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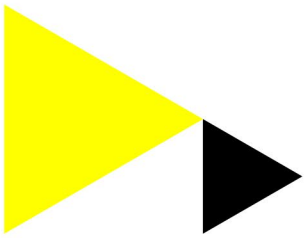

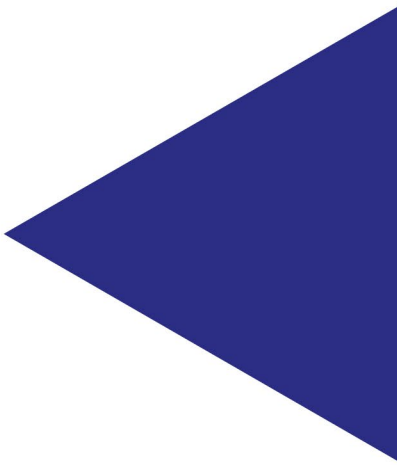

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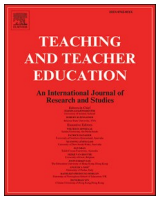

Research paper

Navigating urban classrooms: The role of diversity-related stress and intentions to leave in preservice teachers' self-efficacy

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ABSTRACT

This three-wave study examined relationships between preservice teachers' diversity-related stress, teaching self-efficacy (TSE), and intentions to leave the profession. Participants ($N = 386$) from four Dutch teacher training programs completed surveys on diversity-related stress, intentions to leave, and TSE over 18 months. Random intercept cross-lagged panel models showed that higher diversity-related stress predicted lower TSE and increased intentions to leave. Within-person analyses revealed a complex reciprocal relationship: Highly self-efficacious teachers reported more stress and vice versa. Finally, intentions to leave led to lower TSE at Time-point 3 only. Findings align with social-cognitive theory, highlighting the interplay between stress, TSE, and career intentions.

1. Introduction

The realities of today's urban classrooms, where children with various backgrounds, needs, and abilities are educated side by side, place strong demands on teacher training programs to equip preservice teachers with the skills to successfully navigate their teaching tasks. Among these skills, preservice teachers' self-efficacy (TSE), or self-referent capability beliefs, has frequently been identified as a focal point for development during teacher training (Täschner et al., 2025). Indeed, prior studies have consistently demonstrated that preservice teachers who feel self-efficacious during challenging circumstances tend to deliver differentiated instruction, employ proactive strategies for managing disruptive behavior, and have positive attitudes toward inclusion (Scarparolo & Subban, 2021; Zee & Koomen, 2016). Additionally, TSE has been associated with preservice teachers' willingness to remain in the teaching profession (e.g., Klassen & Chiu, 2011; Pfitzner-Eden, 2016). Given the accrued benefits of TSE in classroom settings, an important avenue for future inquiry involves investigating the mechanisms underlying these beliefs during teacher training.

Social-cognitive theory (Bandura, 1997) generally highlights the idea that TSE is derived from rich, reciprocal interactions with the immediate environment over extended periods of time. Such person–environment interactions may provide various types of information that are relevant for judging personal capabilities, including the interpreted results of mastery experiences, social comparisons with the attainments of peers, performance feedback, and physiological and affective states such as stress (Bandura, 1997). In line with this notion, recent theoretical and meta-analytic reviews on the sources of TSE suggest that teachers are likely to build a healthy sense of efficacy when they are satisfied with their performances during internships, receive positive feedback from peers and supervisors, or observe best practices of experienced teachers (e.g., Morris et al., 2017; Täschner et al., 2025).

Despite empirical research on these sources of TSE, most attention thus far has been paid to factors *external* to preservice teachers. This emphasis on external sources of TSE might have been driven by theoretical claims and evidence suggesting that mastery experiences wield the most considerable influence on self-efficacy and should be acquired early during teacher education (Bandura, 1997; Grossman et al., 2009; Täschner et al., 2025). As such, less is known about more *internal* sources of TSE, including such physiological and affective states as stress (Morris et al., 2017). This is unfortunate, considering that this source, more than mastery or vicarious experiences, has been theorized to be particularly important in dynamically shaping teachers' self-efficacy trajectories during the initial stages of their education (Bandura, 1997; Henson,

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2002; Tschannen-Moran & Woolfolk Hoy, 2007). Compared to later phases of teacher training, TSE may be still highly susceptible to change at the beginning of teacher education programs (e.g., Klassen & Durksen, 2014; Ma et al., 2022). Furthermore, a recalibration of preservice teachers' self-efficacy beliefs and professional ambitions due to occupational stressors may ultimately influence their willingness to stay in the profession (e.g., Pendergast et al., 2011; Pfitzner-Eden, 2016; Skaalvik & Skaalvik, 2011, 2016).

In addition, recent meta-analytic research has revealed that most studies to date have examined the relationships between these constructs in pairs. Across 42 studies, moderate positive correlations across between in-service teachers' TSE and stress, TSE and intentions to leave, and stress and intentions to leave have been found. However, an integrated model that considers all three variables simultaneously has yet to be explored (Yada et al., 2022). This highlights the need to further explore the complex interconnections among stress, TSE, and intentions to leave in a sample of preservice teachers.

To address these gaps, this study explored the dynamic pathways through which stressors in preservice teachers' work environment influence their TSE and intentions to leave the profession during the initial stages of teacher education. To investigate these relationships, we employed Hamaker's (Hamaker, Kuiper, & Grasman, 2015) Random Intercept Cross-Lagged Panel Model (RI-CLPM), which allows for the disentangling of within-person processes from stable between-person differences. This approach enabled us to capture the temporal and reciprocal dynamics between stress, TSE, and intentions to leave the profession.

Given the pivotal role of inclusive education within current teacher education programs, we specifically focused on stress associated with teaching diverse students in urban settings. The stress associated with teaching in such contexts in relation to TSE and intentions to leave is shaped by societal and historical factors that influence values and norms. These influences are not isolated but are intricately linked with broader socio-cultural contexts. As such, further research across diverse contexts is necessary to deepen our understanding of these relationships. By using a Dutch sample, this study provides valuable insights into whether similar relationships occur across national borders.

1.1. Stress regarding teaching in diverse urban settings

One fundamental principle in teacher education is the responsibility to facilitate the learning of all students in the classroom. Since the inception of policies geared toward inclusive education in the Netherlands, teachers are increasingly required to design individualized education plans to fit the learning needs of all students, and to provide the behavioral, social, and emotional supports that help these students participate in all aspects of school life (Smeets & Rispens, 2008; Van Gennip et al., 2007). Consequently, culturally responsive teaching and differentiation has gained growing attention within teacher education programs, advocating for systematic attention to teaching diverse students into the curriculum and daily instructional practices (Baecher et al., 2012). Given this reality, it is likely that preservice teachers in Dutch urban settings experience stress based on aspects related to diversity in the classroom as well.

1.1.1. Diversity-related stress in the Dutch teaching context

Teaching in diverse urban settings is generally associated with educating ethnic minority children from migrant backgrounds in large cities (Soeterik et al., 2023). Following Gaikhorst et al. (2020), our study is situated in the two largest cities in the Netherlands: Amsterdam, the capital, and Rotterdam, Europe's largest port. Although these two cities may not rank among the largest globally, they are key urban centers within the Dutch context. Similar to other major cities worldwide, Amsterdam and Rotterdam are marked by significant diversity in areas such as income and education levels, ethnic backgrounds, cultures, and languages spoken (Fukkink & Oostdam, 2016).

Research conducted among Dutch pre-service teachers suggests that stress associated with teaching in diverse urban settings is often linked to hesitation in addressing sensitive issues and difficulty integrating conflicting cultural values, particularly with children from migrant backgrounds, due to their perceived otherness (Hanna et al., 2020; Savenije et al., 2022). In other words, teachers often feel less connected and engaged with these children, viewing them as different from their "own" children (Soeterik et al., 2023). Additionally, stress arises from uncertainty about the overall difficulty of teaching in such diverse urban settings, with the assumption that urban teaching requires different and more varied skills compared to rural areas (Alhanachi et al., 2021). Among these challenges is the need to effectively address significant differences in the classroom, such as language barriers and variations in students' ethnic and cultural backgrounds, as well as collaborating with their parents (Gaikhorst et al., 2019). These issues are often linked to negative implicit attitudes toward migrant children among (preservice) teachers (Abacioglu et al., 2019).

Teaching in diverse urban classrooms in the Netherlands may thus be particularly stressful due to a combination of perceived cultural distance, uncertainty in addressing sensitive topics, and the assumption that urban teaching demands a broader skill set than teaching in rural areas. Conceivably, implicit biases and a perceived lack of connection with migrant students may further contribute to heightened stress levels in these settings.

1.1.2. Diversity-related stress defined

Consistent with the tenets of social-cognitive theory (Bandura, 1997), dissonance theory (Festinger, 1957), and transactional stress theory (Lazarus & Folkman, 1984), diversity-related stress in this study can be defined as a physiological or psychological response triggered by challenges within diverse urban classrooms that require preservice teachers' adjustment over extended periods of time. Such responses generally manifest as feelings of *tension* or *discomfort* and typically arise when teachers perceive a situation as threatening, overwhelming, or beyond their ability to manage effectively (cf. Hanna et al., 2022; Lazarus & Folkman, 1984).

