

**DIRECTORATE FOR EDUCATION AND SKILLS  
CENTRE FOR EDUCATIONAL RESEARCH AND INNOVATION (CERI) GOVERNING BOARD****TEACHER MOTIVATION RESEARCH AND ITS IMPLICATIONS FOR THE INSTRUCTIONAL  
PROCESS****A Technical Report and Recommendations for an International Large-Scale Assessment of Teachers'  
Knowledge and Professional Competencies****14-15 April 2015**

*This technical report was commissioned as part of the background research for the ITEL-Phase II project on developing a Survey to Profile the Pedagogical Knowledge in the Teaching Profession. The purpose of the report is to provide an overview of current research on teacher motivation, major theoretical frameworks guiding this research, available assessments of teacher motivation, and implications for the instructional process, including implications for both teachers and students. The report concludes with recommendations for approaches to the study of teacher motivation in a large-scale assessment of teachers' general pedagogical knowledge. The work is commissioned to Jun. Prof. Ph.D. Fani Lauermann of the Department of Psychology and Bonn Center for Teacher Education, University of Bonn. This Room Document accompanies the ITEL-Phase II Progress Report [EDU/CERI/CD(2015)4].*

*The opinions expressed in this paper are the sole responsibility of the author and do not necessarily reflect those of the OECD or of the governments of its member countries.*

Sonia Guerriero, Project Leader, EDU/IMEP (Sonia.Guerriero@oecd.org)

**JT03373782**

Complete document available on OLIS in its original format

*This document and any map included herein are without prejudice to the status of or sovereignty over any territory, to the delimitation of international frontiers and boundaries and to the name of any territory, city or area.*

**TABLE OF CONTENTS**

ABSTRACT .....3

PART 1: CONCEPTUALIZATION OF TEACHER MOTIVATION .....4

    What is Teacher Motivation and Why does it Matter for Teachers’ Professional Competence? .....4

        Introduction .....4

        Conceptualizations of teacher motivation and links to professional knowledge and competence.....4

        The importance of studying teacher motivation in addition to knowledge .....6

PART 2: REVIEW OF TEACHER MOTIVATION RESEARCH .....8

    Methodological Approach .....8

        Introduction .....8

        Search strategy and selection criteria .....8

        Results from the implemented search strategies .....10

    Overview of Selected Studies .....12

PART 3: ANALYSIS AND DISCUSSION OF SELECTED STUDIES AND MOTIVATIONAL FRAMEWORKS .....45

    Approaches to the Conceptualization of Teacher Motivation and Implications for the Instructional Process .....45

        Teacher self-efficacy (cf. Part 2, Table 1).....46

        Teachers’ expectancies and values (cf. Part 2, Table 2).....48

        Teachers’ achievement and relational goals/goal orientations (cf. Part 2, Table 3).....49

        Teachers’ autonomous motivation and self-determination (cf. Part 2, Table 4) .....51

        Teachers’ enthusiasm, interest, passion and personal responsibility (cf. Part 2, Table 5) .....53

    Summary, Limitations and Open Questions .....56

PART 4: OUTLOOK AND RECOMMENDATIONS FOR A LARGE-SCALE INTERNATIONAL STUDY ON TEACHERS’ KNOWLEDGE AND PROFESSIONAL COMPETENCE .....58

    Implementation of Teacher Motivation Assessments on an International Scale .....58

    Theoretical Frameworks that Can Inform the Selection of Teacher Motivation Constructs .....58

    Focus on Specific Teaching Tasks Versus General Motivational Orientations Toward Teaching.....59

    The Utility of Teacher Motivation Assessments for a Large-Scale International Assessment of Teachers’ General Pedagogical Knowledge .....60

REFERENCES .....61

**Tables**

Table 1. Overview of studies included in the report: Socio-cognitive theory and teacher self-efficacy ...12

Table 2. Overview of studies included in the report: Expectancy-value theory .....19

Table 3. Overview of studies included in the report: Achievement goal theory.....26

Table 4. Overview of studies included in the report: Self-determination theory .....34

Table 5. Overview of studies included in the report: Multiple theoretical frameworks and motivational processes .....38

## ABSTRACT

The purpose of this report is to provide an overview of current research on teacher motivation, major theoretical frameworks guiding this research, available assessments of teacher motivation, and implications for the instructional process, including implications for both teachers and students. Teacher motivation constitutes a key element of teachers' professional competencies, with implications for teachers' psychological wellbeing, instructional practices, and students' academic and socio-emotional outcomes. Of primary interest for this report are the connections between various operationalizations of teacher motivation and teachers' instructional behaviours, teachers' knowledge about the instructional process, and student outcomes. Because various operationalizations and conceptualizations of motivation have been proposed in the literature, the report begins with a brief outline of the conceptualization that guided the conducted literature review (Part 1), as well as a list of inclusion and exclusion criteria for identified studies on teacher motivation (Part 2). The main part of the report describes ways in which teacher motivation has been operationalized in the literature, as well as an overview of teacher and student outcomes linked to each of these operationalizations (Parts 2 and 3). The report concludes with a discussion of the identified approaches to the study of teacher motivation (Part 3), and corresponding recommendations for their use in a large-scale assessment of teachers' general pedagogical knowledge (Part 4).

## **PART 1: CONCEPTUALIZATION OF TEACHER MOTIVATION**

### **What is Teacher Motivation and Why does it Matter for Teachers' Professional Competence?**

#### ***Introduction***

1. The main focus of the first part of this report is on the question: What is teacher motivation and why does it matter for teachers' professional competence? Accordingly, this section will provide a conceptualization of teacher motivation and a brief discussion of why this construct has attracted so much attention among educational researchers in recent years. I will argue that teacher motivation is an essential element of teachers' professional competence, analogous to the critical role that student motivation plays in students' academic success. I will devote special attention to the links between teacher motivation and teachers' pedagogical knowledge, and I will outline the benefits of examining the relations between motivation and knowledge, as well as their combined effects on educational outcomes. I will draw analogies to student research (e.g., the Programme for International Student Assessment), which also includes assessments of knowledge and motivation, and I will provide examples of questions that can be answered when assessments of motivational constructs are included in addition to knowledge tests.

#### ***Conceptualizations of teacher motivation and links to professional knowledge and competence***

2. Although various approaches to the conceptualization of motivation exist, a general definition that is compatible with these approaches and that guided the present review is motivation as "the process whereby goal-directed activity is instigated and sustained" (Schunk, Pintrich, & Meece, 2008, p. 4). The process element of this definition implies that motivation needs to be inferred from actions (e.g., choices, effort, persistence, and verbal statements) rather than products. In addition, the goal-oriented nature of the motivational process implies awareness of something that individuals would like to attain or avoid. In the context of teaching, motivation is oriented towards teaching-related activities, tasks, and outcomes that teachers strive to attain or avoid.

3. Examples of motivational constructs include teacher self-efficacy (confidence in teachers' capability to bring about desired educational outcomes), expectancies and values (expected success in and valuing of a given choice or an activity), types of goals (e.g., to develop professional competence or to establish positive relationships with students), and intrinsic orientations (e.g., the desire for self-determination of one's behaviour). As will be discussed in more detail in subsequent sections of the report, self-efficacy is a critical motivational construct because individuals seek situations and tasks for which they believe to have sufficient competence, and are likely to avoid situations that exceed their perceived capabilities. Expectancies and values are important, because individuals seek situations in which they not only expect to succeed, but that are also perceived as personally valuable. The quality and type of engagement in a particular situation is also shaped by the types of goals that individuals pursue, as well as by the degree to which their behaviour is motivated by intrinsic (stemming from within) versus extrinsic (stemming from without) factors. In the context of teaching, these constructs play a key role for professional choices, goal setting, willingness to persist in the face of difficulty, psychological wellbeing, and the desire for self-improvement such as engagement in professional development (cf. Richardson, Karabenick, & Watt, 2014). Theoretical assumptions about, available evidence for each of these constructs, and their implications for the motivational process will be discussed in subsequent sections of this report (see Parts 2 and 3).

4. Why should teacher motivation be considered in a study that focuses on teachers' professional knowledge and competence? Motivation constitutes a core element of teachers' professional competence, and is essential for teachers' professional success. The definition of professional competence guiding this

discussion is competence in terms of “skills, knowledge, attitudes, and motivational variables that form the basis for mastery of specific situations” (Kunter et al., 2013, p. 807). Teacher motivation is included in this conceptualization, because the successful mastery of instructional situations requires not only knowledge about the instructional process, but is also influenced by teachers’ affective, motivational, and self-regulatory characteristics. These characteristics constitute core elements of competent teaching.

5. In support of this multifaceted conceptualization of competence, Kunter and colleagues (2013) utilized data from German math teachers whose classes had participated in the Programme for International Student Assessment in 2003 (Organisation for Economic Development and Co-operation [OECD], 2004) and demonstrated that motivational characteristics such as teachers’ enthusiasm for teaching predicted not only student- and teacher-reported instructional quality, but also students’ achievement and interest in mathematics. Enthusiasm for teaching emerged as a positive predictor of student outcomes, even after controlling for the effects of other competencies such as teachers’ pedagogical content knowledge (knowledge about the teaching and learning of mathematics), teachers’ self-regulatory skills, and their teaching philosophy (constructivist views about teaching). Teachers’ motivational characteristics thus complement their professional knowledge and contribute to competent instruction and desirable educational outcomes.

6. Similarly, Blömeke and Delaney (2012) proposed that the two key elements of teachers’ professional competence are their professional knowledge and affective-motivational characteristics. Teachers’ professional knowledge includes content knowledge (knowledge of a particular content area), pedagogical content knowledge (knowledge about the teaching and learning of a content area), and general pedagogical knowledge (knowledge about teaching and learning that is not specific to a content area) (cf. Shulman, 1986, 1987). Affective-motivational characteristics include teachers’ beliefs about their content area, about teaching, and about student learning, as well as teachers’ own motivation and self-regulation. Such characteristics are important, because they influence teachers’ decision-making in particular situations (e.g., how and whether they use available knowledge), as well as teachers’ self-evaluations and corresponding engagement in professional development opportunities (see reviews in Blömeke & Delaney, 2012; Richardson et al., 2014). Indeed, as will be discussed in subsequent parts of this report, teachers’ motivations have been linked not only to desirable instructional practices in the classroom, but also to adaptive professional behaviours such as help-seeking in the face of professional challenges, and involvement in professional development (see Parts 2 and 3).

7. Arguments in support of a conceptualization of professional competence that includes not only teachers’ knowledge, but also motivation can be derived from research with both teachers and students. For instance, in a qualitative study in which teachers, students and parents were asked to describe the teachers’ roles and responsibilities in an open-ended format, the teachers’ responsibility for having pedagogical, methodological, and content knowledge was mentioned just as frequently as their responsibility for being prepared, motivated, and willing to invest much effort into teaching students (Helker & Wosnitza, 2014). Accordingly, from the perspective of teachers, students, and parents, teachers’ motivation appears to be just as salient for the teachers’ professional role, as is their knowledge about instruction. Furthermore, the most frequently mentioned responsibilities were focused on social factors such as being caring, compassionate and friendly, which are also captured in assessments of teacher motivation (e.g., teachers’ relational goals, enthusiasm for teaching students, and responsibility for having positive relationships with students; see Parts 2 and 3 of the report). Thus, the motivational characteristics of teachers constitute a key element of professional competence not only from the perspective of educational researchers, but also from the perspective of teachers, students, and parents.

8. Evidence from research focusing on students can serve as a useful analogy for the benefits of considering both motivation and knowledge in research focusing on teaching. A prominent example is the Programme for International Student Assessment (PISA) conducted by the Organisation for Economic

Development and Co-operation, with its combined focus on students' knowledge in selected academic domains, but also on motivational constructs such as engagement, motivational drive and self-beliefs (e.g., OECD, 2013a). Many of the motivational constructs included in PISA have been adapted for the teaching profession, including intrinsic motivation (enjoying and liking a particular domain), the perceived utility of learning a particular domain, self-responsibility, self-efficacy (confidence in one's ability to master specific tasks), and self-concept of ability (perceived ability in a given domain). The inclusion of these constructs in PISA has allowed researchers to study such important topics as differences in motivation and engagement in academic domains such as mathematics, even in the absence of differences in performance, the role of teachers and schools in shaping students' motivation and behavioural engagement in school-related activities (OECD, 2013a), as well as students' choices of particular career paths in math and science (Nagengast et al., 2011; OECD, 2013a). Importantly, in addition to its role as an antecedent of academic success and of educational and career choices, student motivation is itself recognized as a critical educational outcome and a valuable educational goal. Analogous research can be conducted with respect to teacher motivation.

9. Whereas research on students' academic motivation is well established and there is substantial empirical evidence corroborating its role as an antecedent of students' academic success and educational and career choices, research on teacher motivation represents a relatively new area. A special issue on the topic of teacher motivation published in 2008 concluded that systematic theory-driven research on teacher motivation had essentially been limited to two types of constructs: beliefs about ability (teacher self-efficacy) and teachers' job satisfaction (Watt & Richardson, 2008a). Both of these constructs have been considered in large-scale international assessments of teachers' beliefs, including, for instance, the Teaching and Learning International Survey (TALIS, OECD, 2014; Vieluf, Kaplan, Klieme, & Bayer, 2012), where teacher self-efficacy is conceptualized as a direct antecedent of job satisfaction.<sup>1</sup> Thus, there is general consensus among researchers and policy makers about the importance of these motivational constructs for the instructional process.

