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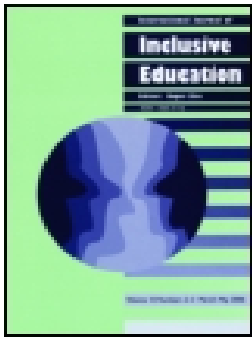
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Teacher efficacy predicts teachers' attitudes towards inclusion – a longitudinal cross-lagged analysis

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ABSTRACT

Over the past decades, an abundance of studies have assessed teacher attitudes and self-efficacy beliefs related to inclusive education. However, empirical evidence on the causal relationship between efficacy and attitudes is still rare and inconclusive. Therefore, the present study focused on identifying the interdependent relationship between teachers' attitudes and their self-efficacy beliefs using a cross-lagged panel design path analysis. A total of 1326 teachers from Finish schools participated in an electronic survey. Teachers' self-efficacy beliefs were assessed five times and attitudes (attitudes and concerns subscale) three times over three years. The outcomes indicated that both constructs are relatively stable over the measured period. Moreover self-efficacy had a positive effect over time on both types of attitudes but not vice versa. This cross-lagged relationship was stronger between efficacy and concerns. These results were similar between male and female respondents and between novice and expert teachers. This implies that increasing teacher efficacy for inclusive practices is likely to change their attitudes toward positive direction. Implications for developing inclusive education and teacher education are discussed.

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KEYWORDS

Inclusive education; teacher attitudes; teacher self-efficacy; longitudinal study; cross-lagged analysis

Introduction

The movement towards teaching all students in the mainstream education system can be considered one of the most significant school reforms in countries all over the world. The political commitment to inclusive education has practically meant that more and more students with special educational needs are taught in mainstream classrooms. This movement is strong all over Europe (European Agency Statistics on Inclusive Education 2017; Schwab 2020) and across the world. The policy mandate for inclusion is strengthened, for instance, by the signing and ratification of international documents, such as the United Nations Convention of the Rights of Persons with Disabilities (2006) and, more recently, the Sustainable Development Goals (United Nations 2015). However, the visions of

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policymakers sometimes seem to be discrepant with the perceptions of teachers, who are asked to implement inclusive education in their daily practices. Inclusive education that goes far beyond the simple spatial inclusion of students with special educational needs (SEN) in mainstream schools often comes with several challenges for teachers (Florian and Beciveric 2011; McKay 2016). Consequently, research during the past decades has tried to identify factors that are related to the successful implementation of inclusive education. One aspect that has been deemed important in this regard is teachers' feeling of self-efficacy to respond to the challenges of inclusive education. The objective of this manuscript is – as one of the first studies done with longitudinal data with several measurements – to add to extant knowledge by studying whether teacher efficacy predicts teacher attitudes toward inclusion or whether vice versa seems more plausible.

Mieghem et al. (2018) conducted a systematic review of the existing studies on inclusive education. They point out that teachers' attitudes towards inclusive schooling have been studied intensively. Major findings of this review was that attitudes towards inclusive education are important for the implementation of inclusive education and that attitudes are influenced by teachers' knowledge of disabilities as well as by their experience of inclusive education. Many researchers have stressed that teachers' attitudes play a key role in the implementation of successful inclusion (e.g. Avramidis and Norwich 2002; De Boer, Pijl, and Minnaert 2011; Schwab 2018). Important for the role of attitudes in inclusive education are also findings that attitudes seem fairly stable. For example Schwab (2018) reported moderate-to-high correlations between the beginning and the end of one school year for teachers' attitudes towards inclusive education of students with different kinds of SEN, suggesting relatively high stability of attitudes. The intervention study by Kopp (2009), suggested that teacher education students felt a more positive attitude towards inclusion and a higher level of self-efficacy beliefs after a specially designed training than before the training. McHatton and Parker (2013) analysed pre-service teachers' attitudes and found an improvement in the attitudes of only elementary pre-service teachers from the beginning to the end of the class. However, the attitudes of special education pre-service teachers remained stable.

