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Which teachers feel good and adopt a motivating teaching style? The role of teaching identity and motivation to teach

Branko Vermote ⓘ, Maarten Vansteenkiste ⓘ, Bart Soenens ⓘ and Wim Beyers ⓘ

Department of Developmental, Social, and Personality Psychology, Ghent University, Ghent, Belgium

ABSTRACT

The present study examined whether secondary school (SE) teachers ($N =$ 324, $M_{age} = 37.97$) and university (UNI) teachers ($N = 225$, $M_{age} = 44.80$) with a firmly grounded and well-explored teaching identity would report better work-related well-being and would adopt a more motivating teaching style. We expected the opposite for teachers ruminating about their teaching role and also considered the mediating role of teaching motivation. Results from multiple group analyses confirmed the hypotheses, showing that teachers with a well-defined teaching identity reported more satisfaction and less emotional exhaustion during teaching and were less likely to leave the profession. They also reported making use of a more motivating teaching style, characterized by more autonomy support and structure, and less control and chaos. Conversely, teachers who ruminated about their teaching role generally showed opposite correlations. Teaching motivation mediated at least partially these associations, with the results generally holding across SE and UNI teachers. Overall, the present study underscores the importance of considering teachers' sense of identity and teaching motivation as they might underlie their well-being and motivating teaching style in the classroom.

Teaching is a multifaceted and sometimes challenging activity that requires an extensive skillset. To transfer knowledge to students effectively, teachers face the task of motivating students to engage in learning activities while at the same time fulfilling other responsibilities such as class management, administrative work, course preparations, and evaluation of tasks. Since teaching is considered emotionally demanding and sometimes stressful (McCarthy et al. 2016), maintaining good teaching motivation to preserve one's professional well-being is crucial.

A strong sense of who one is as a teacher could be an essential foundation for teaching motivation and adaptive personal and interpersonal teacher outcomes. Although the identity literature shows that a well-explored and firmly established identity, both in general (Luyckx et al. 2010) and with respect to one's profession (Haibo et al. 2018), relates to higher well-being and performance, only a few studies have examined teachers' professional identity development as a source of teacher outcomes (e.g. Crocetti et al. 2014). Moreover, none of them examined these structural relations in secondary (SE) or university (UNI) teachers already in service. Therefore, the first aim of the present study was to determine whether teaching identity is related to teaching motivation, professional well-being, and teachers' use of a motivating teaching style in a broad sample of SE and UNI teachers. As a second aim, we wanted to examine whether the role of teaching identity

generalizes between SE and UNI teachers, as the context of secondary education and university differs considerably.

Teachers' professional identity development

Many scholars agree that constructing a professional identity represents a central developmental task throughout adulthood and is a core aspect of one's overall sense of identity (Skorikov and Vondracek 2011). However, much less agreement exists on the definition of professional identity, with various conceptualizations being offered. Indeed, whereas some research on teachers' professional identity fails to provide a clear definition at all or emphasizes that it is never fixed or stable (Beijaard, Meijer, and Verloop 2004), others define it broadly, thereby considering beliefs, self-efficacy, and emotions as elements of teachers' professional identity (Hong 2010).

Building upon the theorizing of Erikson (1968), one of the leading developmental theories on identity development that has been further conceptualized by Marcia (1980), two core processes in (professional) identity formation have been proposed (Luyckx et al. 2010; Skorikov and Vondracek 2011). These are identity exploration, which involves active reflection on multiple identity alternatives, and identity commitment, which denotes the decision to adhere to one or more of the considered alternatives. In Marcia's (1980) identity status framework, when individuals engage in a comprehensive exploration of different identity options and subsequently make a committed choice, this process culminates in what is termed an achieved identity. Achievement has been linked with the most advantageous set of outcomes (Kroger and Marcia 2011). Studies within the broader identity literature have indeed shown that identity exploration and commitment in a general sense (e.g. having clear future plans) were positively associated with professional well-being (Luyckx et al. 2010; Marttinen, Dietrich, and Salmela-Aro 2016). Concerning professional identity development specifically, research has shown that a more substantial professional commitment was linked to higher job satisfaction (Haibo et al. 2018; Jeanson and Michinov 2020; Wendling and Sagas 2022), a lower intention to leave the profession (Haibo et al. 2018), better job performance (Haibo et al. 2018), and higher work engagement (Jeanson and Michinov 2020). Research in a sample of primary and secondary school teachers confirmed that exploration of the teaching role yielded a positive albeit small association with job satisfaction, whereas commitment to the teaching job yielded a stronger association with job satisfaction (positive) and feelings of emotional exhaustion (negative; Crocetti et al. 2014).

Apart from being predictive of teachers' well-being, the benefits of teachers' sense of identity might also radiate to teachers' use of a motivating teaching style in the classroom. Recently, a circumplex approach to (de)motivating teaching was developed, capturing a broad range of motivating and demotivating teaching practices in both secondary (Aelterman et al. 2019) and higher education (Vermote et al. 2020). Four overarching teaching styles were identified, two of which are more motivating in nature (i.e. autonomy support and structure) and two of which are more demotivating teaching styles (i.e. control and chaos). Table 1 provides a detailed description of these teaching styles. Supporting this theorizing, numerous studies have shown that an autonomy-supportive and controlling teaching style, respectively, relate positively and negatively to students' motivation and academic functioning (see Reeve and Cheon 2021; Vansteenkiste et al. 2019 for an overview). While teachers' use of a structuring teaching style has been well-documented (Mouratidis et al. 2013; Taylor, Ntoumanis, and Standage 2008; Tessier, Sarrazin, and Ntoumanis 2010; see a recent meta-analysis by Patall et al. 2023), studies on teacher chaos remain sparse (Aelterman et al. 2019).

Therefore, the present study wanted to examine whether teachers' sense of identity is associated with the use of a (de)motivating teaching style. The idea that individuals' identity development predicts their interpersonal interactions is well-researched with late adolescents, in which a firmly established and well-explored identity related to more prosocial interpersonal behavior (Ritchie et al. 2013; Smits et al. 2011). In the educational context specifically, commitment to teaching was

Table 1. Conceptual definitions of the four teaching styles and eight teaching approaches as described by Aelterman et al. (2019).

Teaching style	Conceptual definition	Subarea	Description
Autonomy support	The teacher's instructional goal and interpersonal tone of understanding. The teacher seeks to maximally identify and nurture students' interests, preferences and feelings, so that students can volitionally engage themselves in classroom learning activities.	Participative	A participative teacher identifies students' personal interests by engaging in a dialogue with students and inviting them to provide input and suggestions. In addition, where possible, the teacher tries to offer (meaningful) choices in how students deal with learning activities and optimally follows their pace.
		Attuning	An attuning teacher nurtures students' personal interests by trying to find ways to make the exercises more interesting and enjoyable, accepting students' expressions of negative affect and trying to understand how students see things. The teacher allows students to work at their own pace and provides explanatory rationales that are meaningful in the eyes of students.
Structure	The teacher's instructional goal and interpersonal tone of guidance. Starting from the capabilities and abilities of students, the teacher provides strategies, help and assistance, so that students feel competent to master classroom learning activities.	Guiding	A guiding teacher nurtures students' progress by providing appropriate help and assistance as and when needed. The teacher goes through the steps that are necessary to complete a task, so that students can continue independently and, if necessary, can ask questions. Together with the students the teacher constructively reflects on mistakes, so that they see for themselves what can be improved and how they can improve.
		Clarifying	A clarifying teacher communicates expectations to students in a clear and transparent way. The teacher offers an overview of what students can expect from the lesson and monitors students' progress in meeting the communicated expectations.
Control	The teacher's instructional goal and interpersonal tone of pressure. The teacher insists that students think, feel, and behave in a prescribed way and imposes his/her own agenda and requirements on students, irrespective of what students think.	Demanding	A demanding teacher requires discipline from the students by using powerful and commanding language to make clear what students have to do. The teacher points students on their duties, tolerates no participation or contradiction, and threatens with sanctions if students don't comply.
		Domineering	A domineering teacher exerts power to students to make them comply with his/her requests. The teacher suppresses students by inducing feelings of guilt and shame. While a demanding teacher tries to change students' thoughts, feelings, and behaviors into something more acceptable to the teacher, a domineering approach is characterized by a 'personal attack' on students.
Chaos	The teacher's instructional goal and interpersonal tone of laissez faire. The teacher leaves students on their own, making it confusing for students to figure out what that they should do, how they should behave, and how they can develop their skills.	Abandoning	An abandoning teacher gives up on students. The teacher allows students to just do their own thing, because eventually students have to learn to take responsibility for their own behavior.
		Awaiting	An awaiting teacher offers a laissez-faire learning climate where the initiative fully lies with the students. The teacher tends to wait to see how things evolve, doesn't plan too much and rather let things take their course.

found to relate to higher self-efficacy beliefs about teaching (Berger and Lê Van 2019; Rots et al. 2010), more learner-oriented beliefs, which entail a focus on the learning process and development (Rots et al. 2010), a more positive attitude towards the different aspects of teaching (Russell 2012) and more positive interpersonal experiences with both colleagues and students (Russell 2012).

The research cited above suggests that exploration and especially commitment is predictive of teacher outcomes. However, more recent models (Luyckx et al. 2006; 2008a) refined these two dimensions in an attempt to better capture the fluidity with which teachers explore and (re-)evaluate their commitments. When making commitments, teachers gather information on different identity alternatives (i.e. exploration in breadth) before choosing a certain identity path (i.e. commitment-making). Beyond making commitments, there's a continuous process of evaluation. Teachers reflect on and discuss their choices (i.e. exploration in depth) and develop a sense of confidence and certainty in their commitments, seeing them as self-concordant and self-expressive (i.e. identification with commitment).

