Teaching and Teacher Education 165 (2025) 105152

Contents lists available at ScienceDirect

Teaching and Teacher Education

journal homepage: www.elsevier.com/locate/tate

Research paper

Teacher student-specific self-efficacy and its impact on students' academic self-concept, emotional well-being and social inclusion

Erkan Eren [a,*], Akie Yada [b,c,d,e], Susanne Schwab [f,g], Hannu Savolainen [a]

[a] University of Eastern Finland, Finland
[b] Department of Psychology, Faculty of Education and Psychology, University of Jyväskylä, Finland
[c] Department of Education, Faculty of Education and Psychology, University of Jyväskylä, Finland
[d] Department of Psychology and Speech-Language Pathology, University of Turku, Finland
[e] Centre of Excellence in Learning Dynamics and Intervention Research (InterLearn), University of Jyväskylä and University of Turku, Finland
[f] University of Vienna, Austria
[g] North-West University, Optentia Research Unit, South Africa

ARTICLE INFO

Keywords:
Inclusive education
Teacher self-efficacy
Student-specific self-efficacy
Academic self-concept
Emotional well-being
Social inclusion

ABSTRACT

This study investigates the impact of teachers' student-specific self-efficacy (S-S TSE) on students' perceptions of inclusion, specifically emotional well-being, social inclusion, and academic self-concept, over time. Participants were 42 teachers and 576 students in Austrian inclusive classrooms. Teachers rated S-S TSE using a short form of the Teacher Sense of Efficacy Scale for each student. Students completed the Perceptions of Inclusion Questionnaire (PIQ). Confirmatory factor analyses supported scale validity. All three student outcomes correlated positively with higher S-S TSE. Special educational needs (SEN) status moderated the relationship between S-S TSE and emotional well-being, but not between S-S TSE and social inclusion or academic self-concept.

1. Introduction

The primary goal of inclusive education is to provide equal opportunities for all students, including those with special educational needs (SEN), disabilities, or exceptional abilities, especially in ordinary classrooms (Ainscow, 2005; Ainscow et al., 2006; UNESCO, 2021). This approach is based on the ideology that every student can learn and has something significant to contribute; it promotes social inclusion and reduces stigma (Armstrong et al., 2010; Florian & Black-Hawkins, 2011). A cornerstone of contemporary educational practice, inclusion, emphasises equal educational opportunities and a sense of belonging within the school community for all students (Schwab, 2019).

Inclusion is effective when schools and teachers use inclusive teaching practices that address a range of learning needs, although this is by no means an easy task (Avramidis & Norwich, 2002). Successful inclusion means that all students feel positive about school, belong socially to the learning community and can achieve key learning goals while feeling valued and developing a positive self-concept as learners through improved attendance, participation and achievement (Ainscow et al., 2006).

A major challenge in implementing inclusive education is that teachers may not feel confident about teaching students with diverse needs. This lack of confidence is closely related to teacher self-efficacy, which plays a crucial role in the successful implementation of inclusive practices and has led researchers to investigate it as one of the key factors in inclusive education.

1.1. Teacher self-efficacy

Self-efficacy, as outlined in Bandura's social cognitive theory, refers to an individual's belief in their ability to plan and carry out the actions required to achieve particular goals (Bandura, 1977). This conviction exerts a significant influence on factors such as motivation, effort, persistence, and the ability to cope with challenges (Bandura, 1997). According to Bandura, the concept of self-efficacy is influenced by four primary sources, namely mastery experiences (success strengthens self-efficacy, while repeated failure can weaken it), learning from others' success or failure (vicarious experiences), encouragement or criticism from others (social persuasion), and emotional or physical states (positive emotions enhance self-efficacy, whereas anxiety or stress can diminish it). These factors determine self-efficacy, which then affects a person's behaviour and performance in different areas of life.

* Corresponding author. School of Educational Sciences and Psychology, Yliopistokatu 7, 80130, Joensuu, Finland.
E-mail address: erkanere@uef.fi (E. Eren).

https://doi.org/10.1016/j.tate.2025.105152
Received 21 March 2025; Received in revised form 14 June 2025; Accepted 3 July 2025
Available online 7 July 2025

Teacher self-efficacy (TSE) is often defined as the beliefs of a teacher in their capacity to influence central elements of teaching. A very common understanding is that teacher efficacy consists of beliefs relating to the ability to increase student engagement, successful instructional effectiveness, and practice classroom management even under challenging circumstances (Tschannen-Moran & Hoy, 2001).

