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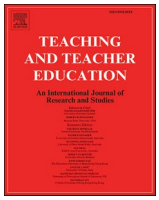

Research paper

Attitudes and self-efficacy as buffers against burnout in inclusive settings: Impact of a training programme in pre-service teachers

Luc Vieira [a], Odile Rohmer [b], Mickael Jury [c], Caroline Desombre [d], Marine Delaval [d], Nadège Doignon-Camus [b], Anne-Clémence Chaillou [e], Claire Goulet [b], Maria Popa-Roch [b,*]

[a] University of Paris Cité, France
[b] University of Strasbourg, France
[c] University of Clermont-Auvergne, France
[d] University of Lille, France
[e] University of Nantes, France

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ABSTRACT

While it has been established that inclusive education training enhances attitudes and self-efficacy, which are predictors of burnout, the specific relation between these constructs has not yet been investigated. In this study, the impact of an online training course was assessed using a pretest-intervention-posttest design. The interest constructs were assessed through online self-reported scales. Results show that self-efficacy mediates the relation between attitudes and the personal accomplishment dimension of burnout. The training improves attitudes, self-efficacy and personal accomplishment and decreases general burnout in pre-service teachers. The results are discussed in light of the need to develop efficient training for teachers in an inclusive framework.

Inclusive education involves ideas on how education and schools should be organized and can therefore be regarded as an educational philosophy. Environmental factors such as financial resources and (material and human) infrastructure are key elements in inclusive policy implementation (Van Mieghem et al., 2020; Woodcock & Woolfson, 2019). However, it has been suggested that the general's public representations influence the outcomes of policies aimed at increasing social inclusion (Scior, 2011; Zeilinger et al., 2020). The implementation of inclusive education depends on both structural and subjective factors (Booth & Ainscow, 2011; Van Mieghem et al., 2020; Woodcock et al., 2022).

Teachers are recognized as key agents of inclusive education. Therefore, many factors involved in the successful implementation of inclusion policies relate to teachers' abilities in inclusive contexts and to their subjective perceptions of these contexts (Rekaa et al., 2019). Despite the benefits of inclusion policies, teachers report encountering difficulties that prevent them from fully embracing these policies (Woodcock et al., 2022). They complain of exhaustion and professional disillusionment, which may lead them to disengage from their missions (Curchod et al., 2013; Rohmer et al., 2022a). Known barriers to inclusion comprise negative perceptions of professional and personal accomplishment, self-efficacy and negative attitudes (Curchod-Ruedi et al., 2013; Rohmer et al., 2022b; Yada et al., 2022). These can be related to stress and burnout (Boujut et al., 2017; Rohmer et al., 2022a). Teachers undeniably need support; insufficient training is cited as one of the main obstacles to inclusive education (Hind et al., 2019; Kasperski & Crispel, 2022; Saloviita, 2020; Van Mieghem et al., 2020). Thus, the first goal of the present paper is to investigate the relation between perceptions of self-efficacy, attitudes and burnout from the teachers' point of view in an inclusive context. The second goal is to demonstrate the impact of evidence-based training in pre-service teachers on inclusion in schools in terms of increased self-efficacy, positive attitudes and reduced burnout.

1. Inclusive education policy in France

Inclusive education means that regardless of individual differences (interests, abilities, learning needs along with gender, ethnic background, economic status), all students are welcomed, cared for and equally valued with fair and equitable learning, participation and educational opportunities. Many international organizations and declarations have stressed the importance of implementing this policy. The

* Corresponding author.
E-mail address: poparoch@unistra.fr (M. Popa-Roch).

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publication of UNESCO's (1994) Salamanca Statement and Framework for Action on Special Needs paved the way for further reform towards inclusive education. Even though inclusion now covers a wide range of special needs, historically this policy applied mainly to the schooling of students with disabilities, who were until recently excluded from regular educational settings (Qvortrup & Qvortrup, 2018).

In France, since 2005, the education system has promoted transformations aimed at facilitating the inclusion of students with disabilities. For instance, special classes have gradually disappeared. While they can benefit from additional support from different stakeholders, teachers are expected to consider these students as "their" students and adapt their practices. Empirical evidence has found encouraging benefits for all students in terms of academic achievement and social skills (Kart et al., 2021; Krämer et al., 2021; Ruijs & Peetsma, 2009). However, facing the challenges of inclusive education policy requires appropriate training for teachers (Kurniawati et al., 2017). In France, during the two years of master's level education, pre-service teachers follow mainly fundamental disciplinary courses (maths, French, arts, sports, science etc.), which amount to nearly 650 h. Very little time is dedicated to training on inclusion (under 3%). Pre-service teacher trainees are also responsible for a regular class during the second year of their two-year teaching curriculum. This training framework is meant to equip schoolteachers with knowledge and real-class teaching strategies to work with students with special needs. In this specific context of training in France, teachers regularly complain of being insufficiently prepared to face inclusive contexts. These difficulties may induce stress and burnout (Cooc, 2019; Van Mieghem et al., 2020).

2. Burnout in teachers

Burnout emerges from chronic stress in the work environment, when job requirements, institutional support and workers' perceived abilities do not match (Maslach et al., 2001). It is most typically conceptualized as a three-component construct (Maslach et al., 2001) including exhaustion (a sense of weariness caused by the job), depersonalization (detached attitude towards the job or client, also called cynicism) and decreased sense of personal accomplishment (negative emotions and cognitions about own achievements and capacities to succeed at work). The inclusive school setting plays a significant role in teachers' professional burnout, recognized as a global concern in many countries (Curchod-Ruedi et al., 2013; Helms-Lorenz & Maulana, 2016; Schwarzer & Hallum, 2008). Teachers with burnout may no longer be available to their students. Thus, burnout is likely to affect a teacher's motivation and drive to fulfil their educational mission and to erode their commitment to help students with disabilities to succeed (Bianchi et al., 2013; Boujut et al., 2017). They may develop negative feelings towards them and deny their role as sources of progress and positive change. Given the serious consequences of burnout for teachers and students alike, it is crucial to pinpoint the psychological factors involved for effective prevention purposes. In this respect, self-regulatory variables such as self-efficacy have been highlighted as key protective factors from negative job stress outcomes (Shoji et al., 2015; Weissenfeld et al., 2021).

3. Self-efficacy and burnout in teachers

Self-efficacy is a socio-cognitive construct understood as the belief that one is equipped to handle challenges (Bandura, 1997; Shoji et al., 2015). For teachers, self-efficacy is the belief in their capacity to affect student performance and engagement, classroom management and instructional strategies (Skaalvik & Skaalvik, 2010). Teacher self-efficacy has been found to be associated with many positive outcomes, including reduced burnout (Boujut et al., 2017; Cappe et al., 2017).

Interestingly, in 1992, Leiter already defined burnout as a "crisis in self-efficacy". Many studies have supported this statement. Indeed, teachers reporting lower levels of self-efficacy are more likely to report higher levels of burnout. For instance, the meta-analysis of Shoji et al. (2015) found a moderate relation between self-efficacy and burnout. Existing findings in the context of inclusion show that teacher self-efficacy is negatively related with exhaustion and depersonalization dimensions of burnout and positively with personal accomplishment. Importantly, the most significant effect was found on the relation between self-efficacy and personal accomplishment. This specific relation has been explained by disillusionment with the profession as a result of dealing with a multitude of complex situations, with the risk of developing negative attitudes towards inclusive policies (Castillo-Gualda et al., 2019; Curchod-Ruedi et al., 2013). Self-efficacy is often associated with attitudes to explain various outcomes in applied fields (Ajzen, 1991; Wilson et al., 2022). A large body of research has found connections between attitudes and self-efficacy beliefs in the education field (Avramidis & Norwich, 2002; Desombre et al., 2019; Schwab, 2019; Vaz et al., 2015; Weber & Greiner, 2019).

