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The who and what of inclusive education—Profiles of student teachers' attitudes toward inclusive education

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The present study investigated the relationship between different attitudes toward inclusive education. It draws from the Framework of Inclusive Education by assuming a reciprocal relationship between learning theory beliefs, models of disability, and the assessment of joined education, resulting in consistent attitudes toward inclusion. The study investigated attitudes toward inclusion by applying a person-centered approach (latent profile analysis; LPA) to a sample of $N = 138$ student teachers. The results suggest a two-class solution: firstly, a consistent exclusive profile combining higher transmissive beliefs of learning and teaching and a preference for exclusion; secondly, a general inclusive profile that combines support for functional and full inclusion, relational and social models of disability, and a cognitive, constructivist learning theory. The profile distribution appeared to be related to teacher self-efficacy, but not to gender or the educational stage of prospective teaching practice.

KEYWORDS

inclusion, education, attitude, teacher, latent profile analysis, disability

1 Introduction

Arguments for inclusive, joined education are widespread and the educational aspiration toward inclusive education can be traced through national and international legislation. This began with various advances all over Europe in the early 20th century (Ellger-Rüttgardt, 2008) and became continuously more comprehensive, for example, in the Butler Act 1944, the more recent Salamanca Statement (UNESCO, 1994), the UN-CRPD (United Nations Convention on the Rights of Persons with Disabilities, 2006), as well as the Sustainable Development Goal (SDG) 4 by the United Nations. While the demands of (joined) education for children with disabilities must be acknowledged, there are shortcomings regarding the actual implementation of inclusion and inclusive education in society (Ainscow, 2007; Wilde and Avramidis, 2011; Winzer and Mazurek, 2020). This is in part due to the general resistance of traditionally segregated special education, but more obviously, it results from the lack of a sufficient and comprehensive definition of inclusion (Göransson and Nilholm, 2014). Current definitions lack a clear description of the target group of inclusive education (Winzer and Mazurek, 2020), the general scope (with no external differentiation?) and possibly differing beliefs regarding learning and teaching.

In Germany, the demand of joined educational settings for children with and without disabilities opposes a long standing special education system (Ellger-Rüttgardt, 2008; Wächter et al., 2024). Currently the phasing out of special education institutions has come to a halt and locally previous advances are being reversed (Klemm, 2022). In addition, a

systematic literature review by Lindner et al. (2023) has shown that in Germany attitudes toward inclusive education are mainly neutral to positive.

Internationally, inclusive education has been thoroughly discussed (e.g., Ahrbeck et al., 2018; Armstrong et al., 2011; Göransson and Nilholm, 2014; Wilson, 1999). However, the discourse, which at its core dates back well over a hundred years, has surpassed practical implementation. Therefore, instead of relying on the rather abstract rights-based demands of inclusive education (i.e. joined education as a human right), as stated by the United Nations Convention on the Rights of Persons with Disabilities (2006) and the UNESCO (1994), here, we apply the Framework of Inclusive Education by Selisko et al. (2024a; also referred to as the Framework) when investigating attitudes toward inclusive education. This Framework incorporates different perceptions of inclusive and exclusive education in comprehensive units integrated with disability and special educational needs (SEN) elements, aspirations for the learning and participation of individual children, and the overarching mode of living within an inclusive society (Artiles and Dyson, 2005; Wilson, 1999; Winzer and Mazurek, 2020). The study aimed to apply these theoretical relationships empirically to a sample of student teachers. This study describes the relationship between three core concepts that determine the feasibility of inclusion in educational settings: models of disability as an indicator of the target group, learning theory along the poles of transmissive/behaviorist and constructivist beliefs, and the placement (a joined or segregated setting) (Selisko et al., 2024a).

We explored the relationship between these aspects by analyzing a sample of $N = 138$ German student teachers using a person-centered approach and applying latent profile analysis (LPA). The relationships were assumed to form coherent profiles of attitudes toward inclusive education. Attitudes play an important role in the implementation of inclusive education (Avramidis and Norwich, 2002; Börnert-Ringleb et al., 2020; Boyle et al., 2013; Saloviita, 2019). The Framework allows us to gain a more holistic understanding of the approval or disapproval of inclusive education by incorporating different perceptions of education and joined settings. It therefore dissolves the previous conflict between different and contradicting definitions of inclusive education (Artiles and Kozleski, 2016; Göransson and Nilholm, 2014).

2 Theoretical background

Because we cannot assume a common ground in the assessment of inclusive education (Buisse et al., 2001; Göransson and Nilholm, 2014; Piezunka, 2020), to adequately investigate attitudes, we need a framework that differentiates the necessary aspects that form coherent perceptions of joined or segregated education. Selisko et al. (2024a) developed the Framework of Inclusive Education, which consists of beliefs regarding learning and teaching, models of disability, and the preferred placement of children with disabilities. Together these three aspects form coherent attitudes toward inclusive education. Because of the persisting conflict that lies within the definition of inclusive education and the implementation of theory into teaching practice, the differentiation of these aspects

is necessary (e.g. Nilholm, 2021; Pawlak et al., 2023). An overview and a categorization of these different aspects of inclusion can be applied by utilizing the Framework of Inclusive Education (Selisko et al., 2024b; see Figure 1).

