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Predictors of teachers' inclusive practices: a longitudinal study using the theory of planned behaviour

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ABSTRACT

We examined the longitudinal relationship between teachers' affective attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy, intentions to use inclusive practices, and their inclusive practices. The study used Ajzen's Theory of Planned Behaviour (TPB) and focused on two domains: personalised instructional practices and collaboration and assessment practices. We analysed longitudinal survey data consisting of responses from Finnish basic education teachers ($N = 783$) to two questionnaires launched in September 2022 and April 2023. The data on affective attitudes, subjective norms, self-efficacy, and intentions originated from the first round of data collection, and the data for inclusive practices were obtained from the second round. The structural equation modelling (SEM) analysis revealed that teachers' self-efficacy for inclusive practices and their intentions to use inclusive practices significantly predicted their inclusive practices. The positive indirect effects of teachers' affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy on their inclusive practices via their intentions were statistically significant. This finding demonstrated that teachers' intentions served as a mediator between these three factors and their inclusive practices. The results have significant implications for enriching teacher training programmes, shaping future policies on inclusive education, and improving more inclusive educational practices in schools.

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KEYWORDS

Theory of planned behaviour (TPB); inclusive education; self-efficacy; intention; inclusive practice

Introduction

Inclusive education has become an important issue worldwide. UNESCO (2017, 7) defines it as the 'process of strengthening the capacity of the education system to reach out to all

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learners'. Teachers are essential to successfully implementing inclusive education in classrooms (Forlin et al. 2010). Researchers have underscored the significance of teachers' attitudes, subjective norms, self-efficacy, and intentions regarding inclusion in ensuring high-quality inclusive education (Cate et al. 2018; Pace and Aiello 2016).

To our knowledge, research on how attitudes, subjective norms, self-efficacy, and intentions regarding inclusion predict inclusive practices has predominantly relied on cross-sectional designs. However, there is a scarcity of longitudinal studies that explore how these factors predict inclusive practices. The objective of this study is to enhance existing knowledge by investigating the longitudinal relationship between teachers' affective attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy beliefs, intentions to use inclusive practices, and their inclusive practices. Employing a longitudinal design enhances our understanding of this relationship by providing insights that extend beyond those derived from cross-sectional studies.

Theory of planned behaviour

Ajzen's (1991) theory of planned behaviour (TPB) provides a useful theoretical framework for predicting human behaviour. Ajzen argues that an individual's intentions to perform a behaviour and perceived behavioural control affect their behaviour. Intentions reflect an individual's readiness to perform a behaviour and are determined by three factors: attitudes towards the behaviour, subjective norms about the behaviour, and perceived behavioural control. Attitudes denote an individual's positive or negative evaluation of behaviour. Subjective norms refer to perceived social pressure to perform or not perform the behaviour. Perceived behavioural control is compatible with Bandura's (1997) concept of self-efficacy, representing an individual's belief in their ability to perform a certain behaviour. Intentions mediate the effects of these three factors on behaviour. Ajzen (1985) also proposes that perceived behavioural control acts as a moderator of the intentions – behaviour relationship (see Figure 1). That is, when an individual has a high level of perceived behavioural control over behaviour, their intentions become a stronger predictor of this behaviour. Research has highlighted the TPB's applicability to understanding teachers' intentions regarding inclusion, inclusive practices, and predictors thereof (e.g. Yan and Sin 2014).

Attitudes towards inclusive education

Three dimensions comprise attitudes towards inclusive education: cognitive, affective, and behavioural (de Boer, Pijl, and Minnaert 2011). Cognitive attitudes reflect teachers' beliefs about inclusion, while affective attitudes denote their feelings about teaching students with diverse needs in their classroom. Behavioural attitudes concern teachers' tendency to act with these students in the classroom.

Positive teacher attitudes are essential for the successful implementation of inclusion (Avramidis and Kalyva 2007). Supporting this perspective, research shows that teachers with positive attitudes towards inclusion are inclined to demonstrate greater willingness to use inclusive methods (Avramidis et al. 2019) and, in turn, engage more in practices that successfully include students with diverse needs in their classrooms (Klehm 2014).