4. Attitudes, self-efficacy and burnout in teachers

Teachers' attitudes towards inclusive education consensually refer to their feelings about including children with diverse educational needs in mainstream classrooms. Attitude is consensually defined as an individual's tendency to evaluate an entity with some degree of favorability or unfavorability (Eagly & Chaiken, 2007). This evaluation is expressed through cognitive, emotional, and behavioural responses. Applied to intergroup attitudes, the cognitive response refers to stereotypical beliefs, the affective response refers to feelings or emotions, and the behavioural response refers to exclusion (Avramidis & Norwich, 2002; Jury et al., 2021; Rohmer et al., 2022b). To the best of our knowledge, few studies have investigated the relation between attitudes towards inclusion and burnout in teachers. The available evidence shows a negative relation between the two constructs in the sense that teachers reporting more burnout are less positive towards inclusion (Kelly & Barnes-Holmes, 2013; Saloviita & Pakarinen, 2021); the strongest relationwith the personal accomplishment dimension (Rohmer et al., 2022a).

While there is little empirical evidence linking attitudes and burnout in the field of inclusive education, a large body of research has found connections between attitudes and self-efficacy beliefs (Avramidis & Norwich, 2002; Desombre et al., 2019; Schwab, 2019; Vaz et al., 2015; Weber & Greiner, 2019). Recently, through a meta-analysis of 41 studies, the significant and positive relation was estimated at $r = 0.35$, which can be considered as evidence of a moderate effect (Yada et al., 2022). Additionally, both attitudes and self-efficacy were found to predict how teachers experience inclusion and teachers' intentions to engage in developing inclusive practices (Wilson et al., 2016). Teachers with negative attitudes towards inclusion and poor self-efficacy may feel that they have added responsibilities, complex collaborations, increased workload and less support, all sources of stress leading to burnout syndrome (Aloe et al., 2014; Squillaci & Hofmann, 2021). Yada et al. (2022) suggest that for understanding classroom behaviour, both constructs (i.e., burnout and self-efficacy) should be assessed simultaneously (see also Tournaki & Samuels, 2016). In their attempt to understand how attitudes and self-efficacy are connected to predict different outcomes at school, based on the seminal Theory of Planned Behaviour (Ajzen, 1991), Wilson et al., 2022 found that self-efficacy acts as a mediator between teachers' attitudes (perception of school climate in this study) and reported inclusive behaviour. In this line, we are interested in investigating how self-efficacy mediates the relation between teachers' attitudes and burnout. Inclusion is thus conceived as a challenge, whose output depends on the meaning teachers give to it, which in turn depends on their belief in their professional capacities and by extension their willingness to continue or not in the field (Aloe et al., 2014; Devecchi et al., 2012).

5. Training, a key factor for improving self-efficacy and attitudes

The relationship between teachers' attitudes, self-efficacy and concerns about education can be explained by teachers' professional development (Derguy et al., 2022; Desimone, 2009; Sokal & Sharma, 2014). Recent reviews have repeatedly noted that teachers do not rate themselves as very knowledgeable or competent regarding students with special education needs (Cooc, 2019; Van Mieghem et al., 2020). Many teachers continue to voice concerns about their ability to teach inclusively; they often blame inadequate pre-service training and feel they are left to their own devices (Kasperski and Crispel, 2022; Woodcock & Woolfson, 2019). Research has accordingly stressed the need to educate and support teachers to fully enact inclusive teaching practices (Florian & Camedda, 2020; Sokal & Sharma, 2022). One of the major challenges relative to the implementation of the inclusion principle is to prepare teachers to best teach and relate to students with special education needs. One way to achieve this is to offer training programmes designed to increase teacher self-efficacy and positive attitudes towards inclusion, which have been recognized as key factors for preventing concerns and exhaustion in teachers dealing with students with special education needs (Boujut et al., 2017; Derguy et al., 2022; Jury et al., 2023; Rohmer et al., 2022b; Sokal and Katz, 2017; Yada et al., 2019). For example, Boyle et al. (2013) showed that in-service teachers harbouring positive attitudes towards inclusion were most likely to have received courses in inclusive education and to playing leading roles in their schools on the issue of inclusion. Likewise, studies in a variety of education systems have shown that inclusive education courses fostered more positive attitudes towards inclusion among teachers (Sokal & Sharma, 2022; Tristani and Bassett-Gunter, 2020). Additionally, the literature has shown that teachers who have received specialized training have increased self-efficacy and positive attitudes towards inclusion (Desombre et al., 2019; Tournaki & Samuels, 2016).

Although insufficient training is cited as one of the most important obstacles to implementing inclusion, among the twenty-six studies on the promotion of inclusive education reviewed by Van Mieghem et al. (2020), only four addressed the specific question of training. Available evidence suggests favourable conditions for efficient training. The content should be focused on the students' needs and disabilities; training should focus on teachers' concerns, connected to their teaching context; training should be framed as an interplay between coursework and practice in a high-quality inclusive classroom field experience (Sokal & Sharma, 2014; Van Mieghem et al., 2020; Walton & Rusznyak, 2020). Given its benefits on attitudes and self-efficacy in teachers, dealing with burnout without providing institutional support, mainly through proper training, appears ill-advised.

6. The present study

Many teachers report feelings of incompetence and powerlessness in dealing with inclusion in education as sources of burnout (Guirimand & Mazereau, 2016; Rohmer et al., 2022a). More effort is needed to develop pre-service teacher training (Avramidis et al., 2019; Desombre et al., 2019; Saloviita & Pakarinen, 2021). Inclusive education courses have been found to result in more positive attitudes and higher self-efficacy for inclusion in pre-service teachers (Van Mieghem et al., 2020). Although attitudes, self-efficacy and burnout are three constructs that appear to be crucial for inclusive practices, their relations have so far not been investigated in the same study. Based on the literature, we hypothesize that attitudes and self-efficacy are positively related to each other and both negatively related to burnout. Moreover, we expect a particularly strong relation with the personal accomplishment dimension of burnout (Curchod-Ruedi et al., 2013; Rohmer et al., 2022b). Given the well-attested strong relations between attitudes and self-efficacy and between self-efficacy and burnout, we expect the relation between attitudes and burnout to be mediated by teacher self-efficacy.

Our study specifically probes the impact of training on the three constructs. First, we posit that inclusion training increases positive attitudes, self-efficacy and decreases burnout levels. Second, and more importantly, we expect the effect of training on burnout to be mediated by the improvement of attitudes and self-efficacy.

To test these hypotheses, we have conducted a study that relies on a pretest-intervention-postttest design to investigate the impact of training for pre-service teachers. This specific population has the advantage of attending inclusion courses and gaining actual classroom practice, which has been recognized as a favourable condition to produce the expected outcomes (Walton & Rusznyak, 2020). Also, the training programme comprised evidence-based contents relevant to future inclusive practices based on teachers' needs for inclusive teaching: knowledge, attitudes and skills (Avramidis et al., 2000; Walton & Rusznyak, 2017).

7. Method

7.1. Participants

Two hundred and eighty-six French pre-service students participated in the study. They were master's level students in a teaching programme whose curriculum is split evenly between attending classes at university and time spent at school in charge of their own class. They were recruited during two stages, in 2020 and 2021: respectively 121 (103 women, $M_{age} = 26.60$, $SD = 6.39$) and 165 participants (145 women $M_{age} = 27.80$, $SD = 7.18$) (in sum, 249 women, $M_{age} = 27.30$, $SD_{age} = 6.87$). Participants volunteered as part of their training for primary school teachers. They were given information on the purpose of the study, told that the study was anonymous and that they were free to stop at any time; they would not be evaluated on the study. Participants were not compensated. They were also informed that the protocol was approved by the University of Strasbourg's ethics committee (agreement reference: CER/2020-06).

7.2. Material

Attitude towards inclusive education. We used the Multidimensional Attitudes toward Inclusive Education Scale (Mahat, 2008) to assess attitudes towards inclusive education. This validated scale measures perceptions and beliefs about inclusive education on the cognitive level (e.g., "I believe that an inclusive school is one that allows all students to make progress regardless of their ability"), feelings and emotions about inclusive education on the affective level (e.g., "I get frustrated when I have difficulty communicating with students with a disability"), and behaviours geared towards inclusive education (e.g., "I am willing to encourage students with a disability to participate in all social activities in the regular classroom"). This scale was previously used on a French population (Jury et al., 2021a, 2021b; Massé et al., 2020). Participants filled in the questionnaire using a 5-point Likert scale (1 = 'totally disagree' to 5 = 'totally agree'). As the scale shows a good reliability (ω[1] = 0.86, $\alpha = 0.84$), a general attitude score was calculated.