The Framework of Inclusive Education divides the discourse into two categories. At the left of the objectivity rubicon, education is understood as a functional–technical process; to the right, education is understood as humanist in terms of the (social) construction of knowledge, which is facilitated or inhibited through the environment (Terhart, 2003).

Referring to the left side of the Framework (Figure 1), behaviorism and cognitivism conceptualize knowledge as being factual and establish it as an objective outcome (Boghossian, 2006; Ertmer and Newby, 1993; Marten and Booth, 1997; Nagowah and Nagowah, 2009). Due to the variety in ability, an inter-individual standard therefore sets the basis for exclusion. The core difference regarding functional education is the perception of how knowledge is obtained. A behaviorist setting perceives learning on a stimulus–response basis (Börnert-Ringleb et al., 2020; Ertmer and Newby, 1993; Handal, 2003); the individual is a passive recipient of information (Reid, 2005). Cognitivist theory, on the other hand, includes internal processes and aims for problem-solving rather than reproduction (Ertmer and Newby, 1993; Nagowah and Nagowah, 2009). Learning is therefore understood as a process affected by internal as well as environmental aspects, and when applied to the inclusion of persons with disabilities, it can be realized by adjustments to the environment. Nonetheless, the resulting process toward inclusion does involve a debate about the scope of general education and its barriers, and the divergence between ideal learning environments and the inclusion of persons with different characteristics; there is therefore a relationship between the individual impairment and the environment. The current discourse on the possible extent of inclusive education can be traced back to an underlying cognitivist principle, with, for example, the least restrictive environment (LRE; Hyatt and Filler, 2011) being ascribed to this understanding. Full educational inclusion results in a burden to the system, which must accommodate persons who cannot be integrated through reducing the barriers to inclusion due to the severity of their impairment.

To the right of the objectivity rubicon, education is viewed to accommodate the process toward maturity and autonomy. In contrast to a functional–technical understanding of education, humanist education (Whitburn, 2017) focuses on the development and experiences of the individual. A more constructivist belief regarding learning and teaching has previously been associated with more positive attitudes toward inclusive education (Sheehy et al., 2019). Understanding the teacher as the facilitator of learning, universal, objective, and comparable learning outcomes as the purpose of education become subordinate. Due to its relationship to the human rights perspective and the origin of the social model, the full inclusion triad is consistent with demands for social justice and equality. On this basis, the Framework bypasses the common discourse regarding the justification of inclusive education, whether it pertains to improving education for children with SEN or advocates for the right to inclusive education (Lindsay, 2007; United Nations Convention on the Rights of Persons with Disabilities, 2006). The conflict between functional and full