Teacher self-efficacy is understood as a context-specific construct, typically in a teaching context, categorised into efficacy beliefs in instructional strategies, student engagement, and behaviour management. Teachers with high self-efficacy tend to use new teaching methods, manage their classrooms well, and involve students in learning activities (Klassen et al., 2011; Tschannen-Moran & Hoy, 2001). Self-efficacy has been shown by research not only to impact teacher performance but also student outcomes in terms of achievement and motivation (Caprara et al., 2006).

Teacher self-efficacy is an important factor in creating an effective teaching and learning environment in educational institutions. Various measures of TSE are frequently used to gauge this sense of confidence (Kim & Seo, 2018; Klassen et al., 2011).

While general teacher self-efficacy has been widely studied in relation to classroom-level practices, recent research has increasingly focused on student-specific self-efficacy, which reflects teachers' confidence in supporting individual students effectively (Schwab, 2019).

1.2. Teacher student-specific self-efficacy

Teacher student-specific or so-called 'dyadic' self-efficacy (S-S TSE) refers specifically to the extent to which a teacher believes in their capacity to effectively interact and engage with individual students (Zee, de Jong, & Koomen, 2016a,b). This idea expands the traditional notion of self-efficacy by considering the relational aspects of teaching (Zee, de Jong, & Koomen, 2016a,b). Teachers who have high student-specific self-efficacy are more likely to create personal and supportive relationships with their students, which is vital for enhancing an inclusive learning environment. (Klassen & Chiu, 2010; Pajares, 1996; Zee, de Jong, & Koomen, 2016a,b).

Research suggests that student-specific self-efficacy may be significant, especially in inclusive educational settings where teachers must address the diverse needs of students that arise, for example, from their special educational needs or disabilities (Hoffman & Kilimo, 2014). The significance of this student-specific self-efficacy is shown in several studies indicating that teachers' self-efficacy varies remarkably for different types of students. For example, teachers' student-specific self-efficacy has been shown to be lower for students with SEN than for those without SEN (Geerlings et al., 2018; Schwab, 2019; Schwab et al., 2021).

Teacher self-efficacy beliefs have varied significantly across student groups, with the lowest efficacy reported for students with low language abilities, followed by students with SEN and those from low socioeconomic backgrounds; in contrast, teachers felt most confident in supporting students without SEN and those demonstrating outstanding success (Kast et al., 2021). This difference has been even more pronounced for students who have multiple diagnoses, including socio-emotional or behavioural disorders (Van Miehe et al., 2020).

An initial result of longitudinal research is consistent with earlier findings in that teachers' student-specific self-efficacy was lower for students with SEN. Nevertheless, these differences decreased over time as familiarity increased (Sawyer et al., 2022). A recent study examined the factors that influence teachers' student-specific self-efficacy, focusing on student characteristics and student-teacher relationships (STR) in preschool settings. The findings suggested that teachers reported higher levels of student-specific self-efficacy for instructional support and student engagement with monolingual English-speaking students in comparison to dual language learners (DLLs). Nevertheless, no differences were identified in behaviour management and emotional support. Furthermore, it was determined that the quality of STRs had a substantial influence on S-S TSE. Indeed, the results demonstrated a positive correlation between higher efficacy and closer relationships, and a negative correlation between efficacy and conflict (Wood et al., 2024). Children's print knowledge outcomes, such as letter identification, print and word awareness, and name writing, have also been found to be significantly associated with student-specific teacher self-efficacy (Guo et al., 2021).

1.3. Students' perceptions of inclusion in relation to teacher self-efficacy

A significant component of effective inclusion is the way students perceive their experience of being in the school environment, as well as their sentiments regarding their involvement and sense of belonging in the classroom. Positive perceptions of inclusion have been demonstrated to be associated with feelings of being valued, supported, and integrated into the learning community (Frederickson et al., 2007). It is of particular importance to students with SEN that they feel included, as this affects their academic engagement and overall school experience, influencing their motivation, sense of belonging, emotional well-being, and long-term academic success within the educational community (De Boer et al., 2011).

One way to conceptualise and understand students' perceptions of inclusion and inclusion success is to divide the experience into three logical domains: academic, social and emotional experiences (Pozas et al., 2023). Students' view of themselves as learners can be defined as their academic self-concept, which relates to the view that the students have of their academic capabilities (Shavelson et al., 1976). Feeling about social context can be defined as the perception of social inclusion, and it includes the quality of relationships students have with their peers and feelings of belonging to the classroom context (Battistich et al., 1997; Osterman, 2000). Emotional well-being refers to how students feel about their experience at school, especially how much they enjoy going to school (McLaughlin, 2008; Tian et al., 2014). In studies measuring students' perceptions of inclusion, students with SEN seem to score lower in all the above-mentioned three main aspects: they tend to dislike school more than other students, experience difficulties in peer acceptance, and possess a lower academic self-concept than other students without SEN (Koster et al., 2009; McCoy & Banks, 2012). More specifically, research has shown, for example, that students with learning disabilities (LD) have had much lower academic self-concept compared to their peers without LD. Students with SEN often struggle to develop a strong academic self-concept because it might be hard for them to meet the demands of a mainstream curriculum (Alnahdi & Schwab, 2021). The study has shown a strong link between S-S TSE and students' academic self-concept but has not found any apparent connection between S-S TSE and their school well-being (Schwab et al., 2022). This may result in a diminished sense of academic competence and overall self-esteem.