Teacher self-efficacy. We used the Teacher Self-efficacy Scale (Tschannen-Moran & Woolfolk, 2001). This scale comprises three main dimensions of efficacy: instructional strategies (e.g., "To what extent can you use a variety of assessment strategies?"), classroom management (e.g., "How much can you do to control disruptive behaviour in the classroom?") and student engagement (e.g., "How much can you do to get students to believe they can do well in schoolwork?"). This scale was previously used on a French population (Desombre et al., 2019; Dussault

[1] McDonald's Omega (w) coefficient (McDonald, 1999) is a better alternative to the more established alpha coefficient (α) (Stone et al., 2013; see Revelle & Condon, 2019; Revelle & Zinbarg, 2009).

et al., 2001). The three dimensions are measured by eight items and participants' answers range from 1 "not agree at all" to 9 "totally agree". As the scale shows a good reliability (ω = 0.91, α = 0.91), a general self-efficacy score was calculated.

Burnout. We used Maslach Burnout Inventory (Maslach & Jackson, 1981) to assess burnout. This inventory addresses three dimensions: emotional exhaustion (e.g., "I feel emotionally drained from my work" – nine items, α = 0.86), depersonalization (e.g., "I've become more callous towards people since I took this job" – five items, α = 0.60) and personal accomplishment (e.g., "I have achieved many rewarding objectives in my work" – eight items, α = 0.74). This scale was previously used on a French population (Boujut et al., 2017; Rohmer et al., 2022a). Participants' answers range from 0 "never" to 6 "every day". Three scores were calculated for each dimension. Following recommendations in Bianchi et al. (2014) we calculated a general burnout score following the algorithm 0.6*(emotional exhaustion) +0.4*(depersonalization).

These scales were used in this study because research has shown their relevance for testing the relations between attitudes, self-efficacy and burnout on a French population. Indeed, the observed relations are consistent with theoretical claims and empirical evidence (see Boujut et al., 2017; Desombre et al., 2019; Rohmer et al., 2022b).

7.3. Procedure

The study was planned as a pretest-intervention-posttest design. The pre- and posttest steps were strictly identical and consisted of the previously described measures. The study was conducted online using the Qualtrix platform (Provo, UT). All participants filled in the scales in the same order: attitudes towards inclusive education scale (Mahat, 2008), teacher self-efficacy scale (Tschannen-Moran & Woolfolk, 2001) and the MBI burnout inventory (Maslach & Jackson, 1981). Lastly, participants gave socio-demographic data and stated whether they considered themselves familiar with the issue of disability, and if so, why. The main themes addressed throughout the training were disability models, inclusion and pedagogical practices, inclusive law requirements, inclusion policy evaluations, objective and subjective barriers to inclusion, knowledge on frequent impairments at school and their consequences, students' needs, pedagogical accommodations and tools (Goulet, 2022; Walton & Rusznyak, 2017; Woodcock et al., 2022).

The intervention took place in the presence of all students, regardless of whether they participated in the study. It was introduced as the occasion to address inclusion-related work situations and their pedagogical posture and responses to children with disabilities. It was designed as a two-session training. The first 2-h session dealt with the concept of disability and the principle of inclusive education – more specifically, inclusive practices in primary schools targeting students with disabilities and their impact on both students (with or without disability) and teachers. Opportunities and obstacles to inclusion were addressed. The second 2-h session focused on the more frequent impairments (e.g., learning disabilities, autism spectrum disorder, cognitive deficit) and their consequences on learning. Specific case studies were introduced with the aim to better understand the needs of these students and to suggest adapted teaching practices.

Initially the study was scheduled for the 2019–2020 academic year. The pre-test was conducted in February 2020. However, due to the first Covid lockdown and the reorganization of teaching at the university during the pandemic, we were unable to complete the remaining two phases of the study. Consequently, with support from our funder, the three phases of the study were rescheduled in 2020–2021. As online teaching was favoured during that period, the study was conducted online. This allowed us to control the teacher effect, as the same person was responsible for training all students. The materials, procedures, descriptive statistics, correlations between variables and statistical analyses are available here: https://osf.io/nfbcs/

8. Results

8.1. Statistical data analysis

Our data analysis strategy was divided in two main parts, respectively on the data collected prior to training and on the pre- and post-training data. The first part followed a three-step integrative data analysis strategy (Curran & Hussong, 2009). Integrative data analysis consists in pooling multiple data sets to analyse them as one, offering increased statistical power and the opportunity to aggregate the data sets from the two phases of the study (for more details, see Curran & Hussong, 2009). Thus, the first analysis was run on a sample of 286 participants. Given the small rate of missing values (i.e., less than 2%), they were replaced by the mean score of the variable. On this data set, the relations between attitudes towards inclusive education, teacher self-efficacy and general burnout were tested, followed by a test of the same relations but with personal accomplishment as a dependent variable.[2] In order to follow current recommendations for higher statistical power (better alpha and beta risks control), our analyses were performed using the model comparison approach (Judd et al., 2009). Following Yzerbyt et al. (2018), we tested the mediation model with attitudes as predictor, teacher self-efficacy as mediator and burnout (then personal accomplishment) as dependent variable to assess the significance of the indirect effect. In the following analysis, the *a* path represents the relation between attitudes and self-efficacy; the *b* path is the relation between self-efficacy and general burnout (then personal accomplishment) controlling for the effect of attitudes; the *c* path stands for the total effect of attitudes on burnout and the *c'* path is the direct effect of attitudes on burnout (then personal accomplishment, cf. Figs. 1 and 2). The *a*b* product is the indirect effect. According to Yzerbyt et al. (2018), to assess whether an indirect effect is different from the null, both *a* and *b* paths need to be significant (see also Montoya and Hayes, 2017).

The second part of the analysis was conducted on the data from the second phase of the programme only ($N = 165$). It tested the effect of the training on attitudes, teacher self-efficacy, general burnout and personal accomplishment changes. Score differences were computed on each variable between the post-test score and the pre-test score. Two internal participant mediations were tested. For both, the predictor was the training and the dependent variable was burnout change (and personal accomplishment change). In one mediation, the mediator was attitude change and in the other it was self-efficacy change. In this analysis, the *a* path represents the relation between training and attitude change (or self-efficacy change); the *b* path is the relation between attitude change (or self-efficacy change) and general burnout change (then personal accomplishment change) controlling for the effect of the training; the *c*

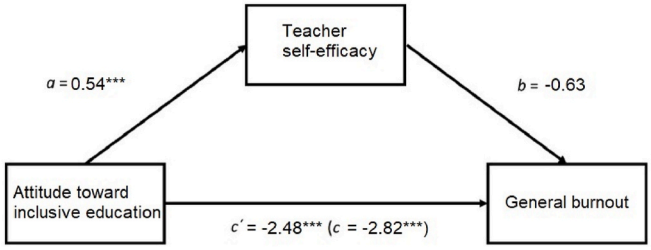

Fig. 1. Unstandardized regression coefficients for the indirect effect of attitude towards inclusive education on general burnout through teacher self-efficacy. *Note.* The total effect is in parentheses. *$p < 0.01$, ***$p < 0.001$.

[2] For exploratory purposes, analyses on the two other burnout dimensions were run and are available on https://osf.io/a6wsg/.

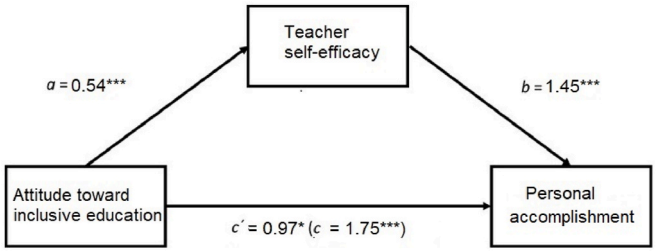

Fig. 2. Unstandardized regression coefficients for the indirect effect of attitude towards inclusive education on personal accomplishment through teacher self-efficacy. *Note.* The total effect is in parentheses. *$p < 0.01$, ***$p < 0.001$.

path is the total effect of training on burnout change (then personal accomplishment change, cf. Figs. 3 and 4).

