attitudes toward inclusion during the term could be found.

As a next analytical step, we applied a multigroup LPA to group respondents (student teachers) into distinct classes according to the different scales on attitudes, assumed competencies, and performance related to inclusion reported. A multigroup latent profile class model (see **Table 5**) consisting of four patterns was selected because it had a low BIC adjusted score for class 4 (9289) compared with a class 3 solution (9429), a class 5 solution (9203), or a class 2 solution (9626). The differences between the BIC scores for the class 4 and 5 solutions were very small, which suggested weak evidence (Raftery, 1995), while the drop from a class 3 to a class 4 solution was still high, favoring a class 4 solution. This is also suggested by the highest log-likelihood drop between the class 3 and 4 solutions. For the identified entropy as a certainty measure class criterion of estimation as the highest Entropy was on the class 2 solution. The class 4 solution was chosen as the final model for reasons of ease of class interpretability and theoretical considerations.

When referring to the LPA-results in the following section, we do not address the scores for each single outcome (see **Table 5**); instead, an overview is presented. To provide more comprehensible insights we introduce the multigroup LPA and variance analysis results (see **Table 6**) combined. From the four class solutions, we were able to detect for both contact groups a variety in attitude specificity toward the inclusive school. The identified heterogeneity within both groups refers to the fact that the levels of the respective classes are decisive for the promotion of students with special needs.

TABLE 5 | Model fit indices for a different amount of classes for latent profile analysis ($N = 440$).

Class	Log-likelihood	BIC adjusted (dF)	Entropy
2	−4,730	9,626 (57)	0.90
3	−4,598	9,429 (80)	0.88
4	−4,494	9,289 (103)	0.87
5	−4,418	9,203 (126)	0.88

First, we identified for both contact groups ("high level positive intensity," "low level positive intensity") significant (see **Table 6**) low self-esteem in promoting students and classroom management under inclusion conditions: the low-level group class 1 (10% of the respondents) and the high-level group class 2 (3.9% of the respondents). These two classes also expressed on average more concerns, higher levels for sentiments compared with the other classes, and significantly very low levels in their assessment of their ability to promote an academically instrumental environment in the classroom.

TABLE 6 | Variance analysis with the Games-Howell *post-hoc* test of the 11 analyzed latent profile analysis variables in the eight patterns (four classes solution) for t1 variables.