Nowadays, there is consensus that diversity-related stress may serve as a source undermining TSE during teacher training (Collie et al., 2012; Jennings & Greenberg, 2009; Morris et al., 2017). Thus far, a variety of such stressors have been identified, including stress resulting from managing diverse student needs, disruptive student behaviors, and working with ethnic minority students (e.g., Collie et al., 2012; Klassen & Chiu, 2010; Yoon, 2002). Focusing on TSE for culturally responsive teaching, multiple descriptive studies from Siwatu (2007, 2011) have indicated, for instance, that teachers feel generally less self-efficacious to teach in urban schools compared to suburban schools and to deal with mismatches between students' home and school culture. Similarly, in a qualitative investigation involving Norwegian teachers, 24 out of the 34 teachers interviewed labelled managing the needs of a diverse student population as a significant stressor. This was attributed in part to their perceived lack of competence in meeting those needs (Skaalvik & Skaalvik, 2015). Taking a more rigorous within-teacher approach, Geerlings and colleagues (2018) focused on Dutch in-service teachers' self-efficacy in relation to individual students in multi-ethnic classrooms. Their multilevel results generally revealed that teachers felt less self-efficacious in teaching ethnic minority students than majority students. Furthermore, this effect was particularly pronounced in classrooms with a lower proportion of minority students. This suggests that teachers who have limited exposure to multi-ethnic classrooms are more susceptible to developing low self-efficacy toward minority students than teachers with more experience with urban classrooms.

Notably, most studies exploring the association among diversity-related stress and TSE have relied on interviews and cross-sectional survey designs. This highlights the need for longitudinal studies exploring the role of such stressors in preservice teachers' self-efficacy across a longer time period (cf. Skaalvik & Skaalvik, 2017), offering

more robust insights into the direction and nature of these relationships. Longitudinal designs are particularly suited for capturing the evolving, dynamic nature of diversity-related stress and TSE, allowing for a more fine-grained understanding of how these factors influence one another over time. By tracking these experiences, this study can reveal not only how preservice teachers' perceptions and responses change, but also the causal mechanisms underlying these shifts, which a cross-sectional design would be unable to capture.

Moreover, stress in most of these studies has typically been defined either in terms of *internal states* (e.g., self-induced stress or anxiety) or *external demands* (e.g., specific sources of stress, such as teaching in ethnically diverse classrooms or managing classroom discipline). Building on these approaches, we adopt a transactional paradigm (Hanna et al., 2022; Lazarus & Folkman, 1984), framing diversity-related stress as a cognitive process in which preservice teachers weigh perceived demands in urban teaching contexts against their perceived capabilities for dealing with these demands (e.g., Lazarus, 1991). Conceivably, when preservice teachers experience dissonance between these demands and the available support, resources, and skills, stress responses arise, potentially leading to a vicious circle decreasing TSE and increasing stress across time (cf. Hanna et al., 2022).

1.2. The role of self-efficacy in preservice teachers' intentions to leave

Although turnover is a prevalent issue in nearly all professions, teachers stand out as particularly susceptible to high rates of attrition (Madigan & Kim, 2021). Indeed, approximately 30–40 % of preservice teachers are estimated not to pursue a teaching career (Wang et al., 2015). This raises the question about which factors may underpin why preservice teachers tend to leave the profession even before graduating.

Only a handful of studies to date have linked preservice teachers' sense of efficacy to their quitting intentions. However, the results from these scarce studies are relatively consistent, generally demonstrating (inverse) relations ranging from small to moderate (e.g., Beltman et al., 2011; Klassen & Chiu, 2011; Martin et al., 2012; Swan et al., 2011). With some exceptions, there is evidence from relatively large-scale studies using cross-sectional designs that preservice TSE is negatively associated with intentions to leave (e.g., Klassen & Chiu, 2011; Wang et al., 2015). Similar patterns of results have also been noted in longitudinal studies. For instance, Swan and colleagues (2011) attempted to describe the patterns of change in TSE and quitting intentions in a small sample of 17 preservice teachers. Their results indicated that preservice teachers who ultimately entered the teaching profession after their student teaching experience reported higher levels of TSE compared to peers with lower self-efficacy beliefs. Using a large sample and two waves of data, Pfitzner-Eden (2016) also noted that positive changes in preservice teachers' self-efficacy during teacher training led to small decreases in their intentions to leave the profession. Given these modest but consistent findings, we expected preservice teachers' self-efficacy beliefs to be negatively associated with their quitting intentions. Whether such intentions may also influence preservice TSE across time remains to be explored.

1.3. Changes in preservice TSE during the first year of teacher training

The initial period of teacher training may represent a pivotal period for the malleability of preservice TSE. During this formative phase, preservice teachers are likely to undergo a transformative journey, assimilating pedagogical and didactical knowledge, gaining more experience, and cultivating their professional identities (Hanna et al., 2020, 2022). As preservice teachers navigate these challenges and stresses inherent in their new roles, their TSE may be most susceptible to change (Bandura, 1997; Henson, 2002; Pfitzner-Eden, 2016).

Thus far, several empirical studies have investigated the malleability of TSE during different stages of teacher training, generally yielding mixed findings. For instance, there is some evidence from rigorous longitudinal studies with large samples that preservice TSE is likely to increase both over the course of a practicum (e.g., Deehan et al., 2017; Han et al., 2017; Klassen & Durksen, 2014) and during teacher training (e.g., Fives et al., 2007), likely because of accumulating teaching experience. For instance, Ma et al. (2022) investigated changes in the self-efficacy beliefs of 201 Australian preservice teachers who were surveyed after their first professional experience placement, and before and after their final placements. Results indicated that preservice TSE increased significantly during the final placement. Additionally, in a longitudinal study among 150 preservice teachers of Klassen and Durksen (2014), increased exposure to challenging situations such as classroom disruptions and difficulties at the end of teacher training was found to lead to linear increases in TSE. Notably, though, these studies primarily focused on the last phase of preservice teachers' training, rather than the initial period.

Next to these positive changes, there is also some explorative research suggesting declines (e.g., Garvis et al., 2012; Pendergast et al., 2011) or even no changes in preservice TSE (Knoblauch, 2006) during teacher training. For example, Pendergast et al. (2011) assessed TSE at the beginning of a graduate diploma course and after a practicum, showing higher means in preservice TSE at the beginning of the course than after the practicum. Additionally, one of the few empirical studies focusing on the first years of teacher training found higher levels of preservice TSE at the beginning of a four-year program compared to the second year (Garvis et al., 2012). Given these mixed findings and the predominant focus in prior research on changes in preservice teachers' self-efficacy during more advanced stages of their training, further research is warranted into their confidence beliefs during the initial years of teacher preparation.

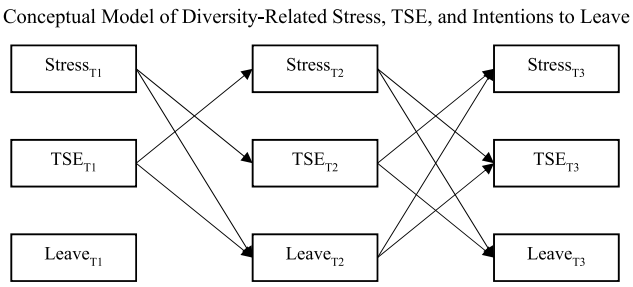
1.4. Gender differences

Most studies have not yet examined gender as a factor that could affect the relationships between diversity-related stress, TSE, and intentions to leave, both broadly and within the specific context of preservice teaching (e.g., Djonko-Moore, 2022; Mintz et al., 2020; Gutentag et al., 2018; Tatar & Horenczyk, 2003; Vieira et al., 2024). Of the few studies that have taken gender into account, the results are mixed. For instance, some found no significant effect of gender on diversity-related stress (e.g., Dubbeld et al., 2019; Hölscher et al., 2024; Pozas et al., 2023), whereas others reported that female teachers experience significantly higher levels of stress related to diversity compared to their male counterparts (e.g., Bottiani et al., 2019; Glock et al., 2019).

Inconsistent findings also emerge when exploring the relationship of gender with TSE and intentions to leave. For example, some studies indicated that male teachers had higher self-efficacy than female teachers (e.g., Klassen & Chiu, 2010), whereas others found the opposite (e.g., Skaalvik & Skaalvik, 2016). There are also studies that found no relationship at all (e.g., Li, 2025; Yada et al., 2022). Similar for intentions to leave, research on gender has not shown unequivocal results (e.g., Alexander et al., 2020; Lindqvist et al., 2014). Hence, to better understand the role of gender, it is essential to consider whether this background characteristic could function as a covariate in the relationships between diversity-related stress, TSE, and intentions to leave.

1.5. Present study

There is a need to better understand the underlying pathways through which diversity-related stressors in preservice teachers' work environment influence their TSE and intentions to leave the profession during the initial stages of teacher education. This three-wave longitudinal study therefore explored the temporal and bidirectional associations among these variables in a sample of preservice teachers who were enrolled in the initial stages of elementary teacher training programs throughout the Netherlands (see Fig. 1). To this aim, we addressed one



Note. Stress = Diversity-related stress; TSE = teaching self-efficacy; Leave = Intentions to leave the profession

Fig. 1. Conceptual Model of Diversity-Related Stress, TSE, and Intentions to Leave
Note. Stress = Diversity-related stress; TSE = teaching self-efficacy; Leave = Intentions to leave the profession.

specific research question: What is the extent to which preservice teachers' stress from adapting to diverse urban teaching contexts is associated with their teaching self-efficacy (TSE) and intentions to leave the profession over time? To test these associations at the appropriate levels of inference, we applied random intercept cross-lagged panel models (RI-CLPM; Hamaker, Kuiper, & Grasman, 2015). This approach enables us to distinguish between reciprocal associations within preservice teachers, and stable associations that occurred between teachers.