All analyses were carried out with the R programme (version 3.6.0, 2020; R Core Team, 2013). All mediation analyses were carried out with the JS mediation package (Batailler et al., 2021).[3] The 95% confidence intervals reported hereafter are based on the estimated percent reduction in error index (PRE,[4] Judd & McClelland, 1989).

8.2. Integrative data analysis (first part)

8.2.1. Indirect effect of attitude towards inclusive education on general burnout through teacher self-efficacy

The relation between attitudes and self-efficacy path was significant (*a* point estimate = 0.54, *SE* = 0.09, *t* = 5.67, *p* = 0.001) but the relation between self-efficacy and burnout was not (*b* point estimate = −0.63, *SE* = 0.33, *t* = 1.93, *p* = 0.05, see Fig. 1). Thus, the indirect effect is not different from the null.

8.2.2. Indirect effect of attitude towards inclusive education on personal accomplishment through teacher self-efficacy

We found that the relation between attitudes and self-efficacy was significant (*a* point estimate = 0.32, *SE* = 0.06, *t* = 5.67, *p* = 0.001), as was the relation between self-efficacy and personal accomplishment (*b* point estimate = 0.35, *SE* = 0.06, *t* = 6.10, *p* = 0.001, see Fig. 2). The indirect effect of self-efficacy on the relation between attitudes and personal accomplishment was significant (point estimate = 0.11, 95% CI [0.06, 0.17], 5000 Monte Carlo iterations).

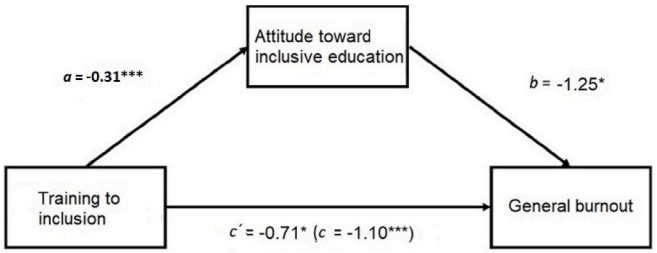

Fig. 3. Unstandardized regression coefficients for the indirect effect of training to inclusion on general burnout through attitude toward inclusive education *Note.* The total effect is in parentheses. *$p < 0.01$, ***$p < 0.001$.

[3] All analyses were ran with familiarity with disability as a covariant, which revealed no significant effect.

[4] We choose here to report the PRE effect size (proportional reduction in error, Judd & McClelland, 1989), rather than the eta-squared index. In statistics, it is accepted that the values expressed in Greek letters refer to the parameters in the population while those in Roman letters express the values in the observed sample.

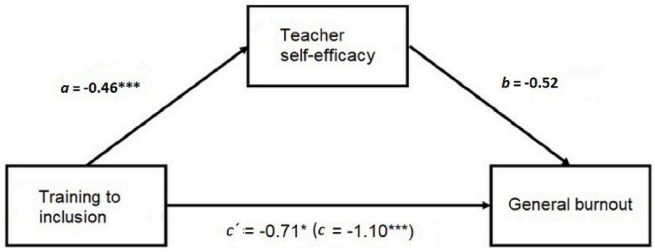

Fig. 4. Unstandardized regression coefficients for the indirect effect of training to inclusion on general burnout through teacher self-efficacy *Note.* The total effect is in parentheses. *$p < 0.01$, ***$p < 0.001$.

8.3. Effect of the training (second part)

8.3.1. Effect of the training on attitudes and self-efficacy

The training significantly improved attitudes towards inclusive education, $t(164) = 6.81$, $p = 0.001$, *PRE* = 0.22, *95% CI [00.12, 00.32]* and self-efficacy, $t(164) = 6.02$, $p = 0.001$, *PRE* = 0.18, *95% CI [00.08, 00.28]*. More precisely, attitudes towards inclusive education were more positive after the training ($M = 3.80$; $SD = 0.65$) than before ($M = 3.49$; $SD = 0.68$). Self-efficacy was also perceived more positively after the training ($M = 6.84$; $SD = 1.16$) than before ($M = 6.38$; $SD = 1.18$).

8.3.2. Effect of the training on general burnout and personal accomplishment

The training significantly decreased general burnout, $t(164) = -3.40$, $p = 0.001$, *PRE* = 0.07, *95% CI [00.01, 00.15]* and increased personal accomplishment, $t(164) = 2.29$, $p = 0.02$, *PRE* = 0.03, *95% CI [00.01, 00.09]*. More precisely, general burnout was lower after the training ($M = 11.27$; $SD = 6.69$) than before ($M = 12.37$; $SD = 6.16$). In addition, personal accomplishment was higher after the training ($M = 20.20$; $SD = 4.66$) than before ($M = 19.51$; $SD = 4.62$).

8.3.3. Indirect effect of training on changes in general burnout through changes in attitudes

Training significantly predicted changes in attitudes (*a* point estimate = −0.31, *SE* = 0.05, *t* = 6.81, *p* = 0.001) and changes in attitudes significantly predicted changes in general burnout (*b* point estimate = −1.25, *SE* = 0.05, *t* = 2.33, *p* = 0.02, see Fig. 3). The indirect effect was significant (point estimate = 0.39, 95% CI [0.06, 0.77], 5000 Monte Carlo iterations).

8.3.4. Indirect effect of training on changes in personal accomplishment through changes in attitudes

Training significantly predicted changes in attitudes (*a* point estimate = −0.31, *SE* = 0.05, *t* = 6.81, *p* = 0.001). Changes in attitude failed to reach significance in predicting changes in personal accomplishment (*b* point estimate = 0.87, *SE* = 0.51, *t* = 1.71, *p* = 0.09).

8.3.5. Indirect effect of training on changes in general burnout through changes in teacher self-efficacy

The same model was tested using changes in self-efficacy change as a mediator. We found that the *a* path was significant (*a* point estimate = −0.46, *SE* = 0.08, *t* = 6.02, *p* = 0.001; however, the *b* path was not significant (*b* point estimate = −0.52, *SE* = 0.33, *t* = 1.59, *p* = 0.11, see Fig. 4).

8.3.6. Indirect effect of training on changes in personal accomplishment through changes in teacher self-efficacy

The same model was tested with personal accomplishment as a dependent variable. We found that both the *a* and *b* paths were significant (*a* point estimate = −0.46, *SE* = 0.08, *t* = 6.02, *p* = 0.001; *b* point estimate = 1.37, *SE* = 0.29, *t* = 4.70, *p* = 0.001), as was the indirect effect (point estimate = −0.63, 95% CI [−1.01, −0.33], 5000 Monte

Carlo iterations).

9. Discussion

Inclusion is a fundamental principle, recognizing that all children are entitled to a high-quality education. The French government has affirmed its commitment to inclusive schooling. However, as has been observed with many other minorities, the implementation of the rights of children with disabilities has met with resistance and adverse reactions, and it is up to research to identify the obstacles in order to combat them more effectively.

Teachers complain about not being prepared for teaching students with disabilities. Teachers with higher levels of concern may risk being tempted to exclude some students in an attempt to reduce problems arising in their classrooms (Curchod-Ruedi et al., 2013; Saloviita & Pakarinen, 2021). These complaints are also associated with consequences on wellbeing (Maulana & Helms-Lorenz, 2016; Rohmer et al., 2022a). Considering their implications on public health, inclusion policies in education need to be taken seriously for the benefit of students and teachers alike. Training teachers in inclusive practices is in this sense a necessity. More precisely, to better prepare teachers for effective inclusive practice in schools, attitudes, efficacy and concerns must be addressed during training (Sokal and Sharma (2022)). In line with this, the goal of the present research was to develop and evaluate the impact of a training programme in preservice students. This programme was expected to alleviate teachers' concerns about their ability to teach students with disabilities. This is important in that negative feelings and beliefs related to inclusion have been related to burnout syndrome in teachers (Boujut et al., 2017; Rohmer et al., 2022b; Sharma, 2018; Weissenfeld et al., 2021). The core question in this study is whether teachers' attitudes (feelings) and self-efficacy (beliefs) in inclusive settings are antecedents of burnout. Previous studies have consistently shown that self-efficacy efficiently protects teachers against burnout (Shoji et al., 2015). Additionally, recent first evidence has indicated that attitudes and burnout are related in teachers (Rohmer et al., 2022a). However, to the best of our knowledge no research has investigated the relation between attitudes, self-efficacy and burnout, considered together in the same sample.