10. Although still in its infancy, teacher motivation research no longer constitutes an "overlooked" area, as researchers have adapted motivational frameworks, originally developed to study students' motivations, for the teaching profession. This includes continued research on established constructs such as teacher self-efficacy, but also on teachers' expectancies, values, goals, and intrinsic orientations (Richardson et al., 2014). Accumulating evidence, discussed in detail in subsequent sections, suggests that—similar to findings with students' motivation and achievement—teacher motivation has critical implications for teachers' decision-making, professional wellbeing, professional learning, instructional practices, and students' academic success.

### ***The importance of studying teacher motivation in addition to knowledge***

11. As is evident from the previous discussion and will be discussed in more detail in subsequent sections, teacher motivation is important for the following reasons:

- Teacher motivation constitutes a *core element of teachers' professional competence* in terms of their ability to master instructional situations.

---

<sup>1</sup> Although job satisfaction undoubtedly has motivational implications, it is not included as a motivational construct in the present report. The main reason is that job satisfaction (in terms of level of contentment with job characteristics and with the profession) is often considered as an outcome of motivational processes. Job satisfaction has been empirically distinguished from related motivational constructs such as enthusiasm for teaching (Kunter et al., 2008), which is a construct that is included in the present report.

- Teacher motivation is related to teachers' *professional and psychological wellbeing* and job satisfaction.
- Teacher motivation is related to teachers' *decision-making* and their chosen instructional practices, including links to teacher- and student-reported *use of high-quality instructional practices*.
- Teacher motivation is related to teachers' willingness to take advantage of learning opportunities and to engage in *professional development*. As such, teacher motivation can be conceptualized as both an antecedent and a concomitant of professional knowledge.
- Teacher motivation is related to *students' motivation and performance*, beyond the effects of teachers' knowledge about effective instruction in a particular subject domain.

12. From the perspective of educational policy, teacher motivation is not only a means towards improving educational outcomes, but is also in and of itself a valuable educational outcome that is related to teachers' wellbeing, intention to persist in teaching, and ultimately teachers' professional success. In a climate of increasing emphasis on formal educational accountability in many OECD countries (OECD, 2013b), concerns have been raised about the impact that external accountability pressures may have on teachers' motivation and wellbeing (Herman, 2007; Herman, Abedi, & Golan, 1994; Lauermaun & Karabenick, 2011). Unintended side effects of high-stakes accountability pressures based on students' test performance have been documented, such as teaching test-specific skills (Jacob, 2005), cheating (Jacob & Levitt, 2003), and exit of qualified teachers from low-performing schools (Clotfelter, Ladd, Vigdor, & Diaz, 2004; Herman, 2007). All the more important, therefore, is a systematic analysis of the conditions under which teachers are motivated and willing to assume responsibility for their teaching and for student outcomes, to persist in the face of difficulty, and to contribute to desirable educational outcomes, even in the absence of external pressures and control mechanisms. Accordingly, the next two sections are dedicated to different conceptualizations of teacher motivation and corresponding implications for the instructional process.

## PART 2: REVIEW OF TEACHER MOTIVATION RESEARCH

### Methodological Approach

#### *Introduction*

13. The main objective of this section is to provide an overview of recent research on teacher motivation and to describe the search strategy (including searched databases, keywords, and existing reviews), as well as the criteria used for selection of relevant studies on teacher motivation. Analysis and discussion of these studies is provided in subsequent sections.

#### *Search strategy and selection criteria*

14. Multiple search strategies were employed in order to provide a comprehensive overview of the available evidence:

##### *Strategy 1: Database search (PsycInfo and ERIC)*

15. Two databases, PsycInfo and ERIC, were searched in November 2014, using the following criteria:

- The titles and abstracts of articles in PsycInfo and ERIC were searched for the terms:

*"teacher motiv\*" or "teaching motiv\*" or "motivation for teaching" or "motives for teaching" or "teachers motiv\*"*

The use of truncation broadened the search to include various word endings and spellings. For instance, the truncation “motiv\*” implied that the search included such terms as “motivation” as well as “motives”. The search was limited to abstracts and titles to ensure that teacher motivation was a key topic of the article and to reduce the number of irrelevant hits. Complementary search of reference lists, described below, was used to ensure that important work was not missed.

- The search was limited to peer-reviewed journal articles.
- Only studies published in English were considered.
- Only studies published since January 1998 (until November 2014) were searched. The objective was to focus on recent evidence and assessments that are currently prevalent in the literature. Since systematic theory-driven research on teacher motivation is a relatively new area, this constraint has implications primarily for well-established constructs. Complementary search strategies outlined below were used in order to provide a comprehensive review.

##### *Strategy 2: Search of reference lists*

- The reference lists of key publications focusing on teacher motivation were searched to identify additional literature not captured by the initial database search. Very few systematic reviews of the teacher motivation literature exist to date. These include:

- an edited volume on teacher motivation published by Routledge in 2014 (“Teacher Motivation: Theory and Practice”),
  - a special issue on teacher motivation published in the International Journal of Educational Research (IJER) in 2014,
  - a special issue published in the Journal of Learning and Instruction (JLI) in 2008.
- Research included in these volumes was screened for relevant citations not captured in the systematic database search. This step is essential, because the word “motivation” is typically, but not always used to describe motivational processes. For instance, achievement goal theory is one of the most popular theories of motivation in educational contexts and has been used with both students and teachers. However, an author using this theoretical framework may reference teachers’ “achievement goals” rather than a more general and less descriptive term such as “motivation.” As a consequence, the study would not be captured by such search terms as “teacher motivation.” Therefore, a complementary search of review articles and references is necessary. Referenced articles were included in this report if:
    - they were identified as key publications on the topic of teacher motivation in review articles and chapters,
    - they examined the links between teacher motivation and teacher-reported instructional practices, student-reported instructional practices, or students’ educational outcomes,
    - they fulfilled all other selection criteria specified in this report.

#### *Additional selection criteria*

- Only quantitative empirical studies using standardized assessments of teacher motivation were included in the review. Although qualitative studies (e.g., using interview data) are also informative, this type of research was considered less relevant for the purposes of a large-scale international assessment.
- Only assessments of teacher motivation that focus on teaching or the instructional process were considered. This implies that, for instance, an assessment of teachers’ motivation for working on creative tasks would not be included in the review, since this measure would be only indirectly related to teaching or the instructional process (e.g., Hong, Hartzell, & Greene, 2009). Similarly, self-efficacy for using the internet would not be included since this skill is not directly related to teaching (e.g., Kao, Wu, & Tsai, 2011). A scale about self-efficacy for using technology in the classroom would have been included. In addition, assessments of teachers’ beliefs about what motivates them were not included, since this is not a direct measure of motivation for teaching, but rather an assessment of motivational antecedents (e.g., Kocabas, 2009). Finally, the search criteria did not include assessments of general work motivation, but rather assessments specifically developed or adapted for the teaching profession.
- Only studies with in-service teachers in primary and secondary education settings were considered. Although research with pre-service teachers may be relevant, the implications of such research for the instructional process and for students are uncertain. Therefore, this review focused only on research with practicing teachers. Only one exception to this rule was made for a study that examined links between pre-service teachers’ motives for teaching and their general pedagogical knowledge (König & Rothland, 2012).
- Only studies with samples of at least 30 teachers were considered, which excluded case studies and very small-scale studies from the analyses.

- Only articles written for researcher audience were considered. Papers targeting practitioners and administrators were not considered in the review.

*The selection criteria at a glance:*

Peer-reviewed journal articles

Published in English

Published between January 1998 and November 2014

Focus on in-service teachers in primary and secondary education settings

Use of a quantitative approach

Use of a standardized assessment of teacher motivation that explicitly references teaching tasks and/or the instructional process

Use of a sample greater than 30

Written for researchers

*Results from the implemented search strategies*

16. The database search of PsycInfo resulted in **164** hits, and the database search of ERIC resulted in **260** hits. All references were downloaded in citation and reference software to eliminate duplicates. After the elimination of duplicate entries, **323** entries were retained for further review.

17. Each reference (title and abstract) was then reviewed to ensure that the selection criteria were met. More than one exclusion criterion may apply to a single article. However, once an exclusion criterion was found, additional exclusion criteria were not searched. Full articles were downloaded and screened if the purpose of the study and its relevance for the present review of teacher motivation were not clear from the abstract. Of the originally identified **323** studies, **38** studies had a clear relevance for this report and were included in our analysis of the conceptualization of teacher motivation, its operationalization, and correlates.

18. Frequent reasons for excluding studies from this review were their focus on pre-service teachers, the use of a qualitative approach, and the use of a motivation assessment that did not have a direct link to teaching or the instructional process (e.g., assessments of teachers' strategies for motivating students, the motivation of a non-teacher population such as tutors and college professors, assessments of motivation related to such outcomes as mental health, the teachers' pursuit of postgraduate studies, implementation of a health program and others).

19. The next stage of the search process consisted of screening of references in review articles and in a recently published (2014) handbook of teacher motivation. As noted previously (see search criteria), the word "motivation" or "motives" may not be used consistently in research focusing on such constructs as teacher goals, efficacy, or expectancies. Therefore, this complementary search strategy of review articles and chapters is necessary. Studies that were identified as suitable for this review and that were found through this search strategy are marked with three asterisks (\*\*\*) . Overall, the review includes **64** studies published in **60** articles (some articles included more than one relevant study).

It is important to note that the implemented search strategies do not aim to include *all* available studies related to teacher motivation, but rather to provide an overview of the most common and influential conceptualizations of teacher motivation in recent research, under consideration of their relevance for an international large-scale assessment of teachers' professional competencies and general pedagogical knowledge.

## Overview of Selected Studies

**Table 1. Overview of studies included in the report: Socio-cognitive theory and teacher self-efficacy**

(Note: Research including teacher efficacy measures within the framework of “expectancy-value theory” is summarized in the next table and is therefore not referenced here.)