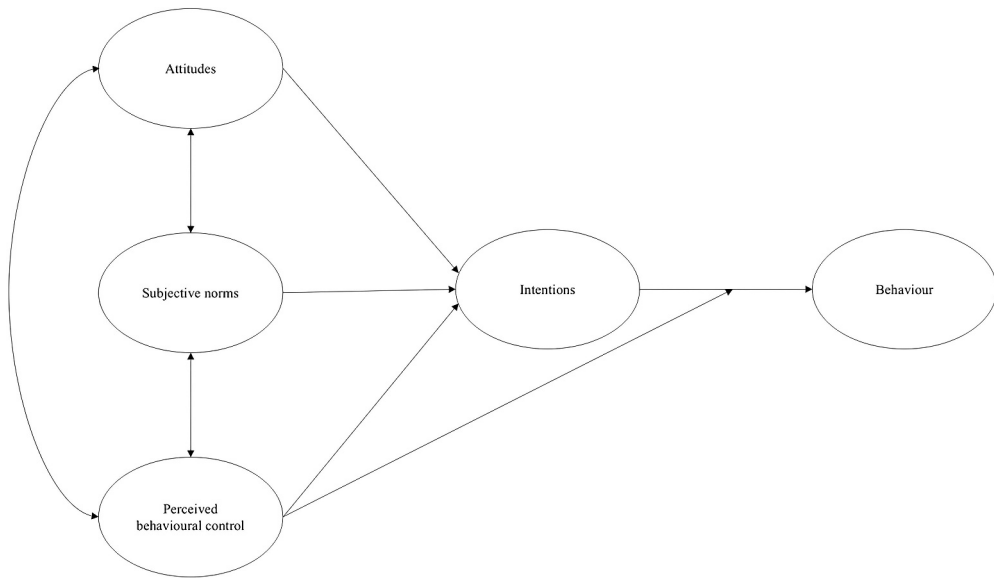


Figure 1. Ajzen's theory of planned behaviour (TPB).

This evidence underscores the indirect role of teachers' attitudes towards inclusion in inclusive strategies through their intentions regarding inclusion.

Subjective norms about inclusive practices

The social pressure that teachers perceive from the expectations of significant individuals within the school community regarding inclusion reflects their subjective norms about inclusive practices (Sharma and Hasheem 2015). These individuals may include school principals, other teachers, and parents. Research suggests that teachers who perceive a positive school ethos, which communicates the expectations of these key figures regarding the implementation of inclusive practices, are more likely to show a greater likelihood of utilising inclusive methods (Shevlin, Winter, and Flynn 2013) and subsequently adopt more inclusive approaches (White and Fletcher 2025). These findings highlight the indirect role that teachers' subjective norms play in inclusive practices through their intentions concerning inclusion.

Self-efficacy for inclusive practices

Teachers' beliefs in their ability to address students' diverse needs using various inclusive strategies reflect their self-efficacy for inclusive practices (Malinen et al. 2013). Based on Bandura's (1997) argument of domain-specific self-efficacy, researchers have explored self-efficacy for inclusive practices across different domains, including instructional strategies and collaboration (e.g. Alnahdi 2020). While self-efficacy for instructional strategies assesses a teacher's belief in their ability to design and implement supportive learning activities, self-efficacy for collaboration evaluates a teacher's conviction in their capability

to work effectively with parents and professionals to improve student outcomes (Savolainen et al. 2012).

Studies indicate that teachers with strong self-efficacy tend to exhibit more willingness to implement inclusion (Franzen, Moschner, and Hellmich 2024) and then participate in a greater variety of inclusive strategies (Woodcock, Hitches, and Manning 2023). These findings underscore the indirect role of teachers' self-efficacy in inclusive methods via their intentions related to inclusion. Additionally, research reveals that teachers with stronger self-efficacy regarding inclusion are more likely to convert their beliefs about inclusion into more inclusive practices within the classroom (Woodcock et al. 2022). This evidence emphasises the moderating role of teachers' self-efficacy concerning inclusion in the link between their intentions and practices related to inclusion.

Intentions to use inclusive practices

Intentions indicate the likelihood of teachers implementing inclusive practices in their classrooms (Sharma and Kate Jacobs 2016). Research indicates that teachers with a greater likelihood of utilising inclusive strategies adopt more inclusive methods within educational settings (Wang, Wang, and Wen 2015). This finding highlights that robust intentions concerning inclusion are crucial for successfully implementing inclusive practices within classrooms.

Inclusive practices

Teachers employ several practices to meet diverse student needs in inclusive classrooms. One of these practices is personalised instruction, which entails adapting teaching strategies to individual student needs (Sharma et al. 2021). Another practice is collaboration, which involves teachers sharing knowledge, observing each other's practices, and reflecting on teaching methods. Teachers also monitor and evaluate individualised student outcomes using assessment practices. The importance of these practices is well documented in the literature. Studies show that personalised instruction and assessment practices promote equity and fairness, making education more relevant and engaging for all students (Bešić et al. 2017; Kaur, Noman, and Nordin 2017). Research also indicates that collaboration practices foster a culture of shared professional learning, thereby enhancing student progress (Nochajski 2002).

Inclusive education in Finland

Part-time special education and a multitiered support system are important features of inclusive education implementation in Finland (Björn et al. 2016). Since the 1970s, every school has provided part-time special education, with teachers offering support through group or individual teaching depending on students' diverse needs. A multitiered support system was introduced following the renewal of the Finnish Basic Education Act (2010). Since 2011, all schools have been required to provide support at three tiers: general, intensified, and special support. This system prioritises early and immediate support to ensure quality education for all. Every student is

entitled to general support as part of daily teaching and learning, with teachers adapting instructional methods, conducting educational assessments, and co-teaching with other teachers. When general support is insufficient, more intensive support is provided by teachers in collaboration with parents and other professionals, including the school principal.

Support rhetoric has necessitated all teachers to adopt more inclusive methods to address increasing student diversity. However, there is a public debate against inclusivity, as seen recently on the Finnish Broadcasting Company's (YLE) website. This opposing view is that teachers struggle with the demands of heterogeneous classrooms (YLE 2019). This news is supported by research highlighting teachers' perceptions of not coping with diverse student needs due to inadequate practical training (Paju et al. 2016). Furthermore, evidence indicates that general education teachers employ few inclusive teaching and working strategies (Saloviita 2018). These findings point to challenges in successfully implementing inclusion, thereby emphasising the importance of studies like the current one investigating potential predictors of inclusive practices.