As has been shown in the literature, our results indicate that attitudes significantly predict general burnout – especially the personal accomplishment component – and that self-efficacy also does. More importantly, as expected, self-efficacy explains the relation between attitudes and personal accomplishment. Therefore, mediation is significant on the personal accomplishment component, which is consistent with existing evidence (Curchod-Ruedi et al., 2013; Rohmer et al., 2022b). This result is important to the extent where an indirect effect tested through a mediation gives hints on why and how attitudes and burnout are related. This goes beyond the recent suggestion by Yada et al. (2022) that research should consider both attitudes and self-efficacy in teachers. It is not only necessary to consider these two factors simultaneously, but also to show how they relate to burnout. Our results specifically show that changing attitudes induces increased wellbeing because teachers feel more competent.

Given the strong relations between these dimensions, training programmes need to target attitudes, self-efficacy and personal accomplishment. Following literature recommendations, the training programme tested in our research tackled issues such as disability models, inclusive laws and policies, objective and subjective barriers to inclusion, pedagogical accommodations and tools, evaluations in inclusive practices. As suggested by Walton and Rusznyak (2020), the training was part of the regular curricula of preservice students within an identifiable coursework combined with actual classroom practice. Our results show that the training programme improves attitudes towards inclusion, self-efficacy, personal accomplishment. Two further results emerge from our analysis. First, the training decreases general burnout and, importantly, this is accountable through increased positive attitudes. One can explain this relation when considering the affective specificity of these concepts, with attitudes representing teachers' evaluative reactions to inclusion issues (Derguy et al., 2022; Jury et al., 2021) and emotional exhaustion being considered as the central dimension of burnout. Second, the positive effect of training on personal accomplishment is accountable through increased self-efficacy beliefs. Indeed, research has shown important similarities between personal accomplishment and self-efficacy, with the former understood as perception of self-competence at work (Schwarzer & Hallum, 2008).

In sum, this research yields three main findings. First, it suggests that a training programme should not only provide knowledge but also induce change on a more subjective level. Second, it points out the value of assessing the impact of an evidence-based programme to understand what mechanisms are at stake in inducing change. When a programme focuses on both the cognitive and the affective dimension in trainees, the likelihood of change is enhanced (Sharma, 2018). Third, it advances our understanding of the relations between attitudes, self-efficacy and burnout, three core concepts relating to teachers' engagement in inclusive practices. It sheds light on the importance of jointly considering cognitive and affective factors when assessing the impact of training.

Despite the importance of these findings, some limitations should be noted. First, the direction of the relation between attitudes and self-efficacy could be questioned. Recent research has tested the causal relations between attitudes and self-efficacy and suggested that teachers' self-efficacy beliefs affect their attitudes towards inclusion rather than vice versa (Savolainen et al., 2022). However, here we were interested in testing a mediation model involving attitudes, self-efficacy and burnout in line with Wilson et al., 2022, which showed that self-efficacy is a mediator of the relation between attitudes and more behavioural outcomes (see also Sharma et al., 2021). Longitudinal studies are needed to confirm the direction of the relation between the aforementioned constructs. The longitudinal approach will also allow for assessing the long-term benefits of training as teachers transition between pre-service to in-service practice (Sims & Fletcher-Wood, 2021; Sokal and Katz, 2017). In this line, further research could extend the investigation to more behavioural outcomes, such as inclusive practice in real-class settings: for example, the quality of student-teacher interaction (Roorda et al., 2011), the readiness to adapt pedagogy (Goulet, 2022; Stanczak et al., 2022), becoming aware of subtle micro-exclusions to better address them (Bastart et al., 2021). It is worth noting that the initial research programme comprised such outcomes that could not unfortunately be assessed at the time when the studies were implemented due to the pandemic.

Second, although the programme was conceived on the basis of recommendations formulated in the literature, some drawbacks should be noted. To start, the training programme involved participants who were both pre-service students and in-service teachers, meaning burnout symptoms may be related to both learning and practising. To the extent that all participants were in the same situation, it can be assumed that they were impacted by it in comparable ways. Importantly, the training decreased negative burnout-related symptoms. Next, the duration of the training programme (i.e., 4 h) might be seen as somewhat short. However, previous studies have shown that even a shorter (1 h) online class influenced professors' attitudes towards diversity and increased behavioural change (Wynants & Dennis, 2018). Overall, the impact of training appears to depend more on content relevance (the training design was based on subject-specific, scientific expertise, combined with field practice and integrated in students' regular curricula) than on length (Sokal & Sharma, 2022). Finally, the training was conducted online, a format that could potentially decrease engagement and commitment to actual change in trainees. The question of the effectiveness of online training under the constraints of the pandemic compared to face-to-face training remains to be settled. To fill this gap in knowledge, Sokal and Sharma (2022) compared the two training formats on variables similar to those tested here. They observed that while online training did not change attitudes and self-efficacy, face-to-face

training enhanced students' self-efficacy on inclusion but, in contrast, worsened attitudes towards inclusion. It should be noted here that our training programme induced positive changes in both attitudes and self-efficacy. In this respect, Driscoll et al. (2012) highlighted the importance of the instructor and suggested that typical levels of participation and engagement in face-to-face teaching can be fully replicated in an online environment. Further research should clarify diverging evidence on the efficacy of different types of training and on comparisons between online and face-to-face training programmes. It should also shed light on the effectiveness of other learning strategies that have been shown to enhance inclusive practices such as cooperative learning (e.g., puzzle class, Johnson & Johnson, 2009). The most important issue that is still to be settled is whether the training effects last in time and if the intentions are transformed in actual behaviours (Kurniawati et al., 2017). One of the initial goals of the programme was to assess the students and teachers' wellbeing in class and to follow their evolution in a delayed follow-up. We were unable to do this due to the pandemic but research should assess the long-term effects of training on inclusive teaching practices and wellbeing in class.

10. Implications and conclusion

All teacher education programmes should incorporate courses aimed at facilitating inclusive education (Kasperski & Crispel, 2022). Training should not only provide relevant knowledge and skills, but also make room for more subjective concerns. Teachers should be given the opportunity to express fears of failing to meet expectations. Like diversity training in general, training on school inclusion stands to gain considerably from being rooted on evidence-based strategies (Cox & Devine, 2019; Devine & Ash, 2022). This is a promising path for improving the achievements and wellbeing of students with disabilities, but also to ensure teachers' personal and professional fulfilment. Now that all pre-service teachers in France attend a 25-h training programme on inclusive education, our results could help refine this training. Crucially, research should be a core feature of teachers' training. Lifelong training for more experienced teachers also stands to benefit given the evidence that, to a certain extent, all teachers have comparable training needs to combat burnout (Jury et al., 2021; Rohmer et al., 2022a). Personal accomplishment may be the core dimension here, insofar as teaching may involve a struggle in reconciling personal and professional values (Perrin et al., 2021). Indeed, the extent to which teachers feel that they share the prevailing norms of the education system impacts their motivation, their commitment and crucially, their wellbeing (Li et al., 2015; Wang & Hall, 2019). Beyond the case of schooling students with special needs and more specifically those with disabilities, this research has implications on the more general question of how teachers can be better prepared to address a wide diversity of learners within a right-based policy framework.

11. Conclusion

The first important declarations in support of the inclusion of children with disabilities in the mainstream education system were made in 1994. Thirty years later, governmental reports and surveys highlight persistent reluctance and difficulties in actually implementing inclusion. This is a perfect illustration of how long it takes for change to happen, a well-documented phenomenon in struggles for equal rights for all human beings, regardless of group (e.g., gender, sexual orientation, religion, race, disability). While the process may seem daunting, it is a necessary step: only by identifying obstacles, raising awareness of them and tackling them will we achieve social advances for these groups. We believe that research like this will help create the conditions required for the inclusion of children with disabilities to become a reality.