Summarising the outcome of these studies, one can conclude that teachers' attitudes towards the general idea of inclusive schooling tend to be rather quite stable but neutral or mildly positive. However, teachers have many concerns about implementing inclusive education in practice, especially when it comes to managing challenging student behaviour, suggesting that the policy of having inclusive classes has not been fully accepted by the teachers.

In addition to teachers' attitudes, teachers' self-efficacy beliefs have also been identified as crucial for inclusive education. The construct of teacher self-efficacy has been studied intensively in recent decades (Malinen et al. 2013; Loreman, Sharma, and Forlin 2013; Yada et al. 2019). Teacher self-efficacy has been found to be associated with many positive teacher outcomes, such as higher job satisfaction (Vieluf, Kunter, and van de Vijver 2013; Malinen and Savolainen 2016). One persistent gap in the teacher self-efficacy research is the scarcity of longitudinal research designs (Klassen et al. 2011; Zee and Koomen 2016). Similar to the research on teachers' attitudes towards inclusive education, empirical research on teacher self-efficacy has predominantly concentrated on cross-sectional studies, and the stability of self-efficacy or its cross-lagged relationships over time with

other variables have often not been analysed. Previously, the conceptualisation of teacher self-efficacy in different studies has been at a universal level, but many of the more recent studies have adopted a more distinct subject-, task-, or domain-specific approach to measuring teacher self-efficacy (Zee et al. 2016). One notable domain in this line of research has been teacher self-efficacy in inclusive education (e.g. Loreman, Sharma, and Forlin 2013; Malinen et al. 2013; Yada et al. 2019).

Teachers' attitudes and self-efficacy beliefs in inclusive education

Studies on teachers' attitudes towards inclusive education and on teachers' self-efficacy have been carried out all around the world, for example, in Australia (e.g. Sharma, Loreman, and Forlin 2012), China (e.g. Malinen, Savolainen, and Xu 2012), the German-speaking parts of Europe (e.g. Lütje-Klose et al. 2017), Finland (e.g. Savolainen et al. 2012), Japan (e.g. Yada, Tolvanen, and Savolainen 2018), and South Africa (e.g. Savolainen et al. 2012). One of the most used combinations of instruments in these studies has been the sentiments, attitudes, and concerns about inclusive education (SACIE) scale (Loreman et al. 2007) or its revised version, the sentiment, attitudes, and concerns about inclusive education revised (SACIE-R) scale (Forlin et al. 2011), and the teacher efficacy for inclusive practice (TEIP) scale (Sharma, Loreman, and Forlin 2012).

Most researchers analysing teachers' attitudes and self-efficacy beliefs have found connections between these two constructs (e.g. Lütje-Klose et al. 2017; Hecht, Niedermair, and Feyerer 2016; Miesera et al. 2019; Sharma, Loreman, and Forlin 2012; Savolainen et al. 2012). It is also notable that efficacy and attitudes have been used interchangeably as a predictor or outcome. The researchers in this field do not yet have conclusive evidence on the most likely causal relationship between the two constructs.

One theoretical prediction concerning the causal link between teachers' attitudes to inclusive education and their self-efficacy can be made from the social-psychological framework of Ajzen's (1991) 'Theory of Planned Behaviour', which postulates that the intention to engage in certain behaviour is determined by three factors: subjective norm, perceived behaviour control, and attitude toward the behaviour (see also Ajzen and Fishbein 1977). According to a more recent extension of this theory (Fishbein and Ajzen 2010), individual factors such as beliefs or knowledge influence these attitudes. Malinen (2013) has elaborated the relationship between the theories of self-efficacy (Bandura 2012) and planned behaviour by suggesting that attitudes may mediate the effect of self-efficacy on behaviour. Therefore, a positive influence of self-efficacy on attitudes can be assumed. However, there is still very little longitudinal research on the relationship between these two constructs. Bosse et al. (2016) have conducted one of the few longitudinal studies on the topic. They analysed teachers' attitudes to inclusive education and their self-efficacy in three measurement points and reported that both the attitudes and self-efficacy beliefs of primary school teachers were highly stable over the period. While the attitudes and self-efficacy correlated moderately in each of the three measurement points, they found no cross-lagged effects between the two constructs. To date, no longitudinal studies have examined the causal relationship between teachers' attitudes towards inclusive education and their self-efficacy contextualised towards implementing inclusive education. Establishing this link, either way, is important because there is evidence