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Tschannen-Moran and Woolfolk Hoy (2001, Study 3) ***	Bandura’s sociocognitive theory applied to the teaching profession “A teacher’s efficacy belief is a judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated” (p. 783)	Three subscales, 12 items short version, 24 items long version Answer scale: 1 (nothing) to 9 (a great deal) <ul style="list-style-type: none"> <li>Efficacy for instructional strategies (15 items long version, 4 items short version, e.g., “To what extent can you use a variety of assessment strategies?”)</li> <li>Efficacy for classroom management (9 items long version, 4 items short version, e.g., “How much can you do to control disruptive behaviour in the classroom?”)</li> <li>Efficacy for student engagement (12 items long version, 4 items short version, e.g., “How much can you do to get students to believe they can do well in schoolwork?”).</li> </ul>	103 pre-service and 255 in-service teachers, USA	Paper-and-pencil, cross-sectional, recruitment in university classes	<ul style="list-style-type: none"> <li>The short and long forms of the scale had similar results</li> <li>Positive correlations with teachers’ internal locus of control and general teacher efficacy (beliefs about what teachers in general are capable of doing, as opposed to beliefs in own capabilities)</li> </ul>
Tschannen-Moran and Woolfolk Hoy (2007) ***	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy, (2001)	Personal teacher efficacy same as Teachers’ Sense of Efficacy Scale, long version (Tschannen-Moran & Woolfolk Hoy, 2001)	255 teachers (74 novice teachers, 181 career teachers), USA	Paper-and-pencil, cross-sectional, recruitment in university classes	<ul style="list-style-type: none"> <li>Teacher efficacy of novice teachers was positively correlated with perceived availability of teaching resources (= teachers’ ratings of materials provided by the school on a scale from “non-existent” to “excellent”) and self-reported satisfaction with teaching performance (perceived teaching mastery)</li> <li>Teacher efficacy of career teachers was also positively related with perceived parental support (by the parents of their students) and involvement, and with perceived community support in the school. These</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
					correlations were not significant in the sample of novice teachers ( <i>that sample was smaller, which implies somewhat smaller statistical power</i> ).
Tschannen-Moran and McMaster (2009) ***	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy (2001)	Same as Teachers' Sense of Efficacy Scale, short version (Tschannen-Moran & Woolfolk Hoy, 2001)  7 items were added to assess self-efficacy specifically for reading instruction (e.g., "To what extent can you teach the sound/letter relationship to your students?")	93 primary teachers participating in 1 of 4 formats of professional development (PD) for a reading strategy, USA	Paper-and-pencil, longitudinal, data collection at the beginning of the PD session and one month later	<ul style="list-style-type: none"> <li>• Bivariate correlations not reported</li> <li>• PD sessions that included follow-up coaching had the strongest effect on self-efficacy beliefs for reading instruction as well as for the self-reported implementation of a new instructional strategy for reading</li> <li>• A proportion of the teachers who participated in PD formats that included a demonstration with local students and a planning and practice session, but no follow-up coaching, experienced a decrease in their self-efficacy for reading instruction</li> <li>• Significant increase in the teacher efficacy assessment that was not specific to reading (TSES; Tschannen-Moran &amp; Woolfolk Hoy, 2001) was observed from pre- to post-test, but there was no significant treatment effect (i.e., it did not seem to matter which PD condition the teachers participated in; the PD conditions mattered more for the efficacy scale that specifically focused on reading instruction)</li> </ul>
Ciani, Summers, and Easter (2008)	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy (2001)	Same as Teachers' Sense of Efficacy Scale, short version (Tschannen-Moran & Woolfolk Hoy, 2001)	156 high school teachers	Paper-and-pencil, cross-sectional during inservice meetings	<ul style="list-style-type: none"> <li>• Bivariate correlations not reported</li> <li>• Path analysis indicated positive associations between teacher efficacy and perceived collective efficacy of teachers in the school (belief in ability to collectively accomplish goals), as well as self-reported mastery-oriented instructional practices (instructional practices that emphasize student learning and task mastery as the main purpose of engagement in academic tasks).</li> </ul>
Klassen et al. (2008, Study 1)	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy (2001)	Same as Teachers' Sense of Efficacy Scale, short version (Tschannen-Moran & Woolfolk Hoy, 2001)	502 secondary teachers: Canada (255), Singapore (247)	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>• Teacher efficacy in both samples was positively correlated with collective teacher efficacy and teachers' perceived academic climate (e.g., emphasis on high academic</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
					<p>standards for students)</p> <ul style="list-style-type: none"> <li>• Teacher efficacy in the Singaporean sample was also correlated with teacher-reported student socioeconomic status (correlation not significant in Canadian sample)</li> <li>• Personal teacher-efficacy was a much less important predictor of teachers' perceptions of school climate (here: whether the school places emphasis on academic standards), relative to the effects of collective teacher efficacy and student SES.</li> </ul>
Klassen and Chiu (2010) ***	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy (2001)	Same as Teachers' Sense of Efficacy Scale, short version (Tschannen-Moran & Woolfolk Hoy, 2001)	1430 teachers, Canada	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>• Teacher self-efficacy showed a non-linear association with years of teaching experience: increasing from early career to mid-career and then falling afterwards.</li> <li>• Teacher self-efficacy was positively correlated with job satisfaction and negatively with overall job stress.</li> <li>• IRT analyses revealed a positive link between workload stress and classroom management self-efficacy (teachers whose workload stress exceeded the mean by 10% averaged 2% better classroom management self-efficacy; in contrast, teachers whose classroom stress exceeded the mean by 10% averaged 5% worse classroom management self-efficacy). <ul style="list-style-type: none"> <li>○ Workload stress references such items as stress due to having too much work to do</li> <li>○ Classroom stress references such items as problems with student behaviour</li> </ul> </li> </ul>
Klassen and Chiu (2011) ***	Personal teacher efficacy same as Tschannen-Moran and Woolfolk Hoy, (2001)	Same as Teachers' Sense of Efficacy Scale, short version (Tschannen-Moran & Woolfolk Hoy, 2001)	434 teachers (also, 379 pre-service teachers), Canada	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>• Teacher self-efficacy was negatively correlated with perceived stress and to intentions to quit the job.</li> <li>• Teacher self-efficacy for instructional strategies was significantly negatively related to classroom stress, but the negative associations with overall stress and the</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
					intention to quit were not significant.
Caprara, Barbaranelli, Steca, and Malone (2006) ***	Teacher self-efficacy ("teachers' beliefs in their ability to effectively handle various tasks, obligations, and challenges related to their professional role" p. 480)	Scale developed analogous to Tschannen-Moran and Woolfolk Hoy (2001) One scale, 12 items (e.g., "I am capable of overcoming all the challenges I encounter in meeting my teaching objectives") Only 5 items were used in this study, selected based on a factor analysis	2184 junior high school teachers, Italy	Paper-and-pencil (distributed by the principal), teacher data assessed only once, but average student achievement at the school level was available for the previous and subsequent school year	<ul style="list-style-type: none"> <li>Teacher self-efficacy was positively correlated with job satisfaction</li> <li>Aggregated ratings of teacher self-efficacy within a school were positively related to school-level average achievement of students, controlling for previous school-level average achievement of students</li> </ul>
Skaalvik and Skaalvik (2007) ***	Teacher self-efficacy (confidence in teaching ability with regard to selected teaching tasks)	Six subscales, 24 items Answer scale: 1 (not certain at all) to 7 (absolutely certain) <ul style="list-style-type: none"> <li>Instruction (4 items, e.g., "How certain are you that you can provide good guidance and instruction to all students regardless of their level of ability?")</li> <li>Adapting education to individual student needs (4 items, e.g., "How certain are you that you can provide realistic challenge for all students even in mixed ability classes?")</li> <li>Motivating students (4 items, e.g., "How certain are you that you can wake the desire to learn even among the lowest-achieving students?")</li> <li>Keeping discipline (4 items, e.g., "How certain are you that you can get students with behavioural problems to follow classroom rules?")</li> </ul>	244 elementary and middle school teachers, Norway	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Teacher self-efficacy was positively related to collective teacher efficacy and negatively to teacher burnout</li> <li>Teacher self-efficacy could be empirically distinguished from collective teacher efficacy and beliefs about external control (teachers' general beliefs about limitations to what can be achieved through education)</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<ul style="list-style-type: none"> <li>Cooperating with colleagues and parents (4 items, e.g., “How certain are you that you can collaborate constructively with parents of students with behavioural problems?”)</li> <li>Coping with changes and challenges (4 items, e.g., “How certain are you that you can teach well even if you are told to use instructional methods that would not be your choice?”)</li> </ul> <p>The authors confirmed one second-order efficacy factor, in addition to the 6 first order factors listed above.</p>			
Skaalvik and Skaalvik (2010) ***	Same as Skaalvik & Skaalvik (2007)	Same as Skaalvik & Skaalvik (2007)	2249 teachers, Norway	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Teacher self-efficacy was positively related to collective teacher efficacy and job satisfaction, and negatively to teacher burnout</li> <li>Teacher self-efficacy was positively related to indicators of a positive work environment (e.g., job autonomy and positive relations with parents)</li> </ul>
Thoonen, Slegers, Peetsma, and Oort (2011)	“Self-efficacy is a future-oriented belief about the level of competence that a person expects he or she will display in a given situation” (p. 348)	One scale, 5 items (e.g., “I have the feeling that I am successful in my work”)	194 teachers and 3462 students in primary schools, Netherlands	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Bivariate correlations not reported</li> <li>Multi-level model indicated that teacher efficacy was positively related to self-reported teaching practices (process-oriented instruction, fit between students’ personal lives and school, cooperative learning, student differentiation) and to student-reported well-being in school (e.g., “I am settled in this school”)</li> <li>Surprisingly, no significant association with other variables of student motivation such as students’ efficacy for learning, student mastery, intrinsic motivation</li> </ul>
Thoonen, Slegers, Oort, Peetsma, and	Same as Thoonen, Slegers, Peetsma, and Oort (2011)	Same as Thoonen, Slegers, Peetsma, and Oort (2011)	502 primary teachers, Netherlands	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Teachers’ sense of self-efficacy was positively related to teacher-reported teaching practices (process-oriented</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Geijsel (2011)					instruction, relatedness to students' world, cooperative learning, differentiation), transformational leadership, supportive organizational conditions, willingness for professional learning (e.g., keeping up-to-date)
Thoonen, Sleegers, Oort, and Peetsma (2012)	Same as Thoonen, Sleegers, Peetsma, and Oort (2011)	Same as Thoonen, Sleegers, Peetsma, and Oort (2011)	1010 primary teachers, Netherlands	Paper-and-pencil, longitudinal for 6 annual surveys	<ul style="list-style-type: none"> <li>• Only change over time is examined</li> <li>• The average teacher efficacy fluctuates over time</li> </ul>
Schwarzer and Hallum (2008) ***	Teacher self-efficacy (reference to socio-cognitive theory)	One scale, 10 items, answer scale: 1 (not at all true) to 4 (exactly true), (e.g., „I am convinced that I am able to teach successfully all relevant subject content to even the most difficult students.“)	608 teachers, Syria 595 teachers, Germany	Paper-and-pencil survey, cross-sectional in the Syrian sample, longitudinal in the German sample (1 yr)	<ul style="list-style-type: none"> <li>• Teacher efficacy was negatively related to job stress and burnout</li> <li>• A cross-lagged model in the German sample indicated that self-efficacy predicts change in burnout and not vice versa</li> </ul>
Holzberger, Philipp, and Kunter (2013) ***	Teachers' self-efficacy in four major areas of the teaching profession, namely, job performance; skill development; social interaction with students, parents, and colleagues; and coping with job stress	Teacher efficacy scale originally developed by Schwarzer, Schmitz and Daytner (1999) Answer scale: 1 (disagree) to 4 (agree) <ul style="list-style-type: none"> <li>• Teacher self-efficacy (5 items out of 10 used, e.g., „I am sure that [in my PISA class] I can develop creative ideas for changing unfavourable instructional structures“).</li> </ul>	155 secondary math teachers, 3483 students in grades 9 and 10 in the German extension to PISA 2003 COACTIV, Germany	Paper-and-pencil, 2 time points at the end of grades 9 and 10, only classes who had the same math teacher in grades 9 and 10 were included, Germany	<ul style="list-style-type: none"> <li>• Teacher efficacy was positively related with teacher-reported and student-reported cognitive activation of students, classroom management, and individual learning support by the teacher at both time points, with the exception of a non-significant but positive correlation between teacher efficacy at time 1 and student-reported classroom management at time 2</li> <li>• Cross-lagged analyses indicated that student-reported and teacher-reported classroom management led to an increase in teacher efficacy (but not vice versa); student-reported cognitive activation led to an increase in teacher efficacy, and teacher efficacy led to an increase in teacher-reported learning support for students (remaining cross-lagged paths were not significant)</li> <li>• Thus, student ratings of instructional quality predicted increase in teacher efficacy, but</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
					<p>not vice versa; teacher efficacy predicted increase in teacher-reported instructional quality for learning support (but not vice versa)</p> <ul style="list-style-type: none"> <li>Note: a larger sample may be necessary to uncover these associations</li> </ul>
<p>Holzberger, Philipp, and Kunter (2014) ***</p>	<p>Same as Holzberger et al. (2013)</p>	<p>Same as Holzberger et al. (2013), but one item out of 5 was deleted due to poor psychometric properties</p>	<p>Same as Holzberger et al. (2013), but focused only on grade 10 students</p>	<p>Same as Holzberger et al. (2013)</p>	<ul style="list-style-type: none"> <li>Teacher self-efficacy was positively correlated with teachers' need satisfaction (need for job autonomy, relatedness, competence) and with student-reported instructional practices (cognitive activation, classroom management, teacher-student relationships)</li> <li>There were significant interactions between self-efficacy and need satisfaction on instructional practices (self-efficacy was a negative predictor of teacher-student relationships at low teacher need satisfaction)</li> </ul>

\*\*\* Article included based on search of reference lists.