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CRediT authorship contribution statement

Luc Vieira: Writing – review & editing, Writing – original draft, Software, Methodology, Formal analysis, Data curation, Conceptualization. **Odile Rohmer:** Writing – review & editing, Writing – original draft, Validation, Supervision, Funding acquisition, Formal analysis, Conceptualization. **Mickael Jury:** Writing – review & editing, Writing – original draft, Formal analysis, Conceptualization. **Caroline Desombre:** Writing – review & editing, Investigation, Funding acquisition, Conceptualization. **Marine Delaval:** Writing – original draft, Resources, Methodology. **Nadège Doignon-Camus:** Writing – review & editing, Formal analysis. **Anne-Clémence Chaillou:** Writing – original draft, Investigation, Data curation, Conceptualization. **Claire Goulet:** Writing – review & editing, Resources, Conceptualization. **Maria Popa-Roch:** Writing – review & editing, Writing – original draft, Validation, Supervision, Project administration, Methodology, Funding acquisition, Formal analysis, Conceptualization.

Declaration of competing interest

The authors have no financial or non-financial interests to disclose.

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Data availability

Data will be made available on request.

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References

Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes, 50*, 179–211. https://doi.org/10.1016/0749-5978(91)90020-T

Aloe, A. M., Amo, L. C., & Shanahan, M. E. (2014). Classroom management self-efficacy and burnout: A multivariate meta-analysis. *Educational Psychology Review, 26*(1), 101–126. http://www.jstor.org/stable/43549786.

Avramidis, E., Bayliss, P., & Burden, R. (2000). A survey into mainstream teachers' attitudes towards the inclusion of children with special educational needs in the ordinary school in one local education authority. *Educational Psychology, 20*(2), 191–211. https://doi.org/10.1080/713663717

Avramidis, E., & Norwich, B. (2002). Teachers' attitudes towards integration/inclusion: A review of the literature. *European Journal of Special Needs Education, 17*(2), 129–147. https://doi.org/10.1080/08856250210129056

Avramidis, E., Toulia, A., Tsihouridis, C., & Strogilos, V. (2019). Teachers' attitudes towards inclusion and their self-efficacy for inclusive practices as predictors of willingness to implement peer tutoring. *Journal of Research in Special Educational Needs, 19*(S1), 49–59. https://doi.org/10.1111/1471-3802.12477

Bandura, A. (1997). *Self-efficacy: The exercise of control.* Freeman.

Bastart, J., Rohmer, O., & Popa-Roch, M. A. (2021). Legitimation of discrimination against students with disabilities in school: The role of justifications of discriminatory behaviours. *International Review of Social Psychology, 33*(1), 1–11. https://doi.org/10.5334/irsp.357