(Wilson et al. 2016) that both attitudes and self-efficacy predict teachers' intention to use inclusive strategies and self-efficacy in particular predicts also actual teacher behaviours. This highlights the important role of attitudes and self-efficacy as potential predictors of the way teachers engage in developing inclusive practices.

Inclusive education in Finland

Finland's position toward inclusive education is rather complex. On the one hand, the comprehensive school reform in the 1970s created a school system that follows the Nordic ideal of 'school for all' where the openly stated policy goal was to achieve better equity of education across geographical areas and social classes (Antikainen 2006). Thus a comprehensive school was created which combined the previous academic track and vocational track that we run separately after 4th grade. However, it was foreseen that increased heterogeneity of classrooms might be a challenge and as a response a new form of special education called part-time special education was established in the late 1970s (Kivirauma, Klemelä, and Rinne 2006). Following this, towards the end of the 1990s, the number of students identified as having SEN grew rapidly and this increase continued through the early 2000s and seemed uncontrollable. This led to the formulation of a new special education strategy (2007) followed by related changes in special education service provision in the Basic Education Act (2010). In the new system, educational support is divided into three tiers: general/universal support, intensified support, and special support.

The new three-tiered support system has increased the administrative duties in schools although the only official administrative decision is the one for special support, which is often approved by a high-level official in a municipality. The move towards more inclusive education was a strong implicit goal of reforming the Finnish educational support system. Important outcome of the first eight years of implementing the three-tiered support system is that schools and scholars are now actively discussing how universal (tier 1) support could be implemented effectively. The idea of universal support increased awareness that all teachers are responsible for all students, and more intensive support will be launched only if the current support within this level, mainly in mainstream classes, does not produce the expected results.

While it seems that the rhetoric on support has shifted towards a more inclusive direction, there is fresh opposition to inclusion, as clearly shown in the public media before the April 2019 parliamentary elections. The arguments against inclusive education are the same as before, highlighting the increased work-load of teachers and somewhat more implicitly that they do not have the necessary skills for inclusive education and the Trade Union of Teachers in Finland, OAJ, has been one of the loudest and certainly the most politically potent forces of this criticism. (e.g. YLE 2019). These arguments are indicative of a new increase of more negative attitudes towards inclusion which highlights the importance of research like the present one looking into potential predictors of attitudes. Earlier findings with cross sectional data suggest that teacher efficacy may be a significant predictor of teacher attitudes (Savolainen et al. 2012), and comparative studies show that this relationship is equally strong (Yada, Tolvanen, and Savolainen 2018) or even stronger (Savolainen et al. 2012) in Finland than in countries compared.

The present study

Although teachers' attitudes towards inclusive education and teachers' inclusive education self-efficacy have been studied extensively during past decades, no conclusive empirical evidence of a possible causal relationship between these two concepts has been reported. Consequently, the objective of the current study is to provide proof of a longitudinal relationship between teachers' attitudes and teachers' self-efficacy beliefs using a cross-lagged-panel design. In addition, because gender has been shown to be related to attitudes (e.g. Avramidis and Norwich 2002) and to teacher efficacy along with teaching experience, specifically in Finland (Malinen et al. 2013) this study will also investigate the influence of the teacher's gender and experience (novice vs. expert) on the relationship between teachers' inclusive education attitudes and self-efficacy beliefs. The exact research questions are as follows.

- (1) Does teacher self-efficacy in implementing inclusive practices affect later teacher attitudes, or do teacher attitudes affect later self-efficacy?
- (2) Are the relationships between self-efficacy and attitudes different between male and female teachers or novice and expert teachers?

