



## Review

# From teacher motivation to teaching behaviour: A systematic review and theoretical framework of the mediating processes

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## ABSTRACT

Teacher motivation plays a key role in achieving a high instructional quality. However, there is a clear need for more detailed research on the underlying mechanisms that link teacher motivation to high-quality instruction. In this systematic literature review, we synthesize existing empirical work examining the intrapersonal processes mediating the relations between teacher motivation and teaching behaviour. Our review includes empirical work referring to core teacher motivation theories (social cognitive theory, situated expectancy-value theory, self-determination theory, and achievement goal theory). Following PRISMA guidelines, literature research in PsycINFO, Web of Science, and Scopus yielded an initial sample of 1607 records. After screening all records, 16 studies remained as eligible. Results of the review show that mediational processes between teacher motivation and teaching behaviour have not yet been addressed sufficiently. Studies focus more on teachers' self-efficacy and goals and the processes linking these to teaching behaviours rather than on teachers' value beliefs. Based on this review, we propose a heuristic model explaining how and why different components of teacher motivation relate to specific teaching behaviours. This model and the underlying findings are of practical relevance, as they indicate that teachers' self-efficacy and goals foster important cognitive (e.g., setting of evaluation standards), emotional (e.g., experience of certain emotions), and behavioural (e.g., engagement) processes relating to teaching behaviour. This implies that teacher education and training should focus simultaneously on these processes and the underlying competence beliefs and goals to enhance teaching quality.

## 1. Introduction

Teacher motivation is theoretically ascribed a key role in achieving a high instructional quality and subsequently in students' academic motivation, emotion, cognition, and achievement (Fives & Buehl, 2016; Lauermann & Butler, 2021; Watt & Richardson, 2014). Empirically, however, the picture is more complex—depending, for example, on the specific aspects of teacher motivation and instructional quality—resulting in a clear need for more detailed research on the underlying mechanisms articulated in prior reviews (e.g., Lauermann & Butler, 2021). Previous work on teacher motivation based on social cognitive theories has underscored the basic notion that certain teaching behaviours mediate the links between teacher motivation and student outcomes (Daumiller et al., 2022;

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Lauermann & ten Hagen, 2021; Lazarides & Schiefele, 2021; Zee & Koomen, 2016). Referring to that research tradition, teacher motivation can be defined as a multifaceted set of constructs ('components') pertaining to teachers' will, desire, or drive to engage in teaching (Fives & Buehl, 2016). In addition, we understand teachers' instructional behaviour (or teaching behaviours, both terms are used here synonymously) as an organized set of practices that interact and combine with each other, thereby fostering, in particular, students' motivation to learn and their acquisition of skills and knowledge (Brophy, 2000; Ryans, 1967). The relations between teacher motivation, teaching behaviours, and student outcomes have been increasingly researched in the last two decades (for overviews, see Fives & Buehl, 2016; Lazarides & Schiefele, 2021; Richardson et al., 2014). Although it has been shown that teacher motivation matters on a fundamental level for teaching behaviours, differentiated and systematic evidence demonstrating the effects of the various aspects of teacher motivation on relevant teaching behaviours is still lacking. Particularly, a systematic review of the processes explaining *why* certain components of teacher motivation lead to certain teaching behaviours is currently missing (Lauermann & Butler, 2021). Therefore, we provide such a review here to synthesize existing work examining the intrapersonal processes mediating the relations between teacher motivation and teaching behaviour. To approach this objective, we first present important teacher motivation theories selected for the review and, second, consider the theoretical assumptions underlying the mediating processes through which teacher motivation might affect teaching behaviour. Thirdly, we systematically review empirical research examining relevant mediating processes. Finally, we propose a heuristic framework for identifying processes that explain links between teachers' motivation and teaching behaviours. Along with this framework, we suggest directions for future research.

### 1.1. Core theories on teacher motivation

In our review, we focus on four core theories of motivation to derive assumptions regarding the nature of the processes potentially mediating between teacher motivation and instructional behaviours, namely social cognitive theory (SCT; Bandura, 1986; Bandura, 1997), situated expectancy-value theory (SEVT; Eccles & Wigfield, 2020), self-determination theory (SDT; Deci & Ryan, 2002), and achievement goal theory (AGT; Ames & Archer, 1988; Elliott & Dweck, 1988). We selected these theories because they were the first to be adapted to teacher motivation and are closely related to the development of theorizing on teacher motivation (Watt & Richardson, 2015a). Research on teacher motivation based on these theories has significantly expanded since the early 2000s, as documented in several literature reviews (e.g., Bardach & Klassen, 2021; Daumiller et al., 2022; Kunter & Holzberger, 2014; Lauermann & Butler, 2021; Watt & Richardson, 2015b). Existing reviews and meta-analyses reveal substantial effects of different teacher motivation constructs on teaching behaviours and student outcomes. The following are some examples.

- (1) Regarding SCT, previous meta-analyses suggest that teacher self-efficacy is positively related to students' academic achievement, with small effect sizes (Kim & Seo, 2018:  $r = .07$  in high school,  $r = .18$  in middle school; Klassen & Tze, 2014:  $r = .12$ ). In their review, Lauermann and ten Hagen (2021) revealed positive relations between teachers' competence beliefs and their self-reported and externally evaluated teaching quality. However, the authors reported mixed evidence for relations between teachers' competence beliefs and student-reported teaching quality and academic outcomes.
- (2) Based on SEVT, previous reviews revealed that (beginning) teachers' competence beliefs and their intrinsic and social utility values predict later professional engagement, commitment, and planned persistence in their profession, as well as a positive self-reported teaching style (Richardson & Watt, 2016). In addition, teachers' educational interest (defined as a value component) was found to be positively correlated with classroom management and mastery-oriented instruction (Bardach & Klassen, 2021).
- (3) Meta-analytic evidence regarding SDT-based teacher motivation constructs showed that teachers' autonomous motivation appears to be particularly important for motivation-enhancing teaching behaviours ( $\rho = .31$ , Slemp et al., 2020). In addition, the review by Bardach and Klassen (2021) reported consistent evidence for the role of teachers' instructional behaviours as mediators of the relation between teachers' autonomous motivation and students' autonomous motivation, although the authors emphasized that all reviewed studies were cross-sectional, limiting the validity of the mediational findings.
- (4) Prior reviews of the effects of AGT-based teacher motivation constructs emphasized the importance of teachers' mastery and performance goals for different instructional behaviours (Butler, 2014; Daumiller et al., 2022). In their review, Han and Gao (2023) found that different achievement goal orientations significantly predicted teachers' instructional practices and were relevant for students' motivation and learning outcomes—however, the review did not address the mediation of effects from teacher goals to student outcomes through instructional practices.

Taken together, previous reviews show substantial effects of teacher motivation on teaching behaviour and student outcomes, which are on average small to moderate. However, these reviews do not refer to underlying processes mediating the relations between teacher motivation and teaching behaviour. Reviews of such processes are essential for a better understanding of, and for empirical investigations on, how and why different components of teacher motivation relate to specific teaching behaviours.

### 1.2. Teacher motivation and teaching behaviour: underlying intrapersonal processes

In line with general theories of motivation (Eccles & Wigfield, 2002; Heckhausen, 2020; Heckhausen & Heckhausen, 2018), it can be assumed that individuals' motivation affects their choice of activities and tasks, how intensely they work on tasks, how much they enjoy doing so, how likely they are to persist in the face of difficulties, and which goals they set for themselves. Applied to the teaching profession, teacher motivation can thus be expected to influence processes involving teachers' instructional choices, the intensity and

effort with which they prepare their teaching and persist in the face of difficulties, their enjoyment of teaching, and their goal-setting processes with respect to classroom instruction. In the next sections, we introduce core assumptions about such processes derived from the four major motivation theories mentioned earlier.

### 1.2.1. Social cognitive theory

According to SCT (Bandura, 1986, 1997), high levels of self-efficacy enhance individuals' willingness to engage in activities that foster successful task performance, such as setting goals, monitoring goal progress, or creating effective learning environments (Schunk & DiBenedetto, 2020). The assumptions of SCT have been applied to the teacher profession by suggesting preconditions and consequences of teacher self-efficacy (TSE). TSE refers to teachers' beliefs about their ability to organize and execute the actions required to successfully accomplish teaching tasks in various situations, even under challenging or unexpected circumstances (Klassen et al., 2009; Lazarides & Warner, 2020; Tschannen-Moran et al., 1998). In their model of the cyclical nature of teacher efficacy, Tschannen-Moran et al. (1998) propose that highly self-efficacious teachers set themselves realistic and achievable teaching-related goals and are willing to invest effort and to persist in achieving certain teaching-related goals even when facing difficulties. Thus, highly self-efficacious teachers should be particularly able to analyse teaching tasks in relation to their own competencies and pursue realistic goals, which in turn facilitate high-quality instruction (Ross, 1998). Further, SCT implies that teachers with high self-efficacy for teaching attribute their teaching success to their own abilities, hold positive attitudes towards teaching, and put forth greater effort towards providing high teaching quality. Taken together, SCT proposes that TSE affects teaching-related goal setting, the level of effort and persistence that teachers invest in teaching situations, and their attitudes towards teaching (e.g., teaching as a valuable and meaningful activity).

### 1.2.2. Situated expectancy-value theory

SEVT (Eccles & Wigfield, 2020) posits that individuals' motivation, achievement choices, and performances are influenced directly by their subjective task values and success expectancies, which are themselves affected by their self-schemata, long- and short-term goals, and prior achievement experiences—which again in turn depend on cultural factors and related socialization processes. Subjective task values refer to the enjoyment of task-related activities (intrinsic value), the personal importance of a task (attainment value), the importance of a task for one's short- and long-term goals (utility value), and the perceived psychological costs of task engagement (cost). Success expectancies are individuals' beliefs about how well they will do on an upcoming task. Research has transferred the assumptions of SEVT to the teacher profession by focusing on the role of teachers' expectancies and values in their decision to choose teaching as a career (Richardson & Watt, 2018; Watt & Richardson, 2014) and by showing that teachers' value beliefs affect their students' value beliefs through certain types of instruction (Dicke et al., 2021; Lazarides et al., 2023; Parrisius et al., 2020). An important mediation process involved in the relation between teachers' value-based motivation and their teaching quality has been proposed by Kunter & Holzberger (2014). These authors suggest that value-related components of teacher motivation, such as enthusiasm about teaching, enable teachers to be more attentive to students in teaching situations, which in turn fosters their teaching performance. Moreover, it may be assumed that certain components of teacher motivation are associated with positive emotions of the teacher (Burić et al., 2020), and that teachers' positive emotions, in turn, influence the choice or execution of instructional practices, or more concretely, of enthusiastic teaching (Frenzel et al., 2009; Frenzel et al., 2018). As such, experiencing certain emotions might represent a mediating instance in the relation between teacher motivation and teaching performance.

### 1.2.3. Self-determination theory

SDT (Deci & Ryan, 1985, 2022) assumes that the motivation and behaviours of individuals are influenced by the fulfilment of basic psychological needs for autonomy, competence, and social relatedness. Accordingly, the motivation of individuals can be differentiated into six types ranging from amotivation (no self-determination) to intrinsic motivation (highest level of self-determination). These types of motivation are theorized to affect the experience of task-related interest, mastery, accomplishment, commitment, and enjoyment (Ryan & Deci, 2000a). SDT was adapted by several authors (e.g., Fernet et al., 2008; Roth et al., 2007) to the context of teaching, and teachers' self-determined (autonomous) motivation was found to be closely related to the experience of personal accomplishment (i.e., fully realizing one's abilities while teaching; Roth, 2014; Roth et al., 2007). Roth (2014) suggests two different intrapersonal processes through which teachers' autonomous motivation might affect their teaching practices: first, autonomously motivated teachers understand the value of the subjects they teach more deeply, which enables them to provide their students with persuasive explanations and a wider range of choices. Second, autonomously motivated teachers possess greater resilience in the face of pressures related to student performance, and attribute more importance to the goal of promoting students' deep understanding of lesson content, which is why these teachers allot more time to explaining the relevance of the lesson content.

### 1.2.4. Achievement goal theory

AGT (Ames & Archer, 1988; Elliott & Dweck, 1988) presumes that individuals' goals in achievement situations influence how they define success, how they engage in tasks or activities, how they emotionally experience task involvement, and thus how well they learn (Ames & Archer, 1988; Linnenbrink & Pintrich, 2002). Initially, goal theorists distinguished between mastery goals (fulfilling task-based requirements and developing personal competence) and performance goals (focused on one's own performance relative to others and as perceived by others). Later, these goals were differentiated along a valence dimension, splitting into approach goals (striving to achieve desired states) and avoidance goals (striving to avoid undesired states; see Elliot & Harackiewicz, 1996; Middleton & Midgley, 1997). Referring to research on teachers and teaching, Butler (2007) and other authors (e.g., Daumiller et al., 2022; Retelsdorf & Günther, 2011; Watt et al., 2021) typically distinguish at least between teachers' mastery, performance approach,

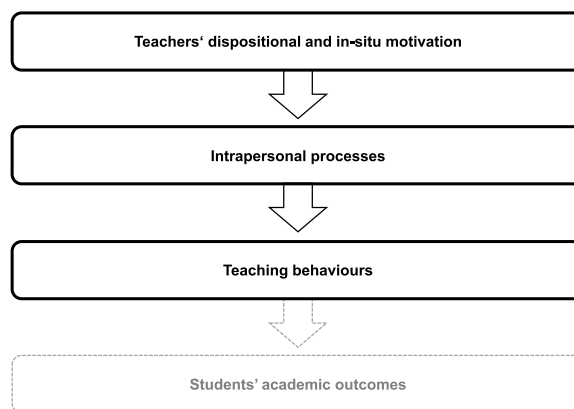
performance avoidance, and work-avoidance goals (striving to minimize effort). Moreover, [Butler \(2012\)](#) has suggested relational goals, which denote teachers' striving to establish caring personal relationships with students. It can be assumed that these self-directed teacher goals elicit different intrapersonal processes in teachers, which are posited to influence teachers' instructional practices. For example, a mastery-oriented teacher probably attributes student help-seeking to students' quest for knowledge and therefore reacts positively to students' questions in class. Such a teacher would also likely apply an individual reference norm orientation (also referred to as a temporal reference norm) by evaluating students' performance in light of their previous achievements ([Butler, 2014](#)). Conversely, a performance-avoidance-oriented teacher might attribute students' help-seeking to their lack of ability and would therefore react differently towards students' questions or requests for help. This teacher likely follows a social reference norm orientation by evaluating a student's performance against the performance of other students (social comparison; [Butler, 2014](#)). Following up on these processes, [Daumiller et al. \(2022\)](#) argued that the goals that teachers hold for their students serve as a preceding mediator that possibly transmits teachers' personal achievement goals (e.g., mastery) to their actual mastery or performance practices. Specifically, it was argued that student-directed goals orient the teacher towards aligned teaching practices; for example, student-oriented mastery goals (e.g., teachers holding the goal that their students continue to learn and improve) should lead to mastery-based teaching practices (e.g., providing students with choices and clear explanations, creating a constructive climate for dealing with errors or wrong answers).