Batailler, C., Muller, D., Yzerbyt, V., Judd, C., Ho, A., Kteily, N., Chen, J., Dohle, S., & Siegrist, M. (2021). *Package "JSmediation."*. https://jsmediation.cedricbatailler.me.
Bianchi, R., Boffy, C., Hingray, C., Truchot, D., & Laurent, E. (2013). Comparative symptomatology of burnout and depression. *Journal of Health Psychology, 18*(6), 782–787. https://doi.org/10.1177/1359105313481079
Booth, T., & Ainscow, M. (2011). *Index for inclusion: Developing learning and participation in schools* (3rd ed.). Centre for Studies on Inclusive Education.
Boujut, E., Popa-Roch, M. A., Palomares, E. A., Dean, A., & Cappe, E. (2017). Self-efficacy and burnout in teachers of students with autism spectrum disorder. *Research in Autism Spectrum Disorders, 36*, 8–20. https://doi.org/10.1016/j.rasd.2017.01.002
Boyle, C., Topping, K., & Jindal-Snape, D. (2013). Teachers' attitudes towards inclusion in high schools. *Teachers and Teaching, 19*(5), 527–542. https://doi.org/10.1080/13540602.2013.827361
Cappe, E., Bolduc, M., Poirier, N., Popa-Roch, M. A., & Boujut, E. (2017). Teaching autistic students across various educational settings: The factors involved in burnout. *Teaching and Teacher Education, 67C*, 498–508. https://doi.org/10.1016/j.tate.2017.07.014
Castillo-Gualda, R., Herrero, M., Rodríguez-Carvajal, R., Brackett, M. A., & Fernández-Berrocal, P. (2019). The role of emotional regulation ability, personality, and burnout among Spanish teachers. *International Journal of Stress Management, 26*(2), 146–158. https://doi.org/10.1037/str0000098
Cooc, N. (2019). Teaching students with special needs: International trends in school capacity and the need for teacher professional development. *Teaching and Teacher Education, 83*, 27–41. https://doi.org/10.1016/j.tate.2019.03.021
Cox, W. T. L., & Devine, P. G. (2019). The prejudice habit-breaking intervention: An empowerment-based confrontation approach. In R. K. Mallet, & M. J. Monteith (Eds.), *Confronting prejudice and discrimination* (pp. 249–274). Academic Press.
Curchod-Ruedi, D., Ramel, S., Bonvin, P., Albanese, O., & Doudin, P. A. (2013). Integration and inclusive education: Teachers' involvement and importance of social support. *European Journal of Disability Research, 7*(2), 135–147. https://doi.org/10.1016/j.alter.2012.11.008
Curran, P. J., & Hussong, A. M. (2009). Integrative data analysis: The simultaneous analysis of multiple data sets. *Psychological Methods, 14*(2), 81–100. https://doi.org/10.1037/a0015914
Derguy, C., Aube, B., Rohmer, O., & Loyal, D. (2022). Evaluation of teachers' knowledge and attitudes regarding the school inclusion of autistic children: Validation of a brief assessment toolkit. *British Journal of Educational Psychology, 10*, 1111. https://doi.org/10.1111/bjep.12569
Desimone, L. M. (2009). Improving impact studies of teachers' professional development: Toward better conceptualizations and measures. *Educational Researcher, 38*(3), 181–199. https://doi.org/10.3102/0013189X08331140
Desombre, C., Lamotte, M., & Jury, M. (2019). French teachers' general attitude toward inclusion: The indirect effect of teacher efficacy. *Educational Psychology, 39*(1), 38–50. https://doi.org/10.1080/01443410.2018.1472219
Devecchi, C., Dettori, F., Doveston, M., Sedgwick, P., & Jament, J. (2012). Inclusive classrooms in Italy and England: The role of support teachers and teaching assistants. *European Journal of Special Needs Education, 27*(2), 171–184. https://doi.org/10.26855/er.2018.06.001
Devine, P. G., & Ash, T. L. (2022). Diversity training goals, limitations, and promise: A review of the multidisciplinary literature. *Annual Review of Psychology, 73*, 403–429. https://doi.org/10.1146/annurev-psych-060221-122215
Driscoll, A., Jicha, K., Hunt, A. N., Tichavsky, L., & Thompson, G. (2012). Can online courses deliver in-class results? A comparison of student performance and satisfaction in an online versus a face-to-face introductory sociology course. *Teaching Sociology, 40*(4), 312–331. https://doi.org/10.1177/0092055X12446624
Dussault, M., Villeneuve, P., & Deaudelin, C. (2001). L'échelle d'autoefficacité des enseignants: Validation canadienne-française du Teacher efficacy scale [the teachers self-efficacy scale: Canadian-French validation of the teacher efficacy scale]. *Revue des Sciences de l'Éducation, 27*(1), 181–194. https://id.erudit.org/iderudit/000313ar.
Eagly, A. H., & Chaiken, S. (2007). The advantages of an inclusive definition of attitude. *Social Cognition, 25*(5), 582–602. https://doi.org/10.1521/soco.2007.25.5.582
Florian, L., & Camedda, D. (2020). Enhancing teacher education for inclusion. *European Journal of Teacher Education, 43*(1), 4–8. https://doi.org/10.1080/02619768.2020.1707579
Goulet, C. (2022). Entre recherche, formation et pratiques professionnelles de l'inclusion : Un balancier vertueux [between research, training, and professional practices of inclusion: A virtuous pendulum]. In O. Rohmer, M. Jury, & M. A. Popa-Roch (Eds.), *Inclusion scolaire des élèves en situation de handicap : Approche psycho-sociale* (pp. 197–208). Presses Universitaires de Bruxelles.
Guirimand, N., & Mazereau, P. (2016). Inclusion scolaire et professionnalités enseignantes : Entre attentes et contradictions [inclusive education and the teaching profession: Between expectations and contradictions. *Carrefours de l'Education, 42*, 47–60. https://doi.org/10.3917/cdle.0420047
Helms-Lorenz, M., & Maulana, R. (2016). Influencing the psychological well-being of beginning teachers across three years of teaching: Self-efficacy, stress causes, job tension and job discontent. *Educational Psychology, 36*, 569–594. https://doi.org/10.1080/13540602.2018.1465404
Hind, K., Larkin, R., & Dunn, A. K. (2019). Assessing teacher opinion on the inclusion of children with social, emotional and behavioural difficulties into mainstream school classes. *International Journal of Disability, Development and Education, 66*(4), 424–437. https://doi.org/10.1080/1034912X.2018.1460462
Johnson, D. W., & Johnson, R. T. (2009). An educational psychology success story: Social interdependence theory and cooperative learning. *Educational Researcher, 38*(5), 365–379. https://doi.org/10.3102/0013189X09339057
Judd, C. M., McClelland, G. H., & Ryan, C. S. (2009). *Data analysis: A model comparison approach* (2nd ed.). Routledge/Taylor & Francis Group.
Jury, M., Laurence, A., Cèbe, S., & Desombre, C. (2023). Teachers' concerns about inclusive education and the links with teachers' attitudes. *Frontiers in Education, 7*, Article 1065919. https://doi.org/10.3389/feduc.2022.1065919
Jury, M., Perrin, A. L., Desombre, C., & Rohmer, O. (2021a). Attitudes toward the inclusion of students with ASD: Impact of students' difficulties. *Research in Autism Spectrum Disorders, 83*, Article 101746. https://doi.org/10.1016/j.rasd.2021.101746
Jury, M., Perrin, A. L., Rohmer, O., & Desombre, C. (2021b). Attitudes toward inclusion: An exploration of the interaction between teachers' position and students' type of impairment. *Frontiers in Education, 6*, Article 55356. https://doi.org/10.3389/feduc.2021.655356
Kart, A., & Kart, M. (2021). Academic and social effects of inclusion on students without disabilities: A review of the literature. *Education Sciences, 11*(1), 16. https://doi.org/10.3390/educsci11010016
Kasperski, R., & Crispel, O. (2022). Preservice teachers' perspectives on the contribution of stimulation-based learning to the development of communication skills. *Journal of Education for Teaching: International Research and Pedagogy, 48*(2), 1–14. https://doi.org/10.1016/j.ssaho.2023.100694
Kelly, A., & Barnes-Holmes, D. (2013). Implicit attitudes towards children with autism versus normally developing children as predictors of professional burnout and psychopathology. *Research in Developmental Disabilities, 34*(1), 17–28. https://doi.org/10.1016/j.ridd.2012.07.018
Krämer, S., Möller, J., & Zimmermann, F. (2021). Inclusive education of students with general learning difficulties: A meta-analysis. *Review of Educational Research, 91*(3), 432–478. https://doi.org/10.3102/0034654321998072
Kurniawati, F., de Boer, A. A., Minnaert, A. E., & Mangunsong, F. (2017). Evaluating the effect of a teacher training programme on the primary teachers' attitudes, knowledge and teaching strategies regarding special educational needs. *Educational Psychology, 37*(3), 287–297. https://doi.org/10.1080/01443410.2016.1176125
Li, M., Wang, Z., You, X., & Gao, J. (2015). Value congruence and teachers' work engagement: The mediating role of autonomous and controlled motivation. *Personality and Individual Differences, 80*, 113–118. https://doi.org/10.1016/j.paid.2015.02.021
Mahat, M. (2008). The development of a psychometrically-sound instrument to measure teachers' multidimensional attitudes toward inclusive education. *International Journal of Special Education, 23*(1), 82–92. http://hdl.handle.net/20.500.12424/3953595.
Maslach, C., & Jackson, S. E. (1981). The measurement of experienced burnout. *Journal of Organizational Behavior, 2*, 99–113. https://doi.org/10.1002/job.4030020205
Maslach, C., Schaufeli, W. B., & Leiter, M. P. (2001). Job burnout. *Annual Review of Psychology, 52*(1), 397–422. https://doi.org/10.1146/annurev.psych.52.1.397
Massé, L., Nadeau, M. F., Verret, C., Gaudreau, N., & Lagacé-Leblanc, J. (2020). Facteurs influençant les attitudes des enseignants-e-s québécois-es envers l' intégration des élèves présentant des difficultés comportementales [Factors including the attitudes of Quebec teachers towards the integration of students with behavioral difficulties]. *Revue des Sciences de l'Éducation, 46*(1), 41–63. https://doi.org/10.7202/1070726ar
Maulana, R., & Helms-Lorenz, M. (2016). Observations and student perceptions of the quality of preservice teachers' teaching behaviour: Construct representation and predictive quality. *Learning Environments Research, 19*, 335–357. https://doi.org/10.1007/s10984-016-9215-8
Montoya, A. K., & Hayes, A. F. (2017). Two-condition within-participant statistical mediation analysis: A path-analytic framework. *Psychological Methods, 22*(1), 6–27. https://doi.org/10.1037/met0000086
Perrin, A. L., Jury, M., & Desombre, C. (2021). Are teachers' personal values related to their attitudes toward inclusive education? A correlational study. *Social Psychology of Education, 24*, 1085–1104. https://doi.org/10.1007/s11218-021-09646-7
Qvortrup, A., & Qvortrup, L. (2018). Inclusion: Dimensions of inclusion in education. *International Journal of Inclusive Education, 22*(7), 803–817. https://doi.org/10.1080/13603116.2017.1412506
Rekaa, H., Hanisch, H., & Ytterhus, B. (2019). Inclusion in physical education: Teacher attitudes and student experiences. A Systematic review. *International Journal of Disability, Development and Education, 66*(1), 36–55. https://api.semanticscholar.org/CorpusID:149158923.
Rohmer, O., Jury, M., & Popa-Roch, M. A. (Eds.). (2022a). *L'inclusion scolaire, perspectives psycho-sociales [Inclusive Education, Psycho-Social Perspectives]*. Presses Universitaires de Bruxelles.
Rohmer, O., Palomares, E. A., & Popa-Roch, M. (2022b). Attitudes towards disability and burnout among teachers involved in inclusive education. *International Journal of Disability, Development and Education*. https://doi.org/10.1080/1034912X.2022.2092078
Roorda, D. L., Koomen, H. M., Spilt, J. L., & Oort, F. J. (2011). The influence of affective teacher–student relationships on students' school engagement and achievement: A meta-analytic approach. *Review of Educational Research, 81*(4), 493–529. https://doi.org/10.3102/0034654311421793
Ruijs, N. M., & Peetsma, T. T. (2009). Effects of inclusion on students with and without special educational needs reviewed. *Educational Research Review, 4*(2), 67–79. https://doi.org/10.1016/j.edurev.2009.02.002
Saloviita, T. (2020). Attitudes of teachers towards inclusive education in Finland. *Scandinavian Journal of Educational Research, 64*(2), 270–282. https://doi.org/10.1080/00313831.2018.1541819
Saloviita, T., & Pakarinen, E. (2021). Teacher burnout explained: Teacher-, student-, and organisation-level variables. *Teaching and Teacher Education, 97*(5), Article 103221. https://doi.org/10.1016/j.tate.2020.103221
Savolainen, H., Malinen, O., & Schwab, S. (2022). Teacher efficacy predicts teachers' attitudes towards inclusion - a longitudinal cross-lagged analysis. *International Journal of Inclusive Education, 26*(9), 958–972. https://doi.org/10.1080/13603116.2020.1752826

Schwab, S. (2019). Teachers' student-specific self-efficacy in relation to teacher and student variables. *Educational Psychology, 39*(1), 4–18. https://doi.org/10.1080/01443410.2018.1516861

Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. *Applied Psychology, 57*(s1), 152–171. https://doi.org/10.1111/j.1464-0597.2008.00359.x

Scior, K. (2011). Public awareness, attitudes and beliefs regarding intellectual disability: A systematic review. *Research in Developmental Disabilities, 32*(6), 2164–2182. https://doi.org/10.1016/j.ridd.2011.07.005

Sharma, U. (2018). Preparing to teach in inclusive classrooms. In G. W. Noblit (Ed.), *Oxford research Encyclopaedia of education* (pp. 1–22). Oxford University Press.

