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Patterns of teachers' self-efficacy and attitudes toward inclusive education associated with teacher emotional support, collective teacher efficacy, and collegial collaboration

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ABSTRACT

Teacher self-reports were used to investigate patterns of their self-efficacy and attitudes toward inclusive education in association with teacher emotional support, collective teacher efficacy, and collegial collaboration. Data included a sample of 100 Norwegian upper secondary school teachers from a mixed-methods cluster randomised controlled trial study. Latent profile analysis identified four subgroups: *Low Self-Efficacy, Mid Attitudes* ($n = 19$); *High in All* ($n = 15$); *Mid Self-Efficacy, Low Attitudes* ($n = 36$); and *High Self-Efficacy, Mid Attitudes* ($n = 30$). Teachers in the *High in All* profile reported being the most emotionally supportive, while the highest levels of collective efficacy and collegial collaboration were reported by teachers belonging to the *High Self-Efficacy, Mid Attitudes* profile. Teachers in the *Low Self-Efficacy, Mid Attitudes* profile reported the lowest levels of emotional support, collective efficacy, and collegial collaboration. The results provide a deeper understanding of the association between teachers' self-efficacy and attitudes toward inclusive education by investigating distinct teacher profiles with diverse self-efficacy and attitude characteristics, leading to more targeted and effective strategies in inclusive education research, practice, and policy.

KEYWORDS

Teachers' self-efficacy; attitudes towards inclusive education; teacher emotional support; collective teacher efficacy; collegial collaboration; latent profile analysis

Introduction

The advancement toward inclusive education has led to growing research in measuring teachers' self-efficacy (TSE) and attitudes toward inclusive education (IE), in which meta-analyses argue that high self-efficacy is associated with positive attitudes (Wray, Sharma, and Subban 2022; Yada et al. 2022). However, existing research presents mixed results and typically use variable-centred designs. Namely, research is scarce regarding within-teacher variation and identifying different profiles of teachers who share similar TSE and attitudes toward IE characteristics. This research is important given that teachers possess idiosyncratic and/or differential levels of self-efficacy beliefs and attitudes that are linked with inclusive practices,

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and thereby influence students' utmost experiences in classrooms (Cassady 2011; Woodcock et al. 2022). For example, teachers may hold positive attitudes toward the philosophy of IE, but are undecided about their capabilities to execute inclusive practices (de Boer, Pijl, and Minnaert 2011).

Additionally, little is known about how patterns of TSE and attitudes toward IE are associated with teachers' emotional support, collective teacher efficacy, and collegial collaboration in upper secondary school classrooms. This is significant as the literature suggests the following are key factors in promoting students with special educational needs (SEN) outcomes (Cassady 2011; Sabol and Pianta 2012; Urton, Wilbert, and Hennemann 2014). Accordingly, the objective of the study was two-fold: (1) investigate patterns of TSE and attitudes toward IE, and (2) examine the extent to which the profiles are associated with teacher emotional support, collective teacher efficacy, and collegial collaboration. The current study aimed to increase our understanding of the interplay of TSE beliefs and attitudes toward IE in upper secondary school classrooms and draw a more comprehensive picture of the association of these profiles with concurrent teacher and organisational-level factors.

Theoretical framework

Teachers' self-efficacy

One contributing factor explaining the use of inclusive practices is teachers' self-efficacy (TSE) (Wray, Sharma, and Subban 2022). Teachers' self-efficacy refers to individuals' beliefs about their capabilities to perform teaching tasks (Bandura 1997, 2007). Literature suggests that students with SEN undermine TSE by diverting instructional time and exhibiting noncompliant behaviour, negatively impacting the learning environment and teachers' confidence in their teaching abilities (Zee and Koomen 2016; Zee, de Jong, and Koomen 2016).

Scholars have argued that self-efficacy is best conceptualised as a multi-dimensional construct, with measures including instruction, adapting education to individual students' needs, motivating students, and keeping discipline (Skaalvik and Skaalvik 2007; Tschannen-Moran and Hoy 2001). The instruction dimension which focuses on teachers' perceived capabilities of using different instructional methods is shown to positively affect TSE (Skaalvik and Skaalvik 2007; Tschannen-Moran and Hoy 2001). Moreover, teachers with high self-efficacy are more likely to adapt innovative teaching practices (Woodcock et al. 2022). Motivating students is characterised by teachers' capabilities to prompt students' interest in their schoolwork, and keeping discipline relates to classroom management and teachers' ability to manage students' behaviour (Zee, de Jong, and Koomen 2016). Highly efficacious teachers are more likely to increase students' motivation and adopt proactive approaches in classroom management (Andreou and Rapti 2010; Hoy and Woolfolk 1990).