### 1.3. The present review

As outlined earlier, although previous reviews exist on the effects of teachers' motivation in general, there is no comparable review of studies addressing the processes linking teacher motivation to teaching behaviour. Such a review, however, would be needed to examine whether and to what extent the theoretical assumptions described in the preceding section can be empirically confirmed. Therefore, we collected and surveyed studies on the potential processes mediating the effects of teachers' motivation on their instructional behaviour. These studies were roughly allocated to the four theoretical frameworks outlined above (SCT, SEVT, SDT, AGT). Our review focuses on the question of how trait-like teacher motivation constructs embedded in these four core theories relate to situation-specific teacher motivation, how both trait-like and situation-specific motivation are related to subsequent intrapersonal processes (e.g., attention allocation, attitudes, effort and persistence, goal setting), and how these processes shape teaching behaviours. The assumption that trait-like motivations manifest in situational motivations and then guide and maintain situation-specific processes is derived from general theories of motivation ([Eccles & Wigfield, 2002](#); [Heckhausen, 2020](#); [Heckhausen & Heckhausen, 2018](#)). According to these general theories, an individual's characteristics always interact with the characteristics of a specific situation. This interaction guides intrapersonal processes including the choice of activities and tasks, the intensity with which individuals work on their tasks, and the goals they set for themselves. The conceptual model guiding our review is depicted in [Fig. 1](#). Although we were focusing on situation-specific processes at a conceptual level, we did not limit our literature synthesis to studies that examined such processes at the situational level. As our main research question, we examined the empirical evidence regarding intrapersonal processes underlying the relation between teacher motivation and teaching behaviour.

## 2. Method

As the first step of the present analysis, we implemented quality criteria as defined in the Preferred Reporting Items for Systematic Reviews and Meta-Analyses statement (PRISMA; [Moher et al., 2009](#); [Page et al., 2021](#)). Our adoption of the PRISMA-guided procedure of identification, selection, and evaluation of relevant studies is depicted in [Fig. 2](#).



**Fig. 1.** Schematic framework for identifying processes mediating the relations between teacher motivation, teaching behaviours, and student outcomes.

## 2.1. Eligibility criteria

A full list of the eligibility criteria used in the present review is provided in Table 1. We conducted title and abstract screening as well as full-text screening to include only studies that claimed to examine internal cognitive, affective, or behavioural processes of the individual explaining the effects of teacher motivation on teaching behaviour. Studies were excluded if they did not contain variables for teacher motivation, teaching behaviour, or an internal process explaining those relations. We specifically excluded studies that did not tap into sensible internal processes involved in the motivation-behaviour relation. For example, Li (2021) examined “perceived school climate” as a mediator between teacher self-efficacy and teaching behaviour. Perceived school climate hardly represents a process influenced by teacher motivation and is therefore unlikely to act as a mediator in this context. The exclusion of mediators that do not focus on internal processes of teachers improved the focus of our review by ensuring that the included studies accurately addressed our research question, which pertained to the underlying intrapersonal processes involved in the link between teacher motivation and teaching behaviours. We further excluded studies that focused on a different order of variables (e.g., teaching behaviours predicting process variables and process variables affecting teacher motivation). In addition, review articles were not considered. Finally, all studies were required to have full-text English results, use appropriate statistical analyses, and present original empirical research carried out in authentic K-12 classrooms with in-service teachers.

## 2.2. Search strategy

In line with previous reviews on teacher motivation (Bardach & Klassen, 2021), the search for literature was conducted through PsycINFO, Web of Science (WoS), and Scopus. The search strategy addressed a variety of terms or concepts that tapped into the four theories we focused on (SCT, SEVT, SDT, AGT) as well as related teacher motivation constructs, such as competence beliefs or efficacy for SCT and value or enthusiasm for SEVT (see search string below). We used the following search strings.

### 2.2.1. Web of science

TI=(teach × OR instructor\*) AND TI=(competen × OR effic × OR confid × OR “self-concept\*” OR attribut × OR locus × control\* OR expectanc × OR EVT OR “expectancy-value theory” OR SEVT OR “situated-expectancy-value theory” OR SDT OR “self-determination theory” OR motivati × OR valu × OR intrinsic × OR attain × OR utilit × OR cost × OR interest × OR valence × OR enthusias × OR goal\*) AND TS=(mediat × OR “indirect\*” OR “transmissive mechanism”) NOT TI=(medic × OR hospit × OR nurs × OR clinic × OR adhs × OR autism × OR disabilit × OR universit\*)

### 2.2.2. PsycINFO

TI (teach × OR instructor\*) AND TI (competen × OR effic × OR confid × OR “self-concept\*” OR attribut × OR locus × control\* OR expectanc × OR EVT OR “expectancy-value theory” OR SEVT OR “situated expectancy-value theory” OR SDT OR “self-determination

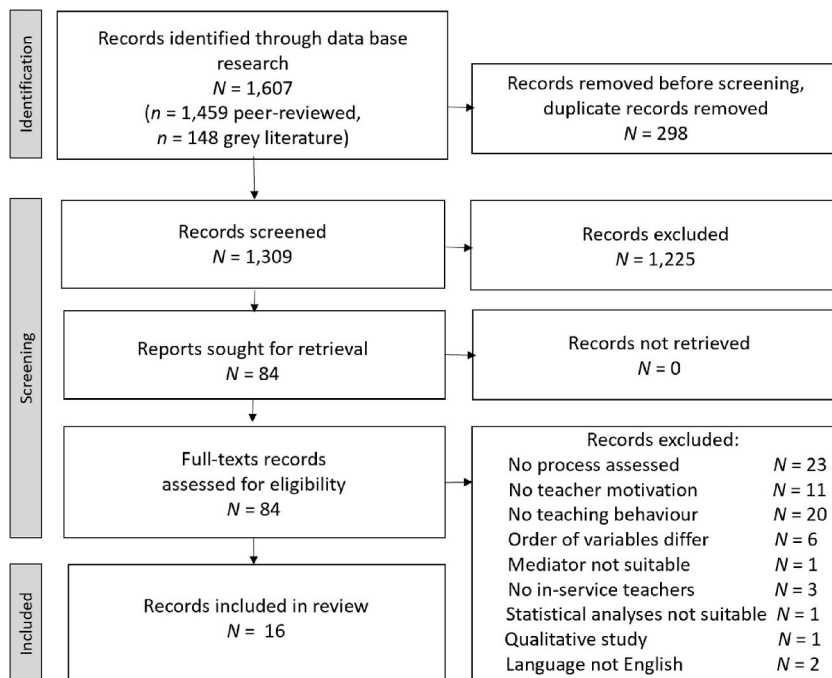


Fig. 2. Flow chart of included and excluded records.

**Table 1**  
Inclusion and exclusion criteria.

Category	Inclusion Criteria	Exclusion Criteria
<i>Title and Abstract Screening</i>		
Language of title and abstract	English	Other than English
Methodology	Quantitative	Qualitative (e.g., interviews, case studies)
Type	Original empirical study	(Systematic) review, meta-analysis, theoretical article
Educational context	Authentic K-12 classrooms	Other than K-12 classrooms teachers (e.g., university, kindergarten)
Sample	In-service teachers	Other than in-service teachers (e.g., pre-service teachers)
Design	Study in authentic classrooms	Other than authentic classrooms (e.g., experimental setting)
Research interest	Teacher motivation component mentioned	No teacher motivation component mentioned in title or abstract
<i>Full Text Screening</i>		
Language of manuscript	English	Other than English
Methodology	Quantitative	Qualitative (e.g., interviews, case studies)
Educational context	Authentic K-12 classrooms	Other than K-12 classrooms teachers (e.g., university, kindergarten)
Sample	In-service teachers	Other than in-service teachers (e.g., pre-service teachers)
Design	Study in authentic classrooms	Other than authentic classrooms (e.g., experimental setting)
Measures/Research interest	Includes measure of teacher motivation	No measure of teacher motivation included
	Includes measure of teaching behaviours	No measure of teaching behaviour included
	Includes measure of cognitive, affective or behavioural processes of the teacher explaining links between teacher motivation and teaching behaviours	No measure of cognitive, affective or behavioural processes of the teacher explaining links between teacher motivation and teaching behaviours

theory' OR motivati × OR valu × OR intrinsic × OR attain × OR utilit × OR cost × OR interest × OR valence × OR enthusias × OR goal\*) AND AB (mediat × OR "indirect\*" OR "transmissive mechanism') NOT TI (medic × OR hospit × OR nurs × OR clinic × OR adhs × OR autis × OR disabilit × OR universit\*)

### 2.2.3. Scopus

(TITLE (teach × OR instructor\*) AND TITLE (competen × OR effic × OR confid × OR "self-concept\*" OR attribut × OR locus × AND control × OR expectanc × OR evt OR "expectancy-value theory' OR sevt OR "situated-expectancy-value theory' OR sdt OR "self-determination theory' OR motivati × OR valu × OR intrinsic × OR attain × OR utilit × OR cost × OR interest × OR valence × OR enthusias × OR goal\*) AND TITLE-ABS-KEY (mediat × OR "indirect\*" OR "transmissive mechanism') AND NOT TITLE (medic × OR hospit × OR nurs × OR clinic × OR adhs × OR autis × OR disabilit × OR universit\*))

### 2.3. Study selection

The initial search was carried out by a doctoral researcher in three databases and yielded an initial sample of 1607 records. All potentially eligible studies were exported into a single *Endnote* library where duplicate studies were removed. The remaining 1309 records were exported into an *MS Excel* sheet, including basic information about the record such as authors' names, publication year, publication title, abstract, and DOI. Titles and abstracts of each record were independently screened for eligibility by three trained raters (the first and second author and a graduate student). Out of this group, we excluded 1225 articles because they did not meet the eligibility criteria. The screening strategies regarding titles, abstracts, and full texts are detailed in the Supplementary Material (Tables S1 and S2). After screening abstracts and titles, 84 studies were identified as eligible. Then, full-text versions of these records were again screened for eligibility by two raters (the first author and a doctoral researcher). As a result, 68 more studies had to be excluded because they did not meet the eligible criteria (see Fig. 2).

### 2.4. Quality assessment

To assess the quality of the process of selecting the 16 remaining eligible studies, two researchers again extracted the teacher motivation construct(s), the teaching behaviour(s), and the mediating process(es) that were addressed in the eligible studies. In addition, we recorded the year of publication, publication type, country in which the study was conducted, study design, sample size, educational levels of schools (e.g., primary/secondary), grade levels, mean age of participants, measurement instruments, and statistical results. This confirmed that all 16 selected studies were eligible.

## 3. Results

In the following, we report the studies' characteristics in terms of their design and measures, followed by the findings regarding our central research question.



### 3.1. Designs and measures

The key characteristics (designs, measures, sample size, country) of the 16 included studies are listed in Table 2. Among the included studies was only one study with a longitudinal design (Künsting et al., 2016). In terms of measurement, the majority of the included studies ( $n = 15$ ) were based on questionnaires, with the exception of one study (Feng, Helms-Lorenz & Maulana, 2023) that included external observer ratings of teaching behaviours. Of the self-report studies, only one study combined student reports of teaching behaviours with teacher-reported motivation (Daumiller et al., 2022). One study used vignettes to assess teacher-reports of teaching styles—the vignettes described concrete teaching situations followed by four potential reactions representing four (de) motivating teaching styles (Buzzai et al., 2023). Notably, all studies assessed teacher motivation without a specific focus on the class in which teachers were teaching or on specific students. Although some of the teacher motivation constructs do not require such a focus (for example, career choice motives; Paulick et al., 2013), other motivation constructs, such as teacher self-efficacy, vary greatly between classrooms or even students—leading to the expectation of stronger relations to teaching behaviours when both refer to the same referent (Bardach & Klassen, 2021; Lauermann & ten Hagen, 2021).

The measurement of teaching behaviours was diverse across the 16 studies. Two studies (Buzzai et al., 2023; Moe & Katz, 2022) focused on teaching behaviours rooted in SDT (e.g., autonomy-supportive, structuring, controlling; see Table 2). One study focused on teaching behaviours based on AGT (Daumiller et al., 2022). One study (Künsting et al., 2016) focused on the Three Basic Dimensions of Teaching Quality model (TBD model) put forth by Klieme and colleagues (Klieme et al., 2009; Praetorius et al., 2018), and used measures assessing a supportive classroom climate, effective classroom management, and cognitive activation.

Four studies focused on instructional practices similar to those described in the TBD model (e.g., social orientation, discipline, differentiation; Boset & Asmawi, 2020; Feng et al., 2023; Paulick et al., 2013; Thoonen et al., 2011). Finally, four studies focused on behaviours of the teachers that supported specific activities in class: Alt (2018) focused on science teachers' self-efficacy as a precursor of teaching practices that supported the implementation of information and communication technology (ICT) in their classrooms. Ye et al. (2022) focused on teachers' ICT self-efficacy as a precursor to the use of blended learning. Gorozidis and Papaioannou (2011) focused on Physical Education (PE) teachers' self-efficacy, as well as goal orientations as precursors of their behaviours concerning the implementation of a new PE curriculum. Shahali and Halim (2023) focused on science teachers' self-efficacy in the fields of science, technology, engineering, and math (STEM) as predictors of integrated STEM teaching practices (e.g., integration of STEM content, inquiry-based learning; see Table 2).