Methods

Sample

The data was collected as part of a longitudinal ProKoulu study. The ProKoulu study was an intervention study implementing school-wide positive behaviour in Finland.¹ Project was advertised openly and interested schools were contacted through their principals and 69 schools agreed to volunteer for the study and all of them are included in this data as long as they stayed in the project. As the study took several years and there is a considerable teacher turnover in schools, some teachers left the study before it ended and some new teachers joined. The total sample for over the 3.5 years was 1452 teachers (76.2% female). This study used data from six measurement points and the yearly participant numbers in the six measurement points were $N = 822$ (T1), $N = 706$ (T2), $N = 730$ (T3), $N = 723$ (T4), $N = 646$ (T5), $N = 459$ (T6) respectively, yielding a total sample of 1326 teachers.

Measures

Attitudes towards inclusive education

In the current study, attitudes towards inclusive education were measured by two subscales of the SACIE scale (Loreman et al. 2007; for the Finnish version, see Savolainen et al. 2012). The subscale 'Attitudes' comprises five items measuring *general attitudes* towards inclusive education and instruction of children with disabilities or other SEN in mainstream classrooms (e.g. 'Students who need assistance with personal care should be in regular classes'). The subscale 'Concerns' consists of five items measuring *teacher specific* attitudes by asking how much concerns they have on including students with disabilities in their own class (e.g. 'I am concerned that I will be more stressed if I have

students with disabilities in my class'). The original SACIE scale also had a third subscale ('sentiments'), but it was not included in the measures of this study, as it has shown poor psychometric qualities, especially in the Finnish version (Savolainen et al. 2012). The answers to SACIE scale items were given with a four-point Likert scale (1 = strongly disagree, 4 = strongly agree). The reliability of the subscale Attitudes was .68, .69, and .70 and for Concerns .65, .69, and .67 in the three measurements. The scales were scored so that higher numbers refer to more positive attitudes (e.g. more positive general attitudes and less concerns).

Self-efficacy beliefs in inclusive education

Teacher self-efficacy for inclusive practices was measured with the Finnish version (Savolainen et al. 2012) of the TEIP scale (Sharma, Loreman, and Forlin 2012). TEIP consists of 18 items (e.g. 'I can provide an alternate explanation or example when students are confused'). Originally, the TEIP scale has used a six-point Likert scale. In this study, however, the TEIP items were rated with a nine-point scale ranging from 'None at all' to 'A great deal'. This nine-point rating scale was adopted to maintain consistency with the rating scales of some other instruments in the same electronic survey and to follow Bandura's (2006) recommendation that a self-efficacy scale should avoid having too few response options. Previous studies have indicated good psychometrics for the original version (e.g. Sharma, Loreman, and Forlin 2012) as well as the Finnish version (see e.g. Savolainen et al. 2012) of this instrument. In the present sample, the Cronbachs' Alpha was .91 for the first four measurements and .92 for the fifth measurement. Means and standard deviations of the scales are listed in Table 1.

Novice and expert teachers

Following the suggestion by Palmer et al. (2005), it was decided that the criteria for identifying experts and novices were as follows: respondents were classified as novice teachers if they had five years or less experience of working as a teacher ($N = 114$) while all others with more than five years of experience were classified as expert teachers ($N = 704$).²

Research design and analyses

Teachers filled in an electronic questionnaire twice a year in late October–November and late March–April. Data was collected from autumn 2013 until autumn 2016, altogether seven times, but only the last six measurements are used in this study. Teacher attitudes towards inclusive education were measured once a year, that is, three times altogether, beginning in spring 2014 (called T1 in this study). Teacher self-efficacy to implement inclusive education was measured twice a year, yielding seven data points of which the

Table 1. Means and standard deviations of attitudes (attitudes and concerns) and teacher efficacy.