Teachers' attitudes toward inclusive education

Attitudes toward inclusive education (IE) refers to teachers' dispositions and perceptions of including and teaching students with SEN (de Boer, Pijl, and Minnaert 2011). Meta-analyses highlight the significant role of teachers' attitudes in the successful

implementation of inclusive education, emphasising the importance of positive attitudes (Wray, Sharma, and Subban 2022; Yada et al. 2022).

In general, attitudes are multi-faceted, encompassing three dimensions: cognitive, affective, and behavioural (Eagly and Chaiken 1993). The cognitive component refers to teachers' knowledge of IE; affective relates to emotions/feelings felt by teachers about IE, and behavioural corresponds to teachers' actions to promote the inclusion of students with SEN (Mahat 2008).

Teachers' attitudes toward IE vary greatly, including positive, neutral, and negative attitudes (Kuyini, Desai, and Sharma 2020). Positive attitudes are associated with increased receptivity, individualised instruction, self-efficacy, and closer teacher–student relationships. Negative attitudes are associated with feelings of frustration, decreased classroom management and individualised learning (Cassady 2011; Kuyini, Desai, and Sharma 2020). In this vein, negative attitudes are a significant barrier to the effective implementation of IE (Yada et al. 2022).

Patterns of teachers' self-efficacy and attitudes toward inclusive education

Person-orientated analyses capture heterogeneity as it identifies different subtypes/profiles of teachers based on their combined levels of self-efficacy beliefs and attitudes toward inclusive education rather than examining the distinct effect of each variable on covariates as occurs in traditional variable-centred analyses (Ferguson, Moore, and Hull 2020). By focusing on patterns of TSE and attitudes toward IE, a person-orientated approach can provide novel insights into underlying prerequisites of teachers' beliefs and perceptions (Ferguson, Moore, and Hull 2020). It highlights the uniqueness of each profile and recognises that different teachers may exhibit diverse patterns of TSE and attitudes toward IE, providing a more nuanced understanding of their association.

From a theoretical standpoint, teachers possess differential levels of self-efficacy beliefs and attitudes toward IE, and a combination of such behaviours likely governs teachers' practices (Cassady 2011; Woodcock et al. 2022). This is evident in a recent study that showed six profiles, which uniformly showed high, low, or intermediate levels of TSE (Perera, Calkins, and Part 2019). Given the association between the two constructs varies greatly, we expect highly efficacious teachers will report positive attitudes, whereas low efficacious teachers are expected to have negative attitudes (Wray, Sharma, and Subban 2022; Yada et al. 2022). It is expected teachers who report mid-level self-efficacy beliefs will have mid-level attitudes, and some profiles will be characterised by mixed patterns of self-efficacy and attitude dimensions/domains. Furthermore, if there are different profiles of TSE and attitudes, they may be differently associated with teacher emotional support, collective teacher efficacy, and collegial collaboration since emotional support provision is typically influenced by various organisational and individual-level factors, and the interplay between these factors can shape teachers' ability to provide emotional support (Bronfenbrenner 1979; Bronfenbrenner et al. 2005).

Teacher emotional support

According to the Teaching through Interactions framework (Hamre et al. 2013; Hofkens and Pianta 2022), teacher emotional support relates to teachers' ability to show caring

behaviours along three dimensions: positive climate, relating to teacher–student connection; teacher sensitivity, indicated by teachers' responsiveness to and awareness of students' needs; and regard for student perspectives, characterised by teachers' ability to encourage student-centred teaching. It has been shown that upper secondary school teachers view the affective quality of the teacher–student interaction with students with SEN as less satisfactory (Pastore and Luder 2021; Roorda et al. 2011). Furthermore, research states that negative attitudes and low efficacy beliefs affect teacher–student interactions, in which the provision of high levels of emotional support is contingent upon positive attitudes and high self-efficacy beliefs (Cassady 2011). Teachers' apprehension or anxiety about employing inclusive practices can hinder their ability to provide emotional support to students with SEN (Cassady 2011). This holds practical implications as scholars assert that emotional support, particularly for students with SEN, directly influences student outcomes and serves as a protective factor against negative school outcomes (Sabol and Pianta 2012).