### 3.2. Explanatory processes

The findings regarding explanatory processes are presented in the following according to the theoretical frameworks of SCT, SEVT, SDT, and AGT. The key findings (including analytical approaches) are reported in Table 3. A more detailed overview on correlational coefficients and direct effects is provided in Table S3 in the Supplemental Material.

#### 3.2.1. SCT: linking teachers' self-efficacy beliefs to their teaching behaviours

Ten of the 16 studies directly referred to SCT and examined processes involved in teachers' self-efficacy (TSE; Alt, 2018; Buzzai et al., 2023; Künsting et al., 2016; Melby, 1995; Pan, 2023; Rahmadani & Kurniawati, 2021; Thoonen et al., 2011; Ye et al., 2022) and self-reported competence<sup>1</sup> (Boset & Asmawi, 2020). Of these ten SCT-related studies, one focused on emotional experiences (Melby, 1995), four examined teachers' engagement as a mediator (Alt, 2018; Pan, 2023; Rahmadani & Kurniawati, 2021; Thoonen et al., 2011), three focused on teachers' attitudes as mediational variables (Buzzai et al., 2023; Shahali & Halim, 2023; Ye et al., 2022), and two studies (Boset & Asmawi, 2020; Künsting et al., 2016) assessed teachers' motivational constructs as mediators between TSE and teaching behaviours.

These two latter studies were not fully informative for our review, because they examined whether a general habitual teacher motivation construct (Boset & Asmawi, 2020: work motivation; Künsting et al., 2016: goals) mediated the effect of TSE on instructional practice. However, we ultimately decided to retain these studies (after a discussion) because, although the assessment of the mediator represented teachers' motivation at a general level, on a theoretical level, motivational processes including goal setting and internal regulation have been suggested to explain the effect of TSE on teaching performance (Tschannen-Moran et al., 1998). Künsting et al. (2016) showed that *teachers' mastery goals* significantly mediated the effect of TSE on classroom management, cognitive activation, and a supportive climate. However, robustness tests performed by these authors with the bias-corrected bootstrap method (MacKinnon, 2008) showed a significant mediation of TSE via teachers' goals only for a supportive climate. Boset & Asmawi, 2020 showed that the effect of teachers' self-reported professional competence on their performance as teachers in five categories (classroom management, planning of lessons, teachers' instructional style/competencies, effective teaching and learning, evaluation; see Table 2) was mediated by their *work motivation*. The latter variable referred to task-specific motivation of teachers rooted in SDT (Deci & Ryan, 2002), including the types of motivation mentioned above—amotivation as well as external (social, material), introjected, identified, and intrinsic motivation—that were included as a sum score in the study. Teachers were asked to rate their reasons for being engaged in a variety of professional tasks (e.g., "this task allows me to attain work objectives that I consider important"). This study indicated that TSE was related to teachers' work motivation, which in turn was related to specific instructional practices and other aspects of

<sup>1</sup> We decided to include self-reported competence in terms of competence beliefs in this category, as it shows a close theoretical relationship with self-efficacy (Lauermann & ten Hagen, 2021).

**Table 2**

Key methodological characteristics of the reviewed studies.

Study	Sample size, educational level; country; design	Teacher motivation measure	Measure of instructional practice/teacher behaviour	Measure of process
Alt (2018)	303 science teachers in Israel; cross-sectional	Information, Communication and Technology TSE (5 items; <a href="#">Vanderlinde &amp; Van Braak, 2010</a> )	Information, Communication and Technology-supported activities in the classroom (9 items; self-developed); teacher reports	ICT teachers' professional development (4 items; <a href="#">Vanderlinde &amp; Van Braak, 2010</a> ); teacher reports
Boset & Asmawi (2020)	375 secondary school (English as a foreign language) teachers in Yemen; cross-sectional	EFL Teachers' competency (36 items; <a href="#">Arshad, 2009</a> )	Professional Performance Evaluation Instrument (25 items; Yemen Ministry of Education); teacher reports	Multidimensional work motivation (19 items, <a href="#">Gagné et al., 2010</a> )
Buzzai et al. (2023)	474 high school teachers in Italy; cross-sectional	TSE for inclusive practice (18 items; <a href="#">Aiello et al., 2016</a> )	Situations-in-School questionnaire (15 vignettes; <a href="#">Moè &amp; Katz, 2020</a> ); teacher reports	Teacher multicultural attitudes (18 items; <a href="#">Ponterotito et al., 1998</a> )
Daumiller et al. (2022)	84 secondary school (mathematics) teachers; 1447 students from 7th to 9th grade in Germany; cross-sectional	TAG (12 items; <a href="#">Nitsche et al., 2011</a> ): Mastery goals; performance approach goals; performance avoidance goals	Interestingness of instruction (6 items; <a href="#">Baumert et al., 2008</a> ), cognitive stimulation (6 items; <a href="#">Ramm et al., 2006</a> ), structuring of content (4 items; <a href="#">Baumert et al., 2008</a> ); clarity (3 items; <a href="#">Baumert et al., 2008</a> ); autonomy (6 items; <a href="#">Black &amp; Deci, 2000</a> ); support for competence (7 items; <a href="#">Baumert et al., 2008</a> ), constructive error climate (31 items; <a href="#">Steuer et al., 2013</a> ); relatedness (5 items; <a href="#">Wild, 1999</a> ); homogeneous and heterogeneous grouping (3 items each; self-developed), cooperation (6 items; <a href="#">Baumert et al., 2008</a> ), competition (3 items; <a href="#">Ramm et al., 2006</a> ); intrapersonal grading standards (3 items); normative grading standards (6 items; <a href="#">Schöne et al., 2004</a> ), publication of marks (3 items; self-developed); public negative feedback (3 items; self-developed); individualization (3 items; <a href="#">Ramm et al., 2006</a> ); MGO (6 items); PAGO (3 items); PVGO (5 items; <a href="#">Midgley et al., 2000</a> ); two latent factors MGO and PGO practices; student reports	Teachers' student-oriented goals ( <a href="#">Midgley et al., 2000</a> ); student-oriented MGO (8 items); student-oriented PGO (12 items)
Feng et al. (2023)	239 beginning teachers of all subject matters; 32 Dutch secondary schools; cross-sectional	TIOP ( <a href="#">Feng et al., 2021</a> ): experienced enthusiasm for teaching (4 items), experienced enthusiasm for subject (4 items), autonomous motivation (3 items)	Six domains of observable teaching behaviour (i.e., providing safe and stimulating learning environment, classroom management, clarity of instruction, intensive and activating teaching, differentiated instruction, teaching learning strategies) using the validated Dutch version of International Comparative Analysis of Learning and Teaching (ICALT) instrument ( <a href="#">Maulana et al., 2017</a> ; <a href="#">Van de Grift et al., 2014</a> ); 32 items as indicators of each domain (120 items in total); observer-ratings	Teachers' Sense of Efficacy Scales (TSES; <a href="#">Tschannen-Moran &amp; Hoy, 2001</a> ): efficacy for instruction (8 items), efficacy for classroom management (8 items) and efficacy for student engagement (8 items); teacher ratings
Gorozidis & Papaioannou (2011)	290 secondary school (physical education) teachers in Greece; cross-sectional	TAG ( <a href="#">Papaioannou &amp; Christodoulidis, 2007</a> ): MGO, PAGO, PVGO, SAGO (each 4 items)	Teachers' past behaviour implementation of new curriculum (3 items; self-developed); teacher reports	Teachers' attitudes toward the implementation of the new curriculum (4 items; self-developed)
Künsting et al. (2016)	203 primary and secondary school teachers in Germany; longitudinal	TSE (6 items; <a href="#">Schwarzer &amp; Hallum, 2008</a> )	Basic dimensions of teaching practice ( <a href="#">Baumert et al., 2008</a> ); classroom climate (8 items); cognitive activation (7 items); effective classroom management (5 items); teacher reports	TMGO (9 items; <a href="#">Butler, 2007</a> )
Melby (1995)	298 primary school teachers in the U.S.; cross-sectional	TSE (16 items; <a href="#">Gibson &amp; Dembo, 1984</a> )	Intervention strategies scale (self-developed): negative consequences (8 items); severe punishment (4 items); teacher reports	Teacher attribution and affect (self-developed): emotion (6 items), attribution (4 items), expectancy (1 item)

(continued on next page)



Table 2 (continued)

Study	Sample size, educational level; country; design	Teacher motivation measure	Measure of instructional practice/teacher behaviour	Measure of process
Moè & Katz (2022)	341 high school teachers in Italy; cross-sectional	Basic psychological need satisfaction and frustration scale (two subscales with 12 items each; Costa et al., 2018)	(De)motivating teaching styles (15 items; Moè et al., 2022); teacher reports	Displayed enthusiasm (Murray, 1983, p. 5 items), experienced enthusiasm (Kunter et al., 2008, p. 4 items); teacher reports
Pan (2023)	226 primary and secondary school teachers in Taiwan; cross-sectional	TSE (3 items) adapted from Tschannen-Moran and Woolfolk Hoy (2001)	Teacher practice of learner-centred teaching (3 items, self-developed); teacher reports	Teachers' collaborative professional learning (3 items; self-developed)
Paulick, Retelsdorf & Möller (2013)	206 secondary school (mathematics) teachers in Germany; cross-sectional	Motivation for Choosing Teacher Education Questionnaire (Pohlmann & Möller, 2010): social influences, ability beliefs, educational interest (3 items each), utility (2 items), subject-specific interest (2 items)	Teaching practice (Clausen, 2002): promotion of surface learning (4 items), comprehensive learning (3 items), discipline (3 items), social orientation (3 items); teacher reports	TAG (Retelsdorf & Günther, 2011): MGO (3 items), PAGO (5 items), WAGO (5 items)
Rahmadani & Kurniawati (2021)	242 primary school teachers in Indonesia; cross-sectional	TSE in inclusive practice, (Loreman et al., 2013): efficacy to use inclusive instruction (7 items), efficacy in managing behaviour (5 items), efficacy in collaboration (6 items)	Classroom management (Maulia, 2016): behaviour management (6 items), productivity (4 items), learning format (2 items); teacher reports	Teachers' ENG (Klassen et al., 2013): cognitive ENG (10 items), emotional ENG, social ENG with students, social ENG with colleagues (12 items each)
Retelsdorf & Günther (2011)	206 teachers in Germany; cross-sectional	TAG: MGO, PAGO, AAGO, WAG (4 items each; Retelsdorf et al., 2010)	Teaching practice (Clausen, 2002): promotion of surface learning (4 items), promotion of comprehensive learning (3 items); teacher reports	Teachers' individual and social reference norms (Rheinberg, 1980): individual reference norm orientation (9 items), social reference norm orientation (20 items)
Shahali & Halim (2023)	333 secondary school (science) teachers in Malaysia; cross-sectional	TSE in integrated Science, Technology, Engineering, and Mathematics (STEM) teaching (19 items; Mobley, 2015)	Integrated Science, Technology, Engineering, and Mathematics teaching practice (self-developed; 5 items each): integration of content, problem-centred learning, inquiry-based learning, design-based learning, cooperative learning; teacher reports	Teachers' attitude toward integrated Science, Technology, Engineering, and Mathematics teaching (self-developed; 20 items)
Thoonen et al. (2011)	502 primary school teachers in the Netherlands; cross-sectional	Teacher motivation (Seegers et al., 2002; van Woerkom, 2003): internalization of school goals (5 items), efficacy (5 items), tolerance of uncertainty (5 items), well-being (6 items)	Teaching practice (Geijssels, 2001): process-oriented instruction (6 items), relatedness to students' world (3 items), cooperative learning (4 items), differentiation (5 items); teacher reports	TENG in professional development activities (Kwakman, 2003): keeping up-to-date (5 items), experimenting and reflection (7 items)
Ye, Kuang & Lung (2022)	562 primary and lower education school teachers in China; cross-sectional	Information, Communication and Technology TSE (4 items; Schwarzer & Jerusalem, 1995)	Use of blended learning (6 items; Garrison & Kanuka, 2004; Shea et al., 2006); teacher reports	Attitudes toward blended learning (3 items; Van Acker et al., 2011)

Note. AAGO = Ability-Avoidance Goals; ENG = Engagement; ICT = Information, Computer; Technology; EFL = English as a Foreign Language; MGO = Mastery Goals; PAGO = Performance-Approach Goals; PVGO = Performance-Avoidance Goals; SAGO = Social Approval Goals; TAG = Teacher Achievement Goals; TIOP = Teachers' Intrinsic Orientation for the Profession; TSE = Teacher Self-Efficacy; WAGO = Work-Avoidance Goals; none of the teacher motivation measures referred to teachers' motivation to teach in a specific classroom.

**Table 3**

Key results of the reviewed studies.