For some teachers, making and evaluating professional identity commitments goes awry. This occurs when teachers dwell on professional identity alternatives, not arriving at a solid commitment, referred to as ruminative exploration (Luyckx et al. 2008a). Ruminative exploration has to be distinguished from the more adaptive forms of exploration and is considered a risk factor or dark pathway for identity development (Crocetti, Beyers, and Çok 2016; Schwartz et al. 2011). Research with late adolescents has indeed shown that, whereas exploration in breadth and in depth related positively to identity commitment, ruminative exploration was negatively related to commitment. Furthermore, in contrast to exploration in breadth and depth, only ruminative exploration was related to adverse outcomes (Luyckx et al. 2008a; Verschueren et al. 2017). In working adults, ruminative exploration has been linked to symptoms of burnout in the workplace (Luyckx et al. 2010; Marttinen, Dietrich, and Salmela-Aro 2016), and participants who experienced the most confusion about their professional identity were found to report the least career-related and personal well-being (Wendling and Sagas 2022). In terms of interpersonal behavior, ruminative exploration in late adolescents was found to relate to more intrusive and aggressive behavior (Luyckx and Robitschek 2014; Ritchie et al. 2013) and more rule breaking behavior (Ritchie et al. 2013).

Based on the above results and in line with the proposed bright and dark pathway of identity development (Schwartz et al. 2011), the present study wanted to examine if teachers' well-explored and strongly founded teaching identity was predominantly associated with positive personal and interpersonal teacher outcomes, whereas ruminative exploration would show the strongest associations with the negative teacher outcomes. We also considered whether the quality of motivation to teach could be the underlying mechanism in these associations.

Teaching motivation linking professional identity with teacher outcomes

According to SDT, teachers can put effort into teaching for diverse reasons, ranging from more autonomous to more controlled motivation (Ryan and Deci 2017; 2020). When teachers are autonomously motivated, they experience teaching as an intrinsically rewarding task that furnishes their enjoyment and energy (i.e. intrinsic motivation) or perceive it as a noble, personally valuable task (i.e. identified motivation). Controlled motivated teachers, however, invest time and energy in teaching because they feel obligated to do so as part of their job. They do so primarily to receive money or to avoid criticism (i.e. external motivation), or because they would feel guilty, ashamed, or disappointed in themselves if they did not make an effort or teach to achieve feelings of self-worth and pride (i.e. introjection). Lastly, teachers may feel amotivated or lack the drive to exert themselves to teach if they feel that instructing their students is pointless and if they can no longer recall a good reason to put effort into their students, course, or class management.

Many studies confirmed that these forms of teaching motivation relate differently to teachers' welfare (Slemp, Field, and Cho 2020). That is, in general, autonomous teaching motivation was related positively to work-related well-being and job satisfaction (e.g. Abós et al. 2018; Cece et al.

2022; Cuevas et al. 2018; Gillet et al. 2013), and negatively to feelings of burnout and intentions to leave the profession (Cece et al. 2022; Eyal and Roth 2011; Fernet et al. 2008; Franco et al. 2021; Gillet et al. 2013; Roth et al. 2007; Soenens et al. 2012; Van Den Berghe et al., 2013a, 2013b; Slemp, Field, and Cho 2020). The opposite pattern of associations was found for controlled motivation to teach, which was linked to higher levels of emotional exhaustion (Abós et al. 2019; Eyal and Roth 2011; Fernet et al. 2008; 2012; Van Den Berghe et al., 2013a, 2013b) and lower levels of job satisfaction (e.g. Gillet et al. 2013) (but see Abós et al. 2019 for an exception in which controlled teaching motivation was associated with more job satisfaction). When studies include amotivation to teach, they generally observe that amotivation is more strongly related to adverse personal outcomes in teachers compared to controlled teaching motivation (e.g. Abós et al. 2019; Cece et al. 2022; Cuevas et al. 2018; Fernet et al. 2008; Franco et al. 2021).

In addition to predicting teachers' professional well-being, teachers' job motivation was found to predict teachers' use of motivational practices. Indeed, previous research with primary school, secondary school, and physical education teachers has shown that teachers' autonomous motivation to teach was related to more autonomy support and structure, as reported by the teachers (Abós et al. 2018; Aelterman et al. 2019; Escriva-Boulley et al. 2021; Katz and Shahar 2015; Pelletier, Séguin-Lévesque, and Legault 2002; Taylor, Ntoumanis, and Standage 2008; Van Den Berghe et al., 2013b), and to a more autonomy-supportive teaching style, as perceived by students (Roth et al. 2007). Additionally, autonomous teaching motivation was associated with a less controlling (Soenens et al. 2012) and chaotic (Aelterman et al. 2019) teaching style in secondary school teachers. Higher levels of control (Aelterman et al. 2019; Escriva-Boulley et al. 2021) and chaos (Aelterman et al. 2019) were reported by secondary school and physical education teachers who reported more controlled motivation to teach. In contrast, amotivation in the sample of physical education teachers was related to more control and chaos (Escriva-Boulley et al. 2021). Less research has been performed in higher education. However, the available research shows similar results, namely that autonomous teaching motivation relates to a more student-centered (Orsini et al. 2020), more autonomy-supportive, and more structuring teaching style (Stupnisky et al. 2018; Vermote et al. 2020), whereas being related to lower chaos in the classroom (Vermote et al. 2020). Controlled teaching motivation, on the other hand, was related to less autonomy support and a more demotivating teaching style, as indexed by more control and chaos. In contrast, amotivation to teach was negatively related to autonomy support and structure, and positively related to control and chaos (Vermote et al. 2020).

Although the extensive evidence cited above confirms the link between teaching motivation and teacher outcomes, how teachers' professional identity and teaching motivation are associated remains somewhat unclear. Part of this has to do with the numerous definitions of teacher identity, some including motivation to teach (Richardson and Watt 2018), whereas others do not (Cece et al. 2022). From a theoretical view, teachers' sense of identity could serve as a source for their motivation (Eccles 2009; Oyserman, Elmore, and Smith 2012). That is, when teachers experience a well-explored and strong professional identity, they have a clear understanding of who they are as a teacher and what they value in their profession. This sense of clarity might serve as a guidepost for selecting or shaping contexts and activities that are in line with who they are or want to be as teacher (i.e. job crafting; De Bloom et al. 2020; Wrzesniewski and Dutton 2001). Relatedly, autonomous teaching motivation stems from activities that align with one's personal values and interests, which are core aspects of a teacher's identity. In contrast, ruminative exploration of the teaching identity signifies a lack of integration and direction, which could lead teachers to feel more easily pushed by external demands in their teaching motivation. Additionally, if teachers dwell about their professional identity all together, it is very likely that they will question why they put effort into their teaching, as indexed by more amotivation to teach.

At the same time, when confronted with difficult situations that could possibly erode their teaching motivation, teachers' professional identity could serve as a source of resilience (Day 2018), preventing that one's motivation to teach is caving in. That is, during difficult times, a clear and coherent understanding of their teaching role could enable teachers to maintain focused on their core beliefs

and personal reasons for teaching. In contrast, an ongoing uncertainty and indecision about one's teaching identity could erode their teaching motivation, as they might struggle to find autonomous reasons to persevere while being more susceptible for external forces. In line with this view, research with students at risk for dropping out of school (Keijzer et al. 2020) has observed substantial correlations between students' vocational identity and their study motivation (.58) and resilience (.62). In addition, in a sample of undergraduate students, in-depth career exploration and identification with commitment was associated with attaching more value to their academic work (autonomous study motivation), whereas ruminative exploration was found to be associated with less perceived value (Wong and Kaur 2018).

Interestingly, although teachers' professional identity continues to develop throughout a person's career (Trautwein 2018), the majority of research on this topic has been conducted with high school and college students (e.g. Lannegrand-Willems, Perchec, and Marchal 2016; Porfeli et al. 2011), and the instruments developed to measure professional identity development primarily concern the period prior to entering the workforce (e.g. Vocational Identity Status Assessment, Porfeli et al. 2011). Research linking professional identity development of in-service teachers with their teaching motivation, professional well-being, and teaching behavior is equally lacking. To bridge this gap, the present study aims to examine these associations in a sample of SE and UNI teachers in service.

The present study

To motivate students and feel good in the workplace, research has shown that teachers' quality of motivation to teach is key. As a first aim, the present study proposes that teaching motivation and personal and interpersonal teacher outcomes might be rooted in teachers' professional identity development. Specifically, we hypothesized that teaching identity synthesis (i.e. exploration in breadth and in depth combined with commitment making and identification with commitment) would relate positively to teaching satisfaction and negatively to intention to leave the teaching role and emotional exhaustion during teaching. The opposite pattern was expected for ruminative exploration (Hypothesis 1). Similarly, we expected that teaching identity synthesis would be associated with a more motivating (i.e. autonomy support and structure) and less demotivating teaching style (i.e. control and chaos), whereas ruminative exploration was expected to show the opposite pattern of correlations (Hypothesis 2). Moreover, we expected that teachers' teaching motivation would play an intervening role in the above associations. More specifically, teaching identity synthesis was assumed to relate to more autonomous and less controlled motivation and amotivation to teach, which in turn would be related to more adaptive personal and interpersonal teacher outcomes. In contrast, ruminative exploration was expected to be associated with less autonomous and more controlled motivation and amotivation to teach, in turn being related to more maladaptive teacher outcomes (Hypothesis 3).

The present study thereby extends previous research that was more fragmented in nature, by examining teachers' sense of identity as a resource for teachers' personal and interpersonal functioning, and considering teaching motivation as an intervening mechanism in these associations. In addition, consistent with the proposed dual pathway model (Crocetti, Beyers, and Çok 2016; Schwartz et al. 2011), we hypothesized that identity synthesis would yield the largest associations with the positive outcomes and ruminative exploration with the negative outcomes, whereas the asymmetrical relations would be less pronounced (Hypothesis 4).