Based on prior empirical research (e.g., Collie et al., 2012; Jennings & Greenberg, 2009; Morris et al., 2017) and social-cognitive theory (Bandura, 1997) suggesting that negative affective states may lower self-efficacy beliefs we formulated the following hypotheses.

1) At the between-person level, we expected that higher levels of initial diversity-related stress would lead to decreases in preservice TSE across time and vice versa. Additionally, we hypothesized that preservice teachers would be more willing to leave due to low self-efficacy beliefs (Klassen & Chiu, 2011; Martin et al., 2012; Swan et al., 2011).
2) At the within-person level, we expected that preservice teachers with a higher than expected level of diversity-related stress would report lower than expected levels of TSE and a higher than expected desire to leave the profession within a specific time point (e.g., Martin et al., 2012; Swan et al., 2011).
3) Based on Bandura's principle of triadic reciprocal causation (Bandura, 1997), we expected the longitudinal relationship between diversity-related stress, TSE, intentions to leave to be reciprocal, such that preservice teachers with higher than expected levels of diversity-related stress would feel less self-efficacious and report a stronger than expected intention to leave the field and vice versa.

2. Method

2.1. Participants, context, and procedure

Our study is set in the two largest cities in the Netherlands: Amsterdam, the capital, and Rotterdam, Europe's largest port. These cities are central urban hubs within the Dutch context. Like other major cities globally, Amsterdam and Rotterdam are characterized by significant socioeconomic and cultural diversity, with wide variations in income and education levels, ethnic backgrounds, cultures, and languages spoken (Fukkink & Oostdam, 2016). This diverse urban environment shapes the context in which the preservice teachers of our study operate, influencing their teaching experiences and professional challenges.

Participants in this study included Dutch preservice teachers preparing for elementary education, drawn from four Dutch teacher training programs, where they were prepared to teach children from culturally diverse and predominantly lower socio-economic backgrounds (cf. Gaikhorst et al., 2015). Prior to conducting this study, we followed the standard ethical approval process, starting with the preparation of a detailed research proposal outlining the study's objectives, methodology, and ethical considerations. This proposal, along with relevant documentation such as consent forms and data management plans, was submitted to the ethics review board of our faculty for evaluation. After addressing all feedback and obtaining formal approval (project no. 2017-CDE-8109), first-year pre-service teachers ($N = 497$) from the four participating institutions were invited to complete a digital, 20-min survey at the beginning of their training (October), halfway through their first year (April), and at the beginning of year 2 (October). Pre-service teachers could enter the digital survey only after providing active consent. All waves of data collection were scheduled at preservice teachers' institutions and under the supervision of one of the authors of this study. The participants took part voluntarily and did not receive any form of compensation for their participation. To ensure confidentiality, participants were identified by student numbers, which were accessible only to the researchers. The data were securely stored, and all information will be used exclusively for research purposes, in accordance with the ethics approval granted.

A total of 128 preservice teachers (25.6 %) completed the survey once, 156 teachers (31.5 %) twice, and 213 preservice teachers during all three waves (42.9 %). Absence during data collection was mainly due to unwillingness to participate, illness, overlapping appointments, or dropout from the program after the first wave of data collection. Furthermore, official registration and deregistration figures of the participating institutions indicated that a small number of preservice teachers ($n = 66$) left teacher training prior to the start of the second semester of the first study year. This attrition rate is in line with national attrition percentages (Dutch Ministry of Education, Culture, and Science, 2017), which is between 20 % and 25 %.

Participants with (near-)complete data on at least two time points (74.4 %; $N = 386$) were ultimately included in the main analyses. Of the preservice teachers who participated, 286 (77.7 %) were female and 82 (22.3 %) were male. One student did not disclose their gender. Regarding educational level, about 75 % of preservice teachers was educated in a professional teaching program. This demographic information is summarized in Table 1.

2.2. Instruments

2.2.1. Teacher self-efficacy

Preservice teachers' perceptions of their self-efficacy were measured using a short, 12-item Dutch version of Teachers' Sense of Efficacy Scale (TSES; Tschannen-Moran & Woolfolk Hoy, 2001; Zee et al., 2016). This instrument taps preservice teachers' perceptions of their competence across a variety of teaching tasks, including instructional strategies (4 items, e.g., "To what extent can you provide an alternative explanation or example when students are confused?"), classroom management (4 items, e.g., "How much can you do to get children to follow classroom

Table 1
Sample descriptives.

Background Characteristics	T1 (N = 369)	T2 (N = 333)	T3 (N = 275)
Gender			
Males	22.3 % (n = 82)	22.2 % (n = 74)	19.6 % (n = 54)
Females	77.7 % (n = 286)	77.8 % (n = 259)	80.4 % (n = 221)
Educational background			
Pre-university education	17.4 % (n = 64)	15.3 % (n = 51)	18.9 % (n = 51)
Higher prevocational education	56.9 % (n = 210)	61.1 % (n = 204)	55.3 % (n = 153)
Vocational education	25.7 % (n = 95)	23.7 % (n = 79)	25.8 % (n = 71)

Note. T1 = December 2017; T2 = May 2018; T3 = December 2018.

rules?"), and student engagement (4 items, e.g., "How much can you do to help your students value learning?"). Preservice teachers responded to these items on a 5-point Likert scale, ranging from 1 (nothing), 3 (neutral) to 5 (a great deal). The psychometric properties of the short form of the TSES have been shown to be adequate, with factor loadings ranging between .37 and .79 in the one factor-solution, and factor loadings ranging between .47 and .85 in the three-factor model (Zee et al., 2016). Additionally, scale reliabilities of the TSES across countries have been found to be adequate (e.g., Klassen et al., 2009; Scherer et al., 2016). In the present study, we used the total scale, which was found to be sufficient across the three waves (α range = .73–.85), in which higher scores indicate a higher degree of TSE.

2.2.2. Stress regarding teaching in diverse urban contexts

Diversity-related stress was measured using the Teaching in Urban Classrooms subscale of the Professional Identity Tensions Scale (PITS; Hanna et al., 2019). This five-item scale measures preservice teachers' tensions regarding teaching culturally diverse and lower socioeconomic students in Dutch, urban contexts. An example item is "I find the diversity in my class enriching, but at the same time, it is also a source of stress that I struggle to cope with". All items were rated on a 5-point Likert-type scale ranging from 1 (not at all), 3 (to a reasonable extent), to 5 (very much). Hanna et al. (2019) provided evidence for the reliability and validity of this scale. In the present study, Cronbach α coefficients ranged between .71 and .80 across the three waves. Higher scores on this scale indicated a higher degree of diversity-related stress.

2.2.3. Intentions to leave

Preservice teachers' intentions to leave were measured with the five-item Retention subscale from the PITS (Hanna et al., 2019), which gauges the balance between committing to teaching and considering alternative professions. Each item was evaluated on a 5-point Likert-type scale, ranging from 1 (not at all), 3 (to a reasonable extent), to 5 (very much). An example item is: "Although I enjoy teaching, I doubt whether I should continue pursuing becoming a teacher." Empirical support for the reliability and validity of this scale has been provided by Hanna et al. (2019). In the current study, Cronbach's α coefficients ranged from .92 to .95 across the three waves. Higher scores on this scale indicated a stronger intention to leave the profession.

2.3. Analyses

We conducted random intercept cross-lagged panel modelling (RI-CLPM; Hamaker, Kuiper, & Grasman, 2015) to explore the developmental dynamics among preservice teachers' stress regarding teaching diverse students in urban contexts, their TSE, and intentions to leave the profession. In the conventional CLPM framework, the reciprocal pathways between these three main variables are modeled across three time points. Additionally, the stability inherent in each of the constructs is captured by specifying autoregressive paths for Diversity-Related Stress, TSE, and Intentions to Leave from one time point to the other. In RI-CLPM, these features are also included, but this method extends standard CLPM by separating between-person variability from within-person variability in repeatedly observed variables (Hamaker, Kuiper, & Grasman, 2015). As such, RI-CLPM allowed us to simultaneously estimate stable, trait-like differences in Diversity-Related Stress, TSE, and Intentions to Leave across the participants in our sample, as well as time-varying fluctuations in these constructs within these preservice teachers.

In the final dataset, there was a moderate degree of missing data across waves, with 98 % of the data present at wave 1, 86.3 % at wave 2, and 71.2 % at wave 3, respectively. Independent samples t-tests indicated that participants with complete data did not differ significantly from those who completed two waves of data on the main variables in this study ($p > .05$). Therefore, main analyses were conducted using raw data, with Full Information Maximum Likelihood (FIML) employed to handle any missing data. Rather than imputing missing values, FIML estimates parameters using all available data for each observation. Under conditions of M(C)AR, FIML estimates a likelihood function for each student teacher based on all the available data that are present and has been shown to produce unbiased parameter estimates and standard errors (Enders & Bandalos, 2001). In our dataset, we did not find any differences in model fit and in direction and strength of model parameters between models that were estimated with and without FIML.

2.3.1. Modeling procedure

Data were analyzed in three steps. First, intraclass correlations (ICCs) for the key constructs in this study were calculated to ensure there was enough variability at the within- and between-person level. The ICCs for the key constructs in this study were .49 for TSE, .55 for Diversity-Related Stress, and .55 for Intentions to Leave, respectively. This indicates that approximately 49 %–55 % of the variance in these variables was explained by between-person differences and that 45 %–51 % of the variance was due to fluctuations within persons. Second, two baseline models were fitted in which only autoregressive paths were included (Model 1) and subsequently constrained across time (Model 2). Step 3 (Model 3) involved specifying cross-lagged associations among preservice teachers' Stress regarding teaching in urban contexts, their TSE, and their Intentions to Leave. In this step, we included Gender as a covariate of the observed scores of Diversity-Related Stress, TSE, and Intention to Leave across time. Based on theory (Bandura, 1997), we did not specify direct paths from Intentions to Leave at T1 to TSE and Diversity-Related Stress at T2. From T2 to T3, all cross-lagged associations were added to the model.