	Welch F asymptotic (df)	eta2	1	2	3	4	5	6	7	8
			M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)	M (SD)
Self-efficacy for student engagement_t1	34.202*** (127)	0.41	5.54 (0.78) 3,4,5,6,7,8	5.05 (1.05) 3,4,5,6,7,8	6.98 (0.55) 1,2,5,6,8	7.19 (0.55) 1,2,5,6,7,8	6.22 (0.63) 1,2,3,4,7	6.35 (0.62) 1,2,3,4,7	6.76 (0.62) 1,2,4,5,6	6.54 (0.61) 1,2,3,4
Self-efficacy for classroom management_t1	30.302*** (127)	0.39	5.82 (0.79) 3,4,6,7,8	5.04 (1.02) 3,4,5,6,7,8	7.32 (0.67) 1,2,5,6,8	7.00 (0.68) 1,2,5,6	6.23 (0.72) 2,3,4,6,7	6.62 (0.61) 1,2,3,4,5,7	7.05 (0.63) 1,2,5,6	6.66 (0.68) 1,2,3
SACIE-R sentiments_t1	24.807*** (128)	0.29	2.31 (0.38) 3,4,5,6	2.03 (0.47)	1.72 (0.46) 1,7,8	1.61 (0.41) 1,7,8	1.80 (0.40) 1,7,8	1.70 (0.42) 1,7,8	2.29 (0.46) 3,4,5,6	2.30 (0.46) 3,4,5,6
SACIE-R attitudes_t1	33.905*** (127)	0.36	2.59 (0.38) 3,4,5,6	2.84 (0.55) 3,4	3.39 (0.47) 1,2,6,7,8	3.46 (0.42) 1,2,5,6,7,8	3.22 (0.39) 1,4,7,8	3.13 (0.42) 1,3,4,7,8	2.65 (0.42) 3,4,5,6	2.65 (0.48) 3,4,5,6
SACIE-R concerns_t1	33.380*** (128)	0.37	3.24 (0.52) 3,4,5,6	2.88 (0.53) 3,4,5,6,7,8	2.29 (0.51) 1,2,5,6,7,8	2.22 (0.55) 1,2,5,6,7,8	2.73 (0.48) 1,3,4,7,8	2.57 (0.46) 1,3,4,7,8	3.15 (0.44) 3,4,5,6	3.33 (0.50) 3,4,5,6
TEIP efficacy in using inclusive instructions_t1	52.965*** (118)	0.50	3.91 (0.49) 2,3,4,5,6,7,8	3.86 (0.41) 3,4,5,6,7,8	5.19 (0.34) 1,2,5,6,7,8	5.13 (0.37) 1,2,5,6,7,8	4.57 (0.41) 1,2,3,4	4.58 (0.38) 1,2,3,4	4.62 (0.35) 1,2,3,4	4.42 (0.38) 1,2,3,4
TEIP efficacy in collaboration_t1	39.892*** (114)	0.39	3.74 (0.74) 3,4,5,6,7	3.86 (0.59) 3,4,5,6	5.14 (0.42) 1,2,5,6,7,8	5.23 (0.40) 1,2,5,6,7,8	4.46 (0.51) 1,2,3,4	4.52 (0.57) 1,2,3,4	4.39 (0.63) 1,3,4	4.25 (0.59) 3,4
TEIP efficacy in managing behavior_t1	47.700*** (119)	0.47	3.84 (0.40) 3,4,5,6,7,8	3.65 (0.48) 3,4,5,6,7,8	5.08 (0.44) 1,2,5,6,7,8	4.93 (0.43) 1,2,5,6,8	4.29 (0.43) 1,2,3,4,7	4.50 (0.41) 1,2,3,4,7	4.70 (0.37) 1,2,3,5,8	4.41 (0.30) 1,2,3,4,7
EFI-L performance-related support in inclusive settings_t1	37.312*** (113)	0.42	3.26 (0.53) 3,4,5,6	3.73 (0.60) 3,4,8	4.50 (0.67) 1,2,5,6,7,8	4.68 (0.60) 1,2,5,6,7,8	4.07 (0.43) 1,3,4,7,8	3.93 (0.54) 1,3,4,7,8	3.49 (0.63) 3,4,5,6	3.06 (0.59) 2,3,4,5,6
EFI-L personal willingness and ability for inclusive teaching_t1	55.110*** (114)	0.49	2.87 (0.76) 2,3,4,5,6	3.65 (0.71) 1,3,4,7,8	4.62 (0.64) 1,2,5,6,7,8	4.76 (0.90) 1,2,5,6,7,8	3.86 (0.73) 1,3,4,5,6,7,8	4.22 (0.64) 1,3,4,5,6,7,8	2.95 (0.60) 2,3,4,5,6	2.85 (0.79) 2,3,4,5,6
EFI-L social inclusion in the classroom_t1	19.825*** (113)	0.29	3.94 (0.70) 1,2,3,4,5,6	4.71 (0.75) 1,3,4,5,6	5.02 (0.76) 1,7,8	5.09 (0.70) 1,5,6,7,8	4.70 (0.62) 1,4,7,8	4.66 (0.59) 1,4,7,8	4.10 (0.64) 3,4,5,6	3.68 (0.82) 2,3,4,5,6

*$p < 0.05$, **$p < 0.01$, ***$p < 0.001$.
^{1,2,3,4,5,6,7,8} *indicate the significant Games-Howell post-hoc differences between the eight classes.*

At the other end, we diagnosed again for both contact groups two classes: class 3 (13.8% of the respondents), a low level positive intensity contact group, and class 4 (10.9% of the respondents), a high-level positive intensity contact group. These had significantly higher levels for self-esteem, lower levels for sentiments or concerns, and the significantly highest levels for assumed competence in promoting students under inclusive conditions (see **Table 6**).

In terms of levels of self-efficacy in dealing with students with special needs, classes 5–8 had low positive intensity (classes 5, or 20% of the respondents, and 7, or 16.1% of the respondents) and high level positive intensity (classes 6, or 18.6% of the respondents, and 8, or 6.6% of the respondents) of contact. They had lower levels than classes 3 and 4 but higher levels than 1 and 2. The specificities of classes 5 and 6 in comparison with classes 7 and 8 were the significantly lower levels for sentiments and concerns, and significant higher levels for their assumed competences in promoting students with special needs (see **Table 6**).

To sum up, the aim of this analytical strategy was to develop and validate empirically multidimensional contact patterns for student teachers (see **Figure 1**). The results indicate that 35% of the participating student teachers (class 3, a low level positive intensity contact group and class 4, a high level positive intensity contact group) fitted into a positive and open-minded profile toward inclusive schools. Contact with people with special needs was a necessary but insufficient condition in these distributions. Of higher importance were the levels of self-efficacy promoting students with special needs and classroom management, which were associated with assumed competence on being able to instruct a class.