The most significant disparities have been observed in domains such as fast learning abilities and the successful completion of challenging tasks (Alnahdi & Schwab, 2021). A further study revealed that, before the provision of supplementary part-time special education support, students who received such support initially exhibited lower general school and reading self-concepts in comparison to their peers not receiving support. However, the intervention had a favourable impact on the development of reading self-concept, effectively counteracting the typical decline observed over time (Savolainen et al., 2018). Similarly, compared to their peers, students with SEN have reported lower levels of social inclusion, suggesting that they may experience persistent social barriers and feel less accepted by classmates, regardless of whether they attend special schools or inclusive classrooms (Vyrastekova, 2021). As demonstrated in the relevant literature, these students tend to be less popular, receive significantly fewer positive nominations from their peers, have fewer mutual friendships, and are less frequently included in social subgroups within their classroom communities (Pijl et al., 2008). This evidence underscores the significant

challenges faced by SEN students in the social dimension of inclusion.

Bosman et al. (2021) found that focusing on teacher-student relationships through interventions like Teacher-Student Interaction Coaching (LLInC) improved teachers' confidence in managing student behaviour and providing emotional support. This led to better-quality relationships between teachers and their students. High student-specific self-efficacy is related to teachers being confident in addressing the variety of needs of students with SEN and encouraging all students to develop a feeling of inclusion and belonging (Zee, de Jong, & Koomen, 2016a,b). The extant literature also suggests that students of teachers with high student-specific self-efficacy perceive greater inclusion and support in mainstream classrooms (Hoffman & Kilimo, 2014). Educators who possess confidence in their capacity to interact with different students with diverse abilities, needs, and backgrounds are more likely to foster a supportive and welcoming environment that promotes both social and academic inclusion in their classrooms (Soodak & McCarthy, 2006).

Several studies conducted in the field of inclusive education and teacher-student interactions, together with a meta-analysis by Vösgen-Nordloh et al. (2023), emphasise the pivotal role of teacher-student relationships (TSRs) in the creation of inclusive educational environments. The meta-analysis revealed that students with emotional and behavioural problems (EBPs), a subgroup of those with SEN and their teachers hold less favourable perceptions of TSRs compared to their peers. This has the potential to exert a detrimental effect on their sense of social inclusion. High-quality TSRs function as a social protective factor, thereby reducing the occurrence of externalising and internalising problems while providing support for social, emotional and academic development. Robson and Allen (2025) found that higher teacher self-efficacy is linked to lower internalising and externalising problems in children, with stronger effects for less experienced teachers. S-S TSE beliefs are positively associated with students' academic achievement (Zee et al., 2018), thus underscoring the significance of teachers' perceptions of their ability to provide support for individual students' learning. The findings emphasise the critical role of teachers' student-specific self-efficacy in shaping the quality of teacher-student relationships and influencing students' perceptions of inclusion. However, further research is required to elucidate the temporal dynamics of S-S TSE and its impact on perceptions of inclusion, as well as to ascertain whether this relationship is contingent on students with and without SEN.

In summary, teachers' student-specific self-efficacy may play an important role as a predictor of fostering students' perceptions of inclusion. High levels of S-S TSE have been shown to be associated with enhanced teacher-student interactions, which are vital for the promotion of social inclusion, the enhancement of academic self-concept, and the provision of emotional support for school well-being. This is particularly the case for students with SEN, who, as a result of high levels of S-S TSE, are likely to feel valued, socially accepted, and academically confident.

While numerous studies have examined teacher self-efficacy and its impact on diverse student outcomes, including engagement and academic achievement, a substantial gap remains in our understanding of how teachers' student-specific self-efficacy influences students' perceptions of inclusion in school settings and whether this effect is uniform for students with SEN and their non-SEN peers. The exploration of these relationships is essential for comprehending students' perceptions of inclusion.

2. Research questions

This study addresses a research gap by examining how these relationships unfold over time and whether they differ based on SEN status.

Therefore, this study aims to address the following questions.

1. Does teachers' student-specific self-efficacy predict students' perceptions of inclusion measured as emotional well-being, social inclusion, and academic self-concept over time?
2. Does students' SEN status moderate the way teachers' student-specific self-efficacy predicts students' perceptions of inclusion?