Study	Analytical approach and key findings
Alt (2018)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE in ICT → Professional development in ICT → ICT-supported activities in class (<math>\beta = .19^{***}</math>)</li> </ul>
Boset & Asmawi, 2020	Structural Equation Model <ul style="list-style-type: none"> <li>Teacher's competency → teachers' work motivation → teachers' professional performance (<math>\beta = .18^{***}</math>)</li> </ul>
Buzzai et al. (2023)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE → attitudes → (1) autonomy (<math>\beta = .12^{***}</math>, <math>SE = .04</math>, <math>CI = .08, .22</math>); (2) structuring (<math>\beta = .11^{***}</math>, <math>SE = .03</math>, <math>CI = .07, .19</math>); (3) controlling (<math>\beta = -.14^{***}</math>, <math>SE = .03</math>, <math>CI = -.22, -.09</math>); (4) chaotic (<math>\beta = -.15^{***}</math>)</li> </ul>
Daumiller et al. (2022)	Two-level Path Model <ul style="list-style-type: none"> <li>TMGO → student-oriented MGO → mastery and performance teaching practices → MGO structure (<math>\beta = .15^*</math>)</li> <li>TMGO → student-oriented MGO → mastery and performance teaching practices → PVGO structure (<math>\beta = -.14^*</math>)</li> <li>TPGO → student-oriented PGO → mastery practices → MGO structure (<math>\beta = -.10^*</math>)</li> <li>TPGO → student-oriented PGO → mastery practices → PGO structure (<math>\beta = .07^*</math>)</li> </ul>
Feng et al. (2023)	Single and Multilevel Moderated Mediation Analysis <ul style="list-style-type: none"> <li>TIOP → TSE (<math>b = -1.447</math>) → activating teaching (<math>b = 1.58</math>)</li> </ul>
Gorozidis & Papaioannou (2011)	Path Models <ul style="list-style-type: none"> <li>TPAGO → TSE in student-centred styles → implementation of new curriculum (no <math>\beta</math> reported)</li> <li>TMGO → TSE in promoting self-regulation → implementation of new curriculum (no <math>\beta</math> reported)</li> <li>Social approval goals → attitudes → intention to implement new curriculum (no <math>\beta</math> reported)</li> </ul>
Künsting et al. (2016)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE in 2001 → TMGO 2008 → climate (<math>\beta = .11^*</math>), classroom management (<math>\beta = .09</math>, <math>SE = .044</math>), cognitive activation 2011 (<math>\beta = .09</math>)</li> </ul>
Melby (1995)	Path Models <p>Model 1 (negative consequences)</p> <ul style="list-style-type: none"> <li>TSE → anger (<math>\beta = -.15^{**}</math>), stress (<math>\beta = -.37^{**}</math>), liking (<math>\beta = .07</math>)</li> <li>Anger → negative consequences (<math>\beta = .30^{**}</math>); Stress → negative consequences (<math>\beta = .30^{**}</math>); Liking → negative consequences (<math>\beta = -.14^{**}</math>)</li> </ul> <p>Model 2 (severe punishment)</p> <ul style="list-style-type: none"> <li>TSE → anger (<math>\beta = -.15^{**}</math>), stress (<math>\beta = -.37^{**}</math>)</li> <li>Anger → severe punishment (<math>\beta = .22^{**}</math>); Stress → severe punishment (<math>\beta = .18^{**}</math>)</li> </ul>
Moè & Katz (2022)	Multivariate Mediation Models <ul style="list-style-type: none"> <li>Teacher need satisfaction → experienced enthusiasm → autonomy support (<math>\beta = .11</math>, 95 % CI [.03, .20]) and structure (<math>\beta = .14</math>, 95 % CI [.07, .22])</li> <li>Teacher need satisfaction → displayed enthusiasm → autonomy support (<math>\beta =</math> not significant, no values reported)</li> <li>Teacher need frustration → experienced enthusiasm → chaotic (<math>\beta = .04</math>, 95 % CI [.006, .08])</li> </ul>
Pan (2023)	Structural Equation Model <ul style="list-style-type: none"> <li>Teachers' experiences in learning communities → TSE → Collaborative learning → Learner-centred teaching practice (<math>\beta = .04^{***}</math>)</li> </ul>
Paulick, Retelsdorf & Möller (2013)	Structural Equation Model <ul style="list-style-type: none"> <li>TSI → TPAGO → comprehensive learning (<math>\beta = .10^*</math>)</li> <li>TEI → TPAGO → comprehensive learning (<math>\beta = .10^*</math>)</li> <li>TEI → TWAGO → comprehensive learning (<math>\beta = -.14^*</math>)</li> <li>TUTI → TPVGO → comprehensive learning (<math>\beta = -.10^*</math>)</li> <li>TUTI → TWAGO → comprehensive learning (<math>\beta = .12^*</math>)</li> </ul>
Rahmadani & Kurniawati (2021)	Hayes Regression Test: <ul style="list-style-type: none"> <li>TSE → TENG → classroom management (<math>b = .08</math>)</li> </ul>
Retelsdorf & Günther (2011)	Structural Equation Model <ul style="list-style-type: none"> <li>TMGO → social reference norm orientation → surface learning (<math>\beta = -.13^*</math>)</li> <li>TMGO → individual reference norm orientation → comprehensive learning (<math>\beta = .06^*</math>)</li> <li>TPAGO → social reference norm orientation → surface learning (<math>\beta = .09^*</math>)</li> <li>TAAGO → social reference norm orientation → surface learning (<math>\beta = .07^*</math>)</li> <li>TWAGO → social reference norm orientation → surface learning (<math>\beta = .09^*</math>)</li> <li>TWAGO → individual reference norm orientation → comprehensive learning (<math>\beta = .05^*</math>)</li> </ul>
Shahali & Halim (2023)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE → attitude → integrated STEM teaching practice (<math>\beta = .056</math>, no <math>p</math>-value)</li> </ul>
Thoonen et al. (2011)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE → experimentation and reflection/keeping → process-oriented instruction (<math>\beta = .12</math>)</li> <li>TSE → experimentation and reflection/keeping → relatedness (<math>\beta = .17</math>)</li> <li>TSE → experimentation and reflection/keeping → cooperative learning (<math>\beta = .13</math>)</li> <li>Personal goals → keeping → process-oriented instruction (<math>\beta = .06</math>)</li> <li>Personal goals → keeping → relatedness (<math>\beta = .09</math>)</li> <li>Personal goals → keeping → cooperative learning (<math>\beta = .10</math>)</li> <li>Personal goals → keeping → differentiation (<math>\beta = .09</math>)</li> </ul>
Ye, Kuang & Lung (2022)	Structural Equation Model <ul style="list-style-type: none"> <li>TSE in ICT → attitude → use of blended learning (<math>\beta = .09^{**}</math>)</li> </ul>

Note: Abbreviations see Table 2.

teachers' work. Although focusing on habitual aspects of motivation, the results of Künsting et al. (2016) and Boset & Asmawi, 2020 are at least in line with the assumption that one aspect of teachers' motivation (here: TSE) may elicit processes that are typically associated with other motivational aspects (e.g., goal-setting processes) which, in turn, lead to certain instructional practices.

Turning to the first processual mediator in the narrower sense, Melby (1995) focused on teachers' experience of emotions (operationalized as anger, stress, liking of students) as a mediating link between TSE and teaching behaviour. Specifically, the author found that TSE negatively related to anger and stress and positively related to the liking of students. Self-reported stress, anger, and liking of students mediated the negative cross-sectional relation between TSE and the use of negative consequences (e.g., sending a student to a time-out area). The mitigating effect of TSE was mediated by stress and anger (but not by the liking of students) regarding the effects of severe punishment (e.g., sending a student to the principal's office). Thus, negative emotions seemed to be an important factor that explained why low-TSE teachers used negative teaching behaviours, such as severe punishments, in class.

The four studies that addressed teachers' engagement as the mediating process between TSE and teaching focused either on behavioural engagement in terms of engagement in professional development activities (Alt, 2018; Pan, 2023; Thoonen et al., 2011) or on general engagement (Rahmadani & Kurniawati, 2021), encompassing cognitive (e.g., deep processing), emotional (e.g., experience of joy), and social engagement (e.g., relating with students) based on the established Engaged Teachers Scale from Klassen et al. (2013)—the items were used as a composite score in all cases, not allowing for differentiation between the theoretically proposed dimensions. The findings revealed that engagement in formal and informal professional development activities explained the effects of teacher self-efficacy (TSE) on a wide range of teaching practices. For example, Alt (2018) showed that the positive relation between TSE for information and communication technology (ICT) and self-reported ICT-supported activities in class (e.g., using ICT to manage group project work) were fully mediated by their engagement in ICT professional development (e.g., 'I take the initiative to learn about everything that has to do with ICT in education'). Further, the cross-sectional effect of TSE on learner-centred teaching (e.g., 'When students are having learning difficulties, I probe students to think rather than giving the answer directly') was mediated via collaborative professional learning (e.g., discussing with peer teachers how to design learning activities; Pan, 2023). Results further revealed that TSE positively and indirectly related to teaching practices (process-oriented instruction, relatedness, cooperative learning, see Table 3) via teachers' engagement in professional learning activities, in particular experimentation (e.g., trying out new knowledge and skills in lessons) and reflection (e.g., discussing problems in class with peer teachers (Thoonen et al., 2011)). Finally, teachers' general (i.e., PD-unrelated) engagement fully mediated the cross-sectional positive relation between TSE and teacher-reported classroom management (Rahmadani & Kurniawati, 2021).

The remaining three studies focused on attitudes as a mediating variable (Buzzai et al., 2023; Shahali & Halim, 2023; Ye et al., 2022). Buzzai et al. (2023) showed that teachers' multicultural attitudes in education (e.g., awareness and appreciation of cultural differences in the classroom) mediated the effect of teachers' self-efficacy for inclusive practice on autonomy-supportive, structuring, controlling, and chaotic teaching practices in class (see Table S3 in the Supplemental Materials). Ye et al. (2022) revealed that teachers' attitudes towards blended learning and teaching (e.g., valuing of blended learning and teaching) mediated the effect of teachers' self-efficacy for ICT on teachers' self-reported use of blended learning in class. Finally, Shahali and Halim (2023) found that attitudes (more specifically, aspects of cognitive and affective attitude components, e.g., perceived relevance of STEM, enjoyment, anxiety; see also Zanna & Rempel, 1988) towards STEM-integrating teaching strategies (e.g., integration of STEM content, problem-centred learning) mediated the effects of teachers' STEM-related self-efficacy on their self-reported implementation of such teaching strategies in class. Because the different cognitive and affective aspects of teachers' attitudes were used as a one-dimensional measure, results did not allow for a differentiation between the mediational effects of different facets of teachers' attitudes, but rather showed a partial mediation of TSE on teaching strategies via attitudes. It has to be mentioned that at least the affective attitude component had considerable conceptual overlap with teachers' experiences of emotions discussed above.

### 3.2.2. SEVT: linking teachers' value beliefs to their teaching behaviours

Two studies examined processes mediating the links between SEVT-related constructs and teaching behaviours. One study examined whether teachers' career choice motivation (in terms of the reasons behind choosing the teacher profession, sometimes also referred to as "career choice motives") related to teaching behaviours through teachers' goal orientations for teaching (Paulick et al., 2013). Although the study did not focus on intrapersonal processes and instead examined how motivational variables explain relations between teacher motivation and teaching behaviour, we kept this study in our review because the findings were informative regarding how career choice motivations—which can be considered as SEVT-related motivational constructs of the teacher (Richardson & Watt, 2016)—relate to instructional practice. The study did not statistically test indirect effects, but examined whether career choice motives were related to goals, which in turn were expected to relate to instructional practices. The findings showed that the degree to which teachers chose the teaching profession due to subject-specific and educational interest was positively related to their performance-approach goals, which in turn promoted self-reported use of teaching strategies aimed at comprehensive learning. In turn, the degree to which teachers chose the profession due its utility value with respect to financial and family/leisure amenities positively related to performance-avoidance goals, in turn negatively affecting the use of teaching for comprehensive learning. This underscores the assumption that goal-setting processes are especially relevant and may be elicited by other aspects of teacher motivation.

The second study to draw on SEVT-related teacher motivation constructs was that by Feng et al. (2023), who examined whether teachers' intrinsic orientations towards the profession (TIOP; i.e., experienced enthusiasm for teaching, enthusiasm for the subject, and autonomous motivation) related to their teaching behaviours (i.e., providing a safe and stimulating learning environment, classroom management, clarity of instruction, intensive and activating teaching, differentiated instruction, teaching learning strategies) through three domains of self-efficacy beliefs (their efficacy for instruction, efficacy for classroom management, and efficacy for student

engagement). This cross-sectional study also did not examine any intrapersonal process and rather examined how a motivational variable (self-efficacy) explained relations between SEVT-related constructs and teaching behaviours, but the findings were informative because they showed that self-efficacy served as a facilitator of TIOP at the teacher level by mediating links between TIOP and activating teaching. However, a negative TIOP-efficacy link was shown at the school level—thus, self-efficacy served as a mediator between TIOP and teaching behaviours at the teacher level only.

### 3.2.3. SDT: linking teachers' need satisfaction to their teaching behaviours

Moe et al. (2022) examined the mediational processes between teachers' SDT-based motivation (satisfaction and frustration of basic needs) and their (de-)motivating teaching styles. The authors revealed that the teachers' experienced enthusiasm linked their need satisfaction to their teaching styles. However, teachers' experienced enthusiasm (assessed with items such as 'I teach my subject with great enthusiasm' and 'I really enjoy teaching the subject I teach') does not fully capture an intrapersonal process in a specific teaching situation, but rather a trait-like general aspect of teachers.

### 3.2.4. AGT: linking teachers' achievement goals to their teaching behaviours

A total of three studies focused on AGT-based teacher motivation constructs and the processes underlying the effects of teachers' goal orientations on their teaching practices (Daumiller et al., 2022; Gorozidis & Papaioannou, 2011; Retelsdorf & Günther, 2011).

Daumiller et al. (2022) found with cross-sectional data that teachers' personal (i.e. self-related) achievement goals indirectly related to their goal-related teaching practices through student-oriented goals. Teachers' mastery goals positively related to teachers' student-oriented mastery goals (e.g., the goal that students continue to learn and improve themselves), which in turn positively related to their students' reports of mastery practices in class (e.g., interestingness of instruction, clarity of explanations). Teachers' mastery goals did not directly relate to their student-oriented performance goals (e.g., the goal that students score well in examinations), but directly and negatively related to teachers' performance practices (e.g., public negative feedback, competition). The authors also showed a positive effect of teachers' performance-approach goals on student-oriented performance goals, which in turn negatively related to mastery practices in class, but did not directly relate to performance practices.