As a second aim of the present study, we wanted to examine whether the role of teaching identity generalizes between SE and UNI teachers in service, as the proportion and centrality of teaching in the overall job description differs considerably between these two groups. That is, for teachers in secondary education, teaching their subjects is the main task. For university teachers, the situation might be somewhat different, as carrying out research activities, supervising their teams, and valorizing research results are additional key tasks. In addition, compared to secondary school teachers,

who consciously choose to be a teacher and follow a teacher education program, teachers at the university level generally start as researchers with occasional training in teaching, not considering it their priority (Anderson et al. 2011). Given the limited available research comparing SE and UNI teachers and the majority of the research being conducted with student reports, the present study aimed to test in an exploratory way whether mean level differences and differences in the structural relations between the assessed variables would occur depending on the educational level teachers work in (Research question 1).

Method

Participants and procedure

In August 2020, a website about motivating teaching was launched for secondary and higher education teachers in the Dutch-speaking part of Belgium and The Netherlands. The website mentioned that a new tool was developed to assess their own motivating teaching style. Teachers were invited to complete the questionnaire to receive their motivating teaching profile with tailored feedback. Before participating in the questionnaire study, no information about motivating teaching was provided to avoid bias. Informed consent was obtained via a built-in online module at the beginning of the questionnaire. The study was conducted according to the ethical rules presented in the General Ethical Protocol of the Faculty of Psychology and Educational Sciences at Ghent University (Belgium).

For the present study, data from 324 teachers from 126 different secondary schools (SE; 66% female; M_{age} = 37.97, SD = 11.95) and 225 teachers from 34 universities (UNI; 83.1% female; M_{age} = 44.80, SD = 9.45) were included. On average, SE teachers reported teaching 18.74 h a week (SD = 5.85) and having 10.11 years of teaching experience (SD = 10.44). Regarding the different educational tracks, 22.1% taught in the first two general years of secondary education, 31.8% taught in the academic track, 25.5% in the technical track, and 20.6% in the vocational track. Considering the distribution across grades, 17.2% taught in the 7th and 8th grade, 17.6% taught in the 9th and 10th grade, and 21.7% taught in the 11th and 12th grade. Many SE teachers taught in a combination of grades (17.6% from 7th to 10th grade, 25.9% from 9th to 12th grade). All participating UNI teachers gave lectures at university and reported teaching on average 34.99 h per month (SD = 24.11) to a group of 73.48 students (SD = 72.72; ranging from 8 to 700). They had, on average, 13.56 years of teaching experience (SD = 9.97). Most UNI teachers followed a short pedagogical training (76.9%) and obtained a teacher education degree (73.7%).

Measures

The measures were completed in the native language of the participants. All measurements except the one assessing the (de)motivating teaching style were identical for the SE and UNI teachers.

Teacher identity

We assessed teachers' professional identity by using the well-validated Dimensions of Identity Development Scale (DIDS; Luyckx et al. 2008a) and adapting it to fit the context of teacher identity development. This is in line with other identity domain-specific adaptions of the DIDS scale, for instance, for parenting (Schrooyen et al. 2021), and allowed us to measure teacher's identity more as a continuum rather than a categorical status. Four indicators (so-called dimensions) were combined to represent the teacher's degree of teacher identity synthesis. That is, teachers' exploration in breadth (e.g. 'I am thinking about different things I can do as a teacher in the future.') and in-depth (e.g. 'I reflect on how I fulfill my role as a teacher') and teachers commitment (e.g. 'I made a decision about whom I want to be as a teacher') and identification with commitment (e.g. 'I feel confident about myself as a teacher'). Combining these dimensions aligns with Luyckx et al.'s (2008b) research, which also added ruminative exploration as a (reverse) indicator for the sense of

identity. However, in the present study, we chose to separate the adaptive from the maladaptive dimensions of identity development and added ruminative exploration of the teacher identity (e.g. 'I worry about what to do as a teacher') as a separate construct. This approach was supported by the results of an exploratory factor analysis clearly showing the hypothesized two factors, that is, teacher identity synthesis (comprising exploration in breadth and in depth, and commitment making and identification with commitment) and ruminative exploration, explaining 81.26% of the total variance. All dimensions were measured on a 5-point scale going from 1 (totally disagree) to 5 (totally agree) with five items each and showed good internal consistencies in both SE teachers ($.71 < \alpha < .81$) and UNI teachers ($.72 < \alpha < .84$).

Teaching motivation
To measure motivation to teach, we relied upon the Work Task Motivation Scale for Teachers (Fernet et al. 2008), which has been successfully used in both secondary (Fernet et al. 2008) and higher education (Vermote et al. 2020). Since the internal consistencies of some subscales in the study of Fernet et al. (2008) were somewhat limited, one item to each subscale was added for the present study, which has been validated by Vermote et al. (2020) in higher education. Following the stem (i.e. 'I put effort into teaching (e.g. giving instructions, answering questions, listening to the needs of the students …)'), teachers were asked to rate on a 7-point scale ranging from 1 (totally not applicable to me) to 7 (totally applicable to me) to what extent they felt autonomously motivated (8 items; e.g. ' … because I like doing this task,' ' … because this task allows me to attain work objectives that I consider important'), controlled motivated (8 items; e.g. ' … because I would feel guilty not doing it,' ' … because my work demands it'), or amotivated to teach (4 items; e.g. ' … I do not know, sometimes I do not see its purpose.'). The internal consistencies for autonomous motivation ($\alpha_{SE} = .87$, $\alpha_{UNI} = .86$), controlled motivation ($\alpha_{SE} = .82$, $\alpha_{UNI} = .84$) and amotivation to teach ($\alpha_{SE} = .88$, $\alpha_{UNI} = .88$) were excellent.

Teaching satisfaction
On a scale from 1 (very dissatisfied) to 10 (very satisfied), participants were asked how satisfied they were with their role as a teacher.

Intention to leave
To assess the intention to leave, we relied upon five items developed by Kuvaas (2006), measuring turnover intention with regards to teaching on a scale going from 1 (totally disagree) to 5 (totally agree). An example item is: 'I often think about quitting teaching.' The internal consistency of the scale for SE ($\alpha = .86$) and UNI teachers ($\alpha = .85$) was excellent.

Emotional exhaustion
To measure exhaustion during teaching, we relied on the Utrecht Burnout Scale (Schaufeli and van Dierendonck 2000). On a scale going from 1 (never) to 7 (always), teachers were given five statements reflecting experiences of exhaustion during teaching (e.g. I feel mentally exhausted by teaching). Internal consistencies for exhaustion ($\alpha_{SE} = .88$; $\alpha_{UNI} = .86$) were excellent.

(De)Motivating teaching style
We relied upon the vignette-based Situations-in-Schools questionnaire for secondary education (SIS; Aelterman et al. 2019) and the thereof-derived Situations-in-Schools Questionnaire for higher education (SISQ-HE; Vermote et al. 2020) to measure SE and UNI teachers' (de)motivating teaching styles. As shown in Figure 1, the circumplex model underlying the SIS identifies eight teaching approaches, that is, two approaches per teaching style, that are organized in a circular structure. Table 1 shows a description of each teaching approach and the corresponding teaching style. Participants were presented with twelve (SE teachers) or ten (UNI teachers) short vignettes describing proactive (e.g. 'You are thinking about classroom rules. So, you … ') and reactive situations (e.g. 'You
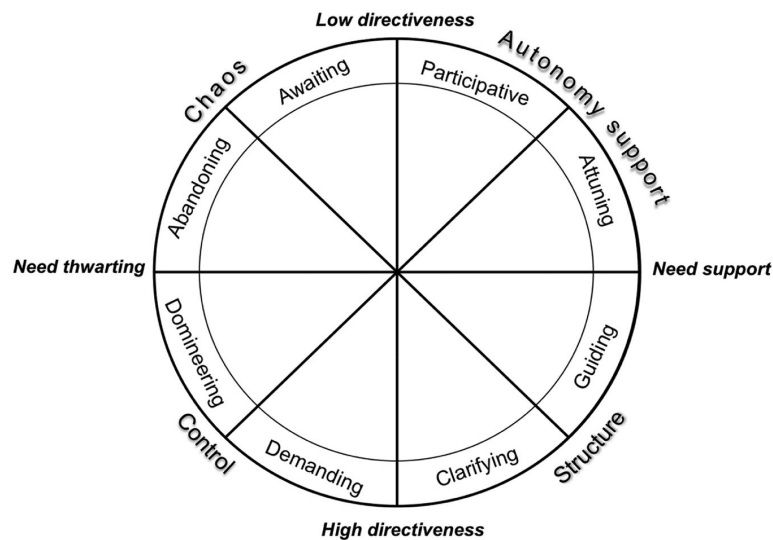
Figure 1. Graphical representation of the circumplex model by Aelterman et al. (2019).

ask a question during class. After waiting for a while, someone raises their hand and gives a partially wrong answer. You … ') involving learning content or student behavior. Ranging from 1 (does not describe me at all) to 7 (does describe me extremely well), participants were provided several responses per situation, each response representing a specific teaching approach (e.g. demanding) and teaching style (e.g. control). For SE teachers, each vignette had four possible responses, with each response representing a specific teaching style (i.e. chaos, structure, autonomy-support, and control). This means that not all teaching approaches (e.g. the abandoning and awaiting approaches within the chaotic style) were represented in each vignette. For HE teachers, vignettes had between four and eight responses presented. When given four responses, each response represented a different teaching style (as is the case also in the SIS for SE teachers). When presented with eight responses, each response referred to a different teaching approach. When presented with five to seven responses, each response responded to a unique teaching approach (e.g. abandoning), with some teaching styles (e.g. chaos) being represented by two items. Good reliability and validity of the SIS and SISQ-HE have been shown by previous research (Aelterman et al. 2019; Vermote et al. 2020). In the present study, non-metric multidimensional scaling analyses (Borg, Groenen, and Mair 2013) were performed which gives a graphical representation of the internal structure of the questionnaire. The results of these analyses supported a two-dimensional data structure for both the SE and HE teachers, as observed by Aelterman et al. (2019) and Vermote et al. (2020). Internal consistencies in the sample of SE teachers were satisfactory for all (.70 < α < .81), but the participative approach, which yielded a limited internal consistency (α = .56, 3 items). For UNI teachers, internal consistencies were good for all (.72 < α < .82) but the awaiting approach (α = .57, 7 items). Subsequently, internal consistencies for the overarching teaching styles (i.e. autonomy support, structure, control, and chaos) were calculated and were found to be satisfactory in both samples (.81 < $α_{SE}$ < .83; .81 < $α_{UNI}$ < .88). Given the different teaching contexts of SE and UNI teachers, items of the SIS and SISQ-HE differ somewhat from each other. Yet, the items do intend to assess the same underlying construct. In the appendix of Vermote et al. (2020), a detailed overview is provided of the differences between the original SIS and the SISQ-HE, and a detailed description of the SIS and SISQ-HE and how they were developed can be found in Aelterman et al. (2019) and Vermote et al. (2020).