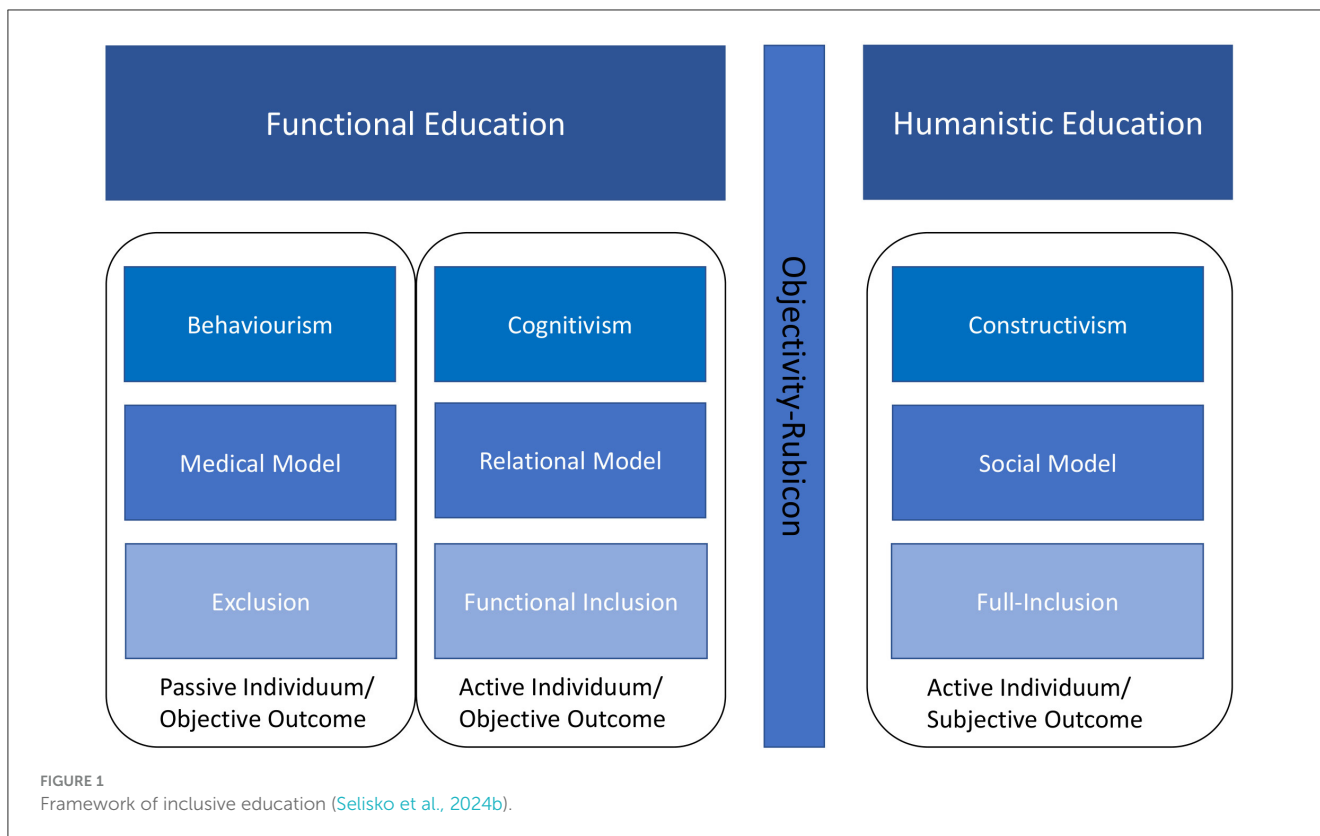


FIGURE 1 Framework of inclusive education (Selisko et al., 2024b).

inclusion can be best understood through the contrast between [Rekus \(2016\)](#) and [Florian and Spratt \(2013\)](#). The former expresses that education should be “one school each” instead of a “school for all” by posing an overall objective goal of education, while the latter emphasize the importance of the co-construction of knowledge. The first accepts and promotes segregation by ability, the latter declare the importance of a joined setting.

A previous network analysis of the Framework variables revealed a two-community structure, which suggested both an exclusive community and an inclusive community ([Selisko et al., 2024a](#)). The analysis reproduced the theoretical exclusion triad of the network of inclusive education while combining aspects in favor of inclusion. Contrary to our theoretical framework, the inclusive community did not show a distinction between fully inclusive and functionally inclusive aspects. To further advance the understanding of the relationships within the Framework of Inclusive Education, therefore, we apply a person-centered approach to the data.

2.1 Attitudes toward inclusive education

Firstly, we aimed to determine the relationship between the Framework of Inclusive Education ([Selisko et al., 2024a](#)) and attitudes in general. [Eagly and Chaiken \(2007\)](#) state that an attitude consists of the conscious or nonconscious evaluation of an entity, alongside a tendency to respond positively or negatively. Based on the Framework, beliefs regarding learning and

teaching, as well as disability, indicate tendencies in the evaluation of joined (inclusive) or segregated (exclusive) education. For example, transmissive/behaviorist beliefs of teaching and learning require homogenous learning groups, which in conjunction with a medical/individualizing belief of disability is jeopardized by inclusive education; that is, a diverse learning group. Nonetheless, because attitudes are not only determined by conscious decisions regarding the evaluation of certain entities, first and foremost, the Framework provides a theoretical background to uncover contradicting evaluations of inclusive education. Furthermore, attitudes can be expressed as cognitive, affective, and behavioral ([Eagly and Chaiken, 2007](#)). While the general assessment of joined education can be ascribed to an affective aspect, the individual models of disability and learning theory are cognitive aspects. In the context of our research project, the practical and observable behavioral aspect lies outside of scope.

To determine the target group, beliefs about learning and teaching as a mode of educational practice, and the concurring favored degree of joined education (exclusive—functional—fully inclusive), we argue that attitudes toward inclusive education are not unidimensional but consist of a model of disability. This approach does not preclude previous conceptualizations, which differentiate, for example, between child-, teacher-, and environment-related variables ([Avramidis and Norwich, 2002](#)). The findings of [Avramidis and Norwich \(2002\)](#) show that variables that influence attitudes toward inclusive education coincide with the predominant model of disability. Teacher- and environment-related variables (e.g., human and physical support) can be accounted to a social model of disability, while child-related

variables (e.g., type and severity of the impairment) necessarily rely on a medical model. [de Boer et al. \(2011\)](#) investigated the attitudes of regular primary school teachers and found several variables (e.g., training, experience with inclusive education, and type of disability) that relate to attitudes toward inclusive education. However, their results were overall neutral to negative.

That the perspective of inclusive education is generally linked to the type and severity of the impairment shows a well-supported medical model of inclusive education ([Saloviita, 2019](#)), although [Van Steen and Wilson \(2020\)](#) did not find a significant effect of a specific type of disability on attitudes when relevant moderators were considered. [Shin et al. \(2023\)](#), who conducted an LPA with $N = 309$ Korean students, found four profiles with differing cognitive-behavioral attitudes toward disabilities and attitudes toward inclusive education. The four distinct types—distant, lukewarm, rationalizing, and potential proactive—appear to highlight the relationship between attitudes toward disability and inclusion ([Shin et al., 2023](#)).

Similarly, [Jordan et al. \(2009\)](#) state a close relationship between beliefs regarding the nature of ability (and disability) and the nature of learning and teaching; teachers who view ability as a fixed entity generally favor teacher-centered, transmissive methods of instruction. This argument supports the Framework of Inclusive Education by [Selisko et al. \(2024a\)](#), which states that there is a theoretical connection between the medical perception of disability as being a fixed in-person characteristic and the transmissive beliefs of learning and teaching.