Collective teacher efficacy

Collective teacher efficacy refers to teachers' shared beliefs about their combined efforts to execute actions within an organisation (in this case, school) (Goddard 2002). Empirical evidence suggests that individual and collective teacher efficacies influence each other in a reciprocal way (Goddard and Goddard 2001). Bandura (1997) argues that collective teacher efficacy fosters collegial collaboration and accomplishments through joint effort, enhancing a positive school atmosphere. For example, within a positive school environment that values inclusive practices, teachers tend to respect diverse learning styles and believe all students have an opportunity to succeed (Darling-Hammond 2006). This corresponds with prior studies which showed collective efficacy is associated with positive attitudes toward teaching students with SEN, persistence in helping, and openness to testing new instructional methods (Donohoo 2018; Goddard and Goddard 2001; Tschannen-Moran and Barr 2004).

Collegial collaboration

When teachers collaborate, they share experiences and knowledge that can lead to improved instructional support in classrooms. Empirical evidence suggests that collegial collaboration improves teachers' positive attitudes toward teaching (Goddard, Goddard, and Tschannen-Moran 2007). Collegial collaboration plays an essential role in building a school culture indicative of inclusive education given collaboration is necessary to better meet the demands posed by the Norwegian Education Act (Kunnskapsdepartementet 1998), whereby it is a prerequisite for inclusion that all teachers understand this as a shared responsibility. For example, as collegial collaboration relies on shared educational goals and values, they also constitute a prerequisite for developing collective teacher efficacy (Skaalvik and Skaalvik 2023). Additional research shows a positive association between collegial collaboration and the achievement of students with SEN (Mattatall and Power 2014). Furthermore, Cassady (2011) argues teachers' level of confidence and opportunities for collaboration affect teachers' attitudes toward the inclusion of students with SEN.

Research questions

The following research questions and hypotheses were established:

(1) How many and what type of profiles emerge in the sample of upper secondary school teachers? We expected different profiles of teachers' self-efficacy and attitudes toward inclusive education (Hypothesis 1).
(2) To what extent are the profiles associated with teacher emotional support, collective teacher efficacy, and collegial collaboration? We expected the different profile configurations will vary in their levels of emotional support, collective efficacy, and collegial collaboration (Hypothesis 2).

Methods

Participants and procedure

The participants were Norwegian upper secondary school teachers (students aged 16–19) from 12 schools across two Norwegian counties. A total of 100 teachers from both academic (39%) and vocational tracks were included. The teachers were 62% female, ranging in age from 25 to 65 years ($M = 43.10$, $SD = 8.87$). Eighty-three percent of teachers reported having teacher education and 89% held a full-time position, ranging from 50% to 100%.

Specifically, 3–16 teachers from each school were recruited in May 2022. Teachers were administrated a self-report online survey for completion at the end of the 2022 school year. The project is registered (nr. 210803) with the Norwegian social science data and assessed in accordance with the Norwegian privacy act. The present study is based on data from the first time-point (T1) from a mixed-methods cluster randomised controlled trial (CRCT) in upper secondary schools which investigates how an online coaching intervention can support teachers' capabilities in teacher–student interactions (Ertesvåg, Vaaland, and Lerkkanen 2022). The purpose of the study is to later interpret for whom and why is the intervention beneficial.

Measures

Teachers' self-efficacy

The Norwegian Teacher Self-Efficacy Scale (NTSES; Skaalvik and Skaalvik 2007) aimed to measure teachers' self-efficacy along four subscales: Instruction, Adapting Education to Individual Students' Needs, Motivating Students, and Keeping Discipline. Each subscale consisted of four items, with a response scale ranging from 1 (not certain at all) to 7 (absolutely certain). Sample items included *'Provide good guidance and instruction to all students regardless of their level of ability'* and *'Wake the desire to learn even amongst the low-achieving students'*.

All four subscales demonstrated acceptable internal consistency with McDonald's omega for Instruction $\omega = 0.90$, Adapting Education to Individual Students' Needs $\omega = 0.92$, Motivating Students $\omega = 0.88$, and Keeping Discipline $\omega = 0.86$. It has been developed and validated in a Norwegian setting and has previously demonstrated good internal consistency (Skaalvik and Skaalvik 2017).

Teachers' attitudes toward inclusive education

The Multidimensional Attitudes toward Inclusive Education Scale (MATIES; Mahat 2008) aimed to measure teachers' attitudes toward inclusive education along three dimensions: Cognitive, Affective, and Behavioural. Each dimension was measured by 6, with a response scale ranging from 1 (strongly agree) to 6 (strongly disagree). Sample items included *'I believe that an inclusive school is one that [facilitates] academic progression of all [pupils] regardless of their ability'* and *"I [become] frustrated when I have difficulty communicating with [pupils with special needs]*.