In all models, the three constructs of interest were represented by between-person factors (i.e., the random intercepts of Diversity-Related Stress, TSE, and Intentions to Leave), which capture trait-like differences between preservice teachers, and within-person latent factors, which capture fluctuations within participants across the three waves. The observed scores of the three constructs were taken as indicators of these factors. To identify the model, all factor loadings were fixed at one and measurement error variances were fixed at zero, such that the variation in the three constructs was fully captured by the latent factors at the within- and between-person level (Keijsers, 2016).

2.3.2. Model goodness-of-fit

All models were fitted in Mplus 8.8, using robust maximum likelihood estimation (Muthén & Muthén, 1998). In assessing model fit, we primarily relied on the model's χ^2 statistic, with non-significant values suggesting a good overall fit to the data (Little, 2013). Recognizing that even minor disparities between expected and observed models could potentially lead to model rejection (Chen, 2007), we complemented our evaluation with additional fit indices. These included the root mean square error of approximation (RMSEA) and standardized root-mean-square residual (SRMR), with values ≤ .08 being indicative of

acceptable fit (Browne & Cudeck, 1993; Kline, 2011), alongside the comparative fit index (CFI), with values ≥ .90 indicating a satisfactory model fit (Bentler, 1992).

3. Results

3.1. Descriptive statistics

Univariate higher-order moment descriptive statistics are displayed in Table 2. Generally, preservice teachers reported relatively low levels of Diversity-Related Stress (M_{range} = 1.96–2.02) and Intentions to Leave (M_{range} = 1.34–1.64), and moderate levels of TSE (M_{range} = 3.61–3.67). Notably, whereas the means of Diversity-Related Stress and TSE remained relatively stable after T2, preservice teachers' Intentions to Leave increased considerably across time. Correlation patterns suggested only moderate stability of preservice teachers' Diversity-Related Stress (*r*s between .54 and .59), TSE (*r*s between .49 and .53, $p < .001$), and Intentions to Leave (*r*s between .56 and .65) across the three waves. Generally, Diversity-Related Stress (*r*s between −.13 and −.31) and Intentions to Leave were both significantly and negatively associated with TSE (*r*s between −.12 and −.30) across waves. The positive correlations among Diversity-Related Stress and Intentions to Leave were generally weak across time (*r*s between .04 and .19) and preservice teachers' Gender was only associated with their experienced Diversity-Related Stress at T1 ($r = -.11$, $p < .05$), suggesting that female teachers feel more stressed about teaching in urban contexts than males.

3.2. Random intercept cross-lagged panel analysis

The baseline RI-CLPM (Model 1) with unconstrained autoregressive paths, fitted the data reasonably well, $\chi^2(15) = 28.83$, $p = .017$, RMSEA = .050 (90 % CI [.021–.077]), CFI = .975, SRMR = .055. To evaluate whether a more parsimonious model resulted in a better model fit, we subsequently constrained the unstandardized autoregressive paths across the three waves in Model 2. This model also produced a reasonable fit, $\chi^2(18) = 37.29$, $p = .005$, RMSEA = .054 (90 % CI [.029–.078]), CFI = .966, SRMR = .090, and was retained as the final baseline model.

The full RI-CLPM is displayed in Fig. 2 and represents standardized coefficients. In this model, Gender served as a covariate of the observed scores of Diversity-Related Stress, TSE, and Intentions to Leave across time. This model produced a good model fit, $\chi^2(10) = 20.03$, $p = .029$, RMSEA = .052 (90 % CI [.016–.085]), CFI = 983, SRMR = .046. Between-person effects, as indicated by relationships between random intercepts, indicated that stable differences between preservice teachers' Diversity-Related Stress ($\sigma^2_{between} = -.51$, $p < .001$) and Intentions to Leave ($\sigma^2_{between} = -.30$, $p < .001$) were negatively associated with stable between-person differences in TSE. This suggests that preservice teachers with higher levels of diversity-related stress reported lower levels of TSE and an increased desire to leave the field.

At the within-person level, we only found significant auto-regressive paths for preservice teachers' Intentions to Leave ($\beta_{T1\rightarrow T2} = .19$, $p < .05$; $\beta_{T2\rightarrow T3} = .30$, $p < .01$). These carry-over effects indicate how within-person deviations from the expected scores of preservice teachers' Intentions to leave at one wave are associated with deviations for those constructs at the next wave. Regarding cross-lagged paths, results indicated that high levels of Diversity-Related Stress led to increases in TSE at T2 and T3 (β = .27; β = .26, $p < .01$). At Timepoint 3, preservice teachers who reported higher levels of TSE also experienced higher levels of Stress regarding teaching in urban contexts (β = .29, $p < .01$), suggesting a reciprocal association between these two constructs during the second half of the first year of teacher training. Last, preservice teachers with a desire to quit reported decreases in their TSE at T3 only (β = −.35, $p < .05$).

Correlations among the residuals in our models indicate the extent to which within-teacher changes in the three constructs are associated with one another (cf. Cohen, 1992). Our results indicate that within-person changes in Intentions to Leave are negatively associated with TSE ($r = -.36$, $p < .001$) at T2 and positively with Diversity-Related Stress at T2 ($r = .23$, $p < .001$) and T3 ($r = .19$, $p < .05$). Gender, our covariate, was only significantly associated with Diversity-Related Stress at T1 (β = −.11, $p < .05$), suggesting that males experience less stress regarding teaching in urban contexts than females.

4. Discussion

This longitudinal study sought to explore the underlying pathways through which perceived stressors in preservice teachers' urban environment influence their TSE and intentions to leave the profession. The findings of our investigation build on prior theory and empirical research by exploring these pathways during the vulnerable initial stages of teacher education and by taking a dissonance perspective on measuring stress. Additionally, given the pivotal role of diversity and inclusion within current teacher training programs, we focused specifically on stress associated with teaching diverse students in urban settings. Thereby, this study may advance our understanding of how experiences of diversity-related stress may alter preservice teachers' feelings of capability and ultimately influence their decision to stay or leave the teaching profession.

Table 2
Univariate higher-order moment descriptive statistics.

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
Correlations										
1. Stress T1	1.00									
2. Stress T2	.54***	1.00								
3. Stress T3	.57***	.59***	1.00							
4. TSE T1	−.28***	−.20***	−.31***	1.00						
5. TSE T2	−.16**	−.21***	−.13*	.49***	1.00					
6. TSE T3	−.26***	−.13*	−.18**	.53***	.51***	1.00				
7. Intention to Leave T1	.10	.07	.15*	−.14*	−.17**	−.23***	1.00			
8. Intention to Leave T2	.08	.19***	.13*	−.13*	−.30***	−.29***	.56***	1.00		
9. Intention to Leave T3	.04	.15*	.19***	−.12*	−.23***	−.24***	.60***	.65***	1.00	
10. Gender	−.11*	−.04	−.08	.04	.08	.08	.00	−.09	−.01	1.00
Means and variance										
M	1.96	2.02	2.01	3.61	3.67	3.66	1.34	1.52	1.64	–
Variance	.35	.42	.41	.13	.15	.20	.35	.53	.77	–
Range	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	1–5	

Note. Construct means range from 1 to 5. Gender: 1 = males, 2 = females. TSE = Preservice teachers' self-efficacy.
*$p < .05$, **$p < .01$, ***$p < .001$.