Variable	T1 ($N = 822$)		T2 ($N = 706$)		T3 ($N = 730$)		T4 ($N = 723$)		T5 ($N = 646$)		T6 ($N = 459$)	
	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.	Mean	Std.
TEIP	–	–	7.08	.86	7.10	.84	7.11	.81	7.21	.81	7.16	.82
Concerns	2.36	.60	–	–	2.39	.61	–	–	2.43	.61	–	–
Attitudes	2.66	.53	–	–	2.69	.54	–	–	2.75	.54	–	–

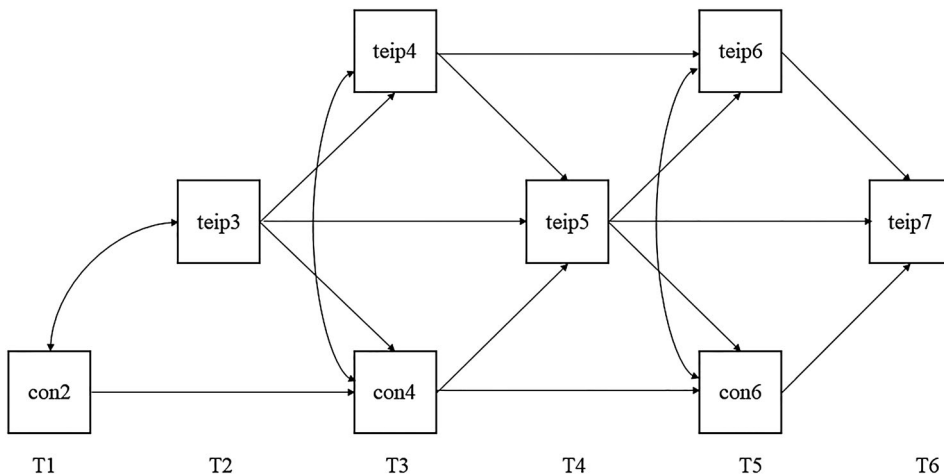


Figure 1. Theoretical model of the study design with cross-lagged relationships.

latter five (called T2–T6 in this study) are included in this study’s cross-lagged design. A theoretical model for the design of this study is depicted below (Figure 1).

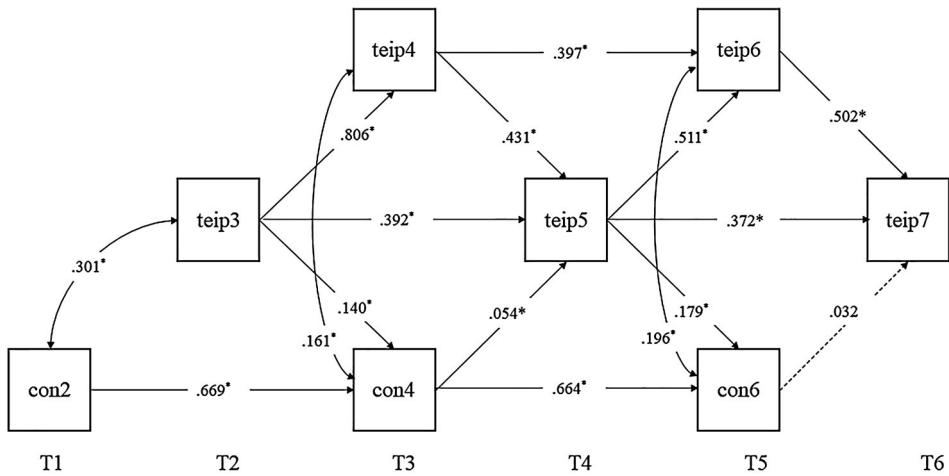
The potential differences between males and females or novice and expert teachers in the relationships between efficacy and attitudes were tested with multigroup analysis, comparing freely loading models to a model where all paths were set equal (metric invariance). Chen (2007) suggested that a difference in CFI values between two models of less than 0.01 suggests adequate invariance. A comparison of chi-square values was not made due to the large sample size that leads easily to interpreting trivial differences as indicators of invariance. As the data was taken from an intervention study, membership of the experimental or control group was similarly controlled for.