Sharma, U., Sokal, L., Wang, M., & Loreman, T. (2021). Measuring the use of inclusive practices among pre-service educators: A multi-national study. *Teaching and Teacher Education, 107*, Article 103506. https://doi.org/10.1016/j.tate.2021.103506

Shoji, K., Cieslak, R., Smoktunowicz, E., Rogala, A., Benight, C. C., & Luszczynska, A. (2015). Associations between job burnout and self-efficacy: A meta-analysis. *Anxiety, Stress & Coping, 29*, 367–386. https://doi.org/10.1080/10615806.2015.1058369

Sims, S., Fletcher-Wood, H., O'Mara-Eves, A., Cottingham, S., Stansfield, C., Van Herwegen, J., & Anders, J. (2021). What are the characteristics of teacher professional development that increase pupil achievement? A systematic review and meta-analysis. Education Endowment Foundation.available from: https://educationendowmentfoundation.org.uk/education-evidence/evidence-reviews/teacherprofessional-development-characteristics.

Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education, 26*(4), 1059–1069. https://doi.org/10.1016/j.tate.2009.11.001

Sokal, L., & Katz, J. (2017). Effects of the three-block model of universal design for learning on teachers' behaviours, efficacy, and concerns about inclusive teaching. *Teacher Education & Practice, 30*(1), 157–176. https://doi.org/10.1111/1471-3802.4_12347

Sokal, L., & Sharma, U. (2014). Canadian in-service teachers' concerns, efficacy, and attitudes about inclusive teaching. *Exceptionality Education International, 23*, 59–71. http://ir.lib.uwo.ca/eei/vol23/iss1/5.

Sokal, L., & Sharma, U. (2022). How effective is online pre-service teacher education for inclusion when compared to face-to-face delivery? *International Journal of Inclusive Education*. https://doi.org/10.1080/13603116.2022.2046191

Squillaci, M., & Hofmann, V. (2021). Working in inclusive or non-inclusive contexts: Relations between collaborative variables and special education teachers' burnout. *Frontiers in Education, 6*, Article 640227. https://api.semanticscholar.org/CorpusID:234752828.

Stanczak, A., Darnon, C., Robert, A., Demolliens, M., Sanrey, C., Bressoux, P., Huguet, P., Buchs, C., Butera, F., & PROFAN Consortium. (2022). Do jigsaw classrooms improve learning outcomes? Five experiments and an internal meta-analysis. *Journal of Educational Psychology, 114*(6), 1461–1476. https://doi.org/10.1037/edu0000730

Tournaki, N., & Samuels, W. E. (2016). Do graduate teacher education programs change teachers' attitudes toward inclusion and efficacy beliefs? *Action in Teacher Education, 38*(4), 384–398. https://doi.org/10.1080/01626620.2016.1226200

Tristani, L., & Bassett-Gunter, R. (2020). Making the grade: Teacher training for inclusive education: A systematic review. *Journal of Research in Special Educational Needs, 20*, 246–264. https://doi.org/10.1111/1471-3802.12483

Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education, 17*, 783–805. https://doi.org/10.1016/S0742-051X(01)00036-1

UNESCO. (1994). *The Salamanca statement and framework for action on special* needs education. In *Adopted by the world conference on special needs education: Access and equity*. UNESCO.

Van Mieghem, A., Verschueren, K., Petry, K., & Struyf, E. (2020). An analysis of research on inclusive education: A systematic search and meta review. *International Journal of Inclusive Education, 24*(6), 675–689. https://doi.org/10.1080/13603116.2018.1482012

Vaz, S., Wilson, N., Falkmer, M., Sim, A., Scott, M., Cordier, R., & Falkmer, T. (2015). Factors associated with primary school teachers' attitudes towards the inclusion of students with disabilities. *PLoS One, 10*(8). https://doi.org/10.1371/journal.pone.0137002

Walton, E., & Rusznyak, L. (2017). Choices in the design of inclusive education courses for pre-service teachers: The case of a South African University. *International Journal of Disability, Development and Education, 64*(3), 231–248. https://doi.org/10.1080/1034912X.2016.1195489

Walton, E., & Rusznyak, L. (2020). Cumulative knowledge-building for inclusive education in initial teacher education. *European Journal of Teacher Education, 43*(1), 18–37. https://doi.org/10.1080/02619768.2019.1686480

Wang, H., & Hall, N. C. (2019). When "I care" is not enough: An interactional analysis of teacher values, value congruence, and well-being. *Teaching and Teacher Education, 86*, Article 102906. https://doi.org/10.1016/j.tate.2019.102906

Weber, K. E., & Greiner, F. (2019). Development of pre-service teachers' self-efficacy beliefs and attitudes towards inclusive education through first teaching experiences. *Journal of Research in Special Educational Needs, 19*(S1), 73–84. https://doi.org/10.1111/1471-3802.12479

Weissenfeld, M., Benick, M., & Perels, F. (2021). Can teacher self-efficacy act as a buffer against burnout in inclusive classrooms? *International Journal of Educational Research, 109*, Article 101794. https://doi.org/10.1016/j.ijer.2021.101794

Wilson, C., Woolfson, L. M., & Durkin, K. (2022). The impact of explicit and implicit teacher beliefs on reports of inclusive teaching practices in Scotland. *International Journal of Inclusive Education, 26*(4), 378–396. https://doi.org/10.1007/s10648-022-09695-0

Wilson, C., Woolfson, L. M., Durkin, K., & Elliott, M. A. (2016). The impact of social cognitive and personality factors on teachers' reported inclusive behaviour. *British Journal of Educational Psychology, 86*(3), 461–480. https://doi.org/10.1111/bjep.12118

Woodcock, S., Sharma, U., Subbean, P., & Hitches, E. (2022). Teacher self-efficacy and inclusive education practices: Rethinking teachers' engagement with inclusive practices. *Teaching and Teacher Education, 117*(1), Article 103802. https://doi.org/10.1016/j.tate.2022.103802

Woodcock, S., & Woolfson, L. M. (2019). Are leaders leading the way with inclusion? Teachers' perceptions of systemic support and barriers towards inclusion. *International Journal of Educational Research, 93*, 232–242. https://doi.org/10.1016/j.ijer.2018.11.004

Wynants, S., & Dennis, J. (2018). Professional development in an online context: Opportunities and challenges from the voices of college faculty. *Journal of Educators Online, 15*(1). https://doi.org/10.1016/j.ssaho.2023.100626

Yada, A., Leskinen, M., Savolainen, H., & Schwab, S. (2022). Meta-analysis of the relationship between teachers' self-efficacy and attitudes toward inclusive education. *Teaching and Teacher Education, 109*(4), Article 103521. https://doi.org/10.1016/j.tate.2021.103521

Yada, A., Tolvanen, A., Malinen, O. P., Imai-Matsumura, K., Shimada, H., Koike, R., & Savolainen, H. (2019). Teachers' self-efficacy and the sources of efficacy: A cross-cultural investigation in Japan and Finland. *Teaching and Teacher Education: An International Journal of Research and Studies, 81*(1), 13–24. https://doi.org/10.1016/j.tate.2019.01.014

Yzerbyt, V., Muller, D., Batailler, C., & Judd, C. M. (2018). New recommendations for testing indirect effects in mediational models: The need to report and test component paths. *Journal of Personality and Social Psychology, 115*(6), 929–943. https://doi.org/10.1037/pspa0000132

Zeilinger, E. L., Stiehl, K. A. M., Bagnall, H., & Scior, K. (2020). Intellectual disability literacy and its connection to stigma: A multinational comparison study in three European countries. *PLoS One, 15*(10), Article e0239936. https://doi.org/10.1371/journal.pone.0239936