3. Method

3.1. Data collection and procedure

The data for this study were collected as part of the **Attitudes Towards Inclusive Schooling – Students, Teachers, and Parents (ATIS-STEP)** project. The study was conducted in public primary schools in rural or urban areas of Styria, a federal state in Austria. The data collection occurred at the beginning and the end of the 4th grade. Participants included teachers and students from inclusive classrooms, defined as classes where at least one student with an official diagnosis of SEN was enrolled. This criterion likely resulted in a higher representation of students with SEN compared to the general student population in Austria.

Prior to data collection, written parental consent was obtained for each student. Ethical approval for the study was granted by the local school authority.

For the student sample, teachers completed the student-specific questionnaire for each of their students, which included items on student-specific self-efficacy. Completing this student-specific questionnaire took approximately 5–10 min per student. Teachers were instructed to respond individually to each student, reflecting specifically on their experiences and interactions with that particular student. In addition, students were asked to complete a paper-and-pencil questionnaire that assessed their perceptions of inclusion. This questionnaire addressed various aspects, including emotional well-being, social inclusion, and academic self-concept.

3.2. Sample

The final sample for this study included 42 teachers and 576 students (278 girls, 273 boys, and 25 with unspecified gender). In the paper-pencil survey, students were asked to indicate their gender by selecting one of three options: boy, girl or diverse. The "unspecified" category refers to students who left this question unanswered.

Among these, 551 students (499 without SEN and 52 with SEN) were included in the moderation analyses, as the moderation model required SEN status as a moderator. The remaining 25 students were excluded from this analysis due to undefined SEN status. As self-efficacy scores and SEN data varied, the total sample sizes differed slightly across analyses (ranging from 551 to 576 participants). All analyses were conducted with these final samples, which represent the most robust and valid data for the study's objectives.

3.3. Measures

3.3.1. Teachers' student-specific self-efficacy

Student-specific teachers' self-efficacy (S-S TSE) was assessed with a German four-item short form Schwab (2019) adapted version of the Tschannen-Moran and Hoy (2001) Teachers' Sense of Efficacy Scale (see also Zee, de Jong, & Koomen, 2016a,b). Therefore, only one item was used for each underlying of the four subscales: Instructional Strategies ("*I can provide appropriate challenges for this student*"), Behaviour Management ("*I can control disruptive behaviour in this student*"), Student Engagement ("*I can motivate this student for his/her schoolwork*"), Emotional Support ("*I can adjust learning tasks to this student's needs and interests*").

The answer format was a five-point Likert scale (1 = 'Not at all true' 5 = 'Completely true'). Teachers had to fill out the four items for each student in their class. The Teachers' Student-Specific Self-Efficacy Scale

demonstrated good reliability in this study, with Cronbach's alpha of 0.830 and McDonald's omega of 0.836 (Nunnally & Bernstein, 1994; McDonald, 1999). Similarly, Przibilla et al. (2024) reported good to excellent reliability for the SS-TSES-G, an adaptation of the TSES framework.

3.3.2. Students' perceptions of inclusion: academic self-concept, social inclusion, and emotional well-being

Students' Perceptions of Inclusion were measured by the German student version of the perception of inclusion questionnaire (PIQ; Venetz et al., 2015). The questionnaire consists of three subscales: Emotional Well-Being (EMO) *(e.g.," I like it in school.")*, Social Inclusion (SOC) *(e.g., "I have a lot of friends in my class.")*, Academic Self-Concept (ACSC) (e.g., *"I am able to solve very difficult exercises.")*. The full questionnaire is available online (Venetz et al., 2015): https://piqinfo.ch/

Each subscale included four items and a four-point Likert scale ranging from 1 (Not at all true) to 4 (Certainly true) as the answer format and showed high psychometric quality for students with as well as students without SEN (Venetz et al., 2019). All subscales demonstrated good reliability. The EMO subscale had the highest reliability ($\alpha = 0.873$, $\omega = 0.875$), followed by the ACSC subscale ($\alpha = 0.769$, $\omega = 0.772$) and the SOC subscale ($\alpha = 0.736$, $\omega = 0.750$).