The present study

While there are many cross-sectional studies examining teachers' intentions and practices regarding inclusion (e.g. Urton et al. 2023), longitudinal research on these factors within the TPB framework remains scarce. Specifically, the longitudinal link between teachers' attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy in inclusive education, intentions regarding inclusion, and inclusive practices within the full TPB framework has not been sufficiently investigated. From a methodological perspective, the association between TPB factors and behaviour is vulnerable to common method variance when a cross-sectional design is used, and this issue may result in an artificially inflated relationship between these factors (Armitage and Conner 1999). A longitudinal design can mitigate common method variance by introducing a time gap between TPB factors and behaviour measures. From a practical standpoint, it is also important to base recommendations for interventions on research with a longitudinal design, as this approach enables stronger claims about the direction of effects between TPB factors and behaviour than a cross-sectional design (Armitage and Conner 2001). Therefore, this study aims to investigate the longitudinal relationship between teachers' affective attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy for inclusive practices, intentions to use inclusive practices, and their inclusive practices in the domains of personalised instructional practices and collaboration and assessment practices based on Ajzen's TPB (see Figures 2 and 3 for the logic models illustrating the theory of change). To achieve this aim, the following hypotheses were formulated for both domains:

Hypothesis 1. Affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy for inclusive practices are related to intentions to use inclusive practices.

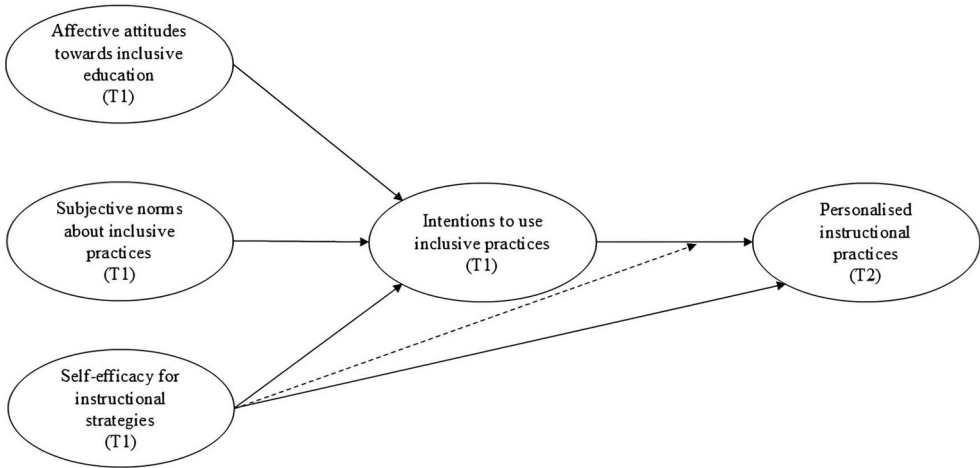


Figure 2. Logic model illustrating the theory of change for the domain of personalised instructional practices. T1 = variables measured in September 2022; T2 = variables measured in April 2023. Affective attitudes, subjective norms, and self-efficacy are related to intentions, which in turn predict later personalised instructional practices. Intentions mediate the effects of these factors on later practices. Self-efficacy also predicts later practices and moderates the intentions – practices association. Solid arrows indicate direct effects, and the dashed arrow indicates moderation.

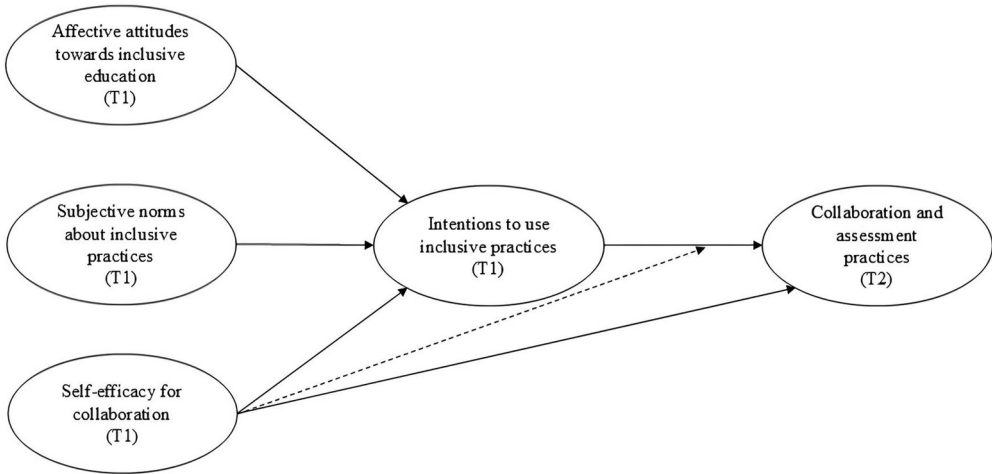


Figure 3. Logic model illustrating the theory of change for the domain of collaboration and assessment practices. T1 = variables measured in September 2022; T2 = variables measured in April 2023. Affective attitudes, subjective norms, and self-efficacy are related to intentions, which in turn predict later collaboration and assessment practices. Intentions mediate the effects of these factors on later practices. Self-efficacy also predicts later practices and moderates the intentions – practices association. Solid arrows indicate direct effects, and the dashed arrow indicates moderation.