Table 2. Overview of studies included in the report: Expectancy-value theory

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Jesus and Lens (2005)	Expectancy-value framework of teacher motivation	<p>Two parallel scales for expectancies and values referencing the same items, 2 x 7 items</p> <p>Answer scale: 1 (disagree) to 7 (agree)</p> <ul style="list-style-type: none"> <li>• Success Expectancy Scale: “As a teacher I expect...” (7 items, e.g., “that the students learn”, “to have a good relationship with the students”, “to help the students”)</li> <li>• Value Scale: “As a teacher, it is important to me...” (7 items, same as the success expectancy scale)</li> <li>• Intrinsic Motivation (4 items, e.g., “teaching increases my self-esteem”, and “teaching contributes to my personal development”)</li> <li>• Efficacy Expectancy (6 items e.g., “when I really try, I tend to succeed even with the students who have more difficulty”, and “if a student is unable to do a determined task, I am able to evaluate up to which point the material in question surpasses the reasonable level of difficulty”)</li> <li>• Control of results expectancy (8 items, e.g., “what happens in my classes depends on my behaviour”, and “I have no influence over students’ motivation”)</li> <li>• Success and failure attributions (10 items, e.g., “my successes in teaching is because . . .”, and “my failures in teaching is because . . .” ... with the following possible reasons: e.g., “...my personal qualities and professional competence”, and “working conditions in the schools”)</li> </ul>	258 elementary and secondary teachers, Portugal	Paper-and-pencil study in a professional development class, cross-sectional	<ul style="list-style-type: none"> <li>• Bivariate correlations were not reported</li> <li>• A multivariate regression revealed that the value scale was the strongest positive predictor of teacher-reported professional engagement (operationalized as involvement in extracurricular activities, continuous course improvement, and effort toward teaching); it is noteworthy that the remaining predictors overlapped conceptually since they were multiple components of expectancies, which may have decreased the predictive power of each individual construct in the overall model (relative to the predictive power of values).</li> </ul>
Leithwood and	Expectancy-value framework	Self-evaluated capacity to implement	2290 primary	Paper-and-	<ul style="list-style-type: none"> <li>• Teacher-reported motivation and capacity to</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Jantzi (2006)	of teacher motivation “...motivational processes were conceptualized as qualities of a person oriented toward the future and aimed at helping the person evaluate the need for change or action” (p. 206)	literacy and numeracy-related teaching strategies (analogous to an expectancy component) and self-evaluated motivation to implement these strategies (analogous to a value component). Answer scale: 1 (strongly disagree) to 5 (strongly agree) <ul style="list-style-type: none"> <li>• Self-evaluated teacher capacity to successfully implement literacy or numeracy-related teaching strategies (8 items, e.g., “I have the knowledge and skill I need to implement the Strategy”)</li> <li>• Self-evaluated motivation (18 items, e.g., “The aims of the Strategy are consistent with my own aims about teaching literacy/numeracy in my classroom”)</li> </ul> Notably, multiple constructs were merged into these two scales (e.g., the teacher motivation scale included items about goal clarity, perceived usefulness of the literacy/numeracy strategies, and emotional reactions).	school teachers, UK	pencil, surveys sent to schools via mail (20% response rate), mostly cross-sectional analyses, student achievement data were available for 3 years	implement the literacy/numeracy teaching strategies were positively related to teacher-reported change in classroom practices toward implementation of these strategies <ul style="list-style-type: none"> <li>• Teacher-reported motivation and capacity to implement the literacy/numeracy teaching strategies were not significantly correlated with students’ achievement gains in literacy over 2 years and numeracy over 1 year. However, student achievement was operationalized as: “test results were reported as percentages of students at each of the [performance] levels within a school. This study used the school mean percentage at Level 4 as the achievement measure.”</li> </ul>
Abrami, Poulsen, and Chambers (2004)	Self-evaluated expectancy of success in, value of and cost of teachers’ use of cooperative learning in the classroom	Three subscales, 48 items Scale stem: Definition of cooperative learning (CL): “An instructional strategy in which students work actively and purposefully together in small groups to enhance both their own and their teammates’ learning.” Answer scale: 1 (Strongly Disagree) to 5 (Strongly Agree) <ul style="list-style-type: none"> <li>• Expectancy (20 items, e.g., “Cooperative learning would not work with my students” reversed)</li> <li>• Value (21 items, e.g., “CL is consistent with my teaching philosophy.”)</li> <li>• Cost (7 items, e.g., “Implementing CL takes too much preparation time”)</li> </ul>	933 elementary and secondary teachers, Canada	Paper-and-pencil, cross-sectional, survey administration in staff meetings	<ul style="list-style-type: none"> <li>• Bivariate correlations are not reported between the belief items and self-reported use of CL</li> <li>• Multivariate regression using 48 single items as predictors indicated that teachers’ expectancy of success and perceived value were positively related and cost was negatively related to teacher-reported use of cooperative learning strategies</li> <li>• Multivariate regression using 3 composite scores for each subscale indicated that teachers’ expectancy of success positively predicted teacher-reported use of cooperative learning strategies, controlling for value and cost (which were not significant predictors once expectancies were included as predictors).</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
					<ul style="list-style-type: none"> <li>Analyses comparing mean-level differences between self-reported “users” versus “non-users” of CL in the classroom on the 48 included items suggested that 7 of the 10 items with the largest effect size were expectancy items, and 3 were value items</li> </ul>
Wozney, Venkatesh, and Abrami (2006)	Self-evaluated expectancy of success in, value of and cost of teachers’ use of technology in the classroom	Three subscales, 33 items Scale stem: “The use of computer technology in the classroom...” Answer scale: A (Strongly Disagree) to F (Strongly Agree) <ul style="list-style-type: none"> <li>Expectancy (10 items, e.g., “Is effective because I believe I can implement it successfully.”)</li> <li>Value (14 items, e.g., “Increases academic achievement (e.g., grades)” or “Promotes student collaboration”)</li> <li>Cost (9 items, e.g., “Is not too costly in terms of resources, time and effort”, reversed)</li> </ul>	764 elementary and secondary teachers, Canada	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Bivariate correlations for the belief items are not reported</li> <li>Multivariate regression indicated that teachers’ expectancy of success and perceived value were positively related and cost was negatively related to teacher-reported use of computer technology related to teaching</li> </ul>
Reeve et al. (2014)	Expected effectiveness of autonomy-supportive teaching practices, expected normalcy of these practices, and ease of implementation (which is analogous to cost).  Note: Although the authors do not reference expectancy-value theory directly, these types of beliefs reflect the value of autonomy supportive practices from the perspective of teachers.	Beliefs about autonomy-supportive practices. Three subscales, 2 times 6 items (asked after describing an example of autonomy-supportive teaching and then after an example of controlling teaching) Answer scale: 1-7 <ul style="list-style-type: none"> <li>Effectiveness belief: (“How effective would this approach to teaching be in terms of motivating and engaging your students?” and “If you taught in this way, how much would your students benefit in terms of learning and achievement?” [“No benefit at all” to “A great deal of benefit”].)</li> <li>Normalcy belief: (“Does this teaching scenario describe what the other teachers you know and work with do as teachers?” [“No, not at all” to “Yes, very much”]; and “How typical or</li> </ul>	815 teachers from Korea (74), Singapore (106), Jordan (99), Bedouin (98), Israel (111), Norway (124), Belgium (98), U.S. (80)	Paper-and-pencil in 1-day in-service workshops, online in Belgium, individual invitations in Korea, Jordan, U.S, cross-sectional.	<ul style="list-style-type: none"> <li>Perceived effectiveness, normalcy and ease of implementation of autonomy-supportive and controlling instructional practices predicted teachers’ endorsement of these types of practices</li> <li>Teachers in collectivistic nations were more likely to endorse controlling teaching styles and to perceive them as “normal”</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<p>common is this approach to teaching for the teachers you know and work with?" ["Extremely atypical, uncommon" to "Extremely typical, common"]. )</p> <ul style="list-style-type: none"> <li>Ease of implementation belief: ("How easy and simple (vs. hard and difficult) is this approach to teaching?" ["Extremely hard, difficult to do" to "Extremely easy, simple to do"]; and "Can most teachers teach this way, or is this approach to teaching simply asking too much of teachers?" ["No, this asks too much of teachers" to "Yes, most teachers can do this".])</li> </ul>			
<p>Chatzistamatiou, Dermitzaki, and Bagiatis (2014)</p>	<p>Value of mathematics (perceived importance of math relative to other subjects)</p> <p>Enjoyment of teaching mathematics</p> <p>Self-efficacy in teaching mathematics (perceived teaching ability)</p>	<p>Three scales, 15 items</p> <ul style="list-style-type: none"> <li>Value of mathematics (3 items, e.g., "In comparison to the various school subjects, mathematics is.... [1 = not at all important to 5 = totally important.]")</li> <li>Enjoyment of teaching mathematics (3 items, "I enjoy teaching mathematics.")</li> <li>Self-efficacy in teaching mathematics (9 items, e.g., "I believe I can accurately estimate students' comprehension of what I have taught in mathematics." Scale: 1-5 Agreement)</li> </ul>	<p>292 elementary school teachers, Greece</p>	<p>Paper-and-pencil, recruited through personal contact in schools, cross-sectional</p>	<ul style="list-style-type: none"> <li>Teachers' perceived value of math, enjoyment of teaching math, and self-efficacy to teach math were positively related to teachers' self-regulation toward teaching, teacher-reported encouragement of students' self-regulation skills, and teachers' affective commitment to their profession</li> <li>In a path analysis, enjoyment of teaching math was not a significant predictor of self-regulation strategies for teachers and for students, once the remaining motivational constructs were also included as predictors (<i>However, note that other studies such as, e.g., research by Kunter et al. in Table 5, indicate that enjoyment of teaching students is generally a stronger predictor of instructional strategies than is enjoyment of teaching a subject matter.</i>)</li> </ul>
<p>Finnigan and Gross (2007)</p>	<p>Expectancy for success in meeting school probation goals and value of the school probation policy</p>	<p>Answer scale: 1 (Strongly disagree) to 4 (Strongly agree)</p> <ul style="list-style-type: none"> <li>Expectancy for students and school (3 items, e.g., "Many of the students I teach are not capable of learning the material I am supposed to teach them," reversed)</li> <li>Expectancy for the teachers' ability to</li> </ul>	<p>269 teachers in schools placed on probation for low achievement, USA</p>	<p>Paper-and-pencil, cross-sectional</p>	<ul style="list-style-type: none"> <li>Bivariate correlations not reported</li> <li>Correlational analyses not conducted</li> <li>Descriptive and single item analyses indicated that expectancies and values seemed positively related to willingness to invest effort toward meeting probation goals</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<p>influence students (5 items, e.g., “By trying different teaching methods, I can significantly affect my students’ achievement level.”)</p> <ul style="list-style-type: none"> <li>Value (2 items, e.g., “Probation is a fair policy”)</li> </ul>			
Finnigan (2010)	Expectancy of success in influencing students (“the expectation or “expectancy” that a particular act will lead to the desired outcome” p. 163)	Same as Finnigan & Gross (2007) for expectancy for the teachers’ ability to influence students	4545 teachers in schools placed on probation for low student performance versus no probation, USA	Paper-and-pencil, the probationary status of the school was assessed longitudinally	<ul style="list-style-type: none"> <li>Bivariate correlations not reported</li> <li>Teachers’ expectancy in the first year of school probation predicted the school’s moving off probation status in the following year (<i>which implies improved student achievement</i>)</li> </ul>
Watt and Richardson (2014) *** a)	Expectancy of success in teaching and perceived value of teaching (e.g., intrinsic, social, and extrinsic motives for teaching)	<p>FIT-Choice Scale by Watt &amp; Richardson, 11 factors, 34 items</p> <p>Scale stem: “I chose to become a teacher, because...”</p> <p>Answer scale: 1 (not at all important) to 7 (extremely important)</p> <ul style="list-style-type: none"> <li>Expectancy of success in teaching (e.g., “I have good teaching skills”)</li> <li>Value of teaching: (e.g., “I like teaching”, “Teachers make a worthwhile social contribution”)</li> </ul>	sample size not reported in chapter, Australia	Survey, longitudinal at three time points (beginning and end of teacher education program, beginning of in-service teaching)	<ul style="list-style-type: none"> <li>Bivariate correlations not reported</li> <li>Path analysis coefficients indicate positive associations between motivations reported at degree entry, and teacher-reported instructional practices/ teachers’ beliefs about how their instruction is perceived by their students</li> <li>Ability and social motivations were positively related to desirable instructional practices (e.g., high expectations for students, positive relationships with students, structure), and social motivations were positively related to planned persistence in teaching at the end of one’s teacher education program</li> <li>Teaching as a fall-back career was negatively related to desirable teaching practices and to planned persistence in teaching</li> <li>Social persuasion (going into teaching due to persuasion by others) was positively related to undesirable teacher-reported teaching practices (negativity toward students)</li> </ul>
König and Rothland	Same as Watt & Richardson (2014)	FIT-Choice Scale by Watt & Richardson (e.g., 2014)	130 pre-service	Paper-and-pencil, two	<ul style="list-style-type: none"> <li>Intrinsic motivation for teaching was positively correlated with general</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
(2012)			teachers, Germany	time points during the academic year	<p>pedagogical knowledge at the second time of measurement</p> <ul style="list-style-type: none"> <li>The desire to work with children (social motivation) was positively correlated with general pedagogical knowledge at both time points</li> <li>Extrinsic motivation for teaching was negatively correlated with general pedagogical knowledge at the initial assessment, but not at the second assessment</li> <li>Job security motivation (an extrinsic factor) was related with positive change in general pedagogical knowledge between Times 1 and 2 during the same academic year (<i>Teacher retention is very high in Germany, so that job security may be a particularly relevant motivational factor in this context.</i>)</li> </ul>
Berger and D'Ascoli (2012)	Expectancy of success in teaching and perceived value of teaching (e.g., intrinsic, social, and extrinsic motives for teaching)	<p>FIT-Choice Scale by Watt &amp; Richardson, 11 factors, with minor adaptations:</p> <p>a) two additional items were included in the intrinsic value scale and the dissuasion scales to improve reliability</p> <p>b) A new 4-item scale called "opportunity" was created (e.g., "I simply got the chance to teach")</p>	483 vocational education and training teachers, Switzerland	Paper-and-pencil, cross-sectional, recruitment in an in-service teacher training program	<ul style="list-style-type: none"> <li>Perceptions of prior occupation as practitioners were correlated with the vocational teachers' motivations for teaching (e.g., perceived social significance of one's prior occupation and social motives for teaching).</li> </ul>
Van Uden, Ritzen, and Pieters (2013)	<p>Motives for becoming a teacher: altruistic (desire to contribute to the development of children/young adolescents and society as a whole), intrinsic (passion for teaching and desire to grow professionally, and extrinsic (motivation by salary, professional security, and status)</p> <p>Perceived ability to influence the instructional process, student discipline, and the</p>	<p>Motives for teaching: Adapted scale originally developed by Hargreaves et al. (2007)</p> <p>Three subscales, 12 items</p> <p>Answer scale: 1 (disagree) to 4 (fully agree)</p> <ul style="list-style-type: none"> <li>Altruistic motives for teaching (4 items, e.g., "To give students the best possible start in life")</li> <li>Intrinsic motives for teaching (4 items, e.g., "Having a challenging job")</li> <li>Extrinsic motives for teaching (4 items, e.g., "The earning potential of the job")</li> </ul> <p>Teaching efficacy: Adapted scale from</p>	194 teachers in vocational and prevocational schools, Netherlands	"Digital" questionnaire, cross-sectional, Netherlands	<ul style="list-style-type: none"> <li>Altruistic and intrinsic motives were positively correlated with teaching efficacy, perceived importance of pedagogical, didactic, and subject-matter competence, and teacher-perceived emotional engagement of students (they were not correlated with teacher-perceived behavioural engagement of students).</li> <li>Altruistic motives were also positively related to teacher-reported positive interactions with students</li> <li>Extrinsic motives were positively related to the teachers' perceived importance of</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
	school climate	Bandura (2006), 14 items (e.g., “How much can you do to keep students on task on difficult assignments”).			<p>didactic and subject-matter competence</p> <ul style="list-style-type: none"> <li>Teaching efficacy was positively related to teacher-reported importance of pedagogical, didactic, and subject-matter competence, teacher-reported positive interactions with students, and teacher-reported behavioural and emotional engagement of students</li> <li>Regression analyses indicated that teachers rating themselves higher on dimensions of interpersonal teacher behaviour, importance of didactic and pedagogical competence, and self-efficacy perceived their students as more engaged (<i>motives for teaching were not included in the regression</i>).</li> </ul>
Liu and Onwuegbuzie (2014)	Extrinsic, intrinsic, and social reasons for choosing teaching as a career	<ul style="list-style-type: none"> <li>Dichotomous Yes-No items about reasons for choosing teaching as a career, 7 items (e.g., “I always wanted to become a teacher” and “I was attracted to teaching because of the salary.”)</li> </ul>	510 teachers, China	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Teachers agreeing with intrinsic motives for teaching had higher average job satisfaction</li> </ul>

\*\*\* Article included based on search of reference lists.

a) Article in preparation for submission. Included due to its focus on links between teacher motivation and student-reported instructional practices.