Plan of analysis

To test the main hypotheses, structural equation modeling was performed with Mplus 8.8 (Muthén and Muthén 2017). First, we examined measurement equivalence across UNI and SE teachers for the main study variables by conducting multiple group analyses. This ensures that the constructs under study are interpreted consistently across SE and UNI teachers. Specifically, an unconstrained model was compared with (1) a model with constrained factor loadings, and (2) a model with constrained factor loadings and intercepts for factor indicators. We performed one analysis for teacher identity, teaching motivation, and personal outcomes, and one analysis for the motivating teaching styles, since slightly different items were used for the SE and UNI teachers. Following the recommendations of Cheung and Rensvold (2002), a ΔCFI value of .01 or less indicated model invariance. To correct for non-normality in some variables, Robust Maximum Likelihood was used as estimator. All except teaching satisfaction (measured by only one item) were latent factors, each represented by two or three parcels since using item parcels provides advantages on psychometric and estimation levels (Little et al. 2002; 2013). Second, a test of equivalence of factor means was conducted to examine whether the latent means for the model with teacher identity, teaching motivation and personal outcomes differed between the SE and UNI teachers. In line with theory (Hoshino and Bentler 2011) and previous research (e.g. Luyckx et al. 2006), latent factor scores were then saved and used in a multiple group path analyses to test whether the associations between the variables would depend on the level of education teachers work in. The Model Indirect procedure (Muthén, Muthén, and Asparouhov 2017) was used with 5000 bootstrap samples to estimate the mediation sequences. For all estimated models, an acceptable fit was indicated by CFI values of .90 or above, χ^2/df ratio of 2 or below, SRMR values of .08 or below, and RMSEA values of .06 or below (Hu and Bentler 1999; Kline 2005).

Results

Preliminary analyses

First, Little's (1988) MCAR test showed that the limited missing data (0.72%) in this study was most likely missing completely at random ($p = .01$, normed χ^2 (89.74/60) = 1.50; Ullman 2001). Therefore, the full information maximum likelihood (FIML) procedure to handle missing data was followed (Schafer and Graham 2002) when conducting the main analyses.

Second, for the sample of SE teachers and UNI teachers, a multivariate analysis of covariance (MANCOVA) was performed. For SE teachers, we examined whether teachers' personal characteristics (i.e. gender, age, teaching experience, teaching hours each week, the educational track they work in, and the grade they taught) and school characteristics (i.e. the educational network that their school belongs to) was related to the variables included in the study. Results showed significant multivariate effects of teachers' gender (Wilks's $\lambda = 0.82$, $F(13,204) = 3.37$, $p < .001$, $\eta^2 = .18$), age (Wilks's $\lambda = 0.88$, $F(13,204) = 2.11$, $p = .02$, $\eta^2 = .12$), teaching experience (Wilks's $\lambda = 0.82$, $F(13,204) = 3.37$, $p < .001$, $\eta^2 = .18$), and the educational track they work in (Wilks's $\lambda = 0.70$, $F(39,604) = 2.01$, $p < .001$, $\eta^2 = .11$). Univariate follow-up analyses indicated that female teachers experience more autonomous and less amotivation to teach, behave more structuring and less controlling in the classroom and report more teaching satisfaction compared to their male colleagues. Further, older colleagues reported more autonomous, less controlled motivation and less amotivation to teach compared to their younger colleagues. However, less qualitative teaching motivation, as indexed by less autonomous, more controlled and more amotivation to teach, was reported by teachers with more teaching experience. Similarly, less emotional exhaustion was reported by older teachers, while the opposite pattern was found in more experienced teachers. More experienced teachers also report more intention to leave the profession than their colleagues with less teaching experience. Lastly, teachers in an academic track experience less amotivation to teach and report being less

chaotic in the classroom compared to their colleagues from the technical and vocational track. Teachers from the vocational track also report to be more autonomy-supportive whereas the use of controlling strategies is highest in teachers from the technical track.

For UNI teachers, we examined whether the variables included in the study depended on their gender, age, teaching experience, whether they have a teacher education degree, their hours of teaching per month, student group size, and at which level of education they teach (i.e. bachelor, master, or a combination). Multivariate effects were only found for UNI teachers' gender (Wilks's λ = 0.82, $F(13.180) = 3.07$, $p < .001$, $\eta^2 = .18$). Univariate analyses show that female UNI teachers experience both more autonomous and controlled motivation to teach and adopt a less chaotic motivational teaching style compared to male UNI teachers. Given the findings of both MANCOVA's, we controlled for gender, age, and teaching experience in the multiple group structural analyses. We could not control for educational track, since this variable was only applicable to SE teachers. Given that the present data were collected during the COVID-19 pandemic, we also controlled for the perceived threat of the COVID-19 crisis in the main analyses. Following the stem (i.e. 'I consider the COVID-19 crisis as … '), three items were administered on a 5-point scale going from 1 (totally disagree) to 5 (totally agree), that is ' … a chance to grow in my teaching' (reverse coded), ' … a threat to teach in a good way' and ' … an obstacle to teach well'. Internal consistencies were good in both samples ($\alpha_{SE} = .76$; $\alpha_{UNI} = .76$).

Third, bivariate correlations between the independent variables and teachers' professional well-being are displayed in Table 2 and (de)motivating teaching style in Table 3.

Main analyses

The results of the tests of measurement invariance are shown in Table 4. For the model estimated for teaching identity, teaching motivation, and personal outcomes (Model 1), as well as for the model for motivating teaching style (Model 2), it was found that constraining the factor loadings yielded a comparable (Model 1B: ΔCFI = .000) or even a better fit (Model 2B: ΔCFI = .007) to the data than the model without constraints (Model 1A and 2A). This indicates that the factor loadings in both models were generally invariant across SE and UNI teachers, meaning that the way in which the measured variables relate to the underlying latent factor is consistent across both SE and UNI teachers. Next, we estimated a model in which both the factor loadings and the indicator means in both groups were constrained. Results showed a comparable fit for the model estimated for identity, motivation, and personal outcomes (Model 1C: ΔCFI = −.002) but not for the model for the

Table 2. Correlations between teachers' professional identity, teaching motivation and professional well-being.

	1	2	3	4	5	6	7	8	M (UNI)	SD (UNI)
1. Teaching identity synthesis	–	−.04	.52***	−.21**	−.41***	.48***	−.31***	−.36***	3.96	.50
2. Ruminative exploration of teaching identity	−.06	–	−.06	.28***	.26***	−.30***	.17**	.39***	2.94	.76
3. Autonomous teaching motivation	.56***	−.06	–	−.00	−.47***	.50***	−.30***	−.29***	5.95	.71
4. Controlled teaching motivation	−.13*	.23***	−.02	–	.33***	−.21**	.29***	.34***	3.58	1.21
5. Amotivation to teach	−.39***	.28***	−.47***	.32***	–	−.44***	.43***	.38***	1.72	.88
6. Teaching satisfaction	.45***	−.31***	.49***	−.18**	−.46***	–	−.42***	−.34***	7.80	1.09
7. Intention to leave	−.35***	.19**	−.34***	.26***	.46***	−.44***	–	.46***	1.58	.73
8. Emotional exhaustion	−.39***	.36***	−.41***	.29***	.38***	−.38***	.46***	–	2.88	1.04
M (SE)	3.99	3.04	5.83	3.79	1.90	7.66	1.79	3.01		
SD (SE)	.48	.76	.76	1.18	.92	1.26	.88	1.16		

Note. Below the diagonal, the results are shown for SE teachers, and above the diagonal, those for UNI teachers. *$p < .05$, ** $p < .01$, ***$p < .001$.

Table 3. Correlations between teachers' professional identity, teaching motivation and (de)motivating teaching style.