Hypothesis 2. Intentions to use inclusive practices and self-efficacy for inclusive practices predict later inclusive practices.

Hypothesis 3. Intentions to use inclusive practices mediate the effects of affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy on later inclusive practices.

Hypothesis 4. Self-efficacy moderates the relationship between intentions and later inclusive practices, whereby intentions have a stronger effect on later inclusive practices for teachers with a strong sense of self-efficacy.

Materials and methods

Participants

We conducted an online questionnaire survey of Finnish basic education teachers in 88 schools across southern Finland. A total of 783 teachers responded to the questionnaire, with 77.7% identifying as female, 19.9% as male, and 2.4% as other genders. The mean age of the teachers was 49.4 ($SD = 9.5$) years. The gender distribution and age profile of the sample align with national statistics on Finnish basic education teachers, with 78% being female and approximately 40% of teachers aged 50 years or older (Finnish National Agency for Education 2020).

Procedure

The data collection process began with obtaining permission from seven municipalities to conduct the research. We contacted each municipality's education authorities, who subsequently provided us with principals' and teachers' email addresses. The first questionnaire was launched in late September 2022. A personalised web link for participation in this electronic questionnaire was emailed to 2491 teachers and principals via an online platform provided by the first author's institute. Of these recipients, 538 teachers completed the first questionnaire. In mid-April 2023, we distributed a personalised web link for participation in the second electronic questionnaire to all teachers and principals through follow-up emails. The questionnaire was completed by 485 teachers. The data encompass one school year, with 240 teachers responding at both time points. At each stage, the questionnaire data was securely saved and stored in a cloud storage service at the first author's institute.

Measures

Teachers' affective attitudes towards inclusive education were measured using the Feelings About Inclusion subscale from the Attitudes Towards Inclusion Scale (AIS; Sharma and Kate Jacobs 2016). The subscale has four items, such as 'I am excited to teach students with a range of abilities in my class'. Item factor loadings ranged from .66 to .78 across the domain-specific models. Participants responded on a 7-point Likert scale

ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). A higher score indicates more positive affective attitudes towards inclusive education. McDonald's omega coefficient was .80.

The Subjective Norms About Inclusive Practices Scale (SNIPS) was developed by the study authors to assess teachers' subjective norms about inclusive practices. Items were derived from the Inclusive Practices Scale (IPS; Sharma et al. 2021). Three items were chosen from each subscale: Personalised Instructional Strategies, Communicative Scaffolding Strategies, and Collaboration and Assessment Strategies. Each item begins with 'In this school, most people who are important to me expect me to ...', followed by IPS items such as 'plan instruction to address interests of students'. Item factor loadings ranged from .61 to .83 across the domain-specific models. The SNIPS contains nine items rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). A higher score suggests more perceived positive social pressure to implement inclusive practices. McDonald's omega coefficient was .87.

Teachers' self-efficacy was assessed using two subscales of the Finnish version of the Teacher Efficacy for Inclusive Practices (TEIP; Malinen et al. 2013; Sharma, Loreman, and Forlin 2012) scale. Each subscale comprises six items: Efficacy to Use Inclusive Instructions, such as 'I am able to provide an alternate explanation or example when students are confused', and Efficacy in Collaboration, such as 'I can make parents feel comfortable coming to school'. Item factor loadings ranged from .49 to .76 for Efficacy to Use Inclusive Instructions and .57 to .86 for Efficacy in Collaboration. Participants responded on a 6-point Likert scale ranging from 1 (*strongly disagree*) to 6 (*strongly agree*). Higher scores indicate a stronger sense of self-efficacy. McDonald's omega coefficient was .72 for the Efficacy to Use Inclusive Instructions and .75 for the Efficacy in Collaboration.

Teachers' intentions to use inclusive practices were measured using the Intention to Teach in Inclusive Classroom Scale (ITICS; Sharma and Kate Jacobs 2016). ITICS has seven items. Participants were first presented with the statement, 'The following statements are about your own work at your current school. How likely is it that you do the following things at work?' followed by items such as 'I change the curriculum to meet the learning needs of a student with learning difficulty enrolled in my class'. Item factor loadings ranged from .56 to .77 across the domain-specific models. Responses were recorded on a 7-point Likert scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*). A higher score suggests stronger intentions to use inclusive practices. McDonald's omega coefficient was .76.

Teachers' inclusive practices were assessed using two subscales from the IPS (Sharma et al. 2021). Each subscale comprises eight items: Personalised Instructional Strategies (PIS) such as 'I modify instruction to meet the diverse learning needs of students', and Collaboration and Assessment Strategies (CAS) such as 'I collaborate with teammates to support student learning' and 'I use a variety of assessment strategies to measure student progress'. Item factor loadings ranged from .64 to .85 for PIS and .42 to .78 for CAS. Responses were rated on a 5-point Likert scale ranging from 1 (*never*) to 5 (*very often*). Higher scores indicate greater engagement in these practices. McDonald's omega coefficient was .85 for PIS and .78 for CAS. Table 1 shows the descriptive statistics for the scales or subscales used in this study.