The items of the MATIES were translated into Norwegian using a back-translation model conducted by both native Norwegian and bilingual English and Norwegian speakers. The wording in the original MATIES was outdated and therefore with permission from the developer was changed to better reflect up-to-date terminology, such as 'disability' to 'pupil with special needs'. One question from the MATIES was excluded in the present study as it decreased the reliability of the scale. Given the small sample size and limited number of items per subscale, the present study demonstrated an omega for Cognitive $\omega = 0.69$, Affective $\omega = 0.70$, and Behavioural $\omega = 0.90$. A critical review concluded that the MATIES appeared to be one of the most psychometrically sound attitude questionnaires (Ewing, Monsen, and Kielblock 2018).

Teacher emotional support

Teacher emotional support was measured using a scale that captured teachers' own perceptions of their emotional support. The scale was developed to align with key elements of the CLASS-S emotional support dimension (Ertesvåg 2011; Hofkens and Pianta 2022). It consisted of 6 items, with a response range from 0 (strongly disagree) to 5 (strongly agree). Sample items included *'I work actively to create good relationships with students'* and *'I show the students that I care about them (not just when it comes to schoolwork)'*. The present study demonstrated an acceptable omega of $\omega = 0.72$. The scale has previously been used in a Norwegian context and demonstrated good internal consistency (Ertesvåg 2011).

Collective teacher efficacy

The Collective Teacher Efficacy Scale-Short Version (CTE-12; Goddard 2002) was used to measure teachers perceived collective efficacy. The scale consisted of 12 items, with a response scale ranging from 1 (strongly disagree) to 6 (strongly agree). Sample items included *'Teachers here are confident they will be able to motivate their students'* and *'The opportunities in this community help ensure that these students will learn'*. The present study demonstrated an acceptable omega of $\omega = 0.73$. The scale has previously been validated in a Norwegian context and demonstrated good internal consistency (Sørlie and Torsheim 2011).

Collegial collaboration

Collegial collaboration was measured using a scale that addressed how individual teachers viewed the value of collaboration with other teachers. The scale consisted of 5 items, with a response scale ranging from 0 (not at all/strongly disagree) to 5

(completely true/strongly agree). Sample items included *'Participating in collegial collaboration benefits my students'* and *'Collegial collaboration gives me a deeper understanding of my role as a teacher*'. The present study demonstrated an acceptable omega $\omega = 0.69$. It has previously been used in a Norwegian setting and demonstrated good internal consistency (Lerang, Ertesvåg, and Virtanen 2021).

Data analysis

A latent profile analysis (LPA) captures heterogeneity by grouping individuals into latent profiles based on similar responses within measured indicators (Ferguson, Moore, and Hull 2020). For the present study, LPA was applied to identify teacher subgroups with homogeneous patterns of teachers' self-efficacy and attitudes toward inclusive education. Given the exact number of profiles cannot be hypothesised, an exploratory LPA approach was applied wherein qualitatively, and quantitatively different profiles are theoretically expected.

The optimal profile solution was determined based on model fit indices which fall under three categories; (1) Log-likelihood; Akaike information criteria (AIC); Bayesian information criteria (BIC); Sample size adjusted BIC (aBIC); (2) Lo-Mendell-Rubin adjusted likelihood ratio test (LMR-LRT); Bootstrap likelihood ratio test (BLRT); and (3) Entropy (Feldman, Masyn, and Conger 2009). The different models (if indicated) were rerun at least twice with the random starts to check that the best log-likelihood (i.e. best solution) was obtained. Lower AIC, BIC, and aBIC indicate better model fit, whereas aBIC has shown to be more favourable (Feldman, Masyn, and Conger 2009). The LMR-LRT and BLRT tests compare neighbouring class models, in which a significant *p*-value (less than 0.05) in the LMR-LRT and BLRT indicates that a *k*-class model improves the fit over the *k*-1 class model (Masyn 2013). The BLRT is regarded as the most accurate index in simulation studies over the LMR-LRT (Nylund, Asparouhov, and Muthén 2007). Entropy is less frequently used as an index due to a lack of support in simulation studies but can still aid in retaining LPA models. High entropy (greater than 0.80) suggests improved enumeration accuracy (Tein, Coxe, and Cham 2013). In addition, the profiles were interpreted with theoretical assumptions.

Descriptive and correlation statistics were computed on IBM SPSS Statistics (Version 28). LPA analyses were performed on the software Mplus 8.7 (Muthén and Muthén 1998–2017). Standard errors were corrected using maximum likelihood estimation with the robust standard procedure and the mixture complex type of analysis available in Mplus. The response rate was 100% and no missing data on single items were present. Furthermore, the BCH approach (Bolck, Croon, and Hagenaars 2004) was used to examine the mean differences across the profiles found while modelling the effects of covariates with the profiles.