Table 3. Overview of studies included in the report: Achievement goal theory

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Butler (2007)	Teachers' achievement goal orientations reflecting strivings to (a) learn, develop, and acquire professional understandings and skills ( <i>mastery orientation</i> ); (b) demonstrate superior teaching ability ( <i>ability approach</i> ); (c) avoid the demonstration of inferior teaching ability ( <i>ability avoidance</i> ); and (d) get through the day with little effort ( <i>work avoidance</i> ).	Four subscales, 16 items Answer scale from 1 (do not agree at all) to 5 (agree completely). Scale stem: "Teachers differ in what makes them feel they had a successful day in school; when would you feel that you had a successful day?" Subscales: <ul style="list-style-type: none"> <li>• Mastery goals (4 items, e.g., "I learned something new about teaching or about myself as a teacher," "I saw that I was developing professionally and teaching more effectively than in the past")</li> <li>• Ability-approach goals (4 items, e.g., "My classes did better than those of other teachers on an exam," "The principal commended me for having higher teaching ability than most of my colleagues")</li> <li>• Ability-avoidance goals (4 items, e.g., "No one asked a question that I could not answer," "My class did not do worse than those of other teachers on an exam")</li> <li>• Work-avoidance goals (4 items, e.g., "Some of my classes were cancelled because pupils were on a school trip," "The material was easy and I did not have to prepare lessons").</li> </ul>	320 teachers (136 elementary school, 93 junior high school, 91 secondary school), Israel	Paper-pencil (during staff meetings in each school)	<ul style="list-style-type: none"> <li>• Mastery goals were positively related to teachers' positive perceptions of help seeking, preferences for receiving autonomous help, and frequency of help seeking</li> <li>• Ability avoidance was related to negative perceptions of help seeking and help avoidance</li> <li>• Work avoidance was related to teachers' expedient help seeking</li> </ul>
Butler and Shibaz (2008)	Same as Butler (2007)	Same as Butler (2007)	53 teachers and 1287 students in grades 7-9, Israel	Paper and pencil, teachers were surveyed at the beginning of the school year and one	<ul style="list-style-type: none"> <li>• Teacher mastery goals were associated with higher levels of student-reported teacher support and lower levels of perceived teacher inhibition of question asking and help seeking</li> <li>• The reverse was the case for teacher ability-avoidance goals.</li> <li>• Surprisingly, teacher mastery goals</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
				class per teacher was surveyed at the end of the school year (teachers selected classes they liked).	<p>were not positively related to student-reported help seeking (turning to the teacher for help and explanations)</p> <ul style="list-style-type: none"> <li>Teacher ability-avoidance goals were associated with student-reported student cheating in that teacher's class.</li> </ul>
Retelsdorf, Butler, Streblov, and Schiefele (2010, Study 1)	Same as Butler (2007)	<p>Minor modifications to Butler (2007)            Four subscales, 16 items            Answer scale from 1 (applies to me) to 4 (does not apply to me).            Scale stem: 'I would feel that I had a good and successful day in school if...'</p> <ul style="list-style-type: none"> <li>Mastery goal orientation: (4 items, e.g., "something that happened in class made me want to learn more about teaching")</li> <li>Ability-approach goal orientation (4 items, e.g., "my classes did better on an exam than those of other teachers"</li> <li>Ability-avoidance goal orientation (4 items, e.g., "my classes did not do any worse than those of other teachers on an exam)</li> <li>Work-avoidance goal orientation (4 items, e.g., I could use material from previous years and did not have to prepare new lessons).</li> </ul>	281 teachers (71 elementary school, 133 low track secondary school, 77 high track secondary school), Germany	Paper and pencil, cross-sectional survey of teachers	<ul style="list-style-type: none"> <li>Mastery orientation was positively related to teacher-reported mastery-oriented instructional practices, cognitively stimulating instruction, interest in teaching, and negatively to burnout.</li> <li>Ability-approach orientation was related to teacher-reported performance-oriented instructional practices</li> <li>Ability-avoidance orientation was positively related to burnout</li> <li>Work avoidance was positively related to teacher-reported performance-oriented practices, negatively to interest in teaching, and positively to burnout</li> </ul>
Retelsdorf et al. (2010, Study 2)	Same as Butler (2007)	Same as Butler (2007)	69 teachers in grades 7-9, Israel	Paper and pencil study, 41 teachers responded about a class they liked teaching, 28 about a class they did not	<ul style="list-style-type: none"> <li>Mastery orientation was positively related to teacher-reported mastery-oriented instructional practices, cognitively stimulating instruction, and interest in teaching (a negative association with burnout was not significant).</li> <li>Ability-avoidance orientation was related to teacher-reported performance-</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
				like teaching. Outcome measures (e.g., teacher-reported instructional practices) were assessed several months after assessing goals for teaching.	<ul style="list-style-type: none"> <li>oriented instructional practices</li> <li>Work avoidance was positively related to teacher-reported performance-oriented practices, negatively related to cognitively stimulating teaching, and to interest in teaching, and positively related to burnout</li> <li>All correlations were consistent with Study 1, but not all of them were significant, possibly due to the small sample size</li> </ul>
Retelsdorf and Günther (2011)	Same as Butler (2007)	Minor modifications to Retelsdorf et al. (2010), which was an adaptation of Butler (2007)	206 teachers, Germany	Paper and pencil study, cross-sectional	<ul style="list-style-type: none"> <li>Mastery orientation was positively related to teacher-reported use of individual reference norms (e.g., students' individual ability and improvement), and negatively to social reference norms when evaluating students (e.g., comparisons of individual students' performance with the average class performance).</li> <li>Ability orientation and work avoidance were related to the use of social reference norms.</li> <li>Ability-approach orientation was related to the teacher-reported promotion of surface learning strategies (e.g., emphasis on memorization of material).</li> </ul>
Butler (2012, Study 1)	Extension of Butler (2007) to include a focus on teachers' social goals for teaching, which reflect strivings to achieve and maintain close relationships with students.	Four items were included in Butler's (2007) assessment to capture teachers' social goals for teaching (e.g., "I would feel most successful as a teacher if I saw that I was developing closer and better relationships with students in my classes")	530 teachers (183 elementary school, 143 junior high school, 194 high school), Israel	Paper and pencil survey, a subset of teachers participated in an online survey; teachers' goals were assessed at	<ul style="list-style-type: none"> <li>Relational goals were positively correlated with teacher-reported social support for students and mastery-oriented instruction</li> <li>Mastery orientation was positively correlated with teacher-reported mastery-oriented instructional practices</li> <li>Ability-approach, ability-avoidance and work avoidance orientation were positively correlated with teacher-</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
				the beginning of the school year, and outcomes were assessed at the end of the school year.	<p>reported performance-oriented instruction and low demands for students (e.g., giving easy tasks, rarely assigning homework)</p> <ul style="list-style-type: none"> <li>• A structural equation model indicated that teachers' relational goals were a stronger predictor of self-reported mastery oriented instruction than were teachers' mastery-oriented goals</li> </ul>
Butler (2012, Study 2)	Same as Butler (2012, Study 1)	Same as Butler (2012, Study 1)	73 teachers and 1790 students in grades 7-9, Israel	Teachers participated in paper-and-pencil surveys at the beginning and at the end of the school year, and students responded to surveys at the end of the school year.	<ul style="list-style-type: none"> <li>• Teachers' relational goals were positively correlated with student-reported social support by the teacher and mastery-oriented instructional practices, and negatively with low demands by the teacher</li> <li>• Teachers' mastery orientation was negatively related to student-reported performance-oriented instruction</li> <li>• Relatively low or no associations between teacher-reported and student-reported instructional practices</li> <li>• Regression analyses (HLM) indicated that teachers' relational goals were a stronger predictor of student-reported mastery-oriented instruction and student-perceived teacher support than were teachers' mastery goals.</li> </ul>
Butler and Shibaz (2014, Study 1) ***	Same as Butler (2012)	Same as Butler (2012)	341 teachers, Israel	Paper-and-pencil at Time 1 (teacher goals were assessed then), Time 2 survey (instructional practices were assessed then) was either paper-	<ul style="list-style-type: none"> <li>• Relational goals were positively correlated with teacher reports of social support to students and (less strongly) with teacher reports of cognitively stimulating instruction</li> <li>• Mastery goals were positively correlated with teacher reports of cognitively stimulating instruction (and not significantly with social support to students)</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
				and-pencil or online depending on teacher preference, surveys matched based on last four digits of teachers' mobile number to ensure anonymity	
Butler and Shibaz (2014, Study 2) ***	Same as Butler (2012)	Same as Butler (2012)	51 middle school teachers and their 1281 students, Israel	Paper-and-pencil, teachers surveyed at the beginning of the school year, and students at the end of the school year	<ul style="list-style-type: none"> <li>Teachers' relational goals were positively related to student-reported social support by the teacher, cognitively stimulating instruction, and to student-reported help seeking and interest</li> <li>Teachers' mastery goals were positively related to student interest, and to cognitively stimulating instruction</li> <li>Regression analyses (HLM) indicated that teachers' relational and mastery goals were both related to cognitively stimulating instruction, relational goals were the stronger predictor of student-reported social support and help-seeking, and mastery goals were the stronger predictor of student interest</li> </ul>
Nitsche, Dickhäuser, Fasching, and Dresel (2011) ***	Expanded upon Butler's scales and proposed a new format for assessing teachers' achievement goals. "...learning goal orientation was adapted to reflect the striving for a particular type of knowledge and competence (pedagogical knowledge,	Four subscales, 12 facets, 36 items Scale stem: "In my vocation, I aspire..." Answer scale: "1 (strongly disagree) to 5 (strongly agree)" <ul style="list-style-type: none"> <li>Learning goal orientation: pedagogical knowledge (3 items, e.g., . to increasingly understand complicated class situations.)</li> <li>Learning goal orientation: content</li> </ul>	495 teacher trainees, 224 in-service teachers, Germany	Online survey forwarded by the school administration or the university program, cross-sectional	<ul style="list-style-type: none"> <li>Bivariate correlations not reported</li> <li>Standardized path coefficients in a structural equation model for in-service teachers indicated: <ul style="list-style-type: none"> <li>(a) Learning goal orientation was positively related with teachers' self-efficacy, with teacher-perceived benefits of help seeking (e.g., that the teacher seeks help in professional contexts),</li> </ul> </li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
	<p>subject matter content knowledge, and pedagogical-content knowledge).”</p> <p>Teacher efficacy (beliefs about teaching ability)</p>	<p>knowledge (3 items, e.g., . to get perfectly acquainted with my subject.)</p> <ul style="list-style-type: none"> <li>• Learning goal orientation: pedagogical content knowledge (3 items, e.g., . to really comprehend the process of knowledge transfer in my subject.)</li> <li>• Performance approach orientation: colleagues (3 items, e.g., . to demonstrate my colleagues that I know more than other teachers.)</li> <li>• Performance approach orientation: principal (3 items, e.g., . to demonstrate my principal that I know more than other teachers.)</li> <li>• Performance approach orientation: students (3 items, e.g., . to demonstrate my students that I know more than other teachers.)</li> <li>• Performance approach orientation: self (3 items, e.g., . to demonstrate myself that I know more than other teachers.)</li> <li>• Performance avoidance orientation: colleagues (3 items, e.g., . to conceal from my colleagues when I do something less satisfying than other teachers.)</li> <li>• Performance avoidance orientation: principal (3 items, e.g., . to conceal from my principal when I do something less satisfying than other teachers.)</li> <li>• Performance avoidance orientation: students (3 items, e.g., . to conceal from my students when I do something less satisfying than other teachers.)</li> <li>• Performance avoidance orientation: self (3 items, e.g., . to not have to admit to myself when I do something less satisfying than other teachers.)</li> <li>• Work avoidance goal orientation (3 items, e.g., . not to have to work too</li> </ul>			<p>and negatively related to perceived threat of help-seeking (e.g., teacher perceives help seeking as a weakness)</p> <ul style="list-style-type: none"> <li>• (b) Performance-approach goal orientation was positively related to teacher self-efficacy (unrelated to help-seeking perceptions)</li> <li>• (c) Performance-avoidance goal orientation was negatively related to self-efficacy and positively to perceived threat of help-seeking (but unrelated to perceived benefits of help-seeking)</li> <li>• Work avoidance did not have significant associations with self-efficacy or help-seeking perceptions</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		hard.) Teacher efficacy scale by Schwarzer & Hallum, 2008 (e.g., "When I try really hard, I am able to reach even the most difficult students")			
Nitsche, Dickhäuser, Fasching, and Dresel (2013) ***	Same as Nitsche et al. (2011)	Same as Nitsche et al. (2011)	Same as Nitsche et al. (2011), 224 in-service teachers, Germany	Same as Nitsche et al. (2011), in-service teachers	<ul style="list-style-type: none"> <li>• Learning goal orientation was positively related to positive attitude toward professional development, self-reported number of attended training workshops, negatively related to occupational strain, and unrelated to number of self-reported sick days</li> <li>• Performance-approach goals were positively related to occupational strain</li> <li>• Performance-avoidance goals were positively related to occupational strain and negatively related to attitude toward professional development</li> <li>• Work-avoidance was positively related to occupational strain and negatively to self-reported number of attended PD workshops</li> <li>• Regression analyses identified learning goal orientation and work avoidance as the strongest predictors of the self-reported number of attended workshops and reported sick days (of the four types of goals)</li> </ul>
Papaioannou and Christodoulidis (2007) ***	Teachers' achievement goals: mastery, performance approach, performance avoidance goals	Three subscales, 12 items short version, 22 items long version (short version used for analyses of links with job satisfaction) Answer scale: 1 (disagree absolutely) 5 (agree absolutely) <ul style="list-style-type: none"> <li>• Mastery goals (4 items, e.g., "My goal is to continuously develop my abilities as a teacher")</li> <li>• Performance approach goals (4 items, e.g., "My attitude is to be a better teacher than the others")</li> <li>• Performance avoidance goals (4 items,</li> </ul>	430 teachers (222 elementary, 198 secondary, 10 both), Greece	Paper-and-pencil survey, cross-sectional	<ul style="list-style-type: none"> <li>• Mastery goals were positively related with job satisfaction, performance approach goals were unrelated, performance avoidance goals were negatively related to job satisfaction</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		e.g., "I want to avoid teaching things in which I may look incapable")			

\*\*\* Article included based on search of reference lists.