In connection with research conducted by [Börnert-Ringleb et al. \(2020\)](#), we assume a relationship between beliefs about learning and teaching and the assessment of inclusive education. But in contrast to the assessment of transmissive beliefs regarding inclusion, we apply the Framework of Inclusive Education, which first and foremost states that transmissive beliefs are an aspect of exclusive attitude, rather than just the opposite of inclusion. This also reconciles with findings by [Saloviita \(2019\)](#) who investigated the general attitudes toward inclusive education of Finnish primary school teachers, finding that the opposition to segregation had a stronger effect on the willingness to include students than their self-efficacy beliefs or ability to get extra help. The results indicate discrete arguments of inclusion and exclusion.

These previous studies underline the relationship between aspects of the Framework of Inclusive Education ([Selisko et al., 2024a](#)) but have not yet examined the coherent attitudes that relate to each other and to overall attitudes toward inclusive education. To expand the understanding of attitudes toward inclusive education and emphasize the validity of the Framework, we investigated additional factors that previously displayed an influence on attitudes toward inclusive education, such as gender, the educational stage, and self-efficacy.

2.1.1 Gender

Regarding the effect of gender on attitudes toward inclusive education, [Forlin et al. \(2009\)](#) found a significant interaction effect in an intervention study. Although men and women began at the same level, the attitudes of male participants at the end of the intervention were significantly more positive ([Forlin et al., 2009](#)).

Others have found positive effects of attitudes toward inclusive education for female (student) teachers ([Navarro-Mateu et al., 2020](#); [Saloviita, 2019](#)). Because many previous studies have been indifferent to the influence of age on attitudes toward inclusive education ([Forlin et al., 2009](#)), with sometimes contradictory results ([Fernandez et al., 2023](#); [Forlin et al., 2009](#); [Orakci et al., 2016](#)), we further investigate this relationship here.

2.1.2 Educational stage

Previous research has widely concentrated on the attitudes of primary school teachers ([Avramidis and Norwich, 2002](#); e.g., [Börnert-Ringleb et al., 2020](#); [Fernandez et al., 2023](#); [Saloviita, 2019](#)). Although if the progress continues, all teachers will come into contact with inclusive education, the barriers to implementation increase with age and educational aspirations. Therefore primary student teachers, with the imminent prospect of teaching diverse classes, are more likely to have positive attitudes toward inclusive education than student teachers at later educational stages ([Avramidis and Norwich, 2002](#); [Szumski et al., 2017](#)).

2.1.3 Self-efficacy

Teachers' self-efficacy, especially in the context of inclusive education, has been thoroughly investigated; this is because on the one hand, it is closely related to a willingness to implement inclusive education, and on the other hand, it indicates the application of innovative teaching strategies that are especially important for diverse classes ([Avramidis et al., 2019](#); [Hosford and O'Sullivan, 2016](#); [Savolainen et al., 2012](#); [Woodcock et al., 2023](#)). In general, self-efficacy is defined as the belief to be able to perform at a specific task ([Bandura, 1994](#)). In terms of teachers' self-efficacy this refers to the conviction of teachers to successfully influence the learning performance of students ([Guskey and Passaro, 1994](#)). Furthermore, teachers with high self-efficacy report less burnout and show lower strain ([Friesen et al., 2023](#); [Oetjen, 2023](#)). A study by [Avramidis et al. \(2019\)](#) revealed that peer-tutoring, as an example of an inclusive teaching method, was more likely to be applied by teachers with higher self-efficacy. Conversely, findings by [Chitiyo et al. \(2024\)](#) show positive attitudes toward inclusive education by teachers in Zimbabwe, despite low self-efficacy.

In conclusion, we apply the Framework of Inclusive Education by [Selisko et al. \(2024a\)](#) to determine what specific aspects (i.e., beliefs) are relevant to forming a coherent attitude toward inclusive education. These aspects are beliefs regarding learning and teaching, models of disability, and the placement of children with disabilities. We examine attitudes because they determine the willingness to implement inclusive education and prospective teachers are at the forefront of inclusive education. Gender, educational stage, and self-efficacy have previously shown further effects on attitudes toward inclusive education and will therefore be included in our analysis. Person-centered approaches in terms of latent profile analyses have previously been applied to the field of inclusive education. Recently, for example, [Dörrenbächer-Ulrich et al. \(2020\)](#) investigated stages of concern with and level of use of inclusive education, [Letzel et al. \(2021\)](#) investigated attitudes toward differentiated instruction, and [Mudhar et al. \(2023\)](#) applied

LPA to determine the relationship between teachers' self-efficacy and attitudes toward inclusive education.

2.2 Hypotheses

The present study aimed to apply the Framework of Inclusive Education (Selisko et al., 2024a) to a sample of prospective teachers. The general research question aimed to determine whether statistically relevant profiles consistent with the framework were evident in the sample. Based on existing literature and the theoretical background we integrated supplementary variables that have previously been considered influential on attitudes toward inclusive education (Avramidis et al., 2019; Börnert-Ringleb et al., 2020; Forlin et al., 2009; Mudhar et al., 2023). These variables were gender, educational stage, and self-efficacy.

Hypothesis 1

In accordance with the Framework of Inclusive Education, there is a three-profile structure within the data showing exclusive, functional, and full-inclusive attitudes.