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	M (UNI)	SD (UNI)
1. Teacher identity synthesis	—	-.04	.52***	-.21**	-.41***	.43***	.60***	.46***	.35***	-.18**	-.27***	-.40***	-.26***	.54***	.45***	-.25***	-.37***	3.96	.50
2. Ruminative exploration of teacher identity	-.06	—	-.06	.28***	.26***	-.12	-.16*	-.22**	-.13*	.14*	.19**	.26***	.19**	-.15*	-.19*	.19**	.26***	2.94	.76
3. Autonomous teaching motivation	.56***	-.06	—	-.00	-.47***	.29***	.48***	.51***	.44***	.07	-.06	-.37***	-.29***	.40***	.53***	-.01	-.38***	5.95	.71
4. Controlled teaching motivation	-.13*	.23***	-.02	—	.33***	-.15*	-.18*	-.10	-.02	.28***	.35***	.24***	.09	-.18**	-.07	.35***	.19**	3.58	1.21
5. Amotivation to teach	-.39***	.28***	-.47***	.32***	—	-.15*	-.37***	-.39***	-.34***	.17*	.32***	.54***	.37***	-.26***	-.41***	.28***	.52***	1.72	.88
Teaching approaches																			
6. Participative	.47***	-.13*	.34***	-.08	-.12*	—	.64***	.38***	.19**	-.22***	-.31***	-.34***	-.16*	.95***	.32***	-.30***	-.29***	4.40	.88
7. Attuning	.63***	-.13*	.55***	-.09	-.32***	.65***	—	.62***	.52***	-.18**	-.35***	-.53***	-.31***	.85***	.63***	-.30***	-.48***	5.61	.72
8. Guiding	.51***	-.21***	.54***	-.06	-.33***	.49***	.69***	—	.60***	-.06	-.17*	-.48***	-.34***	.52***	.89***	-.13*	-.47***	5.33	.68
9. Clarifying	.40***	-.11*	.50***	.00	-.32***	.24***	.57***	.61***	—	.16*	-.03	-.40***	-.44***	.34***	.90***	.05	-.47***	5.50	.71
10. Demanding	-.15**	.10	.07	.26***	.14*	-.18*	-.14*	-.05	.15**	—	.68***	.23***	.01	-.23***	.06	.89***	.14*	3.08	1.12
11. Domineering	-.28***	.17**	-.12*	.29***	.29***	-.28***	-.32***	-.22***	-.07	.68***	—	.46***	.16*	-.35***	-.11	.94***	.35***	2.14	.82
12. Abandoning	-.47***	.22***	-.49***	.14*	.47***	-.38***	-.60***	-.57***	-.47***	.21***	.48***	—	.56***	-.45***	-.49***	.39***	.89***	2.16	.77
13. Awaiting	-.27***	.16**	-.25***	.07	.35***	-.13*	.28***	.31***	-.39***	.04	.21***	.54***	—	-.24***	-.44***	.10	.88***	2.58	.73
Teaching styles																		4.92	.74
14. Autonomy support	.58***	-.14**	.46***	-.09	-.22***	.95***	.86***	.62***	.41***	-.18**	-.33***	-.51***	-.20***	—	.48***	-.33***	-.39***	5.42	.62
15. Structure	.51***	-.18**	.58***	-.03	-.36***	.41***	.70***	.90***	.90***	.05	-.17**	-.58***	-.38***	.57***	—	-.04	-.53***	2.48	.85
16. Control	-.24***	.15**	-.05	.31***	.24***	-.26***	-.27***	-.17**	.03	.89***	.94***	.40***	.15**	-.29***	.08	—	.28***	2.37	.66
17. Chaos	-.43***	.22***	-.43***	.12*	.47***	-.30***	-.52***	-.51***	-.49***	.15*	.40***	.89***	86.***	-.42***	-.56***	.32***	—		
M (SE)	3.99	3.04	5.83	3.79	1.90	4.16	5.66	5.80	5.29	3.23	2.44	2.26	2.93	5.29	5.50	2.90	2.54		
SD (SE)	.48	.76	.76	1.18	.92	1.15	.65	.69	.70	.92	.88	.72	1.10	.68	.63	.83	.74		

Note. Below the diagonal, the results are shown for SE teachers, and above the diagonal, those for UNI teachers. *$p < .05$, ** $p < .01$, *** $p < .001$.

Table 4. Test of measurement invariance between SE and UNI teachers.

	χ^2 (df)	CFI	RMSEA	SRMR	Model comparison	ΔCFI
Identity, motivation, personal outcomes						
Model 1A: without constraints	807.86 (262)	.883	.085	.077	–	–
Model 1B: factor loadings constrained	821.27 (274)	.883	.083	.084	1B vs. 1A	.000
Model 1C: factor loadings and intercepts constrained	844.79 (286)	.881	.082	.085	1C vs. 1A	−.002
Motivating teaching style						
Model 2A: without constraints	167.11 (28)	.916	.131	.064	–	–
Model 2B: factor loadings constrained	160.35 (32)	.923	.118	.068	2B vs. 2A	.007
Model 2C: factor loadings and intercepts constrained	331.70 (36)	.822	.168	.117	2C vs. 2A	−.096

motivating teaching styles (Model 2C: ΔCFI = −.096), meaning that for all but the teaching styles, SE and UNI teachers scored relatively equal on the indicators of identity, motivation, and the personal outcomes. Based on the above results, we selected Model 1C and Model 2B to proceed. Although both measurement models approached an acceptable fit, adding theoretically logical and substantiated error correlations could improve the fit considerably. That is, after adding an error correlation between exploration in breadth and in-depth and between two parcels of ruminative exploration, the fit of Model 1C was good ($\chi^2(282) = 696.41$, CFI = .91, RMSEA = .07, SRMR = .08). For model 2B, after adding one error-correlation between adjacent (i.e. clarifying and demanding approach) and one error-correlation between opposite facets of teaching styles (i.e. clarifying and awaiting approach) for the SE and UNI teachers, the fit was good ($\chi^2(31) = 96.70$, CFI = .96, RMSEA = .09, SRMR = .06).

To examine whether the latent means for teaching identity, teaching motivation, and the personal outcomes were different for the SE and UNI teachers (Research question 1), we compared the best-fitting measurement model where latent means were freely estimated with a constrained model in which latent means were set equal between the two groups. The results show significant differences between the latent means of SE and UNI teachers ($\Delta\chi^2 = 24.44^{**}$; $\Delta df = 7$). More specifically, UNI teachers scored significantly lower ($b = −.26$; $p < .001$) on teacher identity synthesis compared to SE teachers. The findings of a post-hoc independent samples T-test revealed that, in comparison to SE teachers, UNI teachers identify significantly less with their teaching role ($b = −.23$; $p < .01$).

Next, we constructed two distinct structural models: Model 3 investigated the relations among teaching identity, teaching motivation, and personal outcomes (Hypothesis 1, 3, 4), whereas Model 4 focused on the interplay between teaching identity, teaching motivation, and motivating teaching style (Hypothesis 2, 3, 4). We then compared a constrained and unconstrained version of both models to examine whether the structural relations would vary by level of education (Research question 1). Results are shown in Table 5. Both constrained models (Model 3B and 4B) differed

Table 5. Results of multiple group path analysis for the model of personal teacher outcomes and interpersonal teacher outcomes.

	χ^2 (df)	CFI	RMSEA	SRMR	Model comparison	χ^2 difference test
Personal teacher outcomes						
Model 3A: without constraints	40.06 (22)	0.992	0.054	0.051	–	–
Model 3B: fully constrained model	120.04 (53)	0.969	0.067	0.076	3B vs. 3A	$\Delta\chi^2 = 78.66^{***}$; $\Delta df = 31$
Model 3C: partially constrained model (MI)	79.49 (49)	0.986	0.047	0.068	3C vs. 3A	$\Delta\chi^2 = 40.05$; $\Delta df = 27$
Motivating teaching style						
Model 4A: without constraints	61.41 (30)	0.989	0.061	0.049	–	–
Model 4B: fully constrained model	130.04 (63)	0.976	0.061	0.065	4B vs. 4A	$\Delta\chi^2 = 68.57^{***}$; $\Delta df = 33$
Model 4C: partially constrained model (MI)	102.22 (60)	0.985	0.050	0.060	4C vs. 4A	$\Delta\chi^2 = 42.22$ $\Delta df = 30$

Note. In all constrained models, the coefficients of the background variables were estimated freely.

significantly from the unconstrained models (Model 3A and 4A), meaning that some structural relations between the study variables were different across SE and UNI teachers. To detect which structural paths differed significantly, starting from the constrained models and based on the modification indices, parameters were then allowed to vary between the SE and UNI teachers until the models did not differ significantly from the fully constrained model (Model 3C and 4C). Results of these structural models are displayed in Figure 2A–C (teachers' personal outcomes) and Figure 3A–D (teachers' motivating teaching style). Results for the test of indirect effects (Hypothesis 3) are displayed in Table 6. For teachers' personal outcomes, all but one direct association (i.e. from teaching identity synthesis to intention to leave) between teaching identity and the outcomes was significant. For teaching satisfaction, a positive indirect relation through autonomous motivation was found for teaching identity synthesis, whereas a negative indirect relation was found for ruminative exploration, but only for the SE teachers. For both intention to leave and emotional exhaustion, a negative indirect effect was observed for teaching identity synthesis through autonomous teaching motivation, controlled teaching motivation, and for intention to leave, also through amotivation to teach. The opposite was found for ruminative exploration of teaching identity, which was positively indirectly related to intention to leave and emotional exhaustion through controlled teaching motivation in both SE and UNI teachers and autonomous teaching motivation for SE teachers only. For intention to leave, an indirect relation with ruminative exploration through amotivation to teach was observed.

Considering teachers' motivating teaching style (Figure 3A–D and Table 6), results show that teacher identity synthesis related directly to a more motivating (autonomy support and structure) and less demotivating teaching style (control and, only for UNI teachers, chaos). No direct results were obtained for ruminative exploration. In terms of indirect effects, a positive indirect effect was present from teaching identity synthesis to autonomy support, control, and structure through autonomous teaching motivation. For control and chaos, a negative indirect relation was observed for teaching identity synthesis through amotivation to teach, whereas a positive indirect relation occurred for ruminative exploration of teaching identity through controlled teaching motivation and amotivation to teach. Lastly, teaching identity synthesis was negatively and indirectly related to control through controlled teaching motivation.