Gorozidis and Papaioannou (2011) provided evidence that teachers' goals indirectly relate to curriculum implementation through their self-efficacy and indirectly relate to their intentions to implement a new curriculum through their attitudes. In detail, teachers' social approval goals (e.g., the goal of being liked by students) were related to teachers' intention to implement a new curriculum (e.g., 'During the next season I plan to teach at least 50 percent of the proposed teaching plans of the new curriculum') indirectly through their attitudes towards the new curriculum. Further, teachers' performance-approach goals (e.g., the goal of performing better than other teachers) affected the implementation of the new curriculum indirectly through TSE in student-centred teaching styles. Teachers' mastery goals affected the implementation of the curriculum, mediated through TSE in promoting students' self-regulation. Thus, also in this study, one facet of teacher motivation (self-efficacy) was used as a mediator of the effects of another facet of teacher motivation (goals) on teaching-related behaviours (implementation of a new curriculum), and thus no intrapersonal processes in the narrower sense were examined as mediating factors.

Retelsdorf and Günther (2011) found that teachers' goals significantly related to reference norm orientations, which in turn significantly related to self-reported teaching practices (promotion of surface learning; promotion of comprehensive learning). Indirect effects were not tested, however. Specifically, the authors showed that teachers' mastery goals negatively related to their use of a social reference norm (i.e., using the class average as a reference for evaluating performance), which in turn positively related to the promotion of surface learning (e.g., repetition of rules). Further, teachers' mastery goals positively related to their use of an individual reference norm (i.e., using a student's earlier performance as a reference for evaluating current performance), which then positively related to the promotion of comprehensive learning (e.g., explanation of mistakes). Teachers need reference norm orientations as evaluation standards when evaluating a specific result of a student's work on a task as good or poor (Dickhäuser et al., 2017). In the following, we refer to reference norm orientations thus as the setting of evaluation standards.

## 4. Discussion of the reviewed findings

The present review aimed to identify studies examining the intrapersonal processes that are triggered by teacher motivation and that guide teachers' teaching behaviours. Our review showed that such processes have not yet been addressed sufficiently in current research—despite the potential such knowledge would have for understanding and improving high-quality teaching. Regarding the examined processes underlying the relations between teachers' motivation and their teaching behaviours, our systematic review showed that teacher self-efficacy, teacher goal orientations, and the processes linking them to teaching behaviours were more often the object of investigation than were teachers' value beliefs. Our review revealed potential mediational processes for other teacher motivation constructs, such as teachers' self-efficacy, which seems to be related to teachers' teaching behaviours through its effect on teachers' attitudes (Buzzai et al., 2023; Shahali & Halim, 2023; Ye et al., 2022), goal-setting processes (Künsting et al., 2016), engagement (Alt, 2018; Pan, 2023; Rahmadani & Kurniawati, 2021; Thoonen et al., 2011), and experiences of emotions (Melby, 1995). These studies are in line with (Bandura's 1997) assumption that self-efficacy drives emotional, motivational, and decisional processes of individuals, which in turn shape their behaviours.

Regarding SEVT, value beliefs and their mediational pathways were underrepresented in the studies reviewed. We found only two studies referring to teacher value beliefs, and these studies examined motivational variables as mediators (self-efficacy: Feng et al., 2023; goals: Künsting et al., 2016). Thus, further research on intrapersonal processes underlying the effects of teacher value beliefs on teaching behaviours is needed to better understand long-term value transmission (Dicke et al., 2021). This also implies the

development of valid and reliable measures of teachers' value beliefs. Some prior work on the effects of teacher value beliefs on teaching behaviours exists (e.g., Dicke et al., 2021), but the existing work does not directly assess teacher value beliefs and instead assesses teacher interest or teacher enthusiasm. Because these constructs are theoretically different, we would recommend developing valid and reliable measures assessing teachers' value beliefs. Regarding SDT, findings of the included studies showed that teachers' experienced enthusiasm, but not their displayed enthusiasm, indirectly linked their need satisfaction to their teaching styles (Moe & Katz, 2022). Regarding AGT, our review showed that teachers' goal orientations are associated with teachers' setting of student-oriented goals (Daumiller et al., 2022), their attitudes (Gorozidis & Papaioannou, 2011), and their setting of evaluation standards (Retelsdorf & Günther, 2011), which in turn impact their teaching behaviour. However, it needs to be considered that attitudes and evaluation standards are rather stable orientations compared to situation-specific cognitive processes. This is in contrast to motivation theories such as SCT and AGT, which propose that teachers' motivational beliefs affect teaching behaviours through situation-specific intrapersonal processes (Daumiller, 2024; Tschannen-Moran et al., 1998).

Based on our review, we have accumulated indications highlighting a few mediating processes. The included studies suggest that different components of teacher motivation can lead to similar intrapersonal processes. According to our review, for example, high self-efficacy promotes teachers' positive attitudes towards the implementation of new teaching methods, which in turn affects their teaching behaviours (Buzzai et al., 2022; Shahali & Halim, 2023; Ye et al., 2022). Similarly, teachers' goals have been shown to relate to teachers' teaching behaviours through their effects on teachers' attitudes (Gorozidis & Papaioannou, 2011). However, one difference that could be expected would be that a teacher who is highly self-efficacious might have more enjoyment of teaching, and less anger (Melby, 1995), which is not examined in studies on teachers' goals or values. Attitudes can be understood as relatively enduring evaluative associations with specific groups, individuals, or objects ranging from negative to positive (e.g., Denessen et al., 2022; Eagly & Chaiken, 1993). Emotions have been described as coordinated sets of affective, cognitive, motivational, physiological, and expressive processes in response to important events that function as an interface between an individual and his or her environment (Scherer & Moors, 2019). Given the results of our review, we conclude that teacher self-efficacy in particular initiates and maintains such inner states that, in turn, foster certain teaching behaviours. For teachers' goals, however, the reviewed literature does not support analogous effects. Future research should address this aspect, as emotional effects of achievement goals are well-documented (e.g., Bross et al., 2024; Huang, 2011). However, both teacher self-efficacy and goals impact teachers' attitudes in regard to their profession. Taken together, different components of teacher motivation show both similarities and differences in their consequences for mediating processes and resulting teaching practices.

Because we only identified a relatively small number of suitable studies, it cannot be conclusively derived whether different motivational constructs are linked to teaching behaviours through similar or different processes. To examine such questions would, however, be important for future research to identify and examine the mediating processes that underlie different teacher motivation constructs and teachers' instructional behaviours.

Our review pointed to specific method-related deficits of the existing body of research: First, most of the few existing studies were cross-sectional, thus limiting the possibility of establishing causal relations in mediating processes (Maxwell & Cole, 2007). Our findings thus emphasize the need for longitudinal and experimental studies to confirm the conceptually proposed causal pathways in mediational links between teacher motivation and teaching behaviours. A second methodological limitation of the reviewed studies was the over-reliance on self-report measures whereby, typically, studies only included one source of information, namely, teacher reports. This sole reliance on self-report data can potentially cause common method biases leading to an overestimation of effects (Podsakoff et al., 2003). We advocate that future studies should overcome this limitation, for example, through triangulation of data sources, thus complementing teacher reports with student reports and observational data, which could be coded and enriched based on artificial intelligence (AI) – as recently discussed in several publications (e.g., Frenzel et al., 2025; Lazarides et al., 2024; Metzner et al., 2025). Finally, another limitation to the current work was that the situative nature of the intrapersonal processes we investigated was not covered by the existing studies, as all identified studies examined potential processes more on a trait level. For example, Künsting et al. (2016) assessed teachers' mastery goals as a trait component of teachers' motivation, which mediated the effect of teacher self-efficacy on teaching behaviours. Feng et al. (2023) examined whether self-efficacy as a trait mediated the relations between teachers' intrinsic orientations and their teaching behaviours. Melby (1995) assessed teachers' emotional experiences as mediators of the effects of teachers' self-efficacy on negative teaching behaviours (punishment, severe consequences), also on a general level rather than on a situation-specific level. We claim that the explanatory constructs under investigation should be assessed more often at a situation-specific level, also using alternative measurement approaches such as in-situ diary reports (e.g., Daumiller, Fasching, et al., 2023), observer ratings (e.g., Hußner et al., 2024), and eye-tracking (e.g., Daumiller et al., 2025; Frenzel et al., 2024). These approaches could be carried out in interdisciplinary collaborations to enable a situational perspective and a better understanding of the intrapersonal processes underlying the effects of teacher motivation on teaching in the specific situation.

Apart from the existing research deficits regarding design and measurement that limit the trustworthiness of the statements that can be made about the intrapersonal processes linking teachers' motivation to their teaching behaviours, there were also some aspects regarding the conceptual positioning of study variables that should be discussed. Some of the reviewed studies (Boset & Asmawi, 2020; Feng et al., 2023; Gorozidis & Papaioannou, 2011; Künsting et al., 2016; Moe et al., 2022; Paulick et al., 2013) included some aspects of teacher motivation as mediators (see Table 2 for details) of the effects that other aspects of teacher motivation have on teaching variables. The findings of these studies do not provide insight into the intrapersonal processes underlying the relations between teachers' motivation and their teaching behaviours. Instead, their findings might indicate that teacher motivation should be considered preferably with respect to its broad multidimensional nature, accounting for multiple interdependencies between the different motivational aspects when aiming to understand the links between teacher motivation and teaching behaviours. Regarding teaching behaviours, the applied measures and contexts were diverse across the 16 studies, rooted in diverse theoretical approaches



and disciplinary contexts. The large variability in the outcome measures of teaching behaviours might limit the generalizability of the findings. Future research could perhaps detect how this variability of measures and contexts (e.g., ICT, STEM) influences these effects by carrying out meta-analyses that consider measures and domain-related contexts as moderating variables.

In terms of practical implications, the findings of our review inform teacher education and teacher training about how (beginning) teachers can be supported in providing high-quality instruction. First, based on our finding that high self-efficacy promotes teachers' positive attitudes towards the implementation of new teaching methods, which in turn positively affects their teaching behaviours (Buzzai et al., 2022; Shahali & Halim, 2023; Ye et al., 2022), we conclude the importance of fostering self-efficacy in teacher training programs by implementing mastery experiences and the reflection thereon (Bandura, 1997). Our review showed that teachers' goals also promoted teachers' positive attitudes in the teaching context, which in turn fostered effective implementation of a new curriculum (Gorozidis & Papaioannou, 2011). Taken together, our findings imply that fostering teachers' mastery and social goals as well as their self-efficacy represents a promising route for them to get involved with new methods and content and, consequently, promote the quality of their teaching. Finally, in regard to educational policy, we suggest that university curricula and other programs for teacher training should focus more strongly on the enhancement of teacher motivation through interventions.

## 5. Finalizing a heuristic framework of processes linking Teacher motivation and teaching behaviours

Based on our review, we propose that it is important to systematically conceptualize the relations between teacher motivation and teaching behaviour using an integrative framework that applies to a wide range of teacher motivation constructs rooted in different theoretical traditions. The present review has shown that there is only initial research on the internal processes that link teachers' motivation to their teaching behaviours. However, such knowledge is important for better understanding and conceptualizing the nature of the effects of different components of teacher motivation on teachers' instructional practices. This implies recognizing which aspect of teacher motivation matters for high-quality teaching, including why and under what circumstances. Previous work on mediational links between teachers' motivation and teaching behaviour operates mostly at the level of single constructs without referring to an overarching theoretical framework, which in turn makes it impossible to examine whether multiple components of teacher motivation relate to teaching behaviours through similar or distinct intrapersonal processes. To enable research to address the explanatory internal processes that link specific aspects of teacher motivation to specific teaching behaviours, and to test whether such processes are similar or distinct across different components of teacher motivation, we propose a heuristic model that addresses both previously found and theoretically grounded mediational relations applying to a broad range of teacher motivation components. This heuristic framework is depicted in Fig. 3. It is important to note that the proposed framework is informed by a limited number of theoretical models, including SCT, SEVT, SDT, and AGT, and is not fully validated because of insufficient empirical evidence. Our framework, therefore, has a heuristic character and does not propose specific hypotheses, but is formulated as a guideline for developing empirical designs to examine intrapersonal processes linking certain teacher motivation components to certain teaching behaviours. In our review, we intentionally focused on a broad set of teaching behaviours because we were aiming for an integrative framework. However, further analyses could use the present framework to focus on specific theory-based motivational pathways from teacher motivation to student motivation. One other important framework that would inform more specific work of this kind is Ahmadi et al.'s (2023) classification scheme of teachers' motivational behaviours in class, which is based on self-determination theory (Deci & Ryan, 2002) and describes 57 categories of teaching behaviours that foster or impede need-supportive teaching. Based on our framework, for example, it could be examined through which processes teacher motivation is linked to such specific teaching behaviours.