3.4. Analysis

The data were analysed using Mplus 8.10 (Muthén & Muthén, 1998-2017). Confirmatory Factor Analyses (CFAs) were conducted to assess the structural validity of the measurement scales. Robust maximum likelihood estimation (MLR) was employed to estimate models, a method that has been shown to provide reliable estimates even in circumstances where data may not be perfectly normally distributed, with fit indices including Chi-square test (χ^2), Root Mean Square Error of Approximation (RMSEA), Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and Standardised Root Mean Square Residual (SRMR), to ensure a comprehensive assessment of model fit across multiple criteria. The goodness of fit thresholds was applied as follows: RMSEA values below 0.06 indicate a good fit, with values up to 0.08 considered acceptable (Browne & Cudeck, 1992); CFI and TLI values above 0.90 are considered acceptable, with values above 0.95 indicating an excellent fit (Hu & Bentler, 1999); and SRMR values below 0.08 indicate a well-fitting model. Standardised factor loadings greater than 0.40 were considered acceptable for construct validity (Kline, 2023). Covariance coverage varied from 69 % to 72 %, with 25 cases missing data on x-variables due to unknown SEN status. Additionally, missing data patterns varied across models, with six patterns observed in ACSC and SOC analyses and two in EMO analyses. Missing data were treated using full information maximum likelihood (FIML), assuming that data are missing at random (MAR; Enders, 2010) as the data had a nested structure (students within teachers), TYPE = COMPLEX was used in Mplus to adjust for clustering effects and provide corrected standard errors to ensure that within-class correlations did not bias parameter estimates.

3.5. Model specification

The Structural Equation Models (SEMs) were built as follows. Two models were sequentially specified for each of the three PIQ outcomes. **Model 1** evaluated the predictive relationships between teachers' student-specific self-efficacy (S-S TSE) and the three aspects of students' perceptions of inclusion (EMO, SOC, ACSC) over time. Model 1 was evaluated using absolute fit indices, including χ^2, RMSEA, CFI, TLI, and SRMR, to determine the goodness of fit.

Model 2 incorporated moderation analyses whereby students' SEN status was added to models together with an interaction term (S-S TSE x SEN) between student SEN and Teacher's student-specific self-efficacy, and then the student outcomes were predicted by all these three variables (main effects and interaction effect). Since absolute fit indices (χ^2, RMSEA, CFI, TLI, SRMR) are not available for models that include latent interactions (Maslowsky et al., 2015), Model 2 was evaluated using the Satorra-Bentler scaled chi-square difference test, which accounts for scaling of MLR estimation (Satorra & Bentler, 2010). A significant chi-square difference ($p < 0.05$) indicates that the less constrained model (with moderation) provides a significantly better fit to the data than the more constrained model (without moderation), justifying the inclusion of the interaction term (Satorra & Bentler, 2010).

4. Results

4.1. Preliminary analyses

The S-S TSE scale one-factor model of teacher efficacy had a good fit (χ^2 (2) = 4.919, p = 0.086, RMSEA = 0.050, CFI = 0.993 and SRMR = 0.018). Similarly all the three PIQ subscales measuring students perception of inclusion had a good fit (EMO: $\chi^2(2) = 0.068$, p = 0.967, RMSEA = 0.000, CFI = 1.000 and SRMR = 0.002), (SOC $\chi^2(2) = 7.704$, p = 0.021, RMSEA = 0.084, CFI = 0.970 and SRMR = 0.028), (ACSC $\chi^2(2) = 3.378$, p = 0.185, RMSEA = 0.042, CFI = 0.995 and SRMR = 0.017).

Standardised factor loadings for S-S TSE ranged from 0.514 to 0.882, indicating moderate to strong relationships between the observed variables and the latent construct. The loadings for EMO range from 0.670 to 0.872, for SOC from 0.373 to 0.867 and for ACSC from 0.547 to 0.831. All factor loadings were statistically significant ($p < 0.05$), supporting the validity of the scales.

Correlations between the scales included in the analyses are shown in Table 1.

4.1.1. Relationships between teacher specific self-efficacy and students' perceptions of inclusion

Model 1 examined the predictive relationships between teachers' student-specific self-efficacy (S-S TSE, T1) and students' perceptions of inclusion (EMO, SOC, ACSC) at T2. The predictive models between teacher efficacy and student perceptions demonstrated an acceptable fit (see Table 2).

S-S TSE predicted significantly students' emotional well-being ($\beta = 0.139$, $p = 0.020$), social inclusion ($\beta = 0.232$, $p < 0.001$), and academic self-concept ($\beta = 0.203$, $p = 0.001$) over time. These findings suggest that teachers' self-efficacy at the beginning of the school year positively influences students' perceptions of inclusion before the end of the school year.

4.1.2. Moderation of the prediction by SEN status

The second set of models assessed whether students' SEN status moderated the predictive relationships between teachers' student-specific self-efficacy and students' perceptions of inclusion identified in the first phase of modelling. The moderation analysis revealed a significant interaction effect between teacher efficacy and student perception of emotional well-being ($\beta = -0.108$, $p = 0.032$). To evaluate whether the inclusion of the interaction term significantly improved model fit, a Satorra-Bentler chi-square difference test was conducted. The results indicate a significant model improvement (χ^2 (1) = 11.21, p = 0.00081), supporting the inclusion of the moderation effect in the

Table 1
Correlations between the scales.