Discussion

Abundant research has supported the notion that, through their teaching style, teachers have a substantial impact on students' motivation and academic achievement (e.g. Aelterman et al. 2019). Considering the urgent need for highly motivating and enthusiastic teachers and the high turnover rates predicted by teacher burnout (Kelly and Northrop 2015; Perrone, Player, and Youngs 2019), teachers' professional well-being is an ongoing concern. Research examining factors that may serve as sources of teachers' personal and interpersonal functioning are therefore critical. The main aim of the current study was to examine, in a sample of SE and UNI teachers in service, whether and how their professional identity development was related to their teaching motivation, professional well-being, and their use of motivating and demotivating teaching styles. Additionally, we examined whether these associations could be generalized between these two groups.

Overall, the results show that teachers' work-related well-being relates to their sense of self as teachers, with teaching identity synthesis generally showing the strongest associations with teachers' well-being (Hypothesis 1). Specifically, when teachers have a well-explored and firmly grounded view of their teaching role, they experience more satisfaction with teaching and feel less exhausted during teaching. They are also less inclined to quit their teaching job. In contrast, when teachers keep dwelling on what kind of teacher they are or want to be, they experience less work-related well-being, as indexed by feeling drained from and less satisfied with teaching and considering quitting teaching. These results are in line with other research on professional identity development (Crocetti et al. 2014; Haibo et al., 2018; Marttinen, Dietrich, and Salmela-Aro 2016;
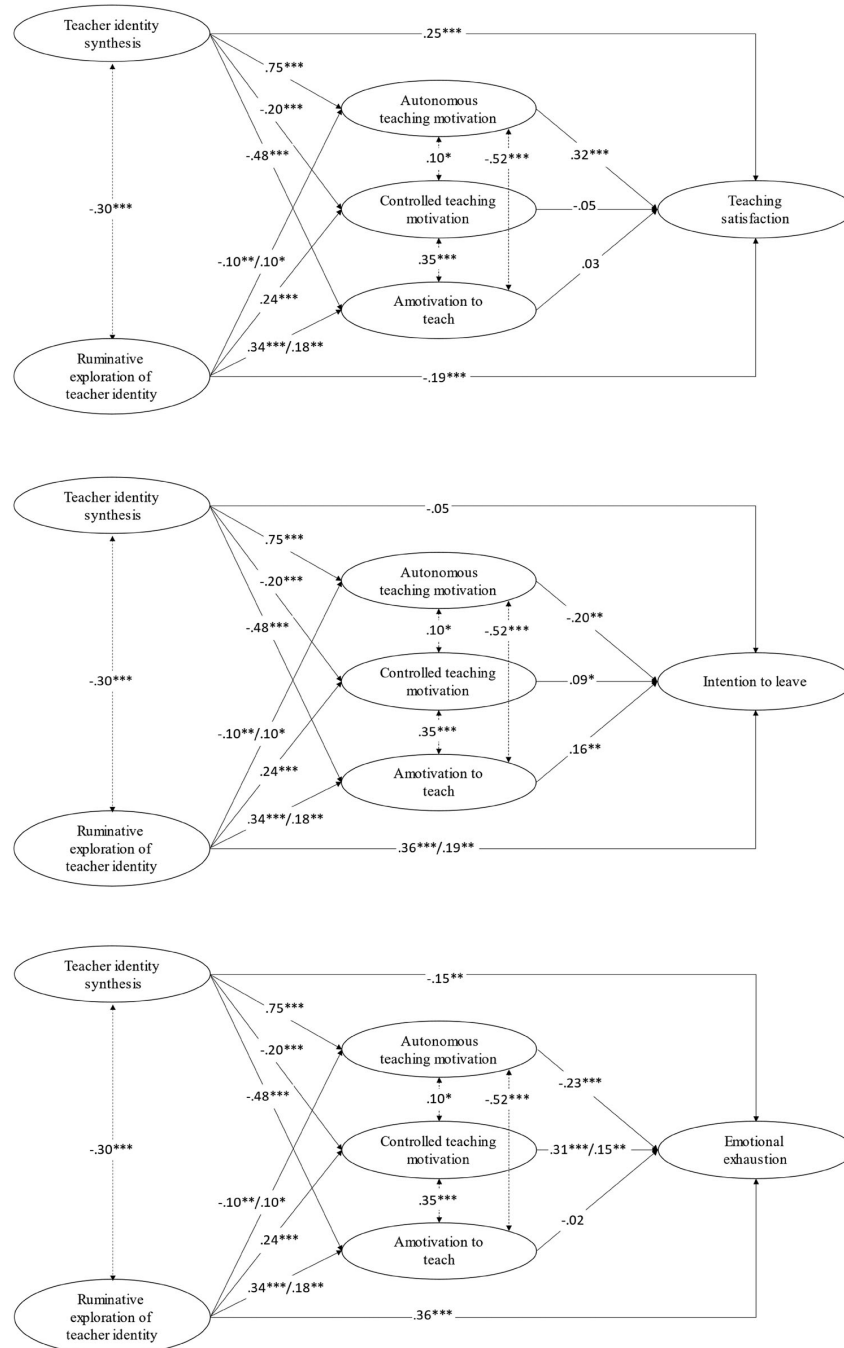
Figure 2. A–C. Graphical representation of the mediation model for professional identity, teaching motivation and personal teacher outcomes. The coefficients in the figures are standardized estimates. When paths significantly differ between SE and UNI teachers, the first coefficients refer to the model for SE teachers and the second refer to the model for UNI teachers. *p < .05; **p < .01; ***p < .001.
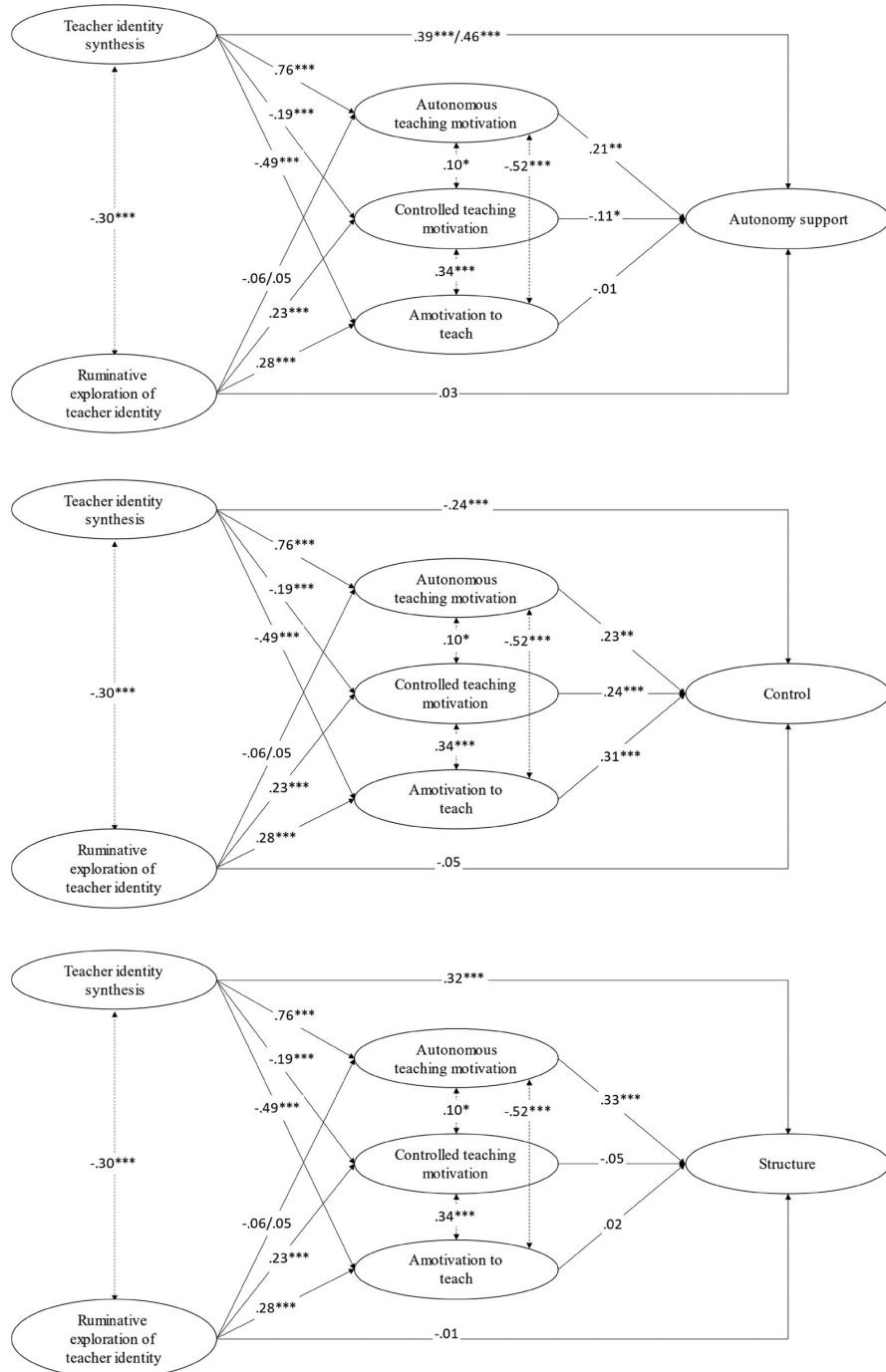
Figure 3. A–D. Graphical representation of the mediation model for professional identity, teaching motivation and motivating teaching style. The coefficients in the figures are standardized estimates. When paths significantly differ between SE and UNI teachers, the first coefficients refer to the model for SE teachers and the second refer to the model for UNI teachers. *$p < .05$; **$p < .01$; ***$p < .001$.
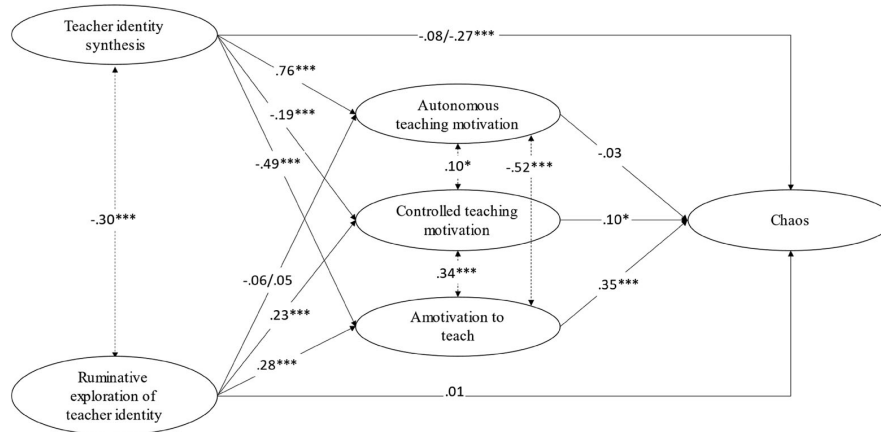
Figure 3 *Continued*

Wendling and Sagas 2022) and underscore the importance of exploring teachers' professional identity development when they report feeling exhausted or dissatisfied when teaching.