Guided by the fact that teacher motivation is multifaceted, context-specific, and embedded in specific (teaching) situations with

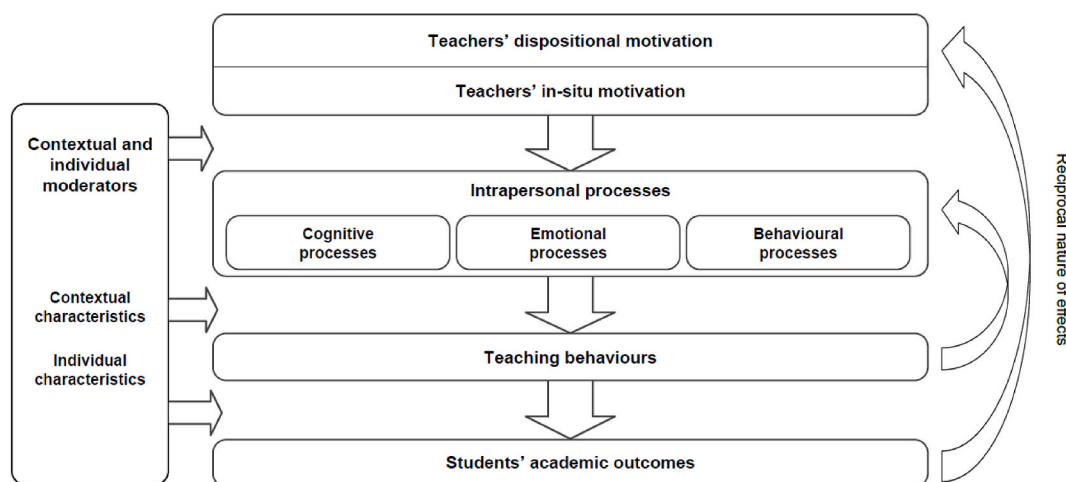


Fig. 3. Heuristic framework of processes mediating the relations between teacher motivation, teaching behaviours, and student outcomes.



specific classes or students (Nolen et al., 2015; Volet, 2001), we distinguish between dispositional and situational motivation. These are interrelated and assumed to lead to specific cognitive (e.g., goal setting, attitudes), emotional (e.g., emotional experiences), and behavioural (e.g., engagement) processes that explain the relations between teacher motivation and teaching behaviours. The question remains open to what degree teachers' teaching behaviours and students' reactions towards them affect teachers' motivation—and to what degree teachers' motivation and teaching behaviours are adjusted to the motivation and learning behaviours of their students. Bandura (1997), for example, came up with the notion that teachers' self-efficacy beliefs not only influence their teaching behaviours via the above-described cognitive and behavioural processes, but are also shaped in turn by successful teaching situations, which teachers perceive as mastery experiences. Evidence is, however, mixed regarding the reciprocal effects between teacher self-efficacy and teaching behaviours (see Holzberger et al., 2013; Lazarides & Schiefele, 2024; Lazarides, Watt & Richardson, 2023; Praetorius et al., 2017). Although we acknowledge this reciprocal character of the relations between teachers' motivation and teaching behaviours, the model primarily focuses on how specific components of teacher motivation relate to specific intrapersonal processes. These processes should then lead—over time—to specific teaching behaviours. An example of the described processes would be that a teacher who feels highly self-efficacious in the teaching profession enjoys teaching when interacting with students in class (Melby, 1995) and shows positive attitudes towards teaching tasks (Ye et al., 2022). Over time, the many instances in which the teacher displays high enjoyment and positive attitudes might then affect the students' perception of the classroom climate. This, in turn, may affect students' perceptions, motivation, and achievement (Seidel & Shavelson, 2007).

As motivation depends on the context in which it occurs (Heckhausen & Heckhausen, 2018), we assume that the interrelations between teachers' motivation to teach and their teaching behaviours are affected by cultural, societal, and institutional influences. As delineated in the left side of the framework, we propose that contextual factors impact all of the core components of our framework and their interrelations. Additionally, it is assumed that individual characteristics of the teachers, such as their professional knowledge or their professional beliefs, also affect teacher motivation and teaching behaviour and can moderate the links between these. Conceptual work in motivational psychology highlights that identity, perceptions, and affective reactions are shaped by social and cultural influences (Wigfield & Eccles, 2020). Thus, culture and educational systems shape teachers' motivation and their instructional behaviours (Richardson, Karabenick, & Watt, 2014). For example, Hagenauer et al. (2016) suggested that different cultural norms and different rules of educational institutions influence how teachers express their motivation and emotions, also affecting their teaching behaviours. However, the consistency or variability of links between teacher motivation, teaching behaviours, and student outcomes remains underexplored, as most studies rarely consider cultural, linguistic, and ethnic diversity (Bardach & Klassen, 2021). Thus, more diverse samples are needed when studying these relations. Broadening the scope of contextual factors, relations between teacher motivation, teaching behaviours, and student outcomes may also vary across domains. Dimensional comparison theory (Möller & Marsh, 2013) maintains that individuals compare abilities across domains, thus influencing self-concepts and task values. Applied to teaching, teachers with high self-efficacy in one domain might show lower self-efficacy in another, which might impede their teaching performance in the domain in which they feel less capable teaching. Prior work has only rarely explored such assumptions (e.g., Wolff, Dresel & Daumiller, 2024) and further conceptual and empirical research is needed to develop meaningful hypotheses. Such work could be guided by our framework, which proposes that contextual conditions not only affect teachers' motivation or teaching behaviours, but also the intrapersonal processes connecting them.

As shown in this synthesis, there is a rich theoretical background from which research on teacher motivation can draw theoretical assumptions about the interrelations between teacher motivation and teaching behaviours. However, there is also a need for further conceptualization, to which end we propose a heuristic framework that summarizes, structures, and extends previous research and facilitates systematic future research on the intrapersonal processes that link teachers' motivation and teaching behaviours. The described processes could be a starting point for future research to investigate why and how teacher motivation relates to teaching behaviours and student outcomes.

#### Author contribution statement

The primary idea for the review and the major literature research was carried out by Rebecca Lazarides, who also wrote the first draft of the manuscript. Markus Dresel contributed decisively to the conceptualization, critical review and revision of the manuscript. Ulrich Schiefele and Martin Daumiller commented on previous versions of the manuscript and thus contributed substantially to the revision. All authors read and approved the final manuscript.

#### Conflict of interest statement

No potential conflict of interest was reported by the authors.

#### Author contribution statement

The primary idea for the review and the major literature research was carried out by Rebecca Lazarides, who also wrote the first draft of the manuscript. Markus Dresel contributed decisively to the conceptualization, critical review and revision of the manuscript. Ulrich Schiefele and Martin Daumiller commented on the manuscript and contributed substantially to the revision. All authors read and approved the final manuscript.

## Competing interest statement

The authors report there are no competing interests to declare. The authors have nothing to disclose.

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## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.edurev.2025.100703>.

## Data availability

No data was used for the research described in the article.

## References

References labelled with \* were included in our systematic review.

- Ahmadi, A., Noetel, M., Parker, P., Ryan, R. M., Ntoumanis, N., Reeve, J., ... Lonsdale, C. (2023). A classification system for teachers' motivational behaviours recommended in self-determination theory interventions. *Journal of Educational Psychology*, 115(8), 1158–1176. <https://doi.org/10.1037/edu0000783>
- Aiello, P., Sharma, U., Dimitrov, D., Di Genarro, D. C., Pace, E., Zollo, I., & Sibilio, M. (2016). Indagine sulle percezioni del livello di efficacia dei docenti e sui loro atteggiamenti nei confronti dell'inclusione [Survey on teachers' perceptions of their effectiveness and Their Attitudes Towards Inclusion]. *L'integrazione Scolastica e Sociale*, 15, 64–87.
- \* Alt, D. (2018). Science teachers' conceptions of teaching and learning, ICT efficacy, ICT professional development and ICT practices enacted in their classrooms. *Teaching and Teacher Education*, 73, 141–150. <https://doi.org/10.1016/j.tate.2018.03.020>.
- Ames, C., & Archer, J. (1988). Achievement goals in the classroom: Students' learning strategies and motivation processes. *Journal of Educational Psychology*, 80(3), 260–267.
- Arshad, M. (2009). *Evaluative study of secondary school teachers' competency in the subject of English*. Punjab, Pakistan: The Islamia University of Bahawalpur. Unpublished MA Thesis [https://www.academia.edu/409203/Evaluative\\_study\\_of\\_secondary\\_school\\_teachers\\_competency\\_in\\_english](https://www.academia.edu/409203/Evaluative_study_of_secondary_school_teachers_competency_in_english).
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall, Inc.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bardach, L., & Klassen, R. M. (2021). Teacher motivation and student outcomes: Searching for the signal. *Educational Psychologist*, 56(4), 283–297. <https://doi.org/10.1080/00461520.2021.1991799>
- Baumert, J., Blum, W., Brunner, M., Dubberke, T., Jordan, A., Klusmann, U., Krauss, S., Kunter, M., Löwen, K., Neubrand, M., & Tsai, Y.-M. (2008). Professionswissen von Lehrkräften, kognitiv aktivierender Mathematikunterricht und die Entwicklung von mathematischer Kompetenz (COACTIV): Dokumentation der Erhebungsinstrumente. Materialien aus der Bildungsforschung: Nr. 83 [Professional knowledge of teachers, cognitive activating mathematics teaching and the development of mathematical competence (COACTIV): documentation of instruments *Materials from educational research*, 83. Max-Planck-Institut für Bildungsforschung <http://hdl.handle.net/hdl:11858/00-001M-0000-0023-998B-4>.
- Black, A. E., & Deci, E. L. (2000). The effects of instructors' autonomy support and students' autonomous motivation on learning organic chemistry: A self-determination theory perspective. *Science Education*, 84(6), 740–756. [https://doi.org/10.1002/1098-237X\(200011\)84:6<740::AID-SCE4>3.0.CO;2-3](https://doi.org/10.1002/1098-237X(200011)84:6<740::AID-SCE4>3.0.CO;2-3)
- \* Boset, S. A. A., & Asmawi, A. (2020). Mediating effect of work motivation on the relationship between competency and professional performance of EFL teachers. *Akademika*, 90(1), 63–75. <https://doi.org/10.17576/akad-2020-9001-06>.
- Brophy, J. E. (2000). *Teaching. Educational practices. Series. International Buero of Education*, 1.
- Bross, T., Nett, U. E., & Daumiller, M. (2024). Interrelations among achievement goals and achievement emotions: A meta-analytic examination. *Educational Psychology Review*, 36, 98. <https://doi.org/10.1007/s10648-024-09931-9>
- Burić, I., Slišković, A., & Sorić, I. (2020). Teachers' emotions and self-efficacy: A test of reciprocal relations. *Frontiers in Psychology*, 11, 1650. <https://doi.org/10.3389/fpsyg.2020.01650>
- Butler, R. (2007). Teachers' achievement goal orientations and associations with teachers' help seeking: Examination of a novel approach to teacher motivation. *Journal of Educational Psychology*, 99(2), 241–252. <https://doi.org/10.1037/0022-0663.99.2.241>
- Butler, R. (2012). Striving to connect: Extending an achievement goal approach to teacher motivation to include relational goals for teaching. *Journal of Educational Psychology*, 104(3), 726–742. <https://doi.org/10.1037/a0028613>
- Butler, R. (2014). What teachers want to achieve and why it matters: An achievement goal approach to teacher motivation. In P. W. Richardson, S. Karabenick, & H. M. G. Watt (Eds.), *Teacher motivation* (pp. 20–35). Routledge.
- \* Buzzai, C., Passanisi, A., Aznar, M. A., & Pace, U. (2023). The antecedents of teaching styles in multicultural classroom: Teachers' self-efficacy for inclusive practices and attitudes towards multicultural education. *European Journal of Special Needs Education*, 38(3), 378–393. <https://doi.org/10.1080/08856257.2022.2107679>.
- Clausen, M. (2002). *Unterrichtsqualität: Eine Frage der Perspektive? [Quality of classroom learning environments - a question of perspective?]* (Vol. 29). Waxmann.
- Costa, S., Ingoglia, S., Inguglia, C., Liga, F., Lo Coco, A., & Larcán, R. (2018). Psychometric evaluation of the basic psychological need satisfaction and frustration scale (BPNSFS) in Italy. *Measurement and Evaluation in Counseling and Development*, 51(3), 193–206. <https://doi.org/10.1080/07481756.2017.1347021>
- Daumiller, M. (2024). Achievement goals. In G. Hagenauer, R. Lazarides, & S. Järvelä (Eds.), *Motivation and emotion in learning and teaching across educational contexts* (pp. 35–53). Routledge.
- Daumiller, M., Böheim, R., Alijagic, A., Lewalter, D., Gegenfurtner, A., Seidel, T., & Dresel, M. (2025). Guiding attention in the classroom: An eye-tracking study on the associations between preservice teachers' goals and noticing of student interactions. *British Journal of Educational Psychology*. <https://doi.org/10.1111/bjep.12748>
- Daumiller, M., Fasching, M. S., Dickhäuser, O., & Dresel, M. (2023). Teachers' achievement goals and teaching practices: A standardized lesson diary approach. *Teaching and Teacher Education*, 127, Article 104079. <https://doi.org/10.1016/j.tate.2023.104079>