DISCUSSION AND LIMITATIONS

Student teachers in current contact with people with disabilities report more positive contacts at the beginning of the term in their three biographical situations (leisure, family, and studies/internships). The findings show that student teachers with a higher intensity of positive contact with people with disabilities report a significantly better attitude toward inclusion, higher self-efficacy for interdisciplinary cooperation and student engagement, and fewer sentiments and concerns, but more positive attitudes toward inclusion than student teachers with a lower intensity of positive contact. Contact with people with disabilities before the start of the program is significantly positively related to attitude and an anticipated willingness to take on an inclusive class. However, no moderating effect of

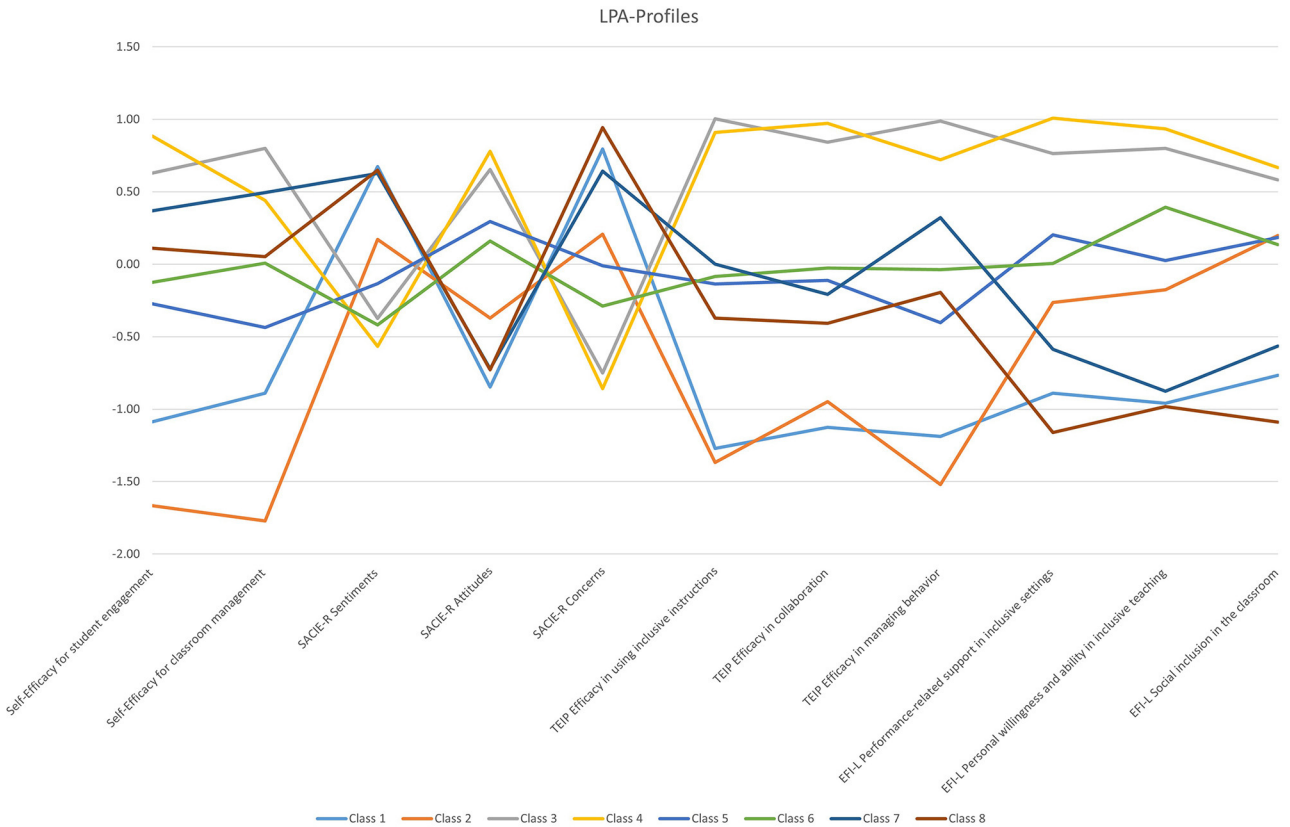

FIGURE 1 | Diagrammatic representation of the eight identified patterns, four classes, 11 indicators examined by latent profile analysis, and logarithmic scale for comparison reasons.

contact over the time of the semester was found. Contact with people with disabilities previous to training seems therefore to be important in terms of anticipated personal willingness and the ability to take on an inclusive class. Actual active contact also makes a difference.