Apart from being associated with their well-being, teachers' sense of identity could also enable them to adopt a more motivating teaching style (Hypothesis 2). Indeed, teachers with a clear and well-reflected idea about their teaching role reported acting more autonomy supportive and

Table 6. Parameter estimates and 95% confidence intervals for the indirect effects.

		Teaching satisfaction	Intention to leave	Emotional exhaustion	Autonomy support	Control	Structure	Chaos
Teaching identity synthesis	Autonomous teaching motivation	.24*** [.16, .33]	−.15** [−.24, −.06]	−.18*** [−.26, −.09]	.16** [.06, .26]	.18** [.05, .30]	.25*** [.15, .34]	−.02 [−.14, .09]
	Controlling teaching motivation	.01 [−.00, .02]	−.02* [−.03, −.00]	−.06***/ −.03* [−.09, −.03] / [−.05, −.01]	.02* [.00, .04]	−.05** [−.07, −.02]	.01 [−.01, .03]	−.02 [−.04, .00]
	Amotivation to teach	−.02 [−.06, .03]	−.08** [−.13, −.02]	.01 [−.04, .05]	.00 [−.06, .06]	−.15*** [−.22, −.08]	−.01 [−.06, .04]	−.17*** [−.24, −.10]
Ruminative exploration of teaching identity	Autonomous teaching motivation	−.03*/.04 [−.06, −.01] / [−.00, .07]	.02*/−.02 [.00, .04] / [−.05, .00]	.02*/−.03 [.00, .04] / [−.06, .00]	−.01/.01 [−.03, .00] / [−.01, .03]	−.02/.01 [−.04, .01] / [−.01, .03]	−.02/.02 [−.04, .00] / [−.01, .05]	.00/−.00 [−.01, .01] / [−.01, .01]
	Controlling teaching motivation	−.01 [−.03, .01]	.02* [.00, .04]	.07***/ .03** [.04, .11] / [.01, .06]	−.03* [−.05, −.00]	.06** [.03, .09]	−.01 [−.03, .01]	.02* [.00, .05]
	Amotivation to teach	.01/.01 [−.02, .05] / [−.02, .03]	.05**/.03* [.02, .09] / [.00, .06]	−.01/−.00 [−.04, .03] / [−.03, .02]	−.00 [−.04, .03]	.09*** [.04, .13]	.01 [−.03, .04]	.10*** [.05, .14]

Note. When paths significantly differ between SE and UNI teachers, the test of indirect effects was separately run for both groups, with the first coefficients referring to the SE teachers, and the second to the UNI teachers.

structuring in the classroom. More specifically, the correlation analyses show the strongest link with the attuning approach, meaning they tend to empathize more with students' needs, interests, and concerns. In addition, teachers high on teaching identity synthesis appear to rely less on controlling or chaotic teaching strategies. Perhaps teachers with a clear sense of their teaching role are more prepared to cope with challenges that arise in the classroom, allowing them to adopt a more flexible and understanding attitude toward students and preventing them from using pressuring tactics. In contrast, when teachers feel lost or confused about who they are as teachers, they reported to adopt a less motivating and more demotivating teaching style. On the correlational level, ruminative exploration related the strongest to an abandoning approach, indicating that teachers high on rumination tend to give up on students and leave them to their own devices. Perhaps, teachers lacking a clear sense of direction and ruminating about their teaching role find it challenging to provide clarity and direction to their students, maybe because they are self-absorbed in their doubts, not able to pay attention to their students' needs. Future research could shed some light on this issue.

Besides examining the association between teaching identity and the outcomes, the current study aimed to uncover possible mechanisms underlying this relation (Hypothesis 3). Theoretically, one could expect teachers with a clear view of their teaching role to seek out or create classroom experiences that align well with their values and interests, thereby contributing to more autonomous teaching motivation (De Bloom et al. 2020; Wrzesniewski and Dutton 2001). Additionally, when confronted with challenges in the classroom (e.g. disruptions of students), they can rely on a firmly grounded foundation that might help them not lose sight of their professional values and drives, which could help them cope well with the situation, thereby maintaining their motivation. In line with this view, the results first show that teachers high on teaching identity synthesis experienced teaching as more joyful and meaningful while experiencing less pressure or amotivation to teach. This suggests that teachers who have a clear understanding of who they are as teacher are less reliant of external factors to be motivated to teach, perhaps because their teaching resonates well with their professional values and interests. In contrast, teachers scoring high on ruminative exploration experienced more amotivation to teach and saw teaching more as a duty they have to do. Perhaps, having a lack of professional direction might make them vulnerable for external directives, potentially even eroding their teaching motivation altogether. Contrary to our expectations, in the structural models, ruminative exploration was also slightly related to more autonomous teaching motivation in the UNI teachers' sample. However, this finding should be interpreted cautiously, given the zero-order bivariate correlation between these variables. Indeed, the non-significant relation could be artificially inflated due to the strong link between teaching identity synthesis and autonomous teaching motivation, leaving little variance to be explained. Although this strong association could suggest that autonomous teaching motivation is a part of teaching identity synthesis, the modest associations observed between teaching identity and controlled motivation and amotivation to teach suggest that teaching identity and teaching motivation represent separate constructs that are linked but not interchangeable.

Second, evidence for the intervening role of teaching motivation was obtained. For each addressed outcome, at least one indirect effect was observed, with more than half of the estimated indirect effects being significant. The most prominent and consistent indirect effects were generally obtained for autonomous teaching motivation, mediating the relation between teaching identity synthesis and all but a chaotic teaching style. Indeed, teachers with a clear teaching vision attach more value or pleasure to teaching, thereby experiencing more work-related well-being and adopting a more autonomy supportive and structuring teaching style. Perhaps, teachers who have undergone deep exploration and have made a strong commitment to a teaching identity are more likely to engage in teaching behaviors that they value and find intrinsically rewarding, Surprisingly, a small positive indirect effect also occurred for a controlling teaching style, with autonomous teaching motivation relating to more control. This finding was inconsistent with the bivariate correlations,

which showed no significant relation between both variables, indicating that this likely reflects a compensation effect that should not be interpreted substantively.

In addition to the observed indirect effects via teaching motivation, each assessed outcome was also directly related to teaching identity, suggesting that additional mechanisms may underlie the association between teaching identity and the outcomes. From an SDT perspective, motivation to teach predominantly taps into teachers' need for autonomy. Perhaps, teachers' need for competence or relatedness might provide additional pathways from teaching identity to teacher outcomes. Teachers' sense of self-efficacy, which closely relates to teachers' need for competence, is one candidate that could be fruitful in this regard (Hoy 2004). When teachers feel uncertain about their teaching role, they will most likely feel incapable of influencing their students' learning and engagement. The opposite holds for teachers with clear and well-reflected plans and goals in their teaching. Evidence in that context shows that teacher efficacy relates to more work-related well-being (Skaalvik and Skaalvik 2014) and a more motivating teaching style (Lauermann and Berger 2021), whereas in a sample of students (Hirschi, Jaensch, and Herrmann 2017) and teachers (Berger and Lê Van 2019) also being related to a stronger professional identity. Additionally, and in line with theories emphasizing the social dimension of professional identity development (Olsen 2015), teachers' felt connection with students, colleagues, and their principal might be another potential mediating mechanism. Theoretically, having a strong sense of their teaching identity could provide an energetic resource to engage with others and could activate a sense of belonging. Rumination, in contrast, would evoke a more inward tendency in which teachers find it difficult to connect with others, as they might feel somewhat isolated with their doubts. In turn, this experienced (lack of) need satisfaction would relate to teachers' intra- and intrapersonal functioning. Research in that regard showed that elementary teachers' relatedness satisfaction was associated with more work enthusiasm, whereas high school teachers' experienced relatedness satisfaction was associated with a more motivating style (Aldrup, Klusmann, and Lüdtke 2017). The opposite was true for experienced relatedness frustration, which related to a more domineering and abandoning approach (Moè, Consiglio, and Katz 2022). Research within the broader identity domain has shown how ruminative exploration related negatively to relatedness satisfaction, whereas identification showed the opposite pattern (Luyckx et al. 2009).