**Table 4. Overview of studies included in the report: Self-determination theory**

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Roth, Assor, Kanat-Maymon, and Kaplan (2007)	Autonomous motivation for teaching (“...autonomous motivations enable people to realize their authentic self, whereas controlled motivations are experienced as sources of external or internal pressure.” p.761)	Four subscales, 16 items Answer scale from 1 to 5 (agreement). <ul style="list-style-type: none"> <li>External motivation (4 items, e.g., “When I devote time to individual talks with students, I do so because I want the parents to appreciate my knowledge and familiarity with their children.”)</li> <li>Introjected motivation (4 items, e.g., “When I try to find interesting subjects and new ways of teaching, I do so because I think it is a shame to keep on teaching in the same way all the time”)</li> <li>Identified motivation (4 items, e.g., “When I try to find interesting subjects and new ways of teaching, I do so because it is important for me to keep up with innovations in teaching”)</li> <li>Intrinsic motivation (4 items, e.g., “When I try to find interesting subjects and new ways of teaching, I do so because it is fun to create new things”)</li> </ul> The scales are weighted and one overall score for autonomous motivation is computed (-3*external -1*introjected +1*identified +3*intrinsic)	132 teachers and 1255 students in grades 3-6, Israel	Paper-and-pencil survey, cross-sectional	<ul style="list-style-type: none"> <li>Autonomous motivation for teaching was positively correlated with teachers' sense of personal accomplishment and negatively with emotional exhaustion.</li> <li>Teachers' self-reported autonomous motivation for teaching was positively correlated with student-reported autonomy-supportive behaviours by the teacher and students' self-reported autonomous motivation for learning.</li> <li>A positive correlation between teachers' self-reported autonomous motivation for teaching and student-reported competence-supportive teaching was positive, but not significant.</li> </ul>
Eyal and Roth (2011)	Same as Roth et al. (2007)	Same as Roth et al. (2007) An autonomous motivation score was based on the intrinsic and identified scales and a controlled motivation score was based on the external and interjected scales.	122 elementary school teachers, Israel	Paper-and-pencil, cross-sectional, recruitment in professional development courses	<ul style="list-style-type: none"> <li>Teachers' autonomous motivation was positively related to teachers' perceived transformational leadership by the principal, and negatively to burnout</li> <li>Teachers' controlling motivation was positively related to teachers' perceived transactional leadership by the principal, and positively to burnout</li> </ul>
Taylor and Ntoumanis (2007)	Teacher self-determination (degree of autonomous motivation for teaching)	New scale based on modifications of two previously existing scales. Five subscales, 20 items  Scale stem: “Why do you teach this class, in general?”	51 teachers of physical education and 787 students in secondary	Paper-and-pencil survey, cross-sectional	<ul style="list-style-type: none"> <li>Teachers' self-determination was positively correlated with teachers' perceptions of the average self-determination of their students and with teacher-reported use of autonomy-supportive instructional practices</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<p>Answer scale: 1 (not at all true) to 7 (very true)</p> <ul style="list-style-type: none"> <li>• Intrinsic motivation (4 items, e.g., “Because teaching this class is fun”)</li> <li>• Identified regulation (4 items, e.g., “Because I think teaching this class is good for myself”)</li> <li>• Introjected regulation (4 items, e.g., “Because I want my colleagues to think I am a good teacher”)</li> <li>• External regulation (4 items, e.g., Because I don’t have the choice”)</li> <li>• Amotivation (4 items, e.g., “I don’t know, I don’t see what teaching this class gives me”)</li> </ul> <p>A self-determination index is computed based on weighted subscales: (3* intrinsic motivation, 2*integrated regulation, 1*identified regulation, -1*introjected regulation, -2*external regulation -3*amotivation).</p>	school, UK		<ul style="list-style-type: none"> <li>• Teachers’ self-determination was not significantly correlated with students’ self-determination</li> <li>• Relatively low or no associations between teacher-reported and student-reported autonomy-supportive practices (with the exception of a positive link between student-reported and teacher-reported teacher involvement, which reflected the teachers’ perceived degree of interest in and emotional support to students)</li> </ul>
Carson and Chase (2009)	Teacher self-determination (degree of autonomous motivation for teaching)	<p>Modification of the Sport Motivation Scale (SMS) (Pelletier et al. 1995) Seven subscales, 28 items Scale stem: “Why do you teach physical education?” Scale answers: 1 (not at all) to 7 (exactly)</p> <ul style="list-style-type: none"> <li>• Intrinsic motivation to know (4 items, e.g., “for the pleasure of discovering new teaching techniques”)</li> <li>• Intrinsic motivation to accomplish (4 items, e.g., “for the pleasure that I feel while executing certain difficult teaching techniques”)</li> <li>• Intrinsic motivation to experience stimulation (4 items, e.g., “for the intense emotions I feel teaching an activity”)</li> <li>• Identified regulation (4 items, e.g., “because it is a good way to learn lots of things which could be useful to me in other areas of my life”)</li> </ul>	247 physical education teachers (82 elementary school, 165 secondary school), USA	Paper-and-pencil survey sent to teachers via mail, cross-sectional	<ul style="list-style-type: none"> <li>• Physical educators’ self-determined motivation was positively related to their perceived fulfilment of their needs for autonomy, competence, and relatedness</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<ul style="list-style-type: none"> <li>Introjected regulation (4 items, e.g., “because I must teach to feel good about myself”)</li> <li>External regulation (4 items, e.g., “for the prestige of being a teacher”)</li> <li>Amotivation (4 items, e.g., “it is not clear to me anymore; I don’t really think my place is in teaching”)</li> </ul>			
Lam, Cheng, and Choy (2010)	Teachers’ autonomous motivation for implementing a project-based learning activity	<p>Four subscales, 20 items Answer scale: 1 (strongly disagree) to 6 (strongly agree)</p> <ul style="list-style-type: none"> <li>Extrinsic motivation by external regulation (5 items, e.g., “I participated because my supervisor would be upset if I didn’t”),</li> <li>Extrinsic motivation by introjected regulation (5 items, e.g., “I participated because I don’t want others to think that I am incapable of doing it”),</li> <li>Extrinsic motivation by identified regulation (5 items, e.g., “I participated because it is helpful to my students”)</li> <li>Intrinsic motivation (5 items, e.g., “I participated because learning new teaching approaches is enjoyable”).</li> </ul>	182 teachers who had participated in a project-based learning program, China	Paper-and-pencil survey via mail, cross-sectional	<ul style="list-style-type: none"> <li>All forms of motivation were positively related to teachers’ perceived school collegiality and school support of teacher competence and autonomy</li> <li>More autonomous forms of teacher motivation were related to higher willingness to use project-based learning (as an instructional practice)</li> </ul>
Soenens, Sierens, Vansteenkiste, Dochy, and Goossens (2012, Study 2) ***	Teachers’ autonomous motivation for teaching	<p>Four subscales, 16 items Scale stem: “I am motivated to teach well because...” Answer scale: 1 (completely disagree) to 5 (completely agree)</p> <ul style="list-style-type: none"> <li>Intrinsic motivation (4 items, e.g., “because I enjoy teaching”)</li> <li>Identified regulation (4 items; e.g., “because it is an important life goal.”)</li> <li>Introjected regulation (4 items; e.g., “because I would feel bad about myself if I don’t”)</li> <li>External regulation (4 items, e.g., “because others force me to do so”).</li> </ul>	317 secondary teachers, Netherlands	Paper-and-pencil survey during a staff meeting, cross-sectional	<ul style="list-style-type: none"> <li>Teachers’ autonomous motivation was negatively related to perceived constraints at work, to indicators of burnout, and to teacher-reported psychologically controlling instructional practices</li> </ul>
Van den Berghe et al. (2014)	Same as Soenens et al. (2012)	<ul style="list-style-type: none"> <li>Same as Soenens et al. (2012)</li> </ul>	201 teachers of physical	Online survey of teachers at	<ul style="list-style-type: none"> <li>Autonomous motivation was negatively related to indicators of burnout, positively to indicators</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
			education (37% elementary school, 59% secondary school, 4% higher education), Netherlands	four time points	of personal accomplishment, and positively to teachers' perceived satisfaction of their basic psychological needs at work, and teacher-reported need-supportive teaching practices
Fernet, Senécal, Guay, Marsh, and Dowson (2008)	Autonomous motivation for teaching-related work tasks	Five subscales applied to 6 teaching tasks (15 items X 6 tasks), 90 items Scale stem: "Why are you engaged in this task?" Answer scale: 1 (does not correspond at all) to 7 (corresponds completely) <ul style="list-style-type: none"> <li>Intrinsic motivation (3 items, e.g., "Because it is pleasant to carry out this task.")</li> <li>Identified motivation (3 items, e.g., "Because it is important for me to carry out this task.")</li> <li>Introjected motivation (3 items, e.g., "Because if I don't carry out this task, I will feel bad.")</li> <li>External motivation (3 items, e.g., "Because my work demands it.")</li> <li>Amotivation (3 items, e.g., "I don't know, sometimes I don't see its purpose.")</li> </ul> The six tasks were: Class preparation, Teaching, Evaluation of students, Class management, Administrative tasks, Complementary tasks)	609 teachers (291 elementary school, 318 high school), Canada	Paper-and-pencil survey sent to teachers via mail, cross-sectional	<ul style="list-style-type: none"> <li>More autonomous forms of motivation were positively correlated with teacher efficacy (belief in their teaching ability) and negatively correlated with teacher burnout</li> <li>A few negative associations with a principal's controlling leadership style were found as well</li> <li>The same factorial structure was confirmed across gender and grade levels</li> </ul>
Goroizidis and Papaioannou (2014)	Autonomous motivation for teaching-related work tasks	Work Task Motivation Scale for Teachers (WTMST; Fernet et al., 2008) but focusing only on one task, namely professional development. Five subscales, 15 items Scale stem: "Why did you participate in this training?" (e.g., "Because I like doing it").	218 teachers, Greece	Online survey of teachers at two time points at the beginning and end of the school year (21% response rate)	<ul style="list-style-type: none"> <li>Teachers' autonomous motivation was positively related to teachers' intentions to engage in training about and to engage in project-based teaching (intentions were reported 9 months after the assessment of teacher motivation).</li> <li>Teachers' controlling motivation was unrelated to their attitudes toward training or teaching.</li> </ul>

\*\*\* Article included based on search of reference lists.

Table 5. Overview of studies included in the report: Multiple theoretical frameworks and motivational processes