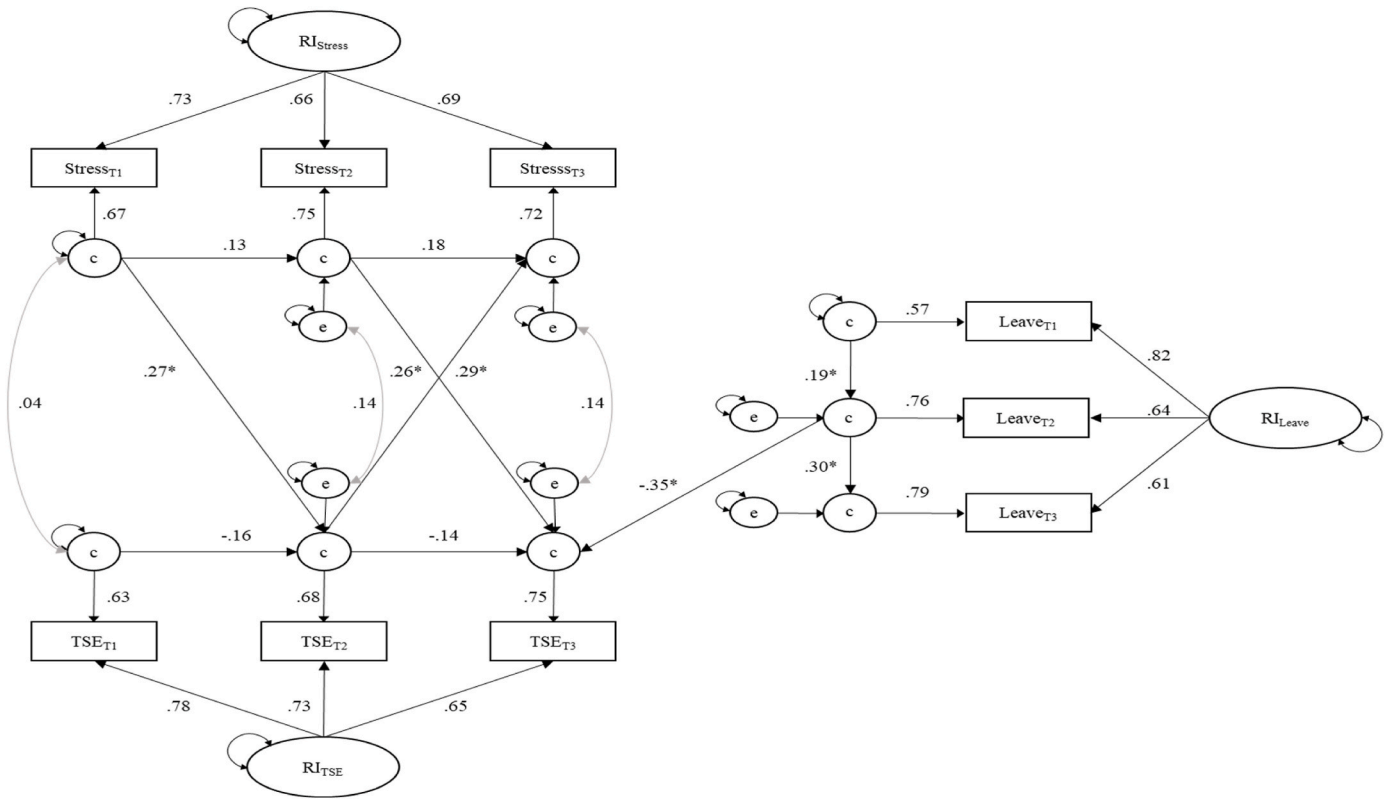


Fig. 2. Random Intercept Cross-Lagged Panel Model of Diversity-Related Stress, TSE, and Intentions to Leave

Note. Standardized coefficients are reported. Gender served as a covariate of the observed scores of Diversity-Related Stress, TSE, and Intentions to Leave across time. Stress = Diversity-related stress; TSE = teaching self-efficacy; Leave = Intentions to leave the profession; RI = Random intercept; e = residual; c = within-person latent factor; T1 = timepoint 1; T2 = timepoint 2; T3 = timepoint 3. *$p < .05$.

4.1. The role of diversity-related stress and intentions to leave in preservice TSE

Our results partially supported our hypothesis that preservice teachers' affective states, in the form of diversity-related stress, may shape their TSE during the initial stages of teacher training. Specifically, between-person results, as indicated by stable, trait-like correlations between random intercepts, suggested that preservice teachers who experienced stress regarding teaching in an urban context felt less self-efficacious over the first 18 months of their training compared with their lower-stress peers. Additionally, there was also a moderate to strong negative correlation between preservice teachers' stable traits of self-efficacy and intentions to leave. Hence, across the three waves, preservice teachers with low self-efficacy were more inclined to leave the profession during this vulnerable period than peers with higher self-efficacy. These findings are largely consistent with prior empirical research, in which small to moderate associations have been noted between preservice TSE and intentions to leave at the between-teacher level (e.g., Beltman et al., 2011; Klassen & Chiu, 2011; Martin et al., 2012; Swan et al., 2011).

After controlling for these stable trait effects, our cross-lagged results revealed a somewhat surprising pattern of results from the participating preservice teachers. In contrast to social-cognitive theory (Bandura, 1997) and our expectations, preservice teachers who experienced more diversity-related stress tended to report higher TSE than they typically would across time, after controlling for deviations from expected levels of TSE on previous time points. Generally, this is inconsistent with Bandura's social-cognitive ideas as well as findings from prior research, which suggest that prolonged exposure to negative emotional states like stress or anxiety can ultimately weaken feelings of self-efficacy (e.g., Bandura, 1997; Morris et al., 2017).

There may be various explanations for this relatively unexpected finding. Methodologically, it is important to note that most earlier studies investigated the link between stressors and TSE at the between-teacher level only (e.g., Collie et al., 2012; Klassen & Chiu, 2010; Yoon, 2002). Using RI-CLPM, however, we were also able to shed light on specific processes that occur within persons across time. Such estimates are likely to differ substantially from the more stable, trait-like processes between persons and, as such, may provide a more valid picture when it comes to understanding the effects of stress on TSE over time (cf. Hamaker, Kuiper, & Grasman, 2015).

Substantively, it could be argued that experiences of stress and failure, especially during the initial phase of teacher training, might contribute to preservice teachers' professional growth. Indeed, although stress and self-doubt often tend to have a negative connotation, these negative states also have the potential to bolster the resilience, problem-solving abilities, and reflective practices of preservice teachers (Schaap et al., 2021; Van der Wal et al., 2019; Wheatley, 2002; Wyatt, 2016). This may be particularly true when preservice teachers' first authentic teaching experiences engender an uncomfortable state of cognitive dissonance. Research advocating an *at-tension* approach toward professional identity development suggests that that such feelings can help teachers to hold a more proper picture of what hay may expect of themselves (Allas et al., 2017; Pillen et al., 2013; Smetana & Kushki, 2023). Such a realistic outlook, coupled with a belief that they can negotiate and surmount different tensions, may ultimately help preservice teachers to develop a healthy sense of efficacy (cf. Schaap et al., 2021; Wyatt, 2016).

Hence, our findings seem to challenge assumptions about the stressfulness of teaching diverse students. Largely in line with prior reviews (Morris et al., 2017; Täschner et al., 2023), it is possible that preservice teachers encountered positive role models, supportive school

environments, or effective mentoring that reinforced their confidence rather than eroded it. Future research could examine whether exposure to such role models serves as a protective factor, buffering against stress and shaping a more resilient TSE. A deeper exploration of these dynamics would provide valuable insights into how teacher preparation programs can better equip educators to thrive in diverse educational settings.

Another unexpected finding at the within-teacher level was that preservice teachers with higher levels of TSE through their first year reported higher levels of diversity-related stress at the beginning of year 2, after controlling for deviations from expected levels of TSE on T2. This suggests a reciprocal pathway between stress and TSE during the second half of the first year. Although the preservice teachers in this sample might have started their training with relatively high TSE, their immersion in a context in which they have to manage students with diverse needs and backgrounds might have fostered a transformative disequilibrium in their existing beliefs (Soodak & Podell, 1997; Wheatly, 2002). Such a disequilibrium might, in turn, have increased their diversity-related stress across the first year of teaching, further informing their sense of efficacy. More research is needed, however, to further disentangle this effect.

Extrapolating from prior research on the link between TSE and quitting intentions (e.g., Beltman et al., 2011; Klassen & Chiu, 2011; Martin et al., 2012), we initially expected preservice teachers with high self-efficacy to be less inclined to leave the profession. Although this hypothesis seemed to hold true at the between-teacher level, this association was no longer significant when analyzed within individual teachers. Instead, our cross-lagged model suggested that preservice teachers' intentions to leave halfway through the first year of their education appeared to lead to within-teacher decreases in their TSE at the beginning of their second year. As such, this finding deviates from studies based on job-demands resources models (e.g., Bakker & Demerouti, 2001; Harmsen et al., 2018), which propose that psychological strains, in conjunction with resources like self-efficacy, are prerequisites for teacher attrition or retention.

One possible explanation for this unexpected result is that preservice teachers who intend to leave the profession identify to a lesser extent with the role of a teacher and, therefore, place less value on feeling efficacious in teaching (Hanna et al., 2020). This leads them to exert less effort to improve in their role as a teacher. As a result, they may fail to invest the necessary effort to become effective educators. Supporting this, a study of 3835 teachers highlights that motivation to teach directly and positively influences job satisfaction, with TSE playing an indirect role in this relationship (Chang & Sung, 2024).

Related to this, another external factor that may contribute to the intention to leave the profession, and consequently a decrease in TSE, is the reality shock—defined as the clash between the idealized expectations of teaching, formed before or during teacher training, and the realities of everyday classroom life—experienced by some preservice teachers (Xu, 2013). This shock, particularly prominent at the beginning of their training, often results in a significant adjustment period (Kim & Cho, 2014). The impact of this shock can be even more pronounced when preservice teachers enter urban classrooms, where they may face limited preparation or unrealistic expectations, sometimes shaped by a lack of lived experience or influenced by a 'savior' mentality—the belief that an outsider is needed to rescue the students or the school, sometimes referred to as the "gangster paradise syndrome" (e.g., Mintz et al., 2020; Sondel et al., 2022).

Last, it is possible that preservice teachers' feelings about leaving the profession may shape their choices and expectations in the future. Rather than exiting the profession, teachers who perceive "diverse" students as more difficult to teach may lower their expectations, adopt less rigorous pedagogical approaches, or resort to exclusionary discipline practices (e.g., Larsen & Bradbury, 2024; Siwatu et al., 2016). Such responses might allow teachers to maintain their sense of self-efficacy, even as their enacted teaching quality declines. This distinction between TSE and actual instructional practice is crucial, as it highlights the need for further research into how teachers reconcile their perceptions of competence with the challenges they encounter in diverse classrooms.

We believe that our study is one of the first to suggest that this effect may be in the opposite direction. Hence, there may be additional sources of TSE beyond the sources proposed by Bandura (1997) that could be considered when investigating TSE during the first year of teacher training. Gradually increasing self-doubts about pursuing a teaching career may be one of those factors that could be further explored.