Hypothesis 2

In accordance with the existing literature, there is no difference in the gender distribution between attitudinal profiles.

Hypothesis 3

Primary school student teachers are more likely to be represented in a functional or full-inclusive profile than student teachers from other educational stages.

Hypothesis 4

Student teachers' self-efficacy differs significantly based on their attitudinal profile.

3 Methods

We used latent profile analysis (LPA) to realize a more holistic understanding of attitudes toward inclusive education. By applying a person-centered approach, we changed the perspective from the variable-centered rationale in a previous investigation of the Framework of Inclusive Education (Selisko et al., 2024a).

We applied the LPA because we were interested in the inter-individual differences of student teachers and their attitudes toward inclusive education (Spurk et al., 2020). By assessing and modeling a pattern within the data, we sought to uncover the individual responses to relevant variables in the theoretical Framework of Inclusive Education (Hickendorff et al., 2018; Selisko et al., 2024a). We assumed that the results of the LPA were in conjunction with the theoretical underpinnings of the Framework.

3.1 Sample and procedure

We recruited a total of $N = 138$ student teachers from a German University from December 2022 to February 2023, of whom $n = 105$ identified as female, $n = 32$ identified as male, and $n = 1$ identified as diverse. The mean age was $M = 22$ ($SD = 4.10$). All the participants completed an online questionnaire created with the survey tool *Unipark*. The sample consisted of $n = 50$ primary school student teachers, $n = 80$ secondary school student teachers, $n = 7$ vocational education student teachers, and $n = 1$ special education needs student teacher.

3.1.1 Scales

The Framework of Inclusive Education by Selisko et al. (2024a) was operationalized by the application of pre-existing and newly developed items/scales regarding attitudes toward the placement of children with disabilities generally, beliefs toward learning and teaching, and models of disability (see Table 1). The instrument regarding placement was divided into three sub-categories which depicted the aspects of exclusive, functional, and full-inclusive placement. Two items within the exclusive category were adopted from the Teachers' Attitudes Toward Inclusion Scale (Boyle, 2015), while the remaining items were newly developed.

The scales regarding transmissive and constructivist beliefs were adopted from Kunter et al. (2019) and three newly-developed items were added, making a total of 11 items for constructivist learning theory and eight for transmissive beliefs. For models of disability, we applied the Concepts of Disability Scale by Gebhardt et al. (2022). In contrast to Gebhardt et al.'s (2022) suggested systemic and cultural model, we applied a relational model, which relates more broadly to the current discourse. The resulting instrument therefore consisted of a medical, a social, and a relational model scale with five to seven items each. All the items were consistently scaled on a 6-point rating scale from *I don't agree at all* (0) to *I fully agree* (6).

Teachers' self-efficacy in dealing with heterogeneity was operationalized by the application of an instrument by Lehmann-Grube et al. (2022) consisting of a total of 41 items across three subdimensions instructional quality, classroom management, and student engagement.

The instrument was previously established by Selisko et al. (2024a) and shows the following psychometric properties (see Table 2).

The analysis aimed to uncover patterns within the obtained data by the application of LPA (e.g., Oberski, 2016). LPA is used to model distinct profiles in a given dataset. For the analysis, we applied the tidyLPA package (Rosenberger et al., 2018) and mclust (Scrucca et al., 2023) to estimate profiles in R (R Core Team, 2021).

4 Results

Regarding Hypothesis 1 and in accordance with the Framework of Inclusive Education we assumed three distinct attitudinal profiles within our dataset, representing coherent exclusive, functionally inclusive, and fully inclusive attitudes. Based on the analysis of

TABLE 1 Questionnaire.

| Scales | Number of items | Example item ^a |
|--|-----------------|---|
| Placement | | |
| Full inclusion | 3 | “Within an inclusive educational system, all children are taught together” |
| Functional inclusion | 3 | “With the necessary support, children with disabilities can participate in regular education” |
| Exclusive | 4 | “I am against the joined education of children with and without special educational needs” |
| Learning theory | | |
| Constructivist beliefs | 11 | “Students learn best when they find their own solutions for tasks” |
| Transmissive beliefs | 5 | “Students learn best when they follow the instructions of their teacher” |
| Model of disability | | |
| Social model | 3 | “Disability is a social construct” |
| Relational model | 4 | “Disability is the outcome of the interaction between impairment and external barriers” |
| Medical model | 3 | “Disability is the consequence of congenital or obtained impairment or disorder” |
| Teachers’ self-efficacy in dealing with heterogeneity | | |
| Instructional quality | 11 | “I am confident in finding an alternative explanation if a student does not understand something” |
| Classroom management | 14 | “I know how to control disturbing behavior” |
| Student engagement | 16 | “I know how to motivate students who are uninterested in class” |

^a Translated items. Originals in German.

two to five class solutions (see Table 3), we determined a two-class solution (in bold) to be the best-fitting model for the data

The decision for a two-class solution was made after following an analytic hierarchical process to determine the most suitable solution (Akogul and Erisoglu, 2017). Following the results of a simulation study by Tein et al. (2013), we focused on the bootstrap likelihood-ratio test (BIC), as well as reasonable theoretical considerations, such as group size and plausibility (Spurk et al., 2020). Therefore, the assumption of a three-profile structure could not be confirmed (Hypothesis 1), but a general distinction between inclusive and exclusive attitudes could.