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Davis and Wilson (2000)	Intrinsic motivation, “whereby individuals’ behaviours are initiated by personal choices” (p. 350)	Adapted an assessment from an unpublished dissertation by Tymon (1988), sample items not reported, 7-item scale	660 elementary teachers, USA	Paper-and-pencil, cross-sectional, recruitment via principals and teacher representative (response rate 40-90%), USA	<ul style="list-style-type: none"> <li>Teachers’ intrinsic motivation was correlated with job satisfaction, and teacher-reported and principal-reported empowering behaviours by the school principal (e.g., encourages collaborative work)</li> <li>Teachers’ intrinsic motivation was negatively related to job stress</li> </ul>
Kunter and Baumert (2006)	Teacher enthusiasm	Teacher enthusiasm (e.g., “I really enjoy teaching mathematics in this class.”)  Further information about this scale is not provided in this publication. However, see subsequent studies by Kunter et al.	288 mathematics teachers and their students in grade 9, Germany	Paper-and-pencil, cross-sectional, extension of PISA 2003, Germany	<ul style="list-style-type: none"> <li>Teacher enthusiasm was correlated with desirable teacher-reported and student-reported instructional practices (classroom management, autonomy-supportive teaching, adequate instructional tempo)</li> <li>Positive association with use of cognitively challenging tasks was not significant</li> </ul>
Kunter et al. (2008) ***	Teacher enthusiasm (“In everyday language, the word “enthusiasm” describes the enjoyment and excitement that people experience when engaged in certain tasks.” p. 468; as a personal disposition, “it reflects the degree of enjoyment, excitement and pleasure that teachers typically experience in their professional activities.” p. 470)	The items were based on an existing teaching effectiveness questionnaire (Marsh & Ware, 1982) Two subscales, 4 items Answer scale: 1 (strongly disagree) to 4 (strongly agree) <ul style="list-style-type: none"> <li>Teachers’ enthusiasm for mathematics (2 items, “I am still enthusiastic about the subject of mathematics”, “I find mathematics exciting and try to convey my enthusiasm to the students”)</li> <li>Teachers’ enthusiasm for teaching mathematics (“I really enjoy teaching mathematics in this class” and “I teach mathematics in this class with great enthusiasm”).</li> </ul>	323 mathematics teachers and 3961 students in grade 9, Germany	Paper-and-pencil, cross-sectional, extension of PISA 2003, Germany	<ul style="list-style-type: none"> <li>Enthusiasm for mathematics was positively related to teachers’ general job satisfaction, student-reported teacher enthusiasm, teacher-reported, but not student-reported desirable instructional practices (monitoring of students, cognitive challenge, social support of students)</li> <li>Enthusiasm for teaching mathematics was positively related to teachers’ general job satisfaction, student-reported teacher enthusiasm, teacher-reported <i>and</i> student-reported desirable instructional practices (monitoring of students, cognitive challenge, social support of students)</li> </ul>
Kunter, Frenzel, Nagy, Baumert, and Pekrun (2011) ***	Teacher enthusiasm (“On the one hand, it is used to refer to a feature of instruction in terms of a	Two subscales, 10 items <ul style="list-style-type: none"> <li>Teaching enthusiasm (5 items, e.g., “I always enjoy teaching students new things.”)</li> </ul>	Three samples: 332 secondary	Paper-and-pencil, cross-sectional (for the	<ul style="list-style-type: none"> <li>Teaching enthusiasm was positively related with teachers’ self-efficacy, job satisfaction, life satisfaction, and negatively related with burnout and neuroticism</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
	<p>motivating, energetic teaching style (Patrick, Turner, Meyer, &amp; Midgley, 2003; Turner et al., 1998). On the other hand, it is taken to mean the subjective experience of teachers themselves in terms of enthusiasm for teaching, which is implicitly assumed to become manifest in certain behaviours, such as a motivating teaching style (e.g., Long &amp; Hoy, 2006) p. 289).</p>	<ul style="list-style-type: none"> <li>Subject enthusiasm (5 items, e.g., “Engaging in my subject is one of my favourite activities”).</li> </ul> <p>Note: the first two samples received only 4 items (2 per scale), the third sample in this study received all 10 items.</p>	<p>math teachers, 205 secondary math teachers, 113 teachers across subject areas, Germany</p>	<p>presented analyses)</p>	<ul style="list-style-type: none"> <li>Subject enthusiasm had the same associations, but the correlations were substantially weaker</li> <li>Teaching enthusiasm was related to characteristics of the classes taught, whereas subject enthusiasm was not. Overall, teachers reported experiencing more teaching enthusiasm in classes characterized by higher mathematics achievement, higher enjoyment, and less disruption. They also reported marginally higher teaching enthusiasm in classes with a larger proportion of girls.</li> <li>Subject enthusiasm, on the other hand, correlated only with class size and class-mean achievement, with teachers of larger and higher-achieving classes reporting higher subject enthusiasm.</li> <li>In sum: teaching enthusiasm was systematically linked to occupational wellbeing and to classroom variables, whereas subject enthusiasm was related only moderately to other measures of occupational wellbeing and was independent of characteristics of the classes taught</li> </ul>
Kunter et al. (2013) ***	<p>Teacher enthusiasm for teaching</p>	<p>One scale (2 items, same as Kunter et al., 2008).</p>	<p>181 mathematics teachers and 4353 students in grades 9 and 10, Germany</p>	<p>Paper-and-pencil, longitudinal, extension of PISA 2003, Germany</p>	<ul style="list-style-type: none"> <li>Enthusiasm for teaching was positively related to teachers’ constructivist beliefs about teaching, student reports of learning support by the teacher, a composite score for student- and teacher-reported classroom management, and students’ self-reported enjoyment and student achievement in mathematics</li> <li>Teaching enthusiasm had a positive effect on student outcomes, controlling for other teaching competencies, including pedagogical content knowledge</li> </ul>
Frenzel, Goetz, Lüdtke,	<p>Teacher enjoyment of</p>	<p>Teacher enjoyment, answer scale: 1</p>	<p>71</p>	<p>Paper-and-</p>	<ul style="list-style-type: none"> <li>Teacher enjoyment of teaching in grade 8</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
Pekrun, and Sutton (2009) ***	teaching	(strongly disagree) to 5 (strongly agree); 5 items, e.g., "I really enjoy teaching mathematics in this class"	mathematics teachers and 1763 students in grade 8, Germany	pencil, teacher data only in 8th grade (Time 2), student data were available in 7 <sup>th</sup> and 8 <sup>th</sup> grade (Times 1 and 2)	was positively related to student-reported teacher enthusiasm and to the students' enjoyment of their math class, even after controlling for prior enjoyment of their math class in grade 7
Carbonneau, Vallerand, Fernet, and Guay (2008) ***	<p>Passion for teaching ("Vallerand et al. (2003) defined passion as a strong inclination or desire toward an activity (e.g., one's job) that one likes (or even loves) and finds important and in which one invests time and energy." p. 977)</p> <p><i>Harmonious passion:</i> "Harmonious passion emanates from an autonomous internalization (Deci &amp; Ryan, 2000; Vallerand, 1997) of the activity into one's identity." p. 978</p> <p><i>Obsessive passion:</i> "obsessive passion results from a controlled internalization (Deci &amp; Ryan, 2000) of the activity into one's identity. Such an internalization originates from intrapersonal or interpersonal pressure either because certain contingencies are</p>	<p>Three subscales, 16 items Answer scale: 1 (do not agree at all) to 7 (very strongly agree)</p> <ul style="list-style-type: none"> <li>• Degree of passion for teaching (4 items, e.g., "I spend a lot of time doing my job as a teacher.")</li> <li>• Harmonious passion (6 items, e.g., "My job as a teacher is in harmony with the other activities in my life")</li> <li>• Obsessive passion (6 items, e.g., "I have almost an obsessive feeling for my job as a teacher")</li> </ul>	494 teachers (306 elementary teachers, 120 high school teachers, 20 adult education, 46 vocational and technical education), Canada	Paper-and-pencil, two time points, 3 months apart	<ul style="list-style-type: none"> <li>• Harmonious passion was positively related to teacher-reported work satisfaction and perceived positive student behaviours (e.g., student cooperation and enthusiasm) at both time points, as well as with an increase in these variables; it was negatively related to burnout at both times, and was related to a decrease in reported burnout over time</li> <li>• Obsessive passion was positively related to burnout at both time points, but also weakly positively related to perceived positive student behaviour at Time 2 (not at Time 1), unrelated to work satisfaction</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
	attached to the activity, such as feelings of social acceptance or self-esteem, or because the sense of excitement derived from activity engagement becomes uncontrollable." p.978				
Morgan, Ludlow, Kitching, O'Leary, and Clarke (2010)	Commitment to teaching and to the school  Teacher efficacy	<ul style="list-style-type: none"> <li>Commitment to teaching and to the school in which one works, answer scale: 0 (never true) to 9 (always true); (8 items, e.g., "I feel that teaching is really right for me")</li> <li>Efficacy, answer scale: 'cannot do it at all' to 'certain I can do it' (6 items, e.g., "teaching all of the subjects on the curriculum")</li> </ul>	749 primary teachers, Ireland	Paper-and-pencil, cross-sectional survey of teachers who had graduated from one of four colleges within 5 years	<ul style="list-style-type: none"> <li>Commitment to teaching and teacher efficacy were positively related to teachers' positive affect and negatively related to teachers' negative affect</li> </ul>
Retelsdorf et al. (2010), <i>this study was also included in the review of teachers' achievement goals</i>	Interest in teaching	<ul style="list-style-type: none"> <li>Interest in teaching was measured with the five-item Didactic Interest subscale of the Teacher Interest Scale developed by Streblow, Schiefele, Retelsdorf, and Bellaire (submitted for publication). This subscale assesses teachers' interest in instructional and didactical methods as one facet of teachers' interest.</li> <li>Interest for teaching (5 items, e.g., "I like to think about problems and possibilities for effective and motivating forms of teaching").</li> </ul>	<p>Study 1: 281 teachers (71 elementary school, 133 low track secondary school, 77 high track secondary school), Germany</p> <p>Study 2: 69 teachers in grades 7-9, Israel</p>	<p>Study 1: Paper and pencil, cross-sectional survey of teachers.</p> <p>Study 2: Paper and pencil study, 41 teachers responded about a class they liked teaching, 28 about a class they did not like teaching.</p>	<ul style="list-style-type: none"> <li>Interest in teaching was positively correlated with teachers' mastery goals, teacher-reported mastery-oriented practices, teacher-reported cognitively stimulating instruction, and negatively related to burnout, and with teachers' work avoidance goals in both Studies 1 and 2</li> <li>Interest was included as an outcome measure in both Studies 1 and 2 (interest was predicted by teachers' achievement goals in a structural equation model in Study 1, with mastery and work avoidance as the strongest predictors; a regression analysis was conducted in Study 2)</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
				Outcome measures (e.g., teacher-reported instructional practices) were assessed several months after assessing goals for teaching.	
Schiefele, Streblov, and Retelsdorf (2013) ***	Interest in teaching, sense of flow while teaching, and enjoyment of teaching	<p>Teaching interest: three subscales, 14 items                      Answer scale: 1 (very true) to 4 (not at all true)</p> <ul style="list-style-type: none"> <li>• Subject interest (5 items, e.g., “I chose my subject because I find it interesting”)</li> <li>• Didactic interest (4 items, e.g., “I like to read up on new teaching methods even in my spare time”)</li> <li>• Educational interest (5 items, e.g., “I think that it is important to take a developmental approach when dealing with problem students”)</li> </ul> <p>Flow: The experience of flow while teaching was assessed with adapted questionnaires from Rheinberg, Vollmeyer, and Engeser (2003) and Schiefele and Roussakis (2006), (e.g., “While I am teaching, I forget everything else around me”).</p> <p>Enjoyment of teaching: adapted version of the subscale “Interest/Enjoyment” from the Intrinsic Motivation Inventory (IMI; McAuley, Duncan, &amp; Tammen, 1989). This scale taps</p>	281 teachers, Germany	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>• All three subscales of interest were positively correlated with self-efficacy, enjoyment of teaching, teachers’ sense of flow, teacher-reported mastery-oriented instructional practices and cognitive stimulation of students, and negatively related to burnout</li> <li>• Didactic and educational interest (but not subject interest) were positively related to internal differentiation (adjustment of instruction for individual students)</li> <li>• Neither of the interest subscales was related to teacher-reported performance-oriented instructional practices</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		the degree to which teachers generally experience activity-inherent or intrinsic incentives during their work (e.g., "I usually enjoy teaching").			
Matteucci and Gosling (2004, Study 1) ***	Teacher responsibility for a student's academic failure	One item asking about the extent to which teachers held themselves responsible for a student's failure Answer scale 1 (not at all) to 7 (very)	115 junior high school and high school teachers, Italy	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>Teachers' felt responsibility was positively related to the teacher-reported sympathy toward the failing student and to a lower likelihood to actually fail the student</li> <li>Junior high school teachers assumed more responsibility when a student's failure was attributed to the student's lack of effort rather than the student's lack of ability, but there was no difference in the high school teacher sample</li> </ul>
Matteucci and Gosling (2004, Study 2) ***	Same as Matteucci and Gosling (2004, Study 1)	Same as Matteucci and Gosling (2004, Study 1)	65 high school teachers, Italy 53 high school teachers, France	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>No significant correlations between teacher responsibility and sympathy or plans to fail the student</li> </ul>
Matteucci (2007, Study 1) ***	Same as Matteucci and Gosling (2004)	Same as Matteucci and Gosling (2004)	119 high school teachers, Italy	Paper-and-pencil, cross-sectional	<ul style="list-style-type: none"> <li>No bivariate correlations are reported</li> <li>Note in the paper suggests that teacher responsibility was not correlated with sympathy toward the student or any intended practices toward the student</li> </ul>
Lauermann and Karabenick (2013) ***	Teacher responsibility ("a sense of internal obligation and commitment to produce or prevent designated outcomes, or that these outcomes should have been produced or prevented", p. 13)	Four subscales, 12 items Scale stem: "Imagine that the following situations would occur in your TARGET CLASS. To what extent would you feel PERSONALLY responsible that you should have prevented each of the following?" Answer scale: 0 (not at all responsible) to 6 (completely responsible) <ul style="list-style-type: none"> <li>Responsibility for student motivation (3 items, e.g., "I would feel personally responsible if a student of mine wasn't interested in the subject I teach.")</li> </ul>	315 pre-service teachers, Germany 412 in-service teachers, USA	Online survey, cross-sectional	<ul style="list-style-type: none"> <li>Teacher responsibility was positively related to teacher efficacy (pre-service teachers)</li> <li>Elementary teachers reported higher levels of responsibility than secondary teachers</li> </ul>

Reference	Conceptualization of motivation	Assessment (subscales, sample items, number of items)	Sample and country	Research method	Key points related to motivation
		<ul style="list-style-type: none"> <li>• Responsibility for student achievement (3 items, e.g., “I would feel personally responsible if a student of mine had very low achievement”)</li> <li>• Responsibility for relationships with students (3 items, e.g., “I would feel personally responsible if a student of mine did not believe that I truly cared about him/her”)</li> <li>• Responsibility for teaching (3 items, e.g., “I would feel personally responsible if a lesson I taught was not as effective for student learning as I could have possibly made it.”)</li> </ul>			
Lauermann (2014b) *** a)	Same as Lauermann & Karabenick (2013)	Same as Lauermann & Karabenick (2013)	62 secondary teachers and 1516 students, Israel	Paper-and-pencil, teachers responded at the beginning of the school year, and students at the end of the school year	<ul style="list-style-type: none"> <li>• Teacher efficacy and teacher responsibility were positively related</li> <li>• Teacher responsibility for relationships was positively related to student-reported teacher enthusiasm and mastery-oriented instruction</li> <li>• Teacher responsibility for relationships, for student achievement, and for teaching negatively predicted student-reported differential treatment by the teacher (teacher prioritizes high-achieving over low-achieving students)</li> </ul>

\*\*\* Article included based on search of reference lists.

a) Article in preparation for submission. Included due to its focus on links between teacher motivation and student-reported instructional practices.