Results

The theoretical model for the study was applied separately for the two types of attitudes towards inclusive education, namely attitudes and concerns. Models were first fitted with all the paths, and later some paths suggested by modification indices were added to the model to increase the fitness of the models. In both cases, a good fit was achieved when efficacy measures had direct paths between all sequential measurements (stability) and additionally between each sequential measurement done in the autumn and spring of the following year. (see Figures 2 and 3). All cross-lagged relationships were included in the models.

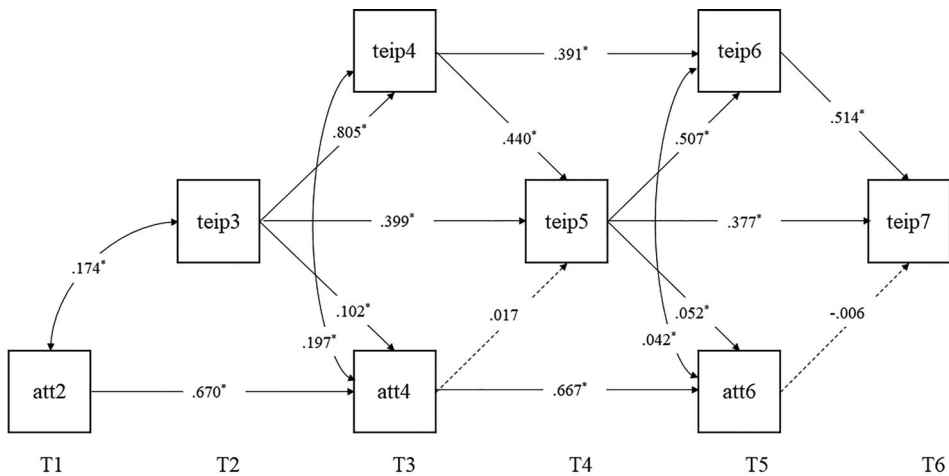
Teachers’ attitudes are quite stable (path coefficients .67 and .67), as is self-efficacy (direct and indirect path coefficients ranging between .38 and .81). Only one of the cross-lagged relationships is significant, indicating that the baseline self-efficacy predicts the attitudes that follow (path coefficient .10, $p = .001$). Thus, teacher self-efficacy affects later general attitudes rather than vice versa.

Regarding the model for Concerns subscale, that is, teachers’ attitudes towards inclusion in their own classroom, there are more cross-lagged relationships while stability



(Chi-square = 106.89; df = 12; CFI = .97; TLI = .94; RMSEA = .08; SRMR = .04)

Figure 2. Cross lagged relationships between Teacher efficacy (TEIP) and Concerns (SACIE).



(Chi-square = 92.913; df = 12; CFI = .97; TLI = .94; RMSEA = .07; SRMR = .04)

Figure 3. Cross lagged relationships between Teacher efficacy (TEIP) and Attitudes (SACIE).

results are similar to Attitudes subscale (stability path coefficients .68 and .65 for Concerns). Baseline self-efficacy (T2) predicts T3 concerns (path coefficient .14, $p = .000$), and T4 self-efficacy predicts concerns at T5. (path coefficient .18, $p = .000$). However, Concerns at T3 predicts T4 self-efficacy (path coefficient .05, $p = .047$), that is, concerns are a partial mediator of T2 efficacy effect on T4 efficacy.

The models produced with the multigroup method for male and female respondents and novice vs. expert teachers had a good fit with the data and were all invariant as the

Table 2. CFI differences in the multigroup model across the background variables and two sub-types of attitudes.

	Attitudes			Concerns		
	Free	Fixed	Difference	Free	Fixed	Difference
Gender	.974	.972	.002	.985	.984	.001
Experience	.967	.965	.002	.985	.984	.001
Intervention	.972	.970	.002	.983	.981	.002

comparison of CFI values showed a difference ranging between .001 and .002 in the various models (see table x). These values all are clearly less than the threshold of 0,01 suggested by Chen (2007) for invariance. Likewise, models for both experimental and control groups were invariant and thus indicate that the intervention did not affect these group-level results (Table 2).