Figure 2 provides a visualization of the profiles.

The Spiderweb diagram in Figure 2 shows the two profiles in relation to the standard deviation of the respective standardized means. The first group shows high levels of agreement with functional and full-inclusive variables and the second group shows high levels in exclusive variables. An exception appears to be the medical model, which shows nearly the same levels in the first and second groups.

TABLE 2 Means, standard deviations, and internal consistencies of scales.

| Scales | M | SD | Cronbach’s α^a |
|--------------------------------|-------|-------|-----------------------|
| Full inclusion | 4.440 | 0.783 | 0.65 |
| Functional inclusion | 4.550 | 0.765 | 0.59 |
| Exclusion | 4.019 | 0.836 | 0.77 |
| Constructivist beliefs | 5.011 | 0.525 | 0.82 |
| Transmissive beliefs | 4.053 | 0.745 | 0.82 |
| Social model of disability | 2.978 | 1.108 | 0.83 |
| Relational model of disability | 4.132 | 0.784 | 0.65 |
| Medical model of disability | 4.506 | 0.694 | 0.66 |

N = 138.

^aCronbach’s α for scale means after the exclusion of items.

TABLE 3 Latent profile analyses results by number of classes.

| Model | Classes | AIC | BIC | Entropy | Prob_max |
|----------|----------|-----------------|-----------------|-------------|-------------|
| 1 | 2 | 3,107.82 | 3,181.00 | 0.62 | 0.93 |
| 1 | 3 | 3,094.75 | 3,194.27 | 0.77 | 0.93 |
| 1 | 4 | 3,075.14 | 3,201.01 | 0.81 | 0.92 |
| 1 | 5 | 3,076.38 | 3,228.60 | 0.75 | 0.97 |

AIC, Akaike Information Criterion; BIC, Bayesian Information Criterion.

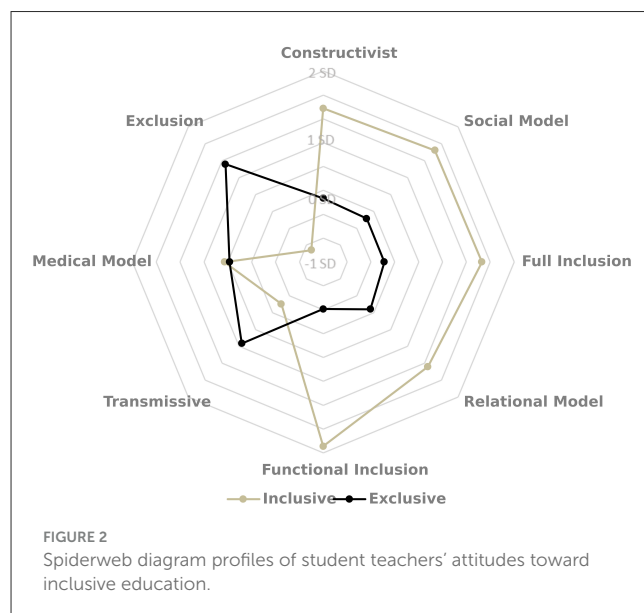


FIGURE 2 Spiderweb diagram profiles of student teachers’ attitudes toward inclusive education.

The analysis revealed two distinct profiles that can generally be described as inclusive and exclusive. The conducted LPA assorted $n = 48$ student teachers with an inclusive profile and $n = 90$ student teachers with an exclusive profile (see Table 4). The inclusive profile showed broad agreement with all aspects in favor of inclusive education, while the exclusive profile showed general disagreement with the inclusive aspect. In line with our previous assumption, the exclusive profile showed more pronounced values in exclusion and transmissive beliefs. Most interestingly, there

TABLE 4 Distribution related to Hypotheses 2 and 3.

| | Exclusive profile | | Inclusive profile | |
|---------------------------|-------------------|-------|-------------------|-------|
| | <i>n</i> | % | <i>n</i> | % |
| Total | 90 | 65.22 | 48 | 34.78 |
| Gender | | | | |
| Female | 68 | 64.76 | 37 | 35.24 |
| Male | 21 | 65.63 | 11 | 34.37 |
| Diverse | 1 | 100 | 0 | 0 |
| Educational stage | | | | |
| Primary | 31 | 62 | 19 | 38 |
| Secondary | 54 | 67.5 | 26 | 32.5 |
| Vocational | 4 | 57.14 | 3 | 42.86 |
| Special educational needs | 1 | 100 | 0 | 0 |

N = 138.

seemed to be no apparent distinction between the assessment of the medical model of disability within the inclusive and exclusive profile. We applied separate univariate analyses of variance (ANOVAs) to reveal whether there were statistically significant differences between the profiles. All the variables except the medical model showed significant mean differences between the two profiles.

Hypothesis 2 assumed no difference in the gender distribution. The gender distribution across the profiles showed that within the exclusive profile, *n* = 68 student teachers identified as female, *n* = 21 student teachers identified as male, and *n* = 1 identified as diverse. Consequently, within the inclusive profile, *n* = 37 student teachers identified as female, and *n* = 11 identified as male. Pearson's chi-square test was not significant ($\chi^2 = 0.55, p = 0.761$). Therefore, Hypothesis 2 that there is no significant difference in attitudes toward inclusive education between genders, as previously suggested by Navarro-Mateu et al. (2020), was confirmed.