	S-S TSE	EMO	SOC
EMO	0.170		
SOC	0.218	0.396	
ACSC	0.162	0.373	0.292

Note. Values are Pearson correlation coefficients. All correlations are significant ($p < 0.01$).

Table 2
Model fit indices and path coefficients.

	χ^2 (df = 19)	p-value	CFI	TLI	RMSEA	SRMR	β	p (β)
EMO	49.642	0.0001	0.984	0.976	0.053	0.046	0.139	0.02
SOC	55.044	0.0	0.975	0.964	0.057	0.047	0.232	<0.001
ACSC	55.867	0.0	0.975	0.963	0.058	0.039	0.203	0.001

Note. χ^2 = Chi-square goodness-of-fit test; df = degrees of freedom; CFI = Comparative Fit Index; TLI = Tucker-Lewis Index; RMSEA = Root Mean Square Error of Approximation; SRMR = Standardized Root Mean Square Residual. β represents standardised regression coefficients. P-values: <0.001 indicates statistical significance.

model. The model with the interaction term had a lower Akaike Information Criterion (AIC = 9017.127) and Sample-Size Adjusted BIC (9047.834) compared to the model without interaction (AIC = 9019.517, Adjusted BIC = 9049.087), indicating a better model fit. The nature of this moderation effect was analysed using a diagram with parameters drawn from the regression analysis (see Fig. 1 below). As Fig. 1 shows, the positive influence of teachers' self-efficacy on students' emotional well-being is weaker for students with SEN, as indicated by the downward slope as compared to the upward slope for students without SEN. However, no significant moderation effects were observed for social inclusion (SOC2, β = −0.018, p = 0.756) or academic self-concept (ACSC2, β = −0.034, p = 0.547). These results suggest that SEN status primarily impacts the relationship between teachers' self-efficacy and students' emotional well-being.

5. Discussion

This study examined the relationship between teachers' student-specific self-efficacy and students' perceptions of inclusion, focusing on emotional well-being, social inclusion and academic self-concept. The findings of the current study confirmed that teachers' student-specific self-efficacy has a significant positive influence on students' perceptions of inclusion. This means that if the teacher has higher confidence in teaching a specific student, that reflects in a more positive perception of inclusive education for the student after one school year. The prediction was of moderate effect size and highest for students' feelings of social inclusion. These findings support previous research results highlighting the importance of teachers' beliefs about their ability to influence student outcomes (Caprara et al., 2006; Zee, de Jong, & Koomen, 2016a,b). These findings are important as they show that the effect of teacher efficacy lasts through a full school year, which adds to the knowledge observed in cross-sectional studies (e.g., Schwab et al., 2022). While this relationship cannot be interpreted strictly as a causal relationship, it provides evidence towards a probable causal direction and highlights the importance of teacher efficacy also for students' well-being. A possible explanation might be that teachers who believe that they can positively influence the development of their students may foster a more inclusive environment that improves the overall school experience for students. Teachers who feel confident in their ability to engage and support students are more likely to create a classroom atmosphere where students feel safe and valued, which in turn promotes students' perceptions of inclusion (Soodak & McCarthy, 2006; Hoffman & Kilimo, 2014; Zee & Koomen, 2016).

While the overall findings point to a positive link between teacher self-efficacy and how students perceive inclusion, the moderation analysis showed a more complex pattern when looking at SEN status and its role in shaping the effect on emotional well-being. In particular, the connection between teacher self-efficacy and the emotional well-being of students with SEN appeared to be negative. The data of this study do not provide a clear explanation for this counterintuitive finding. It