Discussion

There are plenty of studies on teachers' attitudes towards inclusive education and the relationship between attitudes and teacher self-efficacy (see e.g. Pit-ten Cate et al. 2019). However, most studies use data from cross-sectional design; thus, evidence of a possible causal link between the two concepts has been weak. To fill this gap in the extant literature, the purpose of this study was to study attitudes towards inclusive education and teachers' self-efficacy in implementing inclusive practices by using a longitudinal cross-lagged-panel design. A cross-lagged design made it possible to study the effect of attitudes on future efficacy and the effects of efficacy on future attitudes while controlling the previous level of each variable. In this design any cross-lagged relationship indicates that a variable predicts changes in the other variable.

Attitudes (e.g. Hellmich, Löper, and Görel 2019) and efficacy (e.g. Wilson et al. 2016) have been found to be crucial in implementing high-quality inclusive education. The results of this study indicate that teachers' attitudes towards inclusive education as well as their self-efficacy beliefs are rather stable traits. These results are in line with previous research (e.g. Bosse et al. 2016). This means that that changing attitudes can take quite a long time and, therefore, it would be beneficial to address teachers' attitudes and efficacy already from the pre-service phase. As other researchers have earlier discussed, teacher education programmes are perhaps not yet doing this optimally for several reasons. One very obvious problem is that inclusive education issues are most commonly linked with special education courses or programmes. Introducing characteristics of students with disabilities, perhaps how different disabilities are screened, do not necessarily support novice teachers skills or attitudes for inclusive teaching. Nevertheless, there are good examples of approaches in teacher education that address inclusive teaching specifically. However, the literature seems to be inconclusive on the benefits of approaches like single-unit approaches, content-infused approaches, and school placement/experience that are often mentioned as alternatives for teacher education for inclusion (Symeonidou 2017).

Furthermore, it is all too common to have teacher education organised in 'silos' where special education, classroom teachers, and subject teacher students do not have enough

joint study modules that would offer them the possibilities to experience collaboration during their initial training (Malinen, Väisänen, and Savolainen 2012). Offering student teachers from different programmes a chance to gain a mastery experience of successful collaboration, for example, by teaching practicums in inclusive education settings, could be one way to improve the situation (see e.g. Schwab, Hellmich, and Görel 2017). Or perhaps these aspects should already be taken into account when selecting students for teacher education programmes.

This study provides convincing evidence that the effect of teachers' self-efficacy on teachers' attitudes towards inclusive education is likely stronger than vice versa. The results were stable for both female and male teachers. Moreover, for both experts and novices, the results for the direction of this prediction were similar. This suggests that irrespective of gender or teaching experience, increases in self-efficacy are likely to lead to the development of more positive attitudes.

These results also provide guidance for the design of professional development programmes for teachers: in addition to trying to affect teachers' attitudes directly with educational programmes, approaches that aim at increasing teacher efficacy could improve the attitudes of future teachers. In accordance with self-efficacy theory (Bandura 1997) and recent findings (Yada et al. 2019; Wilson, Woolfson, and Durkin 2020) gaining mastery experiences are the most effective way in increasing efficacy. This implies that successful teaching experiences of an inclusive class already during pre-service teacher education could be a powerful way to boost efficacy and thus to change the attitudes of future teachers towards a more positive direction.

Yet another interesting finding of this study was that efficacy had a stronger effect on the attitudes measured as teacher concerns than their general attitudes. These two sub-dimensions represent different aspects of attitudes towards inclusive education. General attitudes are related to teachers' overall perception of the inclusion of children with different disabilities in mainstream classes, which reflects their general view on inclusion as an educational approach. The Concerns sub-dimension is related to a teacher's own teaching, thus reflecting what teachers think about including students with disabilities in their class. Teacher's concerns relate to their fears about increased stress level, workload, and the difficulties they might face when working in inclusive settings. The Concerns dimension takes inclusion to a personal level where, based on previous studies, teachers tend to hold more critical views (e.g. Savolainen et al. 2012). The present study suggests that, although attitudes are quite stable, increasing teacher efficacy can change teacher attitudes towards a positive direction. This was seen in the cross-lagged effect that was found for both types of attitudes but it was – quite interestingly – stronger on concerns. This means that teachers with higher efficacy are on the average more willing to accept students with disability in their mainstream school, and – more importantly – more willing to teach students with disabilities in their own class.