Results

Descriptive analysis

Table 1 reports descriptive and correlation statistics for all study variables. Skewness (between −1.24 and 0.40) and kurtosis (between −0.73 and 1.45) values were within the acceptable criteria of −2 to + 2 and −7 to +7, respectively, demonstrating the normality of the data (Muthén and Kaplan 1992).

Table 1. Descriptive and correlation statistics for study variables.

Variable	*M*	*SD*	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Teachers' Self-Efficacy												
1. Instruction	5.47	0.71										
2. Adapting Education	4.50	0.96	0.44**									
3. Motivating Students	4.36	0.81	0.26**	0.46**								
4. Keeping Discipline	4.39	0.87	0.19	0.30**	0.51**							
Attitudes toward Inclusive Education												
5. Cognitive	4.70	0.72	0.14	0.23*	0.11	0.25*						
6. Affective	4.62	0.74	0.18	0.32**	0.12	0.27**	0.45**					
7. Behavioural	4.99	0.76	0.35**	0.28**	0.08	0.12	0.32**	0.40**				
Variables associated with profiles												
8. Emotional Support	3.93	0.50	0.26**	0.40**	0.40**	0.28**	0.24*	0.30**	0.15			
9. Collective Efficacy	4.32	0.72	0.27*	0.23*	0.25*	0.06	0.07	0.20*	0.23*	0.27*		
10. Collegial Collaboration	4.12	0.67	0.18	0.23*	0.15	0.14	0.09	0.07	0.34**	0.23*	0.07	

*$p < .05$, **$p<.01$. *M*= Mean, *SD*= Standard Deviation.

Table 2. Fit statistics for latent profile analysis of teachers' self-efficacy and attitudes toward inclusive education.

Profiles	No. of free Parameters	Log-likelihood	AIC	BIC	aBIC	LMR-LRT p values	BLRT p values	Entropy	Profile proportions
2	29	−934.940	1927.861	2003.411	1911.822	0.001	0.001	.80	61,39
3	44	−907.213	1902.426	2017.053	1878.090	0.502	0.286	.83	30,29,41
4	**59**	**−884.586**	**1887.171**	**2040.876**	**1854.539**	**0.284**	**0.250**	.86	21,15,34,30
5	74	−858.174	1864.349	2057.131	1823.421	1.000	0.667	.92	21,24,10,7,38

AIC= Akaike Information Criteria, BIC= Bayesian Information Criterion, aBIC= sample size adjusted BIC, LMR-LRT= Lo-Mendell-Rubin Likelihood ratio test, and BLRT= Bootstrap likelihood ratio test. Bold indicated the final model.

Profile enumeration

To answer our first research question regarding the number of profiles, a series of models with an increasing number of profiles were estimated using LPA. The fit indices of the models are presented in Table 2. Except for the BIC, the fit statistics improved when a model with one more profile was estimated. The profile models with two and three groups did not align with our theoretical expectations. In the five-profile model, one of the groups had a small percentage of teachers (7%), resulting in an invalid solution. Therefore, the following solutions were not selected.

The four-profile solution showed improved values of LL, AIC, aBIC, and entropy compared to two- and three-profile solutions. A further examination of the teacher configurations in the three- and four-model solutions showed that the extra group in the four-model solution was a new group and not a result of one group splitting into two, and thus, qualitatively different. Additionally, teachers probabilities of belonging to a specific subgroup were high, ranging from 89.4% to 95.4%. And finally, the information provided in this model fulfilled theoretical expectations and meaningfulness (Ferguson, Moore, and Hull 2020). Therefore, the four-profile solution was determined to provide the most optimal fit to the data. The four-profile model is presented in Figure 1.

Theoretical and practical interpretation of profiles

Furthermore, the first research question concerned the types of subgroups that emerged. The mean scores, standard deviations, and eta-squared effect sizes for the entire sample and subgroups are presented in Table 3. For the present study, the reference profile is *High in All* (Profile 2). Profile 1 consisted of 19 (19%) teachers who reported to be least efficacious compared to the reference group and held mid-level attitudes. This group was called *Low Self-Efficacy, Mid Attitudes*. Profile 2 compromised the least number of teachers, with a total of 15 (15%) teachers who reported to be the most efficacious and held the most positive attitudes compared to other profiles, leading to the profile being called *High in All*. Profile 3 was the largest as it represented 36 (36%) teachers who reported mid-level self-efficacy and held the most negative attitudes compared to the reference group. This group was named *Mid Self-Efficacy, Low Attitudes*. Lastly, profile 4 included 30 (30%) teachers who reported high levels of self-efficacy and mid-level attitudes, leading to the profile being named *High Self-Efficacy, Mid Attitudes*.