In sum, the present findings show that teachers' professional identity and teaching motivation serve a double role. That is, having a clear, well-reflected teaching identity and being autonomously motivated to teach might serve as a buffer for ill-being and the use of more demotivating teaching styles, as well as a source for feeling well and teaching in a motivating way in the classroom. On the other hand, experiencing teaching as a burden, either due to experienced pressure or amotivation, and having severe doubts about who they are as a teacher, seems to serve as a potential risk factor for ill-being and the use of more demotivating teaching styles, as well as an obstacle to experience satisfaction during teaching and adopting more motivating behavior when teaching. However, the study's results are inconclusive regarding whether teaching identity synthesis and ruminative exploration are respectively more strongly linked to positive or negative teacher outcomes (Hypothesis 4). This differs from Schwartz et al.'s (2011) proposed dual pathway model.

Interestingly, the observed associations between teachers' professional identity and teacher outcomes seem to hold in general for both SE and UNI teachers (Research question 1). Only a few differences were found in the structural paths between both groups. The differences that did occur show that, for SE teachers, ruminative exploration seems to be more strongly related to teaching amotivation and the intention to leave teaching altogether. Perhaps, worrying about which direction to take as a teacher is potentially more harmful to SE teachers, as it is their primary activity in school, compared to UNI teachers. In addition, experiencing internal and external pressure to teach well coincided more strongly with feelings of emotional exhaustion in SE teachers. That might be because, compared to UNI teachers, SE teachers have to handle a substantial additional administrative workload that comes along with teaching (Kim 2019; Pelletier and Sharp 2009), such as documenting how the curricula are being met and developing and grading multiple assignments

throughout the year. Important to note in that respect is that we found that more experienced SE teachers are less autonomously motivated to teach and experience more controlled teaching motivation, amotivation to teach, and exhaustion. Apparently, having more experience does not protect teachers from adversity.

Regarding mean-level differences, UNI teachers have a less firmly grounded view of their teaching role than SE teachers, which specifically pertains to their identification with commitment. This suggests that UNI teachers may feel less aligned with their teaching role in terms of how it resonates with their personal interests and values. It implies that aspects such as feeling confident in their teaching approach, being secure in their identity as teachers, and feeling that their teaching choices genuinely reflect their personal convictions, are less pronounced among UNI teachers. This lower degree of personal and professional congruence that UNI teachers feel in their role may be due to the multitude of tasks UNI teachers have apart from teaching, making teaching only one part of their professional identity. In that regard, some research has been performed on one's so-called research identity (Castelló et al. 2021) and the identity tension and fragmentation that could arise from the substantially different tasks UNI teachers perform (Dugas et al. 2020).

Although the estimated models explained a significant amount of variance in both the personal ($.39 < R^2 < .57$) and interpersonal ($.22 < R^2 < .44$) teacher outcomes, a substantial amount of variance could not be accounted for by teaching identity and motivation to teach alone. One valuable concept to include in future research is how teachers identify with the school where they work. Although often aligning well with teachers' professional identity (Gúerreiro Figúeira, Pereira do Nascimento, and Guita de Almeida 2015), one may have a clear view of and commitment to their teaching role while experiencing at the same time a disconnection with the broader organization they work in, thereby potentially mitigating the effects of a teaching identity. In that vein, examining organizational commitment independently and in interaction with teaching identity in predicting teacher outcomes could be a fruitful avenue. Previous research has shown in that regard how organizational commitment relates to teachers' well-being (Ford et al. 2019) and teacher performance (Van Waeyenberg, Peccei, and Decramer 2022).

Another promising area for future research is to explore the process of building a teaching identity (through exploration and commitment) in relation to the content (i.e. teaching goals, values, and beliefs) and the motives (i.e. autonomous or controlled) behind committing to a certain identity. Theoretically, it is possible that a teacher with a structurally well-established identity may be committed to less desirable contents such as teacher-centered (or even authoritarian) teaching beliefs and extrinsic or highly performance oriented teaching goals (e.g. high grades or social status and recognition as a teacher). Research has shown that teachers who prioritize extrinsic teaching goals exhibit more controlling behavior in the classroom, as reported by both students and the teacher. Conversely, teachers who prioritize intrinsic goals such as personal growth for their students tend to be more autonomy-supportive, as reported by both students and teachers (Jang 2019). However, it remains unclear whether teachers can have a clear and well-explored identity centered around extrinsic teaching values and whether such an identity would be equally contributing to teachers' motivating teaching behavior as a similarly strong teaching identity centered around intrinsic values.

In addition, although teachers may have a clear identity focused on extrinsic goals, it is less likely that they adopt those goals for truly self-endorsed (i.e. fully autonomous) motives. Teachers' motives behind committing to a certain identity (i.e. the why of their identity) can indeed be more controlling (pressuring) or more autonomous (volitional) in nature, reflecting the level of authenticity and internalization of the chosen identity. For example, after a thorough process of exploration, a teacher might commit to focusing on students' performance and grades (extrinsic content). However, the teacher may have adopted that belief because he feels that is what is demanded of him or because he would feel guilty or a bad teacher when he would not try to achieve this goal (pressured motive). The commitment to his teaching identity is then considered less internalized and, therefore, less deeply anchored. An important assumption of SDT is that the autonomous regulation of identity choices would generally result in better outcomes in terms of adjustment, well-being, and

performance than controlled regulated identity choices, a premise that has been corroborated by research (e.g. Meens et al. 2018; Soenens et al., 2011; Waterman et al., 2013; Yu et al. 2018). What is yet to be determined is whether a teaching identity centered around extrinsic values can be internalized as deeply as an identity centered around intrinsic values.

Limitations

The present study has a number of limitations that should be acknowledged. First, the study was cross-sectional, so it is impossible to determine the true direction of effects. Although the study is based on Erikson's well-established theory (1968) stating that identity development affects personal and interpersonal functioning, the opposite may also be true. For example, when teachers use demotivating teaching styles, students may become disengaged (Jang, Kim, and Reeve 2016), eventually leading to teacher self-doubt and amotivation to teach. Consistent with this reciprocal view, Fadjukoff and colleagues (2016) observed low professional identity stability and an adaptive trend towards a well-explored and committed vocational identity over 23 years. Indeed, although building a well-explored and strongly founded teaching identity without lapsing into ruminative exploration starts when enrolled in a teacher education program (Thomas and Beauchamp 2007), after entering the workforce, professional identity continues to evolve as a result of experience and reflection, leading to a reevaluation of commitments (Flores and Day 2006). Therefore, future research should examine reciprocal relations between teachers' (inter)personal functioning and changes in professional identity. In doing so, it is recommended that such research incorporates a formal and a priori power analysis, in which the findings obtained in the present study could serve as a point of reference for the estimation of effect sizes.

A second shortcoming is that our sample was self-selected, meaning that teachers voluntarily went to the website and, when interested, filled in the questionnaire. This potentially lead to an overrepresentation of well-motivated teachers who felt confident in their teaching role. Third, all included measures were self-reports, possibly inducing shared method variance. Although using self-reports is the most suitable way to address teachers' professional identity, motivation, and well-being, using student- and observer reports of (de)motivating teaching behavior would be helpful in future research.

Fourth, although the way we measured teachers' teaching identities is conceptually grounded in the well-established framework of Luyckx et al. (2006; 2008a), we used a composite score for teaching identity synthesis, which potentially oversimplifies the nuanced aspects of identity formation. Future research would do well to examine all teaching identity dimensions in isolation, allowing for a more detailed analysis of the complex interplay between various elements of teachers' identity formation and evaluation and their effect on teachers' professional lives.

Practical implications

The results of the present study highlight that educational leaders do well to target teachers' professional identity development, which is, independently and through teaching motivation closely tied to their personal and interpersonal functioning. One way to achieve this is by encouraging teachers to reflect about their own teaching role during performance interviews or coaching sessions. Drawing from research on adolescent identity development, Assor et al. (2020) have identified specific parental behaviors that could be adapted to promote teachers' professional identity development. Similarly, interventions that emphasize value-affirmation (Cohen and Sherman 2014) self-construction, and self-discovery (Schwartz, Kurtines, and Montgomery 2005) could help teachers to align closer with their values, goals and interests within their teaching role.

Besides this direct approach, educational stakeholders can also indirectly support teachers' professional identity development by providing a work environment that supports teachers' basic psychological need for autonomy, competence, and relatedness. By doing that, we can make two friends with one gift since experienced need satisfaction in the workplace has been found to predict a more

autonomous work motivation, work-related well-being (Vermote et al. 2023), a more motivating teaching style (Moè, Consiglio, and Katz 2022; Vermote et al. 2023), as well as a more thorough reflected general (Luyckx et al. 2009) and vocational (Weigold et al. 2021) identity. Indeed, a systematic review by Van Lankveld and colleagues (2017) reported that feeling connected to colleagues and students, being appreciated, and feeling competent could facilitate teacher identity development.

Conclusion

Overall, the present study underscores the importance and relevance of teachers' professional identity, by demonstrating that the extent to which teachers have a well-founded view on who they are as a teacher coincides not only with how teachers feel with regards to teaching, but also with how they act in the classroom. The findings also suggest that teachers' quality of motivation to teach underlie these associations. Most consistently, the results show that when teachers have a clear view on their goals, plans and interests as a teacher, they experience teaching more as a valuable and even pleasant activity, which is tied with feeling less drained and more satisfied during teaching, and thinking less about pursuing other career opportunities. These teachers not only feel better when teaching, they also act in a more motivating and less controlling way. In contrast, worrying and brooding about their teaching role coincided with vulnerability for feeling pressured or amotivated to teach, experiencing ill-being and adopting a less motivating and more demotivating teaching style. These findings call for interventions targeting teachers who feel in doubt about their teaching role, in order to support their professional identity development and to enhance their motivation to teach.

Disclosure statement

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

ORCID

Branko Vermote   http://orcid.org/0000-0002-5444-2694
Maarten Vansteenkiste   http://orcid.org/0000-0001-6983-3607
Bart Soenens   http://orcid.org/0000-0003-1581-3656
Wim Beyers   http://orcid.org/0000-0003-4721-0251

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