- \* Daumiller, M., Fasching, M., Steuer, G., Dickhäuser, O., & Dresel, M. (2022). From teachers' personal achievement goals to students' perceptions of classroom goal structures: Via student-oriented goals and specific instructional practices. *Teaching and Teacher Education*, 111, Article 103617. <https://doi.org/10.1016/j.tate.2021.103617>.
- Deci, E. L., & Ryan, R. M. (1985). *Self-determination*. Wiley.
- Deci, E. L., & Ryan, R. M. (2002). *Handbook of self-determination research*. University Rochester Press.
- Denessen, E., Hornstra, L., van den Bergh, L., & Bijlstra, G. (2022). Implicit measures of teachers' attitudes and stereotypes, and their effects on teacher practice and student outcomes: A review. *Learning and Instruction*, 78, Article 101437. <https://doi.org/10.1016/j.learninstruc.2020.101437>
- Dicke, A.-L., Rubach, C., Safavian, N., Karabenick, S., & Eccles, J. S. (2021). Less direct than you thought: Do teachers transmit math value to students' through their cognitive support for understanding? *Learning and Instruction*, 76, Article 101521. <https://doi.org/10.1016/j.learninstruc.2021.101521>
- Dickhäuser, O., Janke, S., Praetorius, A. K., & Dresel, M. (2017). The effects of teachers' reference norm orientations on students' implicit theories and academic self-concepts. *Zeitschrift für Pädagogische Psychologie*, 31(3–4), 205–219. <https://doi.org/10.1024/1010-0652/a000208>. Sep. 2017.
- Eagly, A. H., & Chaiken, S. (1993). *The psychology of attitudes*. Harcourt Brace Jovanovich College Publishers.
- Eccles, J. S., & Wigfield, A. (2002). Motivational beliefs, values, and goals. *Annual Review of Psychology*, 53(1), 109–132. <https://doi.org/10.1146/annurev.psych.53.100901.135153>
- Eccles, J. S., & Wigfield, A. (2020). From expectancy-value theory to situated expectancy-value theory: A developmental, social cognitive, and sociocultural perspective on motivation. *Contemporary Educational Psychology*, Article 101859. <https://doi.org/10.1016/j.cedpsych.2020.101859>
- Elliot, A. J., & Harackiewicz, J. (1996). Approach and avoidance achievement goals and intrinsic motivation: A mediational analysis. *Journal of Personality and Social Psychology*, 70, 968–980. <https://doi.org/10.1037/0022-3514.70.3.461>
- Elliot, E. S., & Dweck, C. S. (1988). Goals: An approach to motivation and achievement. *Journal of Personality and Social Psychology*, 54(1), 5–12. <https://doi.org/10.1037/0022-3514.54.1.5>
- \* Feng, X., Helms-Lorenz, M., & Maulana, R. (2023). Teachers' intrinsic orientation, self-efficacy, background characteristics, and effective teaching: A multilevel moderated mediation modeling TEACHER MOTIVATION AND PSYCHOLOGICAL PROCESSES 49 mediation modeling. In R. Maulana, M. Helms-Lorenz, & R. M. Klassen (Eds.), *Effective teaching around the world. Theoretical, empirical, methodological and practical insights* (pp. 543–574). Springer Nature (Hrsg.).
- Feng, X., Helms-Lorenz, M., Maulana, R., & Jansen, E. P. (2021). Dutch beginning teachers' intrinsic orientation for the profession: Measurement and consistency during the first year. *Studies In Educational Evaluation*, 70, Article 101059.
- Fernet, C., Senécal, C., Guay, F., Marsh, H., & Dowson, M. (2008). The work tasks motivation scale for teachers (WTMST). *Journal of Career Assessment*, 16(2), 256–279. <https://doi.org/10.1177/1069072707305764>
- Fives, H., & Buehl, M. (2016). Teacher motivation: Self-efficacy and goal orientation. In K. R. Wentzel, & D. B. Miele (Eds.), *Handbook of motivation at school* (2nd ed., pp. 340–360). Taylor and Francis Inc. <https://doi.org/10.4324/9781315773384>
- Frenzel, A. C., Becker-Kurz, B., Pekrun, R., Goetz, T., & Lüdtke, T. (2018). Emotion transmission in the classroom revisited: A reciprocal effects model of teacher and student enjoyment. *Journal of Educational Psychology*, 110(5), 628–639. <https://doi.org/10.1037/edu0000228>
- Frenzel, A. C., Dindar, M., Pekrun, R., Reck, C., & Marx, A. K. (2024). Joy is reciprocally transmitted between teachers and students: Evidence on facial mimicry in the classroom. *Learning and Instruction*, 91, Article 101896. <https://doi.org/10.1016/j.learninstruc.2024.101896>
- Frenzel, A. C., Goetz, T., Lüdtke, O., Pekrun, R., & Sutton, R. E. (2009). Emotional transmission in the classroom: Exploring the relationship between teacher and student enjoyment. *Journal of Educational Psychology*, 101(3), 705–716. <https://doi.org/10.1037/a0014695>
- Frenzel, A. C., Kleen, H., Marx, A. K., Sachs, D. F., Baier-Mosch, F., & Kunter, M. (2025). Is it in their words? Teachers' enthusiasm and their natural language in class-A sentiment analysis approach. *British Journal of Educational Psychology*. <https://doi.org/10.1111/bjep.12734>
- Gagné, M., Forest, J., Gilbert, M.-H., Aubé, C., Morin, E., & Malorni, A. (2010). The motivation at work scale: Validation evidence in two languages. *Educational and Psychological Measurement*, 70(4), 628–646. <https://doi.org/10.1177/0013164409355698>
- Garrison, D. R., & Kanuka, H. (2004). Blended learning: Uncovering its transformative potential in higher education. *The Internet and Higher Education*, 7(2), 95–105. <https://doi.org/10.1016/j.iheduc.2004.02.001>
- Geijsel, F. P. (2001). *Schools and innovations: Conditions fostering the implementation of educational innovations [doctoral dissertation]*. Radboud University Nijmegen]. <https://repository.ubn.ru.nl/handle/2066/146835>.
- Gibson, S., & Dembo, M. H. (1984). Teacher efficacy: A construct validation. *Journal of Educational Psychology*, 76(4), 569–582. <https://doi.org/10.1037/0022-0663.76.4.569>
- \* Gorozidis, G., & Papaioannou, A. (2011). Teachers' self-efficacy, achievement goals, attitudes and intentions to implement the new Greek physical education curriculum. *European Physical Education Review*, 17(2), 231–253. <https://doi.org/10.1177/1356336X11413654>.
- Hagenauer, G., Gläser-Zikuda, M., & Volet, S. E. (2016). University teachers' perceptions of appropriate emotion display and high-quality teacher-student relationship: Similarities and differences across cultural-educational contexts. *Frontline Learning Research*, 4(3), 44–74.
- Han, J., & Gao, C. (2023). Teachers' achievement goal orientations: A systematic review of 15 years of published empirical research. *Teaching and Teacher Education*, 128, Article 104146. <https://doi.org/10.1016/j.tate.2023.104146>
- Heckhausen, J. J. M. S. (2020). Integrating and instigating research on person and situation, motivation and volition, and their development. *Motivation Science*, 6(3), 185–188. <https://doi.org/10.1037/mot0000166>
- Heckhausen, J., & Heckhausen, H. (2018). Motivation and action: Introduction and overview. In J. Heckhausen, & H. Heckhausen (Eds.), *Motivation and action* (pp. 1–14). Springer.
- Holzberger, D., Philipp, A., & Kunter, M. (2013). How teachers' self-efficacy is related to instructional quality: A longitudinal analysis. *Journal of Educational Psychology*, 105(3), 774–786. <https://doi.org/10.1037/a0032198>
- Huang, C. (2011). Achievement goals and achievement emotions: A meta-analysis. *Educational Psychology Review*, 23, 359–388. <https://doi.org/10.1007/s10648-011-9155-x>
- Hußner, I., Lazarides, R., & Symes, W. (2024). The relation between self-efficacy and teaching behaviour: A video-based analysis of student teachers. *Learning and Instruction*, 91, Article 101880. <https://doi.org/10.1016/j.learninstruc.2024.101880>
- Kim, K. R., & Seo, E. H. (2018). The relationship between teacher efficacy and students' academic achievement: A meta-analysis. *Social Behavior and Personality: An International Journal*, 46(4), 529–540. <https://doi.org/10.2224/sbp.6554>
- 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(1), 67–76. <https://doi.org/10.1016/j.cedpsych.2008.08.001>
- Klassen, R. M., & Tze, V. M. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review*, 12, 59–76. <https://doi.org/10.1016/j.edurev.2014.06.001>
- Klassen, R. M., Yerdelen, S., & Durksen, T. L. (2013). Measuring teacher engagement: Development of the engaged teachers scale (ETS). *Frontline Learning Research*, 1(2), 33–52. <https://doi.org/10.14786/flr.v1i2.44>
- Klieme, E., Pauli, C., & Reusser, K. (2009). The pythagoras study. In T. Janik, & T. Seidel (Eds.), *The power of video studies in investigating teaching and learning in the classroom* (pp. 137–160). Waxmann.
- \* Künsting, J., Neuber, V., & Lipowsky, F. (2016). Teacher self-efficacy as a long-term predictor of instructional quality in the classroom. *European Journal of Psychology of Education*, 31(3), 299–322. <https://doi.org/10.1007/s10212-015-0272-7>.
- Kunter, M., & Holzberger, D. (2014). Loving teaching: Research on teachers' intrinsic orientations. In P. W. Richardson, S. A. Karabenick, & H. M. G. Watt (Eds.), *Teacher motivation* (pp. 105–121). Routledge.
- Kunter, M., Tsai, Y.-M., Klusmann, U., Brunner, M., Krauss, S., & Baumert, J. (2008). Students' and mathematics teachers' perceptions of teacher enthusiasm and instruction. *Learning and Instruction*, 18(5), 468–482. <https://doi.org/10.1016/j.learninstruc.2008.06.008>
- Kwakman, K. (2003). Factors affecting teachers' participation in professional learning activities. *Teaching and Teacher Education*, 19(2), 149–170. [https://doi.org/10.1016/S0742-051X\(02\)00101-4](https://doi.org/10.1016/S0742-051X(02)00101-4)

- Lauermann, F., & Butler, R. (2021). The elusive links between teachers' teaching-related emotions, motivations, and self-regulation and students' educational outcomes. *Educational Psychologist*, 56(4), 243–249. <https://doi.org/10.1080/00461520.2021.1991800>
- Lauermann, F., & ten Hagen, I. (2021). Do teachers' perceived teaching competence and self-efficacy affect students' academic outcomes? A closer look at student-reported classroom processes and outcomes. *Educational Psychologist*, 1–18. <https://doi.org/10.1080/00461520.2021.1991355>
- Lazarides, R., Frenkel, J., Petković, U., Göllner, R., & Hellwich, O. (2024). No words—Machine-learning classified nonverbal immediacy and its role in connecting teacher self-efficacy with perceived teaching and student interest. *British Journal of Educational Psychology*, 00, 1–17. <https://doi.org/10.1111/bjep.12732>
- Lazarides, R., & Schiefele, U. (2021). Teacher motivation: Implications for instruction and learning. Introduction to the special issue. *Learning and Instruction*, 76, Article 101543. <https://doi.org/10.1016/j.learninstruc.2021.101543>
- Lazarides, R., & Schiefele, U. (2024). Addressing the reciprocal nature of effects in teacher motivation research: A study on relations among teacher motivation, student-reported teaching, and student enjoyment and achievement. *Learning and Instruction*, 90, Article 101862. <https://doi.org/10.1016/j.learninstruc.2023.101862>
- Lazarides, R., Schiefele, U., Hettinger, K., & Frommelt, M. (2023). Tracing the signal from teachers to students: How teachers' motivational beliefs longitudinally relate to student interest through student-reported teaching practices. *Journal of Educational Psychology*, 115(2), 290–308. <https://doi.org/10.1037/edu0000777>
- Lazarides, R., & Warner, L. M. (2020). Teacher self-efficacy. In *Oxford research encyclopedia of education*. <https://doi.org/10.1093/acrefore/9780190264093.013.890>
- Lazarides, R., Watt, H. M., & Richardson, P. (2023). Does school context moderate longitudinal relations between teacher-reported self-efficacy and value for student engagement and teacher-student relationships from early until midcareer? *Contemporary Educational Psychology*, 102136. <https://doi.org/10.1016/j.cedpsych.2022.102136>
- Li, C. (2021). *School climate, teacher self-efficacy, and teaching practices: Evidence from TALIS 2018* [doctoral dissertation]. University of Nevada, Las Vegas. <https://digitalscholarship.unlv.edu/cgi/viewcontent.cgi?article=5173&context=thesesdissertations>
- Linnenbrink, E. A., & Pintrich, P. R. (2002). Achievement goal theory and affect: An asymmetrical bidirectional model. *Educational Psychologist*, 37(2), 69–78. [https://doi.org/10.1207/S15326985EP3702\\_2](https://doi.org/10.1207/S15326985EP3702_2)
- Loeiman, T., Sharma, U., & Forlin, C. (2013). Do pre-service teachers feel ready to teach in inclusive classrooms? A four country study of teaching self-efficacy. *Australian Journal of Teacher Education*, 38(1), 27–44.
- MacKinnon, D. P. (2008). *Introduction to statistical mediation analysis*. Erlbaum.
- Maulana, R., Helms-Lorenz, M., & Van de Grift, W. (2017). Validating a model of effective teaching behaviour of pre-service teachers. *Teachers and Teaching*, 23(4), 471–493.
- Maulia, M. (2016). In *Pendidikan Inklusif Di Sekolah Dasar: Hubungan Antara Sikap Guru Terhadap Universitas Indonesia Pendidikan Inklusif di Sekolah Dasar* [Unpublished Dissertation, Universitas Indonesia, Depok] <https://lib.ui.ac.id/detail?id=20445949&lokasi=lokal>
- Maxwell, S. E., & Cole, D. A. (2007). Bias in cross-sectional analyses of longitudinal mediation. *Psychological Methods*, 12(1), 23–44. <https://doi.org/10.1037/1082-989X.12.1.23>
- \* Melby, L. C. (1995). *Teacher efficacy and classroom management: A study of teacher cognition, emotion, and strategy usage associated with externalizing student behavior* [doctoral dissertation]. Los Angeles: University of California <https://www.proquest.com/openview/92b70fe026eab4a874a16b6ce624732a/1?pq-origsite=gscholar&cbl=18750&diss=y>
- Metzner, O., Wang, Y., Symes, W., Huang, Y., Keller, L., de Melo, G., & Lazarides, R. (2025). A process-oriented perspective on pre-service teachers' self-efficacy and their motivational messages: Using large language models to classify teachers' speech. *British Journal of Educational Psychology*. <https://doi.org/10.1111/bjep.12779>
- Middleton, M. J., & Midgley, C. (1997). Avoiding the demonstration of lack of ability: An underexplored aspect of goal theory. *Journal of Educational Psychology*, 89(4), 710–718.
- Midgley, C., Maehr, M. L., Hruda, L. Z., Anderman, E., Anderman, L. H., Freeman, K. E., Gheen, M., Kaplan, A., Kumar, R., & Middleton, M. J. (2000). *Manual for the patterns of adaptive learning scales*. University of Michigan.
- Mobley, M. C. (2015). In *Development of the SETIS instrument to measure teachers' self-efficacy to teach science in an integrated STEM Framework* [doctoral dissertation]. University of Tennessee. [https://trace.tennessee.edu/utk\\_graddiss/3354/](https://trace.tennessee.edu/utk_graddiss/3354/)
- \* Moè, A., Consiglio, P., & Katz, I. (2022). Exploring the circumplex model of motivating and demotivating teaching styles: The role of teacher need satisfaction and need frustration. *Teaching and Teacher Education*, 118, Article 103823. <https://doi.org/10.1016/j.tate.2022.103823>
- Moè, A., & Katz, I. (2020). Self-compassionate teachers are more autonomy supportive and structuring whereas self-derogating teachers are more controlling and chaotic: The mediating role of need satisfaction and burnout. *Teaching and Teacher Education*, 96, Article 103173. <https://doi.org/10.1016/j.tate.2020.103173>
- \* Moè, A., & Katz, I. J. L. (2022). Need satisfied teachers adopt a motivating style: The mediation of teacher enthusiasm. *Learning and Individual Differences*, 99, Article 102203. <https://doi.org/10.1016/j.lindif.2022.102203>
- Moher, D., Liberati, A., Tetzlaff, J., Altman, D. G., & PRISMA Group. (2009). Preferred reporting items for systematic reviews and meta-analyses: The PRISMA statement. *Annals of internal medicine*, 151(4), 264–269. <https://doi.org/10.1371/journal.pmed.1000097>
- Möller, J., & Marsh, H. W. (2013). Dimensional comparison theory. *Psychological Review*, 120(3), 544–560. <https://doi.org/10.1037/a0032459>
- Murray, H. G. (1983). Low-inference classroom teaching behaviors and student ratings of college teaching effectiveness. *Journal of Educational Psychology*, 75(1), 138. <https://doi.org/10.1037/0022-0666.75.1.138>
- Nitsche, S., Dickhäuser, O., Fasching, M. S., & Dresel, M. (2011). Rethinking teachers' goal orientations: Conceptual and methodological enhancements. *Learning and Instruction*, 21(4), 574–586. <https://doi.org/10.1016/j.learninstruc.2010.12.001>
- Nolen, S. B., Horn, I. S., & Ward, C. J. (2015). Situating motivation. *Educational Psychologist*, 50(3), 234–247. <https://doi.org/10.1080/00461520.2015.1075399>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., & Brennan, S. E. (2021). *The PRISMA 2020 statement: An Updated Guideline for Reporting Systematic Reviews*. *Systematic Reviews*, 10(1), 1–11. <https://doi.org/10.1186/s13643-021-01626-4>
- \* Pan, H.-L. W. (2023). Learner-centered teaching catalyzed by teacher learning communities: The mediating role of teacher self-efficacy and collaborative professional learning. *Sustainability*, 15(6), 4850. <https://doi.org/10.3390/su15064850>
- Papaioannou, A., & Christodoulidis, T. (2007). A measure of teachers' achievement goals. *Educational Psychology*, 27(3), 349–361. <https://doi.org/10.1080/01443410601104148>
- Parrisius, C., Gaspard, H., Trautwein, U., & Nagengast, B. (2020). The transmission of values from math teachers to their ninth-grade students: Different mechanisms for different value dimensions? *Contemporary Educational Psychology*, 62, Article 101891. <https://doi.org/10.1016/j.cedpsych.2020.101891>
- \* Paulick, I., Retelsdorf, J., & Möller, J. (2013). Motivation for choosing teacher education: Associations with teachers' achievement goals and instructional practices. *International Journal of Educational Research*, 61, 60–70. <https://doi.org/10.1016/j.ijer.2013.04.001>
- Podsakoff, P. M., MacKenzie, S. B., Lee, J.-Y., & Podsakoff, N. P. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology*, 88(5), 879–903. <https://doi.org/10.1037/0021-9010.88.5.879>
- Pohlmann, B., & Möller, J. (2010). Fragebogen zur Erfassung der Motivation für die Wahl des Lehramtsstudiums (FEMOLA) [Questionnaire for assessing the motivation for choosing teacher education studies (FEMOLA)]. *Zeitschrift für Pädagogische Psychologie*. <https://doi.org/10.1024/1010-0652/a000005>
- Ponterotito, J. G., Baluch, S., Greig, T., & Rivera, L. (1998). Development and initial score validation of the teacher multicultural attitude survey. *Educational and Psychological Measurement*, 58(6), 1002–1016.
- Praetorius, A.-K., Klieme, E., Herbert, B., & Pinger, P. (2018). Generic dimensions of teaching quality: The German framework of three basic dimensions. *ZDM*, 50(3), 407–426. <https://doi.org/10.1007/s11858-018-0918-4>
- Praetorius, A.-K., Lauermann, F., Klassen, R. M., Dickhäuser, O., Janke, S., & Dresel, M. (2017). Longitudinal relations between teaching-related motivations and student-reported teaching quality. *Teaching and Teacher Education*, 65, 241–254. <https://doi.org/10.1016/j.tate.2017.03.023>
- \* Rahmadani, A., & Kurniawati, F. (2021). Teacher engagement mediates self-efficacy and classroom management: Focus on Indonesian primary schools. *Electronic Journal of Research in Education Psychology*, 19(53), 75–92. <https://doi.org/10.25115/erjep.v19i53.3444>