In Table 3, the mean differences in the profiles are greater than 0.14, which suggested that they are large indicated by the sizes of the eta squared (Cohen 2013). These mean differences

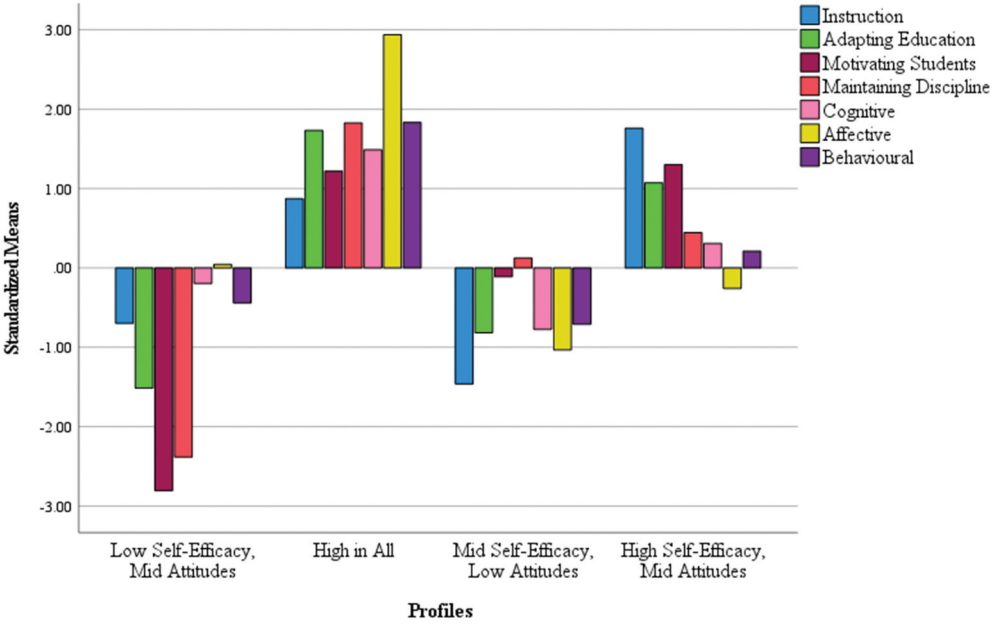

Figure 1. Profiles based on teacher-reported self-efficacy and attitudes toward inclusive education.

Table 3. Profile-specific descriptive statistics for study variables.

	Whole Sample		Mid Attitudes, Low Self-Efficacy		High in All		Low Attitudes, Mid Self-Efficacy		High Attitudes, High Self-Efficacy		
	M	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	η^2
Instruction	5.47	.71	5.22	0.68	5.78	0.55	4.95	0.21	6.10	0.65	0.48
Adapting Education	4.50	.96	3.78	0.72	5.33	0.87	4.11	0.67	5.02	0.86	0.37
Motivating Students	4.36	.81	3.22	0.58	4.85	0.93	4.31	0.43	4.88	0.35	0.56
Keeping Discipline	4.39	.87	3.36	0.61	5.18	0.48	4.44	0.44	4.58	0.97	0.42
Cognitive	4.70	.72	4.63	0.51	5.24	0.82	4.42	0.71	4.81	0.65	0.15
Affective	4.62	.74	4.64	0.73	5.71	0.29	4.21	0.62	4.53	0.48	0.43
Behavioural	4.99	.67	4.82	0.74	5.69	0.37	4.72	0.67	5.07	0.82	0.19
Emotional Support	3.93	.50	3.69	0.43	4.37	0.36	3.81	0.51	4.02	0.44	0.19
Collective Efficacy	4.50	.49	2.32	0.56	4.65	0.36	4.40	0.45	4.68	0.49	0.09
Collegial Collaboration	4.12	.67	3.69	0.85	4.28	0.48	4.10	0.70	4.32	0.44	0.12

M= Mean, *SD*= Standard Deviation, η^2= eta-squared.

showed that 15–56% of the total variance in teachers' self-efficacy and attitude scores could be accounted for by group membership.