Limitations

In the current study, attitudes were measured only once a year while teachers' self-efficacy was assessed twice each year, which limited the number of cross-lagged relationships that could be included in the model. In addition, the baseline measurements of attitudes and efficacy were not done at the same time. However, having several cross-lagged

measurement points is already a clear improvement compared to earlier research on the topic. Another limitation is that the sample of the present study was collected from schools that participated in an intervention study on the development of universal support for student behaviour with a wait-list control group design. To take this into account, we tested whether belonging to the experimental or wait-list control group affected the relationship between variables of interest. No such effect was found, as the models were invariant across groups. Another factor related to taking data from an intervention study might be that those who agreed to participate in the study might have higher levels of interest in developing their work. However, as the experimental study was directed only towards developing behaviour support at the whole-school level, all teachers in the participating schools were expected to respond to the questionnaires. In most schools, the response rate was very high, so it is more likely that the sample includes teachers with different levels of engagement. One further limitation may be that it would also have been interesting to have data on teachers' experience on working with children with disabilities and in particular how positive those experiences were. A possible limitation is also that attitudes towards disabilities did not differentiate between types of disabilities in this study. However we believe this did not cause any meaningful bias as a recent study (Yada and Savolainen 2019) showed that while efficacy of teachers is related to teachers perceptions about inclusion of children with different types of disabilities, the differences of this correlation between different disability types were relatively small in Finland. Finally, the fact that we used only participants' self-ratings is a possible limitation since it carries the risk for bias, such as a tendency towards social desirability.

Conclusion and further directions

The findings of the present study showed that teachers' self-efficacy predicts their attitudes towards inclusive education, especially teachers' concerns towards carrying out inclusive teaching in their own classrooms. Therefore, we propose that pre-service teacher education programmes should develop courses and teaching practicum models to practice inclusive pedagogy in a safe and supportive environment, thus giving teacher students the possibility of gaining mastery experiences that increase their efficacy in implementing inclusive education. Having stronger efficacy beliefs and more positive attitudes can increase the probability of novice teachers working successfully in inclusive schools.

These findings raise intriguing questions for future studies regarding the way and extent to which self-efficacy affects teachers' daily behaviour in their classrooms. Getting more evidence on the relationship between teacher self-efficacy and observed teaching behaviour would be a logical next step for future research. Empirical evidence underpinning the importance of attitudes or self-efficacy on teacher behaviour in classes is still scarce. Only a few existing studies demonstrate results on the relationship between positive teacher attitudes (Schwab, Sharma, and Hoffmann 2019; Hellmich, Löper, and Görel 2019; Sharma and Sokal 2016) or self-efficacy (Wilson et al. 2016) on inclusive teaching practices. One promising step towards this direction is studies that aim to establish the relationship between efficacy and intentions to implement inclusive education (Sharma et al. 2018). To understand the processes related to teachers' attitudes towards inclusive education, future research should distinguish between different sub-

dimensions of teachers' attitudes – as the influence of self-efficacy was stronger on teachers' attitudes related to the concrete implementation of inclusive education in their own class – rather than teachers' general attitudes towards inclusion. Finally, the findings and implications discussed here will require replications across different educational settings (e.g. student grades, school types, educational systems) to demonstrate that these patterns are not limited to a particular context.

Geolocation information

Data was collected from the Eastern part of Finland.

Notes

1. As the study was an intervention study we performed multigroup analyses testing whether models between the two groups are invariant.
2. NB. Calculation of novice/expert teacher variable reduced the sample size, but full models used the complete data with FIML estimation which has been shown to be an effective and reliable approach for handling missing data (Graham, Olchowski, and Gilreath 2007).

Disclosure statement

No potential conflict of interest was reported by the author(s).

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