Table 1. Descriptive statistics of the measurement scales.

Scale	Variable	<i>N</i>	<i>M</i>	<i>SD</i>	Skewness	Kurtosis	Range
AIS	Affective attitudes	538	4.14	1.30	−0.30	−0.34	1–7
SNIPS	Subjective norms	538	3.82	0.61	−0.50	0.88	1–5
TEIP	Self-efficacy for instructional strategies	538	4.62	0.56	−0.42	0.93	1–6
	Self-efficacy for collaboration	538	4.62	0.60	−0.24	0.15	1–6
ITICS	Intentions	538	5.83	0.73	−0.41	−0.39	1–7
IPS	Personalised instructional practices	485	3.92	0.54	−0.03	−0.44	1–5
	Collaboration and assessment practices	485	4.02	0.48	−0.16	−0.48	1–5

Note. AIS = Attitudes Towards Inclusion Scale; SNIPS = Subjective Norms About Inclusive Practices Scale; TEIP = Teacher Efficacy for Inclusive Practices; ITICS = Intention to Teach in Inclusive Classroom Scale; IPS = Inclusive Practices Scale. Sample means (*M*) and standard deviations (*SD*) are based on item-level means rather than total scores.

Ethical issues

This study adhered to the Finnish National Board on Research Integrity TENK (2019) ethical guidelines for human participant research. Based on these guidelines, no ethical review statement from the Human Sciences Ethics Committee was required. All participants provided informed consent prior to taking part in the study. This process included a consent form that accompanied a cover letter with the electronic questionnaire. The consent form emphasised the voluntary nature of participation and informed participants of their right to withdraw at any time. Furthermore, participants received the following ethics-related forms: (a) a research notification that offered a brief description of the study and (b) a privacy notice outlining the processing of personal data.

Study design and data analysis

The study employed a longitudinal design. Ratings for affective attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy for instructional strategies and collaboration, and intentions to use inclusive practices used in the models came from the first round of data collection, which began in September 2022. Data of the personalised instructional practices and collaboration and assessment practices measures were derived from the second round of data collection, which commenced in April 2023. The descriptive statistics presented in Table 1 include variables measured at the first and second rounds of data collection. The confirmatory factor analysis (CFA) similarly incorporated variables from both rounds, with each variable represented by data from the measurement round in which it was collected.

Data from the two measurement rounds were linked using participants' email addresses. These email addresses were replaced with numerical identifiers and then removed to anonymise the data. Before combining two samples, an assessment was conducted to identify differences between these samples. This involved comparing participants who completed only the first round of data collection with those who completed both the first and second rounds on all variables measured at the first round. The results indicated no substantial differences between the two samples. For participants who provided data at both measurement rounds, responses from both rounds were included: first-round data for attitudes, subjective norms, self-efficacy, and intentions, and second-round data for inclusive practices.

Two main analysis methods used in this study were CFA and structural equation modelling (SEM) with TPB latent variables. Both analyses were conducted using Mplus (Version 8.10). The first stage of the analysis was to conduct CFA that included the measurement model and correlations between TPB latent variables across two domains: personalised instructional practices and collaboration and assessment practices. Because the two components of the IPS measure different domains of inclusive practices, each domain was specified as a separate measurement model. Therefore, all CFA and SEM were conducted and reported separately for personalised instructional practices and collaboration and assessment practices. Restricting the analyses to only participants who responded at both time points would have resulted in the exclusion of valid data and reduced statistical power; therefore, all participants with valid data for the relevant variables were retained in the analyses.

The second stage was to build the structural model with TPB latent variables to test Hypotheses 1, 2, and 3, related to the direct effects and the mediating effect of intentions to use inclusive practices across both domains. The weighted least squares means and variance adjusted (WLSMV) estimation method was used in the first two stages. According to Brown (2006), WLSMV is the best option for ordered data modelling, as it yields less biased factor loadings than maximum likelihood estimation (Beauducel and Yorck Herzberg 2006). The default method for handling missing data with WLSMV is pairwise deletion (Asparouhov and Muthén 2010). This approach maximises the use of available data by eliminating cases on an analysis-by-analysis basis (Enders 2010), thereby allowing participants with missing data at some time points to contribute their available data. Since pairwise deletion utilises more information, it is recommended as a more efficient approach for addressing missing data compared to entirely excluding participants who have missing data from the analyses (Asparouhov and Muthén 2010). Pairwise deletion produces unbiased estimates for parameters and standard errors under the assumption that data are missing completely at random (MCAR) (Asparouhov and Muthén 2010). This assumption was evaluated using Little's MCAR test. The result was statistically nonsignificant ($\chi^2(48) = 53.10, p = .284$), indicating that the missing data are consistent with the MCAR mechanism. Missing values constituted 31.5% of the data for affective attitudes, subjective norms, self-efficacy, and intentions, and 37.7% for personalised instructional practices and collaboration and assessment practices. Since teachers were nested within schools, intraclass correlations (ICCs) were estimated to determine if there was a substantial variance at the between-school level. ICCs for all latent variables ranged from 0.02 to 0.08. The nested structure of the data was addressed using Mplus's 'type = complex' option.