Associations between profiles and teacher emotional support, collective teacher efficacy, and collegial collaboration

The second research question concerned to what extent are the profiles associated with teacher emotional support, collective efficacy, and collegial collaboration. The results are shown in Table 3. Teachers in the *High in All* profile reported being the most emotionally

supportive while teachers in the *Low Self-Efficacy, Mid Attitudes* profile were the least emotionally supportive. The mean difference between the two groups was statistically significant at $p < .05$. Furthermore, the mean differences between teachers in the profile *High in All* and the remaining profiles were statistically significant at the $p < .05$ level.

The highest levels of collective efficacy and collegial collaboration were reported by teachers belonging to the *High Self-Efficacy, Mid Attitudes* profile, while teachers in the profile *Low Self-Efficacy, Mid Attitudes* reported the lowest. The mean differences between these profiles were statistically significant at $p < .05$ level. Furthermore, mean differences in the profiles *Low Self-Efficacy, Mid Attitudes* and *High in All* for both collective efficacy and collegial collaboration were statistically significant at the $p < .05$ level.

In general, the mean differences among the profiles were large in emotional support, but moderate in collective efficacy and collegial collaboration. Specifically, profile membership explains 19% of the total variance in emotional support, 9% of the total variance in collective efficacy, and 12% of the total variance in collegial collaboration.

Discussion

The present study aimed to investigate patterns of teachers' self-efficacy and attitudes toward inclusive education in upper secondary classrooms and their association with teacher emotional support, collective teacher efficacy, and collegial collaboration. Confirming our first research question and hypothesis 1, four profiles of TSE and attitudes emerged based on teachers' self-reports: *Low Self-Efficacy, Mid Attitudes; High in All*; *Mid Self-Efficacy, Low Attitudes;* and *High Self-Efficacy, Mid Attitudes*. Teachers in the *Low Self-Efficacy, Mid Attitudes* profiles reported to be the least efficacious compared to the other profiles but held mid-level attitudes. This is consistent with the theoretical assumption that teachers may hold positive attitudes toward the ideology of IE, but are indecisive in their abilities to carry out inclusive practices (de Boer, Pijl, and Minnaert 2011).

As expected, we found one profile that was uniformly high (*High in All*). This coincides with Bandura's (1997) self-efficacy theory and the theory of planned behaviour (Ajzen 2012) which claims that self-efficacy affects individuals' attitudes.

Teachers in the *Mid Self-Efficacy, Low Attitudes* profile displayed the most negative attitudes compared to the other profiles but held mid-level self-efficacy beliefs. One explanation is that less efficacious teachers may prioritise student behaviour management, potentially leading to the categorisation of students based on special needs labels, thus contributing to negative attitudes (Woodcock et al. 2022).

Finally, teachers in the *High Self-Efficacy, Mid Attitudes* profile reported to be highly efficacious and held mid-level attitudes. Interestingly, the affective dimension of attitudes was significantly lower in comparison to cognitive and behavioural. This is surprising considering cognitive and affective attitudes play a predictive role on behavioural attitudes (Ajzen 2012). One explanation relates to the age of the students; as students age, teachers need to prioritise academic knowledge over displaying affective behaviours.

Confirming our second research question and hypothesis 2, we found that teachers in the *High in All* profile reported to be the most emotionally supportive. Based on our findings, this is consistent with the theoretical assumption that high levels of self-efficacy and attitudes are reflected in high-quality teaching, in which teacher emotional support is

a significant feature differentiating students with SEN who succeed in school from those who struggle (Pianta, Hamre, and Allen 2012).

The least emotionally supportive teachers were those belonging to the *Low Self-Efficacy, Mid Attitudes* profile. This is quite logical as low self-efficacy is typically related to low-quality teaching (Bandura 1997; Tschannen-Moran and Hoy 2001). Moreover, as students progress in age, they encounter more teachers throughout the day, limiting teachers' opportunities for providing emotional support. Nevertheless, teachers may perceive their interactions with students as mostly positive or neutral, leading to moderate attitudinal levels.

Contrary to our hypothesis, we found that teachers in the *High Self-Efficacy, Mid Attitudes* profile reported the highest levels of collective efficacy and collegial collaboration. This is consistent with Ajzen's (1992) theory of planned behaviour states teachers who have supportive subjective norms, hold favourable attitudes, and have high self-efficacy will enact inclusive practices and behaviours.

Furthermore, teachers in the *Low Self-Efficacy, Mid Attitudes* profile reported the lowest collective efficacy and collegial collaboration. This is reasonable as empirical evidence highlights the bidirectional association between individual and collective teacher efficacies (Goddard and Goddard 2001). Positive interactions between teachers have been linked to both collective teacher efficacy and collegial collaboration, enhancing their collaborative abilities and willingness, thus contributing to collective teacher efficacy (Skaalvik and Skaalvik 2019). Furthermore, collective teacher efficacy and collegial collaboration mutually influence each other, fostering increased collaboration through the shared belief in collective success (Skaalvik and Skaalvik 2019).