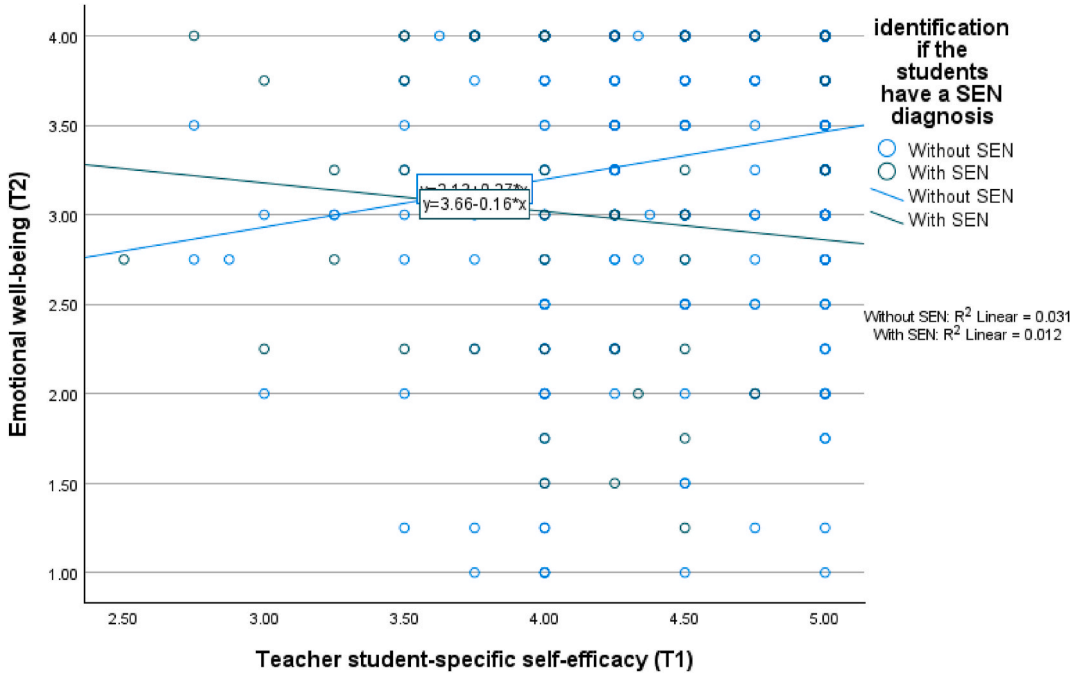

Fig. 1. Moderation Effect of having SEN on the Relationship Between S-S TSE (Time1) and Emotional Well-Being (Time2).
Note. The scatter plot shows the relationship between S-S TSE (T1) and students' emotional well-being (T2), with separate regression lines for students with and without a SEN diagnosis. The without SEN group shows a positive trend, while the SEN group shows a negative trend (y = 3.66–0.16x). R^2 values are low (no SEN: 0.031, SEN: 0.012), indicating a weak association.

remains unclear whether certain pedagogical behaviours associated with high teacher efficacy might inadvertently challenge students with special educational needs (SEN) in unexpected ways. As the results show, higher teacher-specific efficacy seems linked to lower emotional well-being among students with SEN, or on the flip side, lower teacher efficacy connects to higher emotional well-being for these students. This suggests that for students with SEN, other factors may play a more significant role in shaping their emotional experiences and perception of inclusion, potentially overshadowing the influence of teacher self-efficacy. For example, while teachers feel confident, they can adjust tasks, motivate students, and provide them with appropriate challenges, the concrete pedagogical practices they use may not be so well received by the students with SEN. Perhaps the pedagogical challenges, which usually are related to positive learning outcomes, do not arouse positive feelings towards school among the students with SEN. Perhaps students with SEN may require more individualised support, tailored interventions or differentiated interactions to feel emotionally safe and included.

Alternatively, it is possible that some context-specific factors tied to Austrian inclusive settings might help explain this result, which calls for more research. One possible explanation in this regard may be that even teachers with high levels of student-specific self-efficacy may face structural challenges in inclusive Austrian classrooms, such as teacher shortages, lack of resources, or limited access to co-teaching and classroom assistants. Combined with the high heterogeneity of student groups (e.g., students with language barriers), these contextual factors may overwhelm teachers and limit their ability to adapt instruction to the specific needs of students with SEN, despite their general sense of efficacy.

While the exact reasons cannot be drawn from this data, the finding suggests that teachers' student-specific self-efficacy alone is insufficient to address the more complex emotional challenges faced by students with SEN. However, the moderation effects of SEN status were not found for students' social inclusion or academic self-concept, as the effect of S-S TSE was similarly robust and positive for students with and without SEN. This is particularly interesting as the overall effect was strongest for social inclusion, followed by academic self-concept.

5.1. Limitations

The study has obvious limitations. First, although the finding about the longitudinal effect of teachers' student-specific self-efficacy on student well-being is a promising result, these findings should not be interpreted as showing a causal effect. Other factors not considered in this study may also contribute significantly to student well-being. More rigorous study designs would be needed in the future to test the causal assumptions suggested by this study. Second, teachers' student-specific self-efficacy was measured with a scale representing several possible dimensions of teacher efficacy. Although the new short-form scale showed good reliability, as reported in this study, the use of only one item per efficacy domain may have limited the ability to fully capture nuanced aspects of teacher self-efficacy, which should be considered when interpreting the findings. Good reliability might be related to the observation that teacher self-efficacy subscales have often high intercorelations and researchers end up measuring overall efficacy expressed by a second order factor (see e.g. Yada et al., 2018). It would have been interesting to test whether the specific pedagogical context of teacher efficacy (e.g. behaviour management vs. engagement or instruction) would have led to different outcomes in the prediction of student perceptions of inclusion. Such differentiation could help to identify more targeted interventions in teacher education programs. Future research should thus aim to differentiate these dimensions more clearly to deepen our understanding. Third, there was some attrition in the data, which decreased the final sample size and reduced the power of the analyses. Fourth, the sample was purposefully drawn from one region in Austria, among inclusive classes in schools, which were defined as classes that enrolled one or more students with official identification of SEN. Thus, the findings cannot directly be generalised to the overall Austrian educational context.