We applied a multigroup LPA to group student teachers into distinct classes according to the different scales we have discussed. The aim of this analytical strategy was to develop and validate empirically multidimensional contact patterns for student teachers. Content-wise, the LPA results indicate that approximately one-third of the participating student teachers (notably, one low and one high-level positive intensity contact group) fitted into a positive and open-minded profile toward the inclusive school. Contact with people with special needs played a distinctive role in these distributions, but of higher importance were the levels of self-efficacy promoting students with special needs and classroom management; these were associated with assumed competence on being able to instruct a class. This is in keeping with Baumert and Kunter (2013) competence models for teachers, but with professional values, important subjective theories, and normative preferences on inclusive schools added (Seifried and Heyl, 2016). In a nutshell, multidimensional patterns, not single indicators, are the road to inclusion. Student teachers need to have positive experiences with people with special needs, but they especially need self-efficacy in teaching under conditions of inclusion combined with specific competences and a professional attitude.

Our data allow us to conclude that contact with people with disabilities is an important factor in inclusivity. It makes a difference if the educational system allows such contact, e.g., through one's own school experience with peers (with and without disabilities) and through contact during the period of teacher training or other studies. But leisure time and family are also central places for contact. The evaluations presented here also show that patterns are relevant. We are dealing with a "cushioned" variant of the contact hypothesis. The training of teachers must continue to enable students very precisely to plan, prepare, implement, and evaluate inclusive teaching together with other professionals.

It can therefore be stated that a small group is very good at working with the contact hypothesis (Cloerkes, 2007; Lindsay and Edwards, 2013; MacMillan et al., 2014; Armstrong et al., 2017), but most student teachers need accompanying measures during their studies. A teacher training module that enables contact with people with disabilities is therefore important, so all those student teachers who have not yet experienced such contact in their own biographies can be offered the opportunity

to do so [see also Avramidis and Norwich, 2002; Praisner, 2003; Sharma et al., 2006]. This can be achieved in modules where discussion with people with disabilities is made possible. A second possibility is that internships in school classes could be deliberately allocated during studies. For many student teachers, there is an obvious need for concrete situations in the practical part of the teacher training where they could improve their self-perceived own performance (or anticipated own performance in real teaching settings at the start of the career) to develop further an inclusion-related attitude. The development of professional skills for teachers is partly contingent on teaching and on-site training in work placements. The focus must therefore be less on "preaching an inclusive attitude" than on "teaching concrete skills on how inclusive teaching can be realized." Professional input to support the learning of children and young people with special needs could be additionally relevant so that student teachers are or at least feel prepared to deal with real-world scenarios in which support is needed (Yuen and Westwood, 2001; Avramidis and Norwich, 2002).

Limitations and Research Desiderata

The evaluation presented here could only consider data from the first survey point after t0, i.e., measurement point t1. The response rate of 45% (800 student teachers out of a population of 1,777) is high for a voluntary participation at the beginning of the term (t0). At the end of the term, 443 out of these 800 student teachers returned the questionnaire a second time (t1). This corresponds to a percentage of 55.38% and is remarkably high for the time at the end of the term with the high time pressure due to exams and assessments. The long-term perspective of the inclusion-related recruitment research on student teachers could only be implemented in a first step, as suggested by Ruberg and Porsch (2017, p. 410). Complete data at measurement point t2 are presently missing. It will be exciting to see how the profiles change over time.

As well, a deeper qualitative understanding of the specific inclusion patterns and their meanings for the teacher students would be extremely relevant. These kind of insights would be best achieved by case studies (Leatherman and Niemeyer, 2005; Nilholm and Alm, 2010). Using a mixed-methods design would be highly recommended for understanding inclusion patterns in the classroom and in teacher education in a more future oriented way. Due to that, sampling, internal and external validity issues, and data collections procedures would have to be reconsidered (Tashakkori and Teddlie, 2010). Different data sources (e.g., faculty of teacher education universities, teacher already in the field, parents, and students with special needs) and a variety of procedures (e.g., questionnaires, interviews, observations) and a range of methodologies (e.g., ethnography, and experimental approaches) could be combined in order to deepen our understanding of the enactment of inclusion in schools.

As a desideratum for future research, we believe that longitudinal data in sequential multi-method-designs would be preferred. Additionally, further studies on the effects of negative contact experiences with people with disabilities would be desirable.

DATA AVAILABILITY STATEMENT

The raw data supporting the conclusions of this article will be made available by the authors upon request.

ETHICS STATEMENT

Ethical review and approval was not required for the study on human participants in accordance with the local legislation and institutional requirements. The patients/participants provided their written informed consent to participate in this study.

AUTHOR CONTRIBUTIONS

AK outlined the submission and all authors revised the original version. All authors edited the manuscript, contributed equally to this publication, and jointly contributed to the data collection.

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