4.2. Changes in preservice TSE during the first year of teacher training

In line with the social-cognitive theory tenets that the initial years of teacher training may represent a pivotal period for the malleability of preservice TSE, we also inspected the means and degree of variation in TSE within and across preservice teachers. Generally consistent with prior longitudinal studies focusing on beginning and more advanced stages of teacher training (e.g., Ma et al., 2021; Pfitzner-Eden, 2016), the moderate mean scores indicated that preservice teachers' self-efficacy beliefs are likely to remain relatively stable across the first year. At the same time, however, autoregressive correlations were only moderate at the between level, and even non-significant at the within-level, suggesting that preservice teachers' past TSE values have only limited power to predict values at subsequent time points. Although this may obviously reflect inherent inertia or memory of this variable, these temporal dynamics could also be explained by the measure of TSE that we employed in this study. Specifically, we used a relatively general measure of TSE, reflecting preservice teachers' perceived capability to instruct, manage and motivate students, but without any particular frames of reference. As such, participating teachers' responses might have been influenced by specific situations or students, potentially leading to interpretation biases across teachers and particular time points (Wheatley, 2005; Zee et al., 2016, 2018).

To some extent, this assumption is supported by the relatively high ICC-values for TSE, which indicate that about half of the variance is due to fluctuations in teacher reports of TSE over time, and another half due to stable differences between teachers in their TSE. In addition to the variables of interest in this study, it would therefore be relevant to explore which other personal and contextual factors may explain the temporal dynamics of preservice TSE during the initial stages of teacher education. Self-efficacy instruments that are tailored to particular situations (e.g., TSE during internship periods), subjects or skills (e.g., pedagogical and didactical knowledge or skills), or to particular groups of students may be a step forward in unveiling and explaining these fluctuations (cf. Zee et al., 2016, 2018).

4.3. Limitations

The present study's results should be interpreted in the context of several limitations. A first qualification is that we made use of self-report data to investigate links between diversity-related stress, TSE, and intentions to leave. Accordingly, the results of this study may have been threatened by shared source variance, leading to slightly inflated correlations. However, considering that preservice teachers' firsthand experiences and strains play pivotal roles in shaping their self-efficacy, self-reports might be a suitable means of gauging not only their TSE, but also their diversity-related stress and quitting intentions. Nevertheless, it would be beneficial for future research to use various methods, such as interviews and observations, to delve deeper into the findings of the current study.

Second, even though we employed a well-validated and widely employed measure of TSE, we did not focus on specific self-efficacy domains due to reliability issues. Furthermore, there is evidence that teachers may also feel more or less self-efficacious depending upon the specific subject areas or students they have to teach (e.g.,

Tschannen-Moran & Johnson, 2011; Zee et al., 2018). In future research on preservice TSE, it would be relevant to adapt and tailor self-efficacy measures to the specific situations that preservice teachers may encounter during their internships.

Third, due to a lack of background information about the participating preservice teachers, we included only gender as a covariate in our analyses. Given that other background factors, including preservice teachers' socioeconomic background, may also important covariates that should have been controlled for in our analysis, it would be relevant for future research to consider including these factors to further validate the findings of the current study.

Last, our RI-CLPM accounted for only 4–13 % of the variance in our main constructs of interest. Although we accounted for preservice teachers' gender, there might have been other contextual and personal teacher factors that can explain fluctuations in TSE, diversity-related stress, and intentions to leave. In any attempt to replicate the results, it is recommended that future researchers should take account of classroom and teacher characteristics to advance further understanding of the pathways investigated in this study.

4.4. Practical implications and conclusion

Despite these limitations, this study might provide some promising avenues for researchers and practitioners in the area of teacher education. First, our RI-CLPMs clearly demonstrated the relevance of investigating associations among diversity-related stress, TSE, and intentions to leave within and across teachers. First, the moderate to strong negative associations at the between-teacher level generally supported the idea that preservice teachers with high levels of diversity-related stress feel less self-efficacious and also doubt their willingness to stay in the profession. At the within-teacher level, however, associations were generally weaker in magnitude and different in direction, mainly suggesting that preservice teachers' stress and self-efficacy beliefs may reinforce each other across time. These different patterns of association within and across teachers evidently call for a further theoretical and empirical understanding of the complex processes that take place within teachers during the vulnerable initial stages of teacher training.

Additionally, the findings of this study also come with some practical implications for teacher training. Most importantly, our findings seem to reiterate the idea that stress during the first year of teacher training may not only have negative consequences, but also offers valuable opportunities for learning. During this critical period of professional identity formation, teachers encounter new and challenging experiences, learn to reflect on their goals and beliefs, and make choices that may affect their willingness to stay in the profession (e.g., Grossman et al., 2009; Hanna et al., 2019). Teacher training programs could support preservice teachers in this phase by offering environments where they can face, without feeling overwhelmed, the challenges they will typically face in urban classroom contexts and view them as opportunities to learn (Smetana & Kushki, 2023). Especially in small group settings or during mentor programs, preservice teachers may also benefit from the vicarious experiences of peers and supervisors (Bandura, 1997). By understanding that the stress, failures, and challenges they encounter are shared by others in similar roles, they may be able to form a more realistic perception of their own capabilities and role as a teacher (Gray & Seiki, 2020). This may ultimately fuel their persistence and intention to stay in the profession for a long time.

CRediT authorship contribution statement

Marjolein Zee: Writing – review & editing, Writing – original draft, Methodology, Formal analysis, Conceptualization. **Robert M. Klassen:** Writing – review & editing. **Fadie Hanna:** Writing – review & editing, Project administration, Data curation, Conceptualization.

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Declaration of competing interest

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

Data availability

The data that has been used is confidential.

References

Abacioglu, C. S., Zee, M., Hanna, F., Soeterik, I. M., Fischer, A. H., & Volman, M. (2019). Practice what you preach: The moderating role of teacher attitudes on the relationship between prejudice reduction and student engagement. *Teaching and Teacher Education, 86*, Article 102887. https://doi.org/10.1016/j.tate.2019.102887

Alexander, C., Wyatt-Smith, C., & Du Plessis, A. (2020). The role of motivations and perceptions on the retention of inservice teachers. *Teaching and Teacher Education, 96*, Article 103186. https://doi.org/10.1016/j.tate.2020.103186

Alhanachi, S., de Meijer, L. A., & Severiens, S. E. (2021). Improving culturally responsive teaching through professional learning communities: A qualitative study in Dutch pre-vocational schools. *International Journal of Educational Research, 105*, Article 101698. https://doi.org/10.1016/j.ijer.2020.101698

Allas, R., Leijen, Ä., & Toom, A. (2017). Supporting the construction of teacher's practical knowledge through different interactive formats of oral reflection and written reflection. *Scandinavian Journal of Educational Research, 61*, 600–615. https://doi.org/10.1080/00313831.2016.1172504

Baecher, L., Artigliere, M., Patterson, D. K., & Spatzer, A. (2012). Differentiated instruction for English language learners as "variations on a theme" teachers can differentiate instruction to support English language learners. *Middle School Journal, 43*, 14–21. https://doi.org/10.1080/00940771.2012.11461807

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

Beltman, S., Mansfield, C., & Price, A. (2011). Thriving not just surviving: A review of research on teacher resilience. *Educational Research Review, 6*, 185–207. https://doi.org/10.1016/j.edurev.2011.09.001

Bentler, P. M. (1992). On the fit of models to covariances and methodology to the bulletin. *Psychological Bulletin, 112*, 400–404. https://doi.org/10.1037/0033-2909.112.3.400

Bottiani, J. H., Duran, C. A., Pas, E. T., & Bradshaw, C. P. (2019). Teacher stress and burnout in urban middle schools: Associations with job demands, resources, and effective classroom practices. *Journal of School Psychology, 77*, 36–51. https://doi.org/10.1016/j.jsp.2019.10.002

Browne, M. W., & Cudeck, R. (1993). Alternative ways of assessing model fit. *Sage Focus Editions, 154*, 136.

Chang, T. J., & Sung, Y. T. (2024). Does teacher motivation really matter? Exploring the mediating role of teachers' self-efficacy in the relationship between motivation and job satisfaction. *The Asia-Pacific Education Researcher*, 1–11.

Chen, F. F. (2007). Sensitivity of goodness of fit indexes to lack of measurement invariance. *Structural Equation Modeling: A Multidisciplinary Journal, 14*, 464–504. https://doi.org/10.1080/10705510701301834

Collie, R. J., Shapka, J. D., & Perry, N. E. (2012). School climate and social–emotional learning: Predicting teacher stress, job satisfaction, and teaching efficacy. *Journal of Educational Psychology, 104*, 1189–1204. https://doi.org/10.1037/a0029356

Deehan, J., Danaia, L., & McKinnon, D. H. (2017). A longitudinal investigation of the science teaching efficacy beliefs and science experiences of a cohort of preservice elementary teachers. *International Journal of Science Education, 39*, 2548–2573. https://doi.org/10.1080/09500693.2017.1393706

Demerouti, E., Bakker, A. B., Nachreiner, F., & Schaufeli, W. B. (2001). The job demands-resources model of burnout. *Journal of Applied Psychology, 86*(3), 499.

Djonko-Moore, C. M. (2022). Diversity education and early childhood teachers' motivation to remain in teaching: An exploration. *Journal of Early Childhood Teacher Education, 43*(1), 35–53. https://doi.org/10.1080/10901027.2020.1806151

Dubbeld, A., Hoog, N. D., Den Brok, P., & de Laat, M. (2019). Teachers' attitudes toward multiculturalism in relation to general and diversity-related burnout. *European Education, 51*(1), 16–31. https://doi.org/10.1080/10564934.2017.1401435

Enders, C. K., & Bandalos, D. L. (2001). The relative performance of full information maximum likelihood estimation for missing data in structural equation models. *Structural Equation Modeling, 8*(3), 430–457.