Additionally, using the relatively small moderation subgroup of students with SEN ($n = 52$) might have partially explained the non-significant moderation results for both academic self-concept and social inclusion. For future studies, considering larger samples may help achieve a broader understanding. Furthermore, taking into account the sensitivity of these moderation results, these findings should be considered preliminary and interpreted with caution until confirmed by further research.

The definition of inclusive classrooms is another limitation in this study. In this study, the presence of at least one student with SEN was used as a proxy for an inclusive classroom. Nevertheless, this does not completely capture whether these classrooms are fully inclusive or simply function as integrated settings without fully supporting the social and emotional inclusion of SEN students (Qvortrup & Qvortrup, 2017; Woodcock & Hardy, 2016). Considering more nuanced measures of inclusion may illustrate not just student placement, but the actual inclusive settings and students' perceived classroom climate.

5.2. Implications for research and practice

The positive effect of S-S TSE and the (partly) differential effects for students with SEN highlight the importance of investigating teachers' self-efficacy in a more context-specific manner, in this case, within the teacher-student dyad. Teachers' confidence in teaching different students with various characteristics and abilities may play a larger role than expected thus far. This means that while it is important to differentiate between different aspects of teaching in contextualising teacher efficacy, it may also be important to regard the differences among the learners as important in understanding the role of teacher efficacy.

Considering the unique interactions within each teacher-student dyad, it may also be worthwhile to explore how teachers adapt their strategies according to their perception of student needs. An important source of support to teachers could also be direct student feedback, for example by an online tool utilizing PIQ. PIQ ratings could be used in a similar fashion as schools use various formative assessment tools today, from which teacher gets longitudinal graphs showing how each students' well-being develops. Teacher could, then, adjust their teaching and support accordingly. Resultant positive developments could, then, support increased teacher's student specific efficacy.

A logical conclusion is that teachers who face challenges in areas such as classroom management, for example, may also need some individualised support to carry out their inclusive teaching practices. Recognising these individual challenges is essential to effectively addressing the diverse needs within the classroom. This personalised assistance may encompass customised coaching sessions that specifically target the teacher's own areas of concern, thereby fostering greater self-awareness and effectiveness. This calls for a more nuanced understanding of inclusive pedagogy or inclusive practices where the teacher's role is described as concrete actions or activities. If and when such actions can be understood more clearly, this opens a door for more targeted teacher education, both pre-service and in-service, which can contribute towards building a more inclusive education. This could take the form of targeted supervision or mentorship rather than general, one-size-fits-all training. In addition, offering collaborative platforms where teachers share their experiences, and practical solutions might foster collective growth in inclusive pedagogical skills. Furthermore, allowing teachers to reflect on why they feel high levels of self-efficacy with some students but not with others could provide valuable insights into their specific training needs and capacity gaps. This reflective process could help identify areas where teachers require additional support or professional development to enhance their effectiveness across a broader range of students.

Finally, the study emphasises the significance of listening to

children's voices as a crucial indicator of successful inclusion. Having confident and effective teachers is not enough; the true measure of successful inclusion is the well-being of students and their positive view of themselves, emotionally, socially and academically. Therefore, including regular, structured feedback sessions with students could significantly enhance the understanding of how inclusive practices are experienced and where improvements might be needed.

CRediT authorship contribution statement

Erkan Eren: Writing – original draft, Formal analysis, Conceptualization. **Akie Yada:** Writing – review & editing, Supervision, Software, Methodology. **Susanne Schwab:** Writing – review & editing, Supervision, Investigation, Funding acquisition, Conceptualization. **Hannu Savolainen:** Writing – review & editing, Supervision, Methodology, Conceptualization.

Funding

Erkan Eren's work was supported by the Turkish Ministry of Education.

Akie Yada's work was funded by The Centre of Excellence for Learning Dynamics and Intervention Research (InterLearn CoE) in the Academy of Finland's Center of Excellence Programme (2022–2029) (JYU-EDU/Aro 346120, JYU-PSY/Leppänen 346119, UTU/Korja 346121).

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data will be made available on request.

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