Hypothesis 3 states that primary education students are more likely to show an inclusive profile. Out of *n* = 50 primary education student teachers, *n* = 31 were classified as exclusive, and *n* = 19 were classified as inclusive, while out of *n* = 80 secondary education student teachers, *n* = 54 were classified as exclusive, and *n* = 26 were classified as inclusive. Both groups appeared to have a similar distribution as the overall distribution: 34.78% inclusive and 65.22% exclusive. Pearson's chi-square test was also not significant ($\chi^2 = 1.16, p = 0.761$). Therefore, Hypothesis 3, that primary education student teachers are more likely to be inclusive than student teachers from other educational stages, was dismissed.

Regarding Hypothesis 4, we applied *t*-tests to determine the significant mean differences in self-efficacy between the profiles. We found that overall, the student teachers in the inclusive profile had significantly higher self-efficacy than the students in the exclusive group ($t = 1.84, df = 87.77, p = 0.0348$). For the subdimensions of teacher self-efficacy, we also found significant differences in instructional quality ($t = 1.69, df = 83.59, p = 0.0476$) and student engagement ($t = 2.81, df = 85.50, p$

$= 0.003$). There was no mean difference between groups in classroom management. Hypothesis 4, that there are significant mean differences in self-efficacy based on the attitudinal profile, could therefore be confirmed.

5 Discussion

This study aimed to apply the Framework of Inclusive Education (Selisko et al., 2024a) to a sample of student teachers and investigate if the theoretical concept underlying the Framework can also be applied empirically. The person-centered approach of the LPA indicates connecting factors for future research.

The LPA revealed inter-individual differences among student teachers consistent with the Framework of Inclusive Education and has, therefore, added an essential dimension to the previously conducted variable-centered network analysis (i.e., Selisko et al., 2024a). Even though Hypothesis 1, which stated a three-profile solution, was not confirmed, the two-class solution clearly separates inclusive and exclusive attitudes. The separate univariate ANOVAs confirmed significant mean differences between the profiles for all aspects except the medical model of disability. First and foremost, the exclusive and inclusive profiles were distinctively different in the assessment of specific aspects of the Framework. The exclusive profile combined high values for exclusive placement and transmissive beliefs regarding learning and teaching, and values for any form of inclusion or constructivist beliefs. Conversely, the inclusive profile showed low values for exclusion and transmissive beliefs regarding learning and teaching, as well as high values for constructivist beliefs, full- and functionally inclusive placement, and the social and relational model of disability. The only aspect that was not assessed differently among the profiles was the medical model of disability. The results indicated that disability was strongly associated with the accompanying impairment and independent from implications for participation. While there is a clear contradiction between social and medical models of disability within the literature (e.g., Gallagher, 2015; Gebhardt et al., 2022; Shakespeare, 2017; Waldschmidt, 2005), the clear distinction might have not translated into perceptions in this sample. The LPA emphasized the bilateral structure of attitudes toward inclusive education. Coinciding with a previous variable-centered network analysis, the LPA also showed both an inclusive and exclusive distribution (Selisko et al., 2024a). Although the theoretical considerations and conceptualizations within the current literature point to three standpoints, the attitudinal investigation showed only a differentiation between exclusive and inclusive.

The examination of gender showed no difference in gender distribution between the inclusive and exclusive profiles (Hypothesis 2). While women are more positive toward inclusive education (Navarro-Mateu et al., 2020), this has also been suggested for men, especially younger pre-service teachers (Fernandez et al., 2023). A large-scale international sample analyzed by Forlin et al. (2009) showed only interactive effects after intervention. In the present study, the almost equal gender distribution between the profiles suggests no difference in attitudes toward inclusive education. Hence, we argue that gender differences in attitudes toward inclusive education are small (if they exist) and extraneous. Similar results were found

for educational stage (Hypothesis 3). Although primary school student teachers were assumed to be more inclusive, they were equally represented within the profiles as student teachers for other educational stages.

Regarding Hypothesis 4, the differences in self-efficacy showed that the profiles and the Framework they were derived from coincide with the existing literature on attitudes toward inclusive education (Avramidis et al., 2019; Hosford and O'Sullivan, 2016; Savolainen et al., 2012). This further emphasizes the importance of self-efficacy for teacher education, especially regarding inclusive education (Dörrenbächer-Ulrich et al., 2020). Contrary to the findings by Chitiyo et al. (2024) the relationship between self-efficacy and attitudes toward inclusive education is apparent. The difference could be attributed to national differences, as well as differences in the assessment of attitudes toward inclusive education. A study by Lozano et al. (2024) highlights the importance of nationally specific strategies, while self-efficacy has been shown to be among the most influential factors on attitudes toward inclusive education across a number of countries. There appeared to be no measurable difference between the profiles regarding the assessment of the medical model of disability. Of course, this could be attributed to the longstanding and widely accepted definition of disability. Indeed, the medical model provides the necessary rationale for grouping students into able and disabled—a practice that has been performed since the very beginning of compulsory education. Necessarily, the abolition of the individualizing aspect of disability would cause dissonance regarding current educational practice and segregated special education teacher education. Special education teachers are supposed to have the distinguishing skills necessary for teaching children with disabilities (Anastasiou et al., 2015; Anderson et al., 2015). This *special need* is based on an at least partly medical understanding of disability.