- Ramm, G., Prenzel, M., Baumert, J., Blum, W., Lehmann, R., Leutner, D., Neubrand, M., Pekrun, R., Rolff, H.-G., Rost, J., & Schiefele, U. (2006). *PISA 2003. Dokumentation der Erhebungsinstrumente [PISA 2003. Scale documentation]*. Waxmann.
- \* Retelsdorf, J., Butler, R., Streblow, L., & Schiefele, U. (2010). Teachers' goal orientations for teaching: Associations with instructional practices, interest in teaching, and burnout. *Learning and Instruction*, 20(1), 30–46. <https://doi.org/10.1016/j.learninstruc.2009.01.001>.
- Retelsdorf, J., & Günther, C. (2011). Achievement goals for teaching and teachers' reference norms: Relations with instructional practices. *Teaching and Teacher Education*, 27(7), 1111–1119. <https://doi.org/10.1016/j.tate.2011.05.007>
- Rheinberg, F. (1980). *Leistungsbewertung und Lernmotivation*. Verlag für Psychologie.
- Richardson, P. W., Karabenick, S. A., & Watt, H. M. G. (2014). *Teacher motivation: Theory and practice*. Routledge.
- Richardson, P. W., & Watt, H. M. G. (2016). Factors influencing teaching choice: Why do future teachers choose the career? In J. Loughran, & M. L. Hamilton (Eds.), *International handbook of teacher education*. Springer. XX-XX.
- Richardson, P. W., & Watt, H. M. G. (2018). Teacher professional identity and career motivation: A lifespan perspective. In P. A. Schutz, J. Hong, & D. C. Francis (Eds.), *Research on teacher identity: Mapping challenges and innovations* (pp. 37–48). Springer.
- Ross, J. A. (1998). *The antecedents and consequences of teacher efficacy* (Vol. 7). JAI Press.
- Roth, G. (2014). Antecedents and outcomes of teachers' autonomous motivation: A self-determination theory analysis. In P. Richardson, S. A. Karabenick, & H. M. G. Watt (Eds.), *Teacher motivation* (pp. 58–73). Routledge.
- Roth, G., Assor, A., Kanat-Maymon, Y., & Kaplan, H. (2007). Autonomous motivation for teaching: How self-determined teaching May lead to self-determined learning. *Journal of Educational Psychology*, 99(4), 761–774. <https://doi.org/10.1037/0022-0663.99.4.761>
- Ryan, R. M., & Deci, E. L. (2000a). Intrinsic and extrinsic motivations: Classic definitions and new directions. *Contemporary Educational Psychology*, 25(1), 54–67. <https://doi.org/10.1006/ceps.1999.1020>
- Ryans, D. G. (1967). Teacher behavior can be evaluated. *Educational Horizons*, 45(3), 99–120.
- Scherer, K. R., & Moors, A. (2019). The emotion process: Event appraisal and component differentiation. *Annual Review of Psychology*, 7, 719–745. <https://doi.org/10.1146/annurev-psych-122216-011854>
- Schöne, C., Dickhäuser, O., Spinath, B., & Stiensmeier-Pelster, J. (2004). Zielorientierung und Bezugsnormorientierung: Zum Zusammenhang zweier Konzepte [Goal orientation and reference norm orientation: On the relationship between two concepts]. *Zeitschrift für Pädagogische Psychologie*, 18(2), 93–99.
- Schunk, D. H., & DiBenedetto, M. K. (2020). Motivation and social cognitive theory. *Contemporary Educational Psychology*, 60, Article 101832. <https://doi.org/10.1016/j.cedpsych.2019.101832>
- Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. *Applied Psychology*, 57(1), 152–171.
- Schwarzer, R., & Jerusalem, M. (1995). Generalized self-efficacy scale. In J. Weinman, S. Wright, & M. Johnston (Eds.), *Measures in health psychology: A user's portfolio. Causal and control beliefs* (pp. 35–37). NFER-NELSON.
- Seegers, G., Van Putten, C. M., & de Brabander, C. J. (2002). Goal orientation, perceived task outcome and task demands in mathematics tasks: Effects on students' attitude in actual task settings. *British Journal of Educational Psychology*, 72(3), 365–384. <https://doi.org/10.1348/000709902320634366>
- Seidel, T., & Shavelson, R. J. (2007). Teaching effectiveness research in the past decade: The role of theory and research design in disentangling meta-analysis results. *Review of Educational Research*, 77(4), 454–499. <https://doi.org/10.3102/0034654307310317>
- \* Shahali, E. H. M., & Halim, L. (2023). The influence of science teachers' beliefs, attitudes, self-efficacy and school context on integrated STEM teaching practices. *International Journal of Science and Mathematics Education*, 1–21. <https://doi.org/10.1007/s10763-023-10403-9>.
- Shea, P., Li, C. S., & Pickett, A. (2006). A study of teaching presence and student sense of learning community in fully online and web-enhanced college courses. *The Internet and Higher Education*, 9(3), 175–190. <https://doi.org/10.1016/j.iheduc.2006.06.005>
- Slemp, G. R., Field, J. G., & Cho, A. S. (2020). A meta-analysis of autonomous and controlled forms of teacher motivation. *Journal of Vocational Behavior*, 121, Article 103459. <https://doi.org/10.1016/j.jvb.2020.103459>
- Steuer, G., Rosentritt-Brunn, G., & Dresel, M. (2013). Dealing with errors in mathematics classrooms: Structure and relevance of perceived error climate. *Contemporary Educational Psychology*, 38(3), 196–210. <https://doi.org/10.1016/j.cedpsych.2013.03.002>
- \* Thoonen, E. E. J., Sleegers, P. J. C., Oort, F. J., Peetsma, T. T. D., & Geijsel, F. P. (2011). How to improve teaching practices: The role of teacher motivation, organizational factors, and leadership practices. *Educational Administration Quarterly*, 47(3), 496–536. <https://doi.org/10.1177/0013161X11400185>.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17(7), 783–805. [https://doi.org/10.1016/S0742-051X\(01\)00036-1](https://doi.org/10.1016/S0742-051X(01)00036-1)
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68(2), 202–248. <https://doi.org/10.3102/00346543068002202>
- Van Acker, F., Van Buuren, H., Kreijns, K., & Vermeulen, M. (2011). Why teachers use digital learning materials: The role of self-efficacy, subjective norm and attitude. *Education and Information Technologies*, 18, 495–514. <https://doi.org/10.1007/s10639-011-9181-9>
- Van de Grift, W., Helms-Lorenz, M., & Maulana, R. (2014). Teaching skills of student teachers: Calibration of an evaluation instrument and its value in predicting student academic engagement. *Studies In Educational Evaluation*, 43, 150–159. <https://doi.org/10.1016/j.stueduc.2014.09.003>
- van Woerkom, M. (2003). *Critical reflection at work: Bridging individual and organisational learning*. Twente University Press.
- Vanderlinde, R., & Van Braak, J. (2010). The e-capacity of primary schools: Development of a conceptual model and scale construction from a school improvement perspective. *Computers and Education*, 55(2), 541–553. <https://doi.org/10.1016/j.compedu.2010.02.016>
- Volet, S. (2001). Understanding learning and motivation in context: A multi-dimensional and multi-level cognitive-situative perspective. In S. E. Volet, & S. Järvelä (Eds.), *Motivation in learning contexts: Theoretical advances and methodological implications* (pp. 57–82). Elsevier Science.
- Watt, H. M. G., Butler, R., & Richardson, P. (2021). Antecedents and consequences of teachers' goal profiles in Australia and Israel. *Learning and Instruction*, 76, Article 101491. <https://doi.org/10.1016/j.learninstruc.2021.101491>
- Watt, H. M. G., & Richardson, P. W. (2014). Beginning teachers' motivations, effectiveness and wellbeing. In A.-L. Ostern (Ed.), *NAFOL year book 2014: Once a teacher-always a teacher?* (pp. 53–64). Fagbokforlaget Vigmostad & Bjørke AS.
- Watt, H. M. G., & Richardson, P. W. (2015a). A motivational analysis of teacher beliefs. In H. Fives, & M. G. Gill (Eds.), *International handbook of research on teachers' beliefs* (pp. 191–211). Routledge.
- Watt, H. M. G., & Richardson, P. W. (2015b). Teacher motivation. In J. D. Wright (Ed.), *International encyclopedia of the social & behavioral sciences* (pp. 64–71). Elsevier.
- Wigfield, A., & Eccles, J. S. (2020). 35 years of research on students' subjective task values and motivation: A look back and a look forward. In A. J. Elliott (Ed.), *Advances in motivation science* (Vol. 7, pp. 161–198). Elsevier. <https://doi.org/10.1016/bs.adms.2019.05.002>
- Wild, E. (1999). *Elterliche Erziehung und schulische Lernmotivation [Parental Education and Academic Learning Motivation]*. Mannheim: University of.
- Wolff, F., Dresel, M., & Daumiller, M. (2024). Dimensional comparisons in the formation of faculty members' research and teaching self-concepts? *Higher Education*, 87(2), 345–364. <https://doi.org/10.1007/s10734-023-01010-2>
- \* Ye, L., Kuang, M., & Liu, S. (2022). ICT self-efficacy, organizational support, attitudes, and the use of blended learning: An exploratory study based on English teachers in basic education. *Frontiers in Psychology*, 13, Article 941535. <https://doi.org/10.3389/fpsyg.2022.941535>
- Zanna, M. P., & Rempel, J. K. (1988). Attitudes: A new look at an old concept. In D. Bar-Tal, & A. Kruglanski (Eds.), *The social psychology of knowledge* (pp. 315–334). Cambridge University Press.
- Zee, M., & Koomen, H. M. (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(4), 981–1015. <https://doi.org/10.3102/0034654315626801>