To examine intentions' mediating effect, bias-corrected 95% confidence intervals for indirect effects were calculated using the bootstrapping approach with 1000 iterations (Shrout and Bolger 2002). MacKinnon, Lockwood, and Williams (2004) identified the bias-corrected bootstrap confidence interval as effective for testing mediation. They also noted that the mediating effect is statistically significant if the confidence interval excludes zero. Full mediation occurs when an indirect effect via the mediator is statistically significant, whereas the direct effect of the exogenous variable on the endogenous variable is

nonsignificant. Partial mediation exists when direct and indirect effects via the mediator are statistically significant (MacKinnon, Fairchild, and Fritz 2007).

The third stage was to build another structural model with TPB latent variables to test Hypothesis 4 regarding self-efficacy's moderating effect across both domains. This was done through interaction by multiplying the independent variables, namely self-efficacy and intentions. Following Aiken and West's (1991) guideline, these independent variables were standardised to avoid multicollinearity. At this stage, maximum likelihood with robust standard errors (MLR) was employed by default for moderation analysis.

The goodness of fit of the SEM was assessed using several indices: comparative fit index (CFI), Tucker-Lewis index (TLI), standardised root-mean-square residual (SRMR), and root-mean-square error of approximation (RMSEA). Based on Hu and Bentler's (1999) guidelines, the following criteria for a good fit were adopted: (a) CFI and TLI values approaching .95; (b) RMSEA \leq .06; and (c) SRMR $<$.08.

Results

As shown in Table 1, the descriptive results indicate that teachers report moderately positive affective attitudes towards inclusive education, relatively high subjective norms, strong self-efficacy for instructional strategies and collaboration, and strong intentions regarding inclusion. They also report engaging in personalised instructional practices as well as collaboration and assessment practices frequently, although these practices are not at the upper end of the scale.

CFA with TPB latent variables

The CFA model exhibited an acceptable fit to the data across two domains: personalised instructional practices (χ^2 (517, $N = 779$) = 1143.81, $p < .001$, CFI = .93, TLI = .93, RMSEA = .04, SRMR = .07) and collaboration and assessment practices (χ^2 (517, $N = 779$) = 1228.62, $p < .001$, CFI = .93, TLI = .93, RMSEA = .04, SRMR = .07). Details of standardised factor loadings from the CFA and reliability coefficients are provided in Table S1 in the Supplementary Material. Table 2 presents the correlations between the TPB latent variables.

Table 2. Correlations between latent variables.

Variable	1	2	3	4	5	6	7
1. Affective attitudes	—						
2. Subjective norms	.28**	—					
3. Self-efficacy for instructional strategies	.36**	.39**	—				
4. Self-efficacy for collaboration	.37**	.40**	—	—			
5. Intentions	.38**	.46**	.48**	.56**	—		
6. Personalised instructional practices	.29**	.53**	.49**	—	.53**	—	
7. Collaboration and assessment practices	.37**	.48**	—	.54**	.59**	—	—

Note. Pairwise correlations between variables from different measurement models are not reported. $N = 538$ for affective attitudes, subjective norms, self-efficacy, and intentions. $N = 485$ for inclusive practices variables. Missing data ranged from 31.5% for affective attitudes, subjective norms, self-efficacy, and intentions to 37.7% for inclusive practices variables.

** $p < .01$.

Structural model

Direct effects

The structural model demonstrated an acceptable fit to the data for the personalised instructional practices domain ($\chi^2(519, N = 779) = 1190.59, p < .001, CFI = .93, TLI = .92, RMSEA = .04, SRMR = .07$). Affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy for instructional strategies significantly predicted intentions to use inclusive practices, supporting Hypothesis 1. Corroborating Hypothesis 2, these intentions and self-efficacy for instructional strategies significantly predicted personalised instructional practices.

For the collaboration and assessment practices domain, the structural model also showed an acceptable fit to the data ($\chi^2(519, N = 779) = 1235.52, p < .001, CFI = .93, TLI = .93, RMSEA = .04, SRMR = .07$). In support of Hypothesis 1, affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy for collaboration significantly predicted intentions to use inclusive practices. Confirming Hypothesis 2, these intentions and self-efficacy for collaboration significantly predicted collaboration and assessment practices.

Mediating effects

Hypothesis 3 was confirmed for the personalised instructional practices domain. The indirect effects of affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy for instructional strategies on personalised instructional practices via intentions to use inclusive practices were statistically significant. This finding indicates that intentions to use inclusive practices mediated the effects of affective attitudes towards inclusive education and subjective norms about inclusive practices on personalised instructional practices. Furthermore, intentions to use inclusive practices partially mediated the effect of self-efficacy for instructional strategies on personalised instructional practices, as the direct effect of self-efficacy for instructional strategies on personalised instructional practices was statistically significant.

For the collaboration and assessment practices domain, Hypothesis 3 was also supported. The indirect effects of affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy for collaboration on collaboration and assessment practices via intentions to use inclusive practices were statistically significant. This finding suggests that intentions to use inclusive practices mediated the effects of affective attitudes towards inclusive education and subjective norms about inclusive practices on collaboration and assessment practices. Moreover, intentions to use inclusive practices partially mediated the effect of self-efficacy for collaboration on collaboration and assessment practices, as the direct effect of self-efficacy for collaboration on collaboration and assessment practices was statistically significant.