Practical implications

The present study had some practical implications for teacher education. The different teacher profile configurations suggest that a 'one-size-fits-all' approach to professional development (PD) may not be feasible (Lerang, Ertesvåg, and Virtanen 2021). The diverse profiles indicate teachers may interact with their students differently. Recognising this knowledge is essential when developing PD programmes, as it highlights the potential benefits of offering differentiated PD opportunities, ultimately improving the overall quality of teacher training.

For example, teachers in the *Low Self-Efficacy, Mid Attitudes* profile may benefit from individualised training targeting specific aspects of self-efficacy and attitudes. However, individualised training should be personalised to address individuals' unique needs for enhancing TSE and attitude practices (Lerang, Ertesvåg, and Virtanen 2021).

Since teachers in the profile *Mid Self-Efficacy, Low Attitudes* accounted for the largest group, it is imperative that they are offered more targeted PD. To foster an inclusive culture in schools, it is important to cultivate consensus around inclusive values. This involves training school leaders, such as principals and teachers based on their dedication to promote inclusivity, as research shows their effectiveness in enhancing school quality and equity (Ainscow and Sandill 2010).

Additionally, policymakers can use the information gleaned from the profiles which may inform the development or adaptation of policies that aligned with the identified profiles to support positive outcomes for the profiles (Perera, Calkins, and Part 2019).

Additionally, as person-centred profiling recognises the diversity of teaching styles, recruiting teachers from different profiles in schools can foster a more diverse and collaborative teaching faculty, thus enhancing the overall quality of education. However, researchers and stakeholders must approach the interpretation of LPA findings with sensitivity to mitigate the potential stigmatisation of teacher profiles (Spurk et al. 2020).

Methodological considerations and future directions

A strength of this study is the application of a person-centred approach, as we investigated patterns of teachers' self-efficacy and attitudes toward inclusive education. Instead of assuming one distribution, LPA explored within-teacher variation patterns of TSE and attitudes and provided novel insights (Ferguson, Moore, and Hull 2020).

Another strength was the use of both organisational and teacher-level factors as these affect TSE and attitudes toward IE (Cassady 2011; Donohoo 2018; Kuyini, Desai, and Sharma 2020). However, the aforementioned study overlooked some potentially influential factors such as the Norwegian policy/social context, school culture, and leadership which warrants further investigation. Incorporating these into a large-scale study will allow for researchers to examine how different variables combine to form distinct profiles, giving valuable insights into the barriers and facilitators of inclusion. This leads to more targeted and effective strategies in inclusive research, practice, and policy.

A limitation of the study was the small sample size, impacting the generalisability and reliability of the findings. However, estimating sample size in LPA lacks a straightforward formula since it depends on the number and distance between the profiles, which are unknown and estimated through prior research (Tein, Coxe, and Cham 2013). Replicating this study with a larger sample could provide further insight, making it possible to find more profiles. Secondly, the findings of this study are based on teachers' self-reports and therefore should be interpreted within this context. Memory is fallible and individuals may have difficulty reporting information in present time, and teachers' self-perceptions may not align with their actual behaviours. While social desirability may have influenced teachers' responses, this does not appear to have limited the findings as we found four distinct profiles (Perera, Calkins, and Part 2019). Nevertheless, an examination of how well teachers' reports align with observations may provide more information.

Third, our sample was limited to upper secondary school teachers. Future research is needed to examine whether the number and configurations of the profiles can be replicated across other samples of teacher educators (Spurk et al. 2020). Finally, teacher demographic factors, including work experience was not included in the present study. However, preliminary analyses showed gender and education were insignificantly associated across the profiles.

Conclusion

This study was amongst the first to use a person-centred approach to investigate patterns of teachers' self-efficacy and attitudes toward inclusive education and their association with teacher emotional support, collective teacher efficacy, and collegial collaboration. It provided novel insights into upper secondary school classrooms as research relating to

this context is scarce. Four distinct groups were identified based on latent profile analysis, indicating teachers possess different levels of self-efficacy and attitudes. Furthermore, the profiles were intertwined at different levels with emotional support, collective efficacy, and collegial collaboration. Overall, the current study provides valuable insights in terms of the diversity of TSE and attitudes toward IE that can be translated into practical interventions, professional development programmes, and policy improvements all aimed at fostering teachers' inclusive practices.

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