A clear distinction between the profiles was seen between constructivist and transmissive teaching beliefs. Although these are established relationships (e.g., Börnert-Ringleb et al., 2020; Dignath et al., 2022; Dörrenbächer-Ulrich et al., 2020), the results provide inside into the relationship between teaching and learning beliefs, the (social) model of inclusive education, and a concurring attitude toward the placement of children with disabilities.

5.1 Limitations

There are several limitations within the present study, which are outlined below:

For the assessment of constructivist learning beliefs, we applied an instrument by Kunter et al. (2019). Whereas the Framework of Inclusive Education (Selisko et al., 2024a) demands a radical constructivist position, Kunter et al. (2019) applied a cognitive-constructivist position, which especially undermines the distinction between functional and full inclusion in the Framework. Because of the lack of an appropriate instrument for radical constructivism and the reliable test history of the instrument by Kunter et al. (2019), we decided not to develop a new instrument. However, the lack of a distinct differentiation of cognitivism and constructivism could account for the absence of a third profile.

The small sample size may have negatively affected the results. As can be seen within the comparison of solutions, the two-class solution showed a low entropy level, although it was theoretically the most suitable and showed the lowest BIC. In the future, a larger sample would further elaborate on the suitability of the two-class solution, especially in comparison with the three-class solution. While we did find distinct profiles and well-fitting variables that contributed to attitudes toward inclusive education, it might be argued that it is not the teachers' attitudes that hinder inclusive education, but the lack of resources (Saloviita, 2019). Nonetheless, this should at least have shown up in the model of disability because it also applies to the attribution of barriers to participation. In future research, this necessary connection should be further investigated.

An issue that has only implicitly been touched on here is the relationship between inclusive education and its purpose for the development of society. Although we would argue that within the fully inclusive triad, students are considered to construct a common reality and, therefore, this presents a basis for a common community, political, ethical, and social dimensions have been disregarded (Nilholm, 2006). Specifically, the conflict regarding the relationship between special/inclusive education and meritocracy highlights the societal challenges and profound changes that the educational system is experiencing when it comes to full inclusion (Stanczak et al., 2024).

6 Conclusion

Several conclusions can be drawn from this study. The LPA revealed a two-profile structure consistent with the basic structure of the Framework of Inclusive Education (Selisko et al., 2024a). This further establishes a relationship between learning beliefs, models of disability, and the preferred placement of children with disabilities.

Theoretically, in terms of full inclusion, attitudes toward inclusive education are necessarily bound by a radical constructivist approach to education (Selisko et al., 2024a). Empirically, the analyses here did not reveal a coherent fully inclusive profile, but rather an exclusive and moderately inclusive profile. The lack of a coherent fully inclusive profile is an indicator of continuous struggles with implementing inclusive education (e.g., Saloviita, 2019). The conflict that arises from upholding an inter-individual norm, and the call for full inclusion based on a human rights perspective, causes rising pressure on educational institutions. Full inclusion as is quite regularly supported within the scientific discourse, does not seemingly translate into similar attitudes in practitioners, who have previously been shown to be hesitant when it comes to full inclusion (Avramidis and Norwich, 2002).

Additionally, we did not detect differences between the profiles regarding the medical model of disability, although we found a significant difference between the two classes regarding the social model of disability. Further investigation is needed to obtain a more differentiated view on attitudes toward disability, especially as a precondition for identifying the target group of inclusion. This could be conducted through a preliminary qualitative analysis of perceptions of disability. The previously voiced call for further

training also needs to encompass the conflicting view between medical and social approaches to disability and SEN (Fuchs, 2010).

In the light of international frameworks, such as the United Nations Convention on the Rights of Persons with Disabilities (2006) and the UN DESA (2024) a differentiated assessment of inclusive education becomes increasingly important. As some countries are already reversing efforts of inclusive education a coherent perception becomes vital to facilitate positive attitudes toward inclusion.

In conclusion, the present study underscores that we must look past sweeping arguments regarding inclusive and exclusive education that result in general assessments of positive or negative associations with inclusive education (e.g., Oh-Young and Filler, 2015; Szumski et al., 2017; Van Mieghem et al., 2020). In light of the findings of the present study, attitudes toward inclusive education consist of beliefs regarding learning and teaching and disability and have potentially contradicting implications for individual cases. Based on current knowledge, we can assume that the exclusion of persons with disabilities can be traced back to coherent perceptions regarding transmissive learning beliefs and the medical model of disability. Inclusion, on the other hand, appears to be in a constant struggle between functionality and aspirations of full inclusion.

Data availability statement

The raw data supporting the conclusions of this article will be made available by the authors, without undue reservation.

Ethics statement

The study was conducted in accordance with the Declaration of Helsinki, no institutional approval necessary in accordance with local law. The studies were conducted in accordance with the

local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

TS: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. CE: Resources, Supervision, Writing – review & editing. FP: Conceptualization, Formal analysis, Project administration, Supervision, Writing – review & editing.

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Conflict of interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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