Festinger, L. (1957). Social comparison theory. *Selective Exposure Theory, 16*, 401.

Fives, H., Hamman, D., & Olivarez, A. (2007). Does burnout begin with student-teaching? Analyzing efficacy, burnout, and support during the student-teaching semester. *Teaching and Teacher Education, 23*(6), 916–934. https://doi.org/10.1016/j.tate.2006.03.013

Fukkink, R., & Oostdam, R. (2016). *Onderwijs en opvoeding in een stedelijke context; Van startbekwaam naar stadsbekwaam. Bussum*. Coutinho.

Gaikhorst, L., Beishuizen, J. J., Zijlstra, B. J., & Volman, M. L. (2015). Contribution of a professional development programme to the quality and retention of teachers in an urban environment. *European Journal of Teacher Education, 38*, 41–57. https://doi.org/10.1080/02619768.2014.902439

Gaikhorst, L., März, V., du Pré, R., & Geijsel, F. (2019). Workplace conditions for successful teacher professional development: School principals' beliefs and practices. *European Journal of Education, 54*(4), 605–620. https://doi.org/10.1111/ejed.12366

Gaikhorst, L., Post, J., März, V., & Soeterik, I. (2020). Teacher preparation for urban teaching: A multiple case study of three primary teacher education programmes. *European Journal of Teacher Education, 43*(3), 301–317. https://doi.org/10.1080/02619768.2019.1695772

Garvis, S., Pendergast, D., & Keogh, J. (2012). Changes in teacher self-efficacy in the first year of primary school teacher education study. *The Journal of the World Universities Forum, 5*(1).

Geerlings, J., Thijs, J., & Verkuyten, M. (2018). Teaching in ethnically diverse classrooms: Examining individual differences in teacher self-efficacy. *Journal of School Psychology, 67*, 134–147. https://doi.org/10.1016/j.jsp.2017.12.001

Glock, S., Kleen, H., & Morgenroth, S. (2019). Stress among teachers: Exploring the role of cultural diversity in schools. *The Journal of Experimental Education, 87*(4), 696–713. https://doi.org/10.1080/00220973.2019.1574700

Gray, P. L., & Seiki, S. (2020). Institutional performativity pressure and first-year teachers. *Frontiers in Education, 5*, 71. https://doi.org/10.3389/feduc.2020.00071

Grossman, P., Hammerness, K., & McDonald, M. (2009). Redefining teaching, re-imagining teacher education. *Teachers and Teaching: Theory and Practice, 15*, 273–289. https://doi.org/10.1080/13540600902875340

Gutentag, T., Horenczyk, G., & Tatar, M. (2018). Teachers' approaches toward cultural diversity predict diversity-related burnout and self-efficacy. *Journal of Teacher Education, 69*(4), 408–419. https://doi.org/10.1177/0022487117714244

Hamaker, E. L., Kuiper, R. M., & Grasman, R. P. (2015). A critique of the cross-lagged panel model. *Psychological Methods, 20*(1), 102–116. https://doi.org/10.1037/a0038889.

Han, I., Shin, W. S., & Ko, Y. (2017). The effect of student teaching experience and teacher beliefs on pre-service teachers' self-efficacy and intention to use technology in teaching. *Teachers and Teaching, 23*, 829–842. https://doi.org/10.1080/13540602.2017.1322057

Hanna, F., Oostdam, R., Severiens, S. E., & Zijlstra, B. J. (2019). Primary student teachers' professional identity tensions: The construction and psychometric quality of the professional identity tensions scale. *Studies In Educational Evaluation, 61*, 21–33. https://doi.org/10.1016/j.stueduc.2019.02.002

Hanna, F., Oostdam, R., Severiens, S. E., & Zijlstra, B. J. (2020). Assessing the professional identity of primary student teachers: Design and validation of the Teacher Identity Measurement Scale. *Studies In Educational Evaluation, 64*, Article 100822.

Hanna, F., Oostdam, R., Severiens, S. E., & Zijlstra, B. J. (2022). The development of the relationship between professional identity tensions and teacher identity: A quantitative longitudinal study among Dutch primary student teachers. *Studies In Educational Evaluation, 75*, Article 101199.

Harmsen, R., Helms-Lorenz, M., Maulana, R., & Van Veen, K. (2018). The relationship between beginning teachers' stress causes, stress responses, teaching behaviour and attrition. *Teachers and Teaching, 24*, 626–643. https://doi.org/10.1080/13540602.2018.1465404

Henson, R. (2002). Teacher self-efficacy: Substantive implications and measurement dilemmas. *ERIC Document Reproductive Service No. ED 452208)*.

Hölscher, S. I., Gharaei, N., Schachner, M. K., Ott, P. K., & Umlauft, S. (2024). Do my students think I am racist? Effects on teacher self-efficacy, stress, job satisfaction and supporting students in culturally diverse classrooms. *Teaching and Teacher Education, 138*, Article 104425. https://doi.org/10.1016/j.tate.2023.104425

Jennings, P. A., & Greenberg, M. T. (2009). The prosocial classroom: Teacher social and emotional competence in relation to student and classroom outcomes. *Review of Educational Research, 79*, 491–525. https://doi.org/10.3102/0034654308325693

Keijsers, L. (2016). Parental monitoring and adolescent problem behaviors: How much do we really know? *International Journal of Behavioral Development, 40*(3), 271–281. https://doi.org/10.1177/0165025415592515.

Kim, H., & Cho, Y. (2014). Pre-service teachers' motivation, sense of teaching efficacy, and expectation of reality shock. *Asia-Pacific Journal of Teacher Education, 42*(1), 67–81. https://doi.org/10.1080/1359866X.2013.855999

Klassen, R. M., Bong, M., Usher, E. L., Chong, W. H., Huan, V. S., Wong, I. Y., & Georgiou, T. (2009). Exploring the validity of a teachers' self-efficacy scale in five countries. *Contemporary Educational Psychology, 34*, 67–76. https://doi.org/10.1016/j.cedpsych.2008.08.001

Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology, 102*, 741–756.

Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context. *Contemporary Educational Psychology, 36*, 114–129. https://doi.org/10.1016/j.cedpsych.2011.01.002

Klassen, R. M., & Durksen, T. L. (2014). Weekly self-efficacy and work stress during the teaching practicum: A mixed methods study. *Learning and Instruction, 33*, 158–169. https://doi.org/10.1016/j.learninstruc.2014.05.003

Kline, R. B. (2011). *Principles and practice of structural equation modeling* (3rd ed.). New York: Guilford.

Knobloch, N. A. (2006). Exploring relationships of teachers' sense of efficacy in two student teaching programs. *Journal of Agricultural Education, 47*, 36–47. https://doi.org/10.5032/jae.2006.02036

Larsen, A., & Bradbury, O. (2024). Examining strategies to support teacher self-efficacy when working with diverse student groups: A scoping literature review. *Inclusion and Social Justice in Teacher Education*, 79–97.

Lazarus, R. S. (1991). Cognition and motivation in emotion. *American Psychologist, 46*(4), 352.

Lazarus, R. S., & Folkman, S. (1984). *Stress, appraisal, and coping*. Springer publishing company.

Li, B. (2025). Is well begun half done? A latent cross-lagged study of first-year teachers' occupational commitment, vocational satisfaction, and teacher self-efficacy. *Teaching and Teacher Education, 154*, Article 104875. https://doi.org/10.1016/j.tate.2024.104875

Lindqvist, P., Nordänger, U. K., & Carlsson, R. (2014). Teacher attrition the first five years–A multifaceted image. *Teaching and Teacher Education, 40*, 94–103. https://doi.org/10.1016/j.tate.2014.02.005

Little, T. D. (2013). *Longitudinal structural equation modeling*. New York: The Guilford Press.

Ma, K., McMaugh, A., & Cavanagh, M. (2022). Changes in pre-service teacher self-efficacy for teaching in relation to professional experience placements. *Australian Journal of Education, 66*(1), 57–72. https://doi.org/10.1177/0004944121106047

Madigan, D. J., & Kim, L. E. (2021). Towards an understanding of teacher attrition: A meta- analysis of burnout, job satisfaction, and teachers' intentions to quit. *Teaching and Teacher Education, 105*, Article 103425. https://doi.org/10.1016/j.tate.2021.103425

Martin, N. K., Sass, D. A., & Schmitt, T. A. (2012). Teacher efficacy in student engagement, instructional management, student stressors, and burnout: A theoretical model using in-class variables to predict teachers' intent-to-leave. *Teaching and Teacher Education, 28*, 546–559.

Mintz, J., Hick, P., Solomon, Y., Matziari, A., Ó'Murchú, F., Hall, K., … Margariti, D. (2020). The reality of reality shock for inclusion: How does teacher attitude, perceived knowledge and self-efficacy in relation to effective inclusion in the classroom change from the pre-service to novice teacher year? *Teaching and Teacher Education, 91*, Article 103042. https://doi.org/10.1016/j.tate.2020.103042

Morris, D. B., Usher, E. L., & Chen, J. A. (2017). Reconceptualizing the sources of teaching self-efficacy: A critical review of emerging literature. *Educational Psychology Review, 29*, 795–833. https://doi.org/10.1007/s10648-016-9378-y

Muthén, L. K., & Muthén, B. O. (1998-2017). *Mplus user's guide* (8th ed.). Los Angeles: Muthén & Muthén.