Moderating effects

Contrary to Hypothesis 4, self-efficacy for instructional strategies did not significantly moderate the relationship between intentions to use inclusive practices and personalised instructional practices. Similarly, self-efficacy for collaboration did not significantly moderate the relationship between intentions to use inclusive practices and collaboration and

Table 3. Structural model results for the personalised instructional practices domain.

Variable	β	BC 95% CI		<i>B</i>	<i>SE B</i>	<i>R</i> ²
		<i>LL</i>	<i>UL</i>			
Direct effect						
Intentions						.51***
Affective attitudes	.20***	.14	.29	0.17***	0.01	
Subjective norms	.30***	.25	.42	0.24***	0.01	
Self-efficacy for instructional strategies	.37***	.35	.42	0.52***	0.01	
Personalised instructional practices						.68***
Intentions	.41***	.27	.58	0.50***	0.01	
Self-efficacy for instructional strategies	.50***	.20	.68	0.83***	0.03	
Indirect effects on practices via intentions						
Affective attitudes	.08***	.05	.11	0.09***	0.00	
Subjective norms	.13***	.07	.24	0.12***	0.01	
Self-efficacy for instructional strategies	.15***	.11	.21	0.26***	0.01	
Moderating effect on the intentions – practices link						
Self-efficacy for instructional strategies	.01	-.04	.06	0.02	0.05	

Note. *N* = 779. β = standardised effect; *B* = unstandardised effect; *SE B* = standard error for *B*; BC = bias-corrected; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *R*² = multiple correlation squared. ****p* < .001.

Table 4. Structural model results for the collaboration and assessment practices domain.

Variable	β	BC 95% CI		<i>B</i>	<i>SE B</i>	<i>R</i> ²
		<i>LL</i>	<i>UL</i>			
Direct effect						
Intentions						.57***
Affective attitudes	.21***	.14	.28	0.16***	0.00	
Subjective norms	.34***	.29	.44	0.25***	0.00	
Self-efficacy for collaboration	.42***	.33	.47	0.39***	0.01	
Collaboration and assessment practices						.83***
Intentions	.77***	.68	.80	0.87***	0.01	
Self-efficacy for collaboration	.20***	.08	.30	0.21***	0.01	
Indirect effects on collaboration and assessment practices via intentions						
Affective attitudes	.16***	.12	.25	0.14***	0.00	
Subjective norms	.26***	.21	.27	0.21***	0.00	
Self-efficacy for collaboration	.32***	.23	.39	0.34***	0.01	
Moderating effect on the intentions – practices link						
Self-efficacy for collaboration	-.07	-.15	.02	-0.11	0.08	

Note. *N* = 779. β = standardised effect; *B* = unstandardised effect; *SE B* = standard error for *B*; BC = bias-corrected; CI = confidence interval; *LL* = lower limit; *UL* = upper limit; *R*² = multiple correlation squared. ****p* < .001.

assessment practices, not supporting Hypothesis 4. Tables 3 and 4 provide the structural model results for the domains of inclusive practices.

Discussion

The objective of this study was to explore the longitudinal link between teachers' affective attitudes towards inclusive education, subjective norms about inclusive practices, self-efficacy beliefs, intentions to use inclusive practices, and their inclusive practices using Ajzen's TPB. This study focuses on two domains: personalised instructional practices and collaboration and assessment practices. The descriptive results indicate that teachers generally possess positive inclusion-related beliefs and frequently implement inclusive practices, albeit not to their maximum extent. In light

of the earlier discussion in the introduction suggesting that inclusive practices may lack support and that teachers might feel ill-prepared to accommodate students with diverse needs, these findings may point to ongoing challenges in the implementation of inclusion.

Consistent with Hypothesis 1, this study identified a significant relationship between teachers' affective attitudes towards inclusive education, subjective norms, self-efficacy for inclusive practices, and their intentions to use inclusive practices. This result supports Ajzen's TPB and evidence from previous studies (Carlson et al. 2012; Frumos 2018). It can therefore be inferred that when teachers possess positive feelings about inclusion, experience a positive school ethos that conveys expectations for inclusive practices in the school community, and have strong beliefs in their ability to employ inclusive teaching strategies and engage with others, they intend to implement inclusive educational methods.

This study also supported Hypothesis 2, showing that teachers' intentions to use inclusive practices and self-efficacy significantly predicted their personalised instructional practices and collaboration and assessment practices. This result suggests that teachers who believe in effectively using inclusive instruction and have strong intentions to employ inclusive strategies are more likely to adapt their teaching to meet students' diverse needs. Furthermore, those who feel capable of collaborating with others successfully and strongly intend to use inclusive methods are more inclined to engage in collaborative activities and utilise varied assessment techniques to better support their students.

Corroborating Hypothesis 3 and Ajzen's TPB, teachers' intentions to use inclusive practices mediated the effects of affective attitudes towards inclusive education, subjective norms about inclusive practices, and self-efficacy on their personalised instructional practices and collaboration and assessment practices. This finding demonstrates that favourable affective attitudes and a positive school ethos towards inclusion reinforce teachers' intentions to employ inclusive strategies, ultimately increasing their involvement in personalised instruction, collaborative endeavours, and assessment methods. A conclusion drawn from this result is the significance of a positive attitudinal climate towards inclusion in schools, as suggested by Weisel and Dror (2006), and their indirect role via intentions in prompting teachers to adopt more inclusive teaching and workplace practices.

The finding regarding the mediating effect of teachers' intentions to use inclusive practices further suggests that self-efficacy played an indirect role via these intentions in their personalised instructional practices and collaboration and assessment practices. That is, self-efficacy for instructional strategies strengthens teachers' intentions to implement inclusive methods, thereby fostering their participation in individualised teaching. Likewise, self-efficacy for collaboration enhances teachers' intentions to employ inclusive strategies, thus motivating them to engage in joint work and assessment practices. Specifically, these intentions partially mediated the effect of self-efficacy on these inclusive practices. This result indicates that self-efficacy also had a longitudinal direct effect on inclusive strategies, independent of intentions. These results reveal the importance of teachers' strong beliefs in their capacity to utilise strategies that promote inclusivity in developing practices that are adaptable and

responsive to students' needs and strengths and that support teamwork and evaluation in school.

In this study, teachers' self-efficacy for instructional strategies did not significantly moderate the relationship between their intentions to use inclusive practices and personalised instructional practices. Similarly, self-efficacy for collaboration showed a nonsignificant moderating effect on the association between intentions and collaboration and assessment practices. These findings contradict Hypothesis 4 and Ajzen's TPB. This means that strong self-efficacy linked to strong intentions did not lead to different inclusive practices than low self-efficacy linked to low intentions. Instead of functioning as a moderator, self-efficacy directly predicted inclusive practices.

Self-efficacy also had an effect on intentions, which in turn predicted inclusive practices. This evidence indicates that self-efficacy is an important part of the overall effect of intentions on inclusive practices. Although self-efficacy did not moderate the relationship between intentions and inclusive practices, its significant role was underlined in this study by the fact that it had both direct and indirect effects on inclusive practices. These dual pathways of influence highlight the necessity of fostering teacher self-efficacy beliefs. According to Bandura (1997), self-efficacy develops through vicarious learning and verbal persuasion. Indeed, observing experienced teachers and receiving positive feedback on teacher performance have been shown to enhance teacher self-efficacy (Tschannen-Moran and Woolfolk Hoy 2007). However, the TALIS 2018 survey indicated that 40% of Finnish teachers never receive feedback on their teaching practice (Taajamo and Puhakka 2020). Additionally, peer observation remains one of the least utilised professional development activities among Finnish teachers (Taajamo and Puhakka 2019). Yada et al. (2019) further noted that vicarious learning is not a strong source of self-efficacy for Finnish teachers. These results suggest Finnish teachers have insufficient opportunities to observe other teachers and receive feedback within school activities. Therefore, it is essential to increase practical opportunities for vicarious learning and verbal persuasion in teacher training programmes to enhance teachers' self-efficacy. One way to increase teachers' opportunities to observe and receive feedback on inclusive teaching and collaborative practices is to introduce co-teaching, where at least two teachers share teaching responsibilities in the same classroom (Engelbrecht et al. 2017). This approach appears to be used less often among Finnish general education teachers compared to special education teachers (Saloviita 2018).

A possible limitation of this study is the use of self-reported behaviour measures, which may be prone to social desirability bias (van de Mortel 2008). Although this bias may lead teachers to report perceptions of inclusive practices that differ from their actual implementation, we believe we have mitigated this bias by ensuring participants' confidentiality. In future studies, classroom observations could be employed to validate self-reported inclusive practices and to gain a clearer understanding of the relationship between inclusion-related intentions and behaviour, as self-reports might obscure this connection. However, it is important to bear in mind that using (video) observation presents practical challenges, including labour intensity and data privacy concerns, and thus it is rarely used in practice. The nature of inclusive practices also warrants closer examination. Further research could address this issue through a multi-method approach that combines surveys and in-depth interviews with teachers, principals, students, and parents, and classroom observations of teaching practices. A further limitation of the

study is the substantial proportion of missing data across measurement times, which may reduce statistical power and limit the generalisability of the findings. Nonetheless, the missing data met the assumption required for the analytical approach employed. Future longitudinal studies would benefit from strategies to minimise attrition across measurement times.

Despite the limitations mentioned above, this study provides longitudinal evidence supporting the TPB's usefulness in predicting teachers' inclusive teaching and working practices. One significant finding is the direct positive role of teacher self-efficacy, apart from its indirect role via intentions in implementing inclusive strategies. Therefore, building a strong sense of confidence is essential. Given the importance of positive social pressure for inclusive practices and that this can come from other teachers, principals, and parents, it is vital to cultivate a whole-school inclusive ethos that equips teachers with the confidence to implement inclusive education and fosters their positive affective attitudes and favourable subjective norms to do so. Future educational policies and teacher training programmes should therefore provide clear guidance for school-wide efforts for inclusive education, such as co-teaching with other teachers and collaboratively planning inclusive learning arrangements with principals and parents.

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Data availability statement

The participants of this study did not give written consent for their data to be shared publicly, so due to the sensitive nature of the research supporting data is not available.

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