Pendergast, D., Garvis, S., & Keogh, J. (2011). Pre-service student-teacher self-efficacy beliefs: An insight into the making of teachers. *Australian Journal of Teacher Education, 36*, 46–58.

Pfitzner-Eden, F. (2016). I feel less confident so I quit? Do true changes in teacher self-efficacy predict changes in preservice teachers' intention to quit their teaching degree? *Teaching and Teacher Education, 55*, 240–254. https://doi.org/10.1016/j.tate.2016.01.018

Pillen, M., Beijaard, D., & Brok, P. D. (2013). Tensions in beginning teachers' professional i dentity development, accompanying feelings and coping strategies. *European Journal of Teacher Education, 3*, 240–260. https://doi.org/10.1080/02619768.2012.696192

Pozas, M., Letzel-Alt, V., & Schwab, S. (2023). The effects of differentiated instruction on teachers' stress and job satisfaction. *Teaching and Teacher Education, 122*, Article 103962. https://doi.org/10.1016/j.tate.2022.103962

Savenije, G. M., Wansink, B. G., & Logtenberg, A. (2022). Dutch history teachers' perceptions of teaching the topic of Islam while balancing distance and proximity. *Teaching and Teacher Education, 112*, Article 103654. https://doi.org/10.1016/j.tate.2022.103654

Scarparolo, G., & Subban, P. (2021). A systematic review of pre-service teachers' self-efficacy beliefs for differentiated instruction. *Teachers and Teaching, 27*, 753–766. https://doi.org/10.1080/13540602.2021.2007371

Schaap, H., van der Want, A. C., Oolbekkink-Marchand, H. W., & Meijer, P. C. (2021). Changes over time in the professional identity tensions of Dutch early-career teachers. *Teaching and Teacher Education, 100*, Article 103283. https://doi.org/10.1016/j.tate.2021.103283

Scherer, R., Jansen, M., Nilsen, T., Areepattamannil, S., & Marsh, H. W. (2016). The quest for comparability: Studying the invariance of the teachers' sense of self-efficacy (TSES) measure across countries. *PLoS One, 11*(3), Article e0150829.

Siwatu, K. O. (2007). Preservice teachers' culturally responsive teaching self-efficacy and outcome expectancy beliefs. *Teaching and Teacher Education, 23*, 1086–1101. https://doi.org/10.1016/j.tate.2006.07.011

Siwatu, K. O. (2011). Preservice teachers' culturally responsive teaching self-efficacy-forming experiences: A mixed methods study. *The Journal of Educational Research, 104*, 360–369. https://doi.org/10.1080/00220671.2010.487081

Siwatu, K. O., Chesnut, S. R., Alejandro, A. Y., & Young, H. A. (2016). Examining preservice teachers' culturally responsive teaching self-efficacy doubts. *The Teacher Educator, 51*(4), 277–296.

Skaalvik, E. M., & Skaalvik, S. (2011). Teacher job satisfaction and motivation to leave the teaching profession: Relations with school context, feeling of belonging, and emotional exhaustion. *Teaching and Teacher Education, 27*, 1029–1038. https://doi.org/10.1016/j.tate.2011.04.001

Skaalvik, E. M., & Skaalvik, S. (2015). Job satisfaction, stress and coping strategies in the teaching profession-what do teachers say? *International Education Studies, 8*, 181–192.

Skaalvik, E. M., & Skaalvik, S. (2016). Teacher stress and teacher self-efficacy as predictors of engagement, emotional exhaustion, and motivation to leave the teaching profession. *Creative Education, 7*, 1785.

Skaalvik, E. M., & Skaalvik, S. (2017). Motivated for teaching? Associations with school goal structure, teacher self-efficacy, job satisfaction and emotional exhaustion.

Teaching and Teacher Education, 67, 152–160. https://doi.org/10.1016/j.tate.2017.06.006

Smeets, E., & Rispens, J. (2008). Op zoek naar passend onderwijs. *Overzichtsstudie van de samenhang tussen regulier en speciaal (basis)onderwijs. Nijmegen: ITS*.

Smetana, L. K., & Kushki, A. (2023). Confronting, investigating, and learning from professional identity tensions. *European Journal of Teacher Education*, 1–19. https://doi.org/10.1080/02619768.2023.2212854

Soeterik, I. M., Hanna, F., & Öztemir, T. (2023). Learning about racism: A week-by-week qualitative exploration of two white Dutch primary student teachers' emotional responses during a critical race theory based course. *Studies In Educational Evaluation, 78*, Article 101282. https://doi.org/10.1016/j.stueduc.2023.101282

Sondel, B., Kretchmar, K., & Hadley Dunn, A. (2022). "Who do these people want teaching their children?" White saviorism, colorblind racism, and anti-blackness in "no excuses" charter schools. *Urban Education, 57*(9), 1621–1650. https://doi.org/10.1177/0042085919842618

Soodak, L. C., & Podell, D. M. (1997). Efficacy and experience: Perceptions of efficacy among preservice and practicing teachers. *Journal of Research & Development in Education, 30*(4), 214–221.

Swan, B., Wolf, K., & Cano, J. (2011). Changes in teacher self–efficacy from the student teaching experience through the third year of teaching. *Journal of Agricultural Education, 52*, 128–139. https://doi.org/10.5032/jae.2011.02128

Täschner, J., Dicke, T., Reinhold, S., & Holzberger, D. (2023). "Yes, I can!" A systematic review and meta-analysis of intervention studies promoting teacher self-efficacy. *Review of Educational Research*. , Article 00346543231221499. https://doi.org/10.3102/00346543231221499

Täschner, J., Dicke, T., Reinhold, S., & Holzberger, D. (2025). Yes, I Can!" A Systematic Review and Meta-Analysis of Intervention Studies Promoting Teacher Self-Efficacy. *Review of Educational Research, 95*(1), 3–52. https://doi.org/10.3102/00346543231221499.

Tatar, M., & Horenczyk, G. (2003). Diversity-related burnout among teachers. *Teaching and Teacher Education, 19*(4), 397–408. https://doi.org/10.1016/S0742-051X(03)00024-6

Tschannen-Moran, M., & Johnson, D. (2011). Exploring literacy teachers' self-efficacy beliefs: Potential sources at play. *Teaching and Teacher Education, 27*, 751–761. https://doi.org/10.1016/j.tate.2010.12.005

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

Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education, 23*, 944–956. https://doi.org/10.1016/j.tate.2006.05.003

van der Wal, M. M., Oolbekkink-Marchand, H. W., Schaap, H., & Meijer, P. C. (2019). Impact of early career teachers' professional identity tensions. *Teaching and Teacher Education, 80*, 59–70. https://doi.org/10.1016/j.tate.2019.01.001

Van Gennip, H., Marx, T., & Smeets, E. (2007). Gedragsproblemen in de basisschool en competenties van leraren. *Nijmegen: ITS*.

Vieira, L., Rohmer, O., Jury, M., Desombre, C., Delaval, M., Doignon-Camus, N., … Popa-Roch, M. (2024). Attitudes and self-efficacy as buffers against burnout in inclusive settings: Impact of a training programme in pre-service teachers. *Teaching and Teacher Education, 144*, 104569. https://doi.org/10.1016/j.tate.2024.104569.

Wang, H., Hall, N. C., & Rahimi, S. (2015). Self-efficacy and causal attributions in teachers: Effects on burnout, job satisfaction, illness, and quitting intentions. *Teaching and Teacher Education, 47*, 120–130. https://doi.org/10.1016/j.tate.2014.12.005

Wheatley, K. F. (2002). The potential benefits of teacher efficacy doubts for educational reform. *Teaching and Teacher Education, 18*, 5–22. https://doi.org/10.1016/S0742-051X(01)00047-6

Wheatley, K. F. (2005). The case for reconceptualizing teacher efficacy research. *Teaching and Teacher Education, 21*, 747–766. https://doi.org/10.1016/j.tate.2005.05.009

Wyatt, M. (2016). "Are they becoming more reflective and/or efficacious?" A conceptual model mapping how teachers' self-efficacy beliefs might grow. *Educational Review, 68*(1), 114–137.

Xu, H. (2013). From the imagined to the practiced: A case study on novice EFL teachers' professional identity change in China. *Teaching and Teacher Education, 31*, 79–86. https://doi.org/10.1016/j.tate.2013.01.006

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*, Article 103521. https://doi.org/10.1016/j.tate.2021.103521

Yoon, J. S. (2002). Teacher Characteristics as predictors of teacher-student relationships: Stress, negative affect, and self-efficacy. *Social Behavior and Personality, 30*, 485–494. https://doi.org/10.2224/sbp.2002.30.5.485

Zee, M., & Koomen, H. M. Y. (2016). Teacher self-efficacy and its effects on classroom processes, student academic adjustment, and teacher well-being A synthesis of 40 years of research. *Review of Educational Research, 86*, 981–1015. https://doi.org/10.3102/0034654315626801

Zee, M., Koomen, H. M., & de Jong, P. F. (2018). How different levels of conceptualization and measurement affect the relationship between teacher self-efficacy and students' academic achievement. *Contemporary Educational Psychology, 55*, 189–200. https://doi.org/10.1016/j.cedpsych.2018.09.006

Zee, M., Koomen, H. M. Y., Jellesma, F. C., Geerlings, J., & de Jong, P. F. (2016). Inter- and intra-individual differences in teachers' self-efficacy: A multilevel factor exploration. *Journal of School Psychology, 55*, 39–56. https://doi.org/10.1016/j.jsp.2015.12.003