### **PART 3: ANALYSIS AND DISCUSSION OF SELECTED STUDIES AND MOTIVATIONAL FRAMEWORKS**

20. The main objective of this part of the report is to provide an analysis and a discussion of research identified and summarized in the previous section. The focus of this section is in particular on the main theoretical frameworks guiding current research on teacher motivation, as well as on identified implications of teachers' motivations for teachers and students. The analysis will synthesize the reviewed studies and will identify major theoretical frameworks, approaches to the operationalization of teacher motivation, and types of constructs that have been associated with teacher motivation. Identified limitations and open questions for future research will be discussed as well.

#### **Approaches to the Conceptualization of Teacher Motivation and Implications for the Instructional Process**

21. Five approaches to the conceptualization of teacher motivation were identified in Part 2 of this report: research on teacher self-efficacy (grounded in socio-cognitive theory), teachers' expectancies and values (expectancy-value theory), teachers' goal orientations (achievement goal theory), teachers' autonomous motivation and self-determination (self-determination theory), and motivational constructs that cut across multiple theoretical frameworks (teachers' enthusiasm, interest, passion, and responsibility). The reviewed studies in Part 2 are synthesized with respect to the following topics:

- **Theoretical background and adaptations for the teaching profession:** What is the theoretical background underlying each motivational construct and how has it been adapted for the teaching profession? One of the major advancements in recent teacher motivation research is the theory-driven conceptualization of motivation, which has allowed researchers to examine theory-based hypotheses about the antecedents, consequences, and mechanisms through which teacher motivation may impact the instructional process. Accordingly, it is important to review the major theoretical frameworks that have been adapted for the teaching profession.
- **Specificity:** To what extent is each motivational construct specific to a particular type of outcome versus represents a general motivational orientation toward teaching? Motivational processes are generally goal-oriented and thus at least to an extent oriented toward a particular outcome (see Part 1 of this report). However, the level of specificity can vary considerably, ranging from a focus on specific practices such as motivation for using project-based learning to broad motivational orientations such as self-determination toward teaching. A consideration of the level of specificity of each measure is critical for the following reasons. The associations between motivational constructs and outcomes predicted by these constructs are stronger when measures of motivation are designed specifically for these outcomes (e.g., the perceived value of a particular instructional practice and the intended or actual use of this practice). Accordingly, it can be beneficial to use motivational measures that are outcome-specific. However, greater specificity of a particular motivation assessment typically comes at the expense of narrowing down its applicability to a particular outcome or a particular type of outcome. Accordingly, the selection of teacher motivation assessments requires a careful consideration of the appropriate level of specificity for a given context and research questions.

- **Correlates:** What types of constructs have been associated with each conceptualization of teacher motivation? The objective of this analysis is to provide categories of constructs that have been linked to a particular teacher motivation concept. Whereas the overview presented in Part 2 lists outcomes examined in each study, the list presented here aims at grouping these outcomes into categories across different studies.

### *Teacher self-efficacy (cf. Part 2, Table 1)*

22. Teacher self-efficacy is by far one of the most frequently researched teacher motivation constructs (Woolfolk Hoy, 2008), even though theory-driven analyses of its antecedents and consequences still represent an understudied area (Klassen, Durksen, & Tze, 2014; Klassen, Tze, Betts, & Gordon, 2011). Grounded in Bandura's socio-cognitive theory (Bandura, 1977, 1986), self-efficacy is defined as "people's judgments of their capabilities to organize and execute courses of action required to attain designated types of performances" (Bandura, 1986, p. 391). Self-efficacy represents a key motivational construct, because it has implications for goal-setting processes (e.g., selection of more or less challenging goals), persistence in the face of difficulty, resilience in the face of failure, and affective responses such as enjoyment of situations in which individuals are confident in their capabilities and experience themselves as competent (cf. Bandura, 2000; Bandura, 1997). In general, individuals tend to avoid situations that subjectively exceed their capabilities and are more likely to invest effort and to persist in situations that they believe they can master successfully. Importantly, subjective self-efficacy judgments may deviate from objective ability assessments (Bandura, 1977, 1997).

23. According to socio-cognitive theory, self-efficacy judgments are influenced by mastery experiences (past success or failure), vicarious experiences of relevant role models (whether or not similar others are successful), verbal persuasion by others, and physiological arousal such as experienced tension, nervousness or anxiety in a given situation (Bandura, 1977, 1997).

24. Adaptations of this theoretical framework for the teaching profession have focused on teachers' capability judgments with regard to mastering teaching-related tasks. For instance, Tschannen-Moran and Woolfolk Hoy (2001) defined teacher self-efficacy as a teacher's "judgment of his or her capabilities to bring about desired outcomes of student engagement and learning, even among those students who may be difficult or unmotivated" (p. 783). Assessments of teacher self-efficacy have focused on core domains of the teaching profession such as teachers' perceived capability to implement a variety of instructional strategies, self-efficacy for implementing effective classroom management, and self-efficacy for influencing student engagement (Tschannen-Moran & Woolfolk Hoy, 2001). In addition, researchers have demonstrated that teacher self-efficacy can be conceptualized as a second-order factor underlying teachers' confidence in their ability to influence various tasks such as providing high quality instruction, motivating students, dealing with diverse student needs, and others (Skaalvik & Skaalvik, 2007). According to this conceptualization, some teachers may be generally more likely than others to feel confident in their teaching ability across various types of tasks.

25. The level of specificity of teacher self-efficacy assessments, however, varies not only with regard to the number and type of teaching tasks that is referenced, but also with regard to the context in which teaching tasks are performed. For instance, Holzberger et al. (2013) asked teachers to reference a particular class that they were teaching, and to reflect on their perceived capability to influence selected outcomes in this class. This approach allowed the authors to link teachers' self-efficacy judgments to teacher-reported and student-reported instructional practices in one particular class taught by the teacher. Available evidence suggests that teachers' self-efficacy judgments do indeed vary for different classes taught by the same teacher (Raudenbush, Rowan, & Cheong, 1992). Accordingly, depending on the stated research questions, it can be advantageous to match the level of specificity of teachers' self-efficacy assessments with the level of specificity of hypothesized outcomes (e.g., general instructional beliefs and approaches versus specific practices) and context (e.g., students in general versus a particular class).

26. Even though theory-driven antecedents and consequences of teacher self-efficacy remain an understudied area of research (Klassen et al., 2014; Klassen et al., 2011), the available evidence is consistent with the assumptions of Bandura's socio-cognitive theory. Analyses of the potential antecedents of teachers' self-efficacy beliefs corroborate the positive influence of teachers' mastery experiences and persuasion by others in the form of perceived interpersonal support on teachers' self-efficacy judgments (Tschannen-Moran & Hoy, 2007; Tschannen-Moran & McMaster, 2009). Analyses of correlates of teacher self-efficacy further reveal positive associations with teacher- and student-reported use of desirable instructional practices (Ciani et al., 2008; Holzberger et al., 2013; Thoonen, Slegers, Oort, et al., 2011), with teachers' professional and psychological wellbeing in terms of lower likelihood of experiencing burnout (Klassen & Chiu, 2010; Skaalvik & Skaalvik, 2007), with job satisfaction and commitment to the teaching profession (Caprara, Barbaranelli, Borgogni, & Steca, 2003; Klassen & Chiu, 2011), student-reported wellbeing in school (Thoonen, Slegers, Peetsma, et al., 2011), and student achievement (Caprara et al., 2006). A recent meta-analysis confirmed the positive association between teacher self-efficacy and student achievement (Klassen & Tze, 2014).

27. Although these variables are often conceptualized as consequences of teacher self-efficacy, the associations are likely bidirectional. The few existing longitudinal studies that have examined bidirectional associations over time provide somewhat mixed evidence. Schwarzer and Hallum (2008) found that initial self-efficacy predicted change in experienced burnout over a one-year period, but not vice versa. Holzberger et al. (2013) found only partial support for the role of teacher self-efficacy as a precursor of instructional quality over a one-year period. This research suggested that effective instructional practices can be an efficacy-building experience for teachers, and that self-efficacy is not always an antecedent, but also a consequence of high quality instruction.

28. The following types of associations with teacher self-efficacy were identified in research reviewed in Part 2 of the present report:

- *Characteristics of the professional/school context*: positive associations with availability of resources for teaching (e.g., materials provided by the school), perceived organizational support in the school, transformational leadership by the school administration, perceived support by the students' parents and by the community, perceived collective sense of efficacy among teachers in the school, perceived academic climate in the school (e.g., high academic standards for students), positive work environment (e.g., job autonomy and positive relations with parents), psychological need satisfaction in the work context (needs for autonomy, relatedness and competence), professional development that involves coaching on the job, teaching experience
- *Teacher beliefs and personality characteristics*: positive associations with internal locus of control
- *Teachers' engagement in professional tasks (other than instructional practices)*: positive associations with interest in continuous professional learning (e.g., keeping up-to-date)
- *Professional and psychological wellbeing*:
  - Positive associations with teacher-reported satisfaction with own teaching performance, and job satisfaction
  - Negative associations with job stress, intentions to quit the job, burnout
- *Teacher-reported instructional practices*: positive associations with the self-reported use of instructional strategies learned in professional development, mastery-oriented instructional practices, process-oriented instruction, use of cooperative learning, student differentiation, cognitively activating instruction, effective classroom management, individual learning support by the teacher

- *Student-reported instructional practices*: Positive associations with cognitively activating instruction, effective classroom management, individual learning support by the teacher, positive teacher-student relationships
- *Student outcomes*: positive associations with school-level average student achievement (controlling for prior school-level achievement), student-reported wellbeing in school

***Teachers' expectancies and values (cf. Part 2, Table 2)***

29. According to expectancy-value theory, achievement-related choices such as career decisions (e.g., choosing teaching as a career) or effort toward particular tasks (e.g., choice and performance of particular instructional practices) depend on two types of beliefs: expected success in a given activity or task and the subjective valuing of this activity or task (e.g., Eccles et al., 1983). Expectancy-value theory is consistent with socio-cognitive theory in that it acknowledges the critical role of perceived ability and expected success as antecedents of achievement-related choices. Subjective values, however, can be equally important: individuals would be unlikely to engage in activities that have no subjective value to them, regardless of how successful they believe they would be in performing these activities. According to Eccles' expectancy-value framework, something is subjectively valuable if it is intrinsically interesting, personally important, useful for other goals, and does not involve too high personal cost (Eccles et al., 1983).

30. Eccles' expectancy-value theory has been adapted for the teaching profession in the so called "Factors Influencing Teaching Choice" (FIT-Choice) framework, which focuses in particular on motivations for choosing teaching as a career (Watt & Richardson, 2007). The expectancy component of this framework captures perceived teaching abilities and expected success in teaching, whereas the value component captures the perceived intrinsic value of the teaching profession (e.g., enjoyment and interest in teaching), personal utility value (e.g., job security and time for family), and social utility value (e.g., desire to help others, to work with children and adolescents, and to make a social contribution). Additional factors included in the FIT-Choice framework are choosing teaching as a fall-back career and the perceived demands and formal returns associated with teaching (e.g., social status), both of which can shape individual decisions to pursue teaching as a career. Proposed antecedents of aspiring teachers' expectancies and values include socialization processes such as prior teaching and learning experiences, as well as persuasion by others (Richardson & Watt, 2014; Watt & Richardson, 2007).

31. The majority of available studies using the FIT-Choice framework have focused on pre-service teachers. In general, perceived teaching ability, intrinsic motivations and social motivations for teaching have emerged as most adaptive with respect to indicators of professional engagement such as planned persistence in teaching, career choice satisfaction and professional development aspirations (Watt & Richardson, 2007, 2008b, 2010; Watt et al., 2012). Preliminary evidence reported by Richardson and Watt (2014) suggested that pre-service teachers' motivations for teaching reported at degree entry positively predicted their self-reported instructional practices as novice teachers. Specifically, perceived teaching ability and social utility value at degree entry predicted a positive (self-reported) teaching style after the transition to in-service teaching (e.g., positive student-teacher relationships, clear expectations for students, and emphasis on effort investment). Choosing teaching as a fall-back career and social persuasion, on the other hand, were related to self-reported negativity toward students.

32. Only one study to date has directly examined the associations between motives for teaching in the FIT-Choice framework and pre-service teachers' general pedagogical knowledge (König & Rothland, 2012). Cross-sectionally, the study identified positive associations between general pedagogical knowledge and pre-service teachers' intrinsic and social motivations for teaching. Longitudinally, however, only the desire for job security (an extrinsic type of motivation) predicted a positive change in general pedagogical knowledge over time (two time points within the same academic year). This study indicates that the reasons why pre-service teachers enter the profession

may have implications for their learning in teacher education. However, it is important to note that the observed associations were relatively weak. Assessments focusing specifically on motivations for learning may reveal stronger associations (e.g., motivation to learn about particular instructional practices).

33. Indeed, analyses of teachers' expectancies and values are often outcome-specific. Researchers have identified both the expected success in implementing particular instructional strategies and practices, and the perceived value of implementing these strategies and practices as key predictors of the intended or self-reported use of these practices (Abrami, Poulsen, & Chambers, 2004; Finnigan, 2010; Leithwood & Jantzi, 2006; Reeve et al., 2014).

34. The following types of associations with teachers' expectancies of success (often operationalized as perceived teaching ability or teacher self-efficacy) and subjective values were identified in research reviewed in Part 2:

- *Characteristics of the professional/school context*: associations with prior professional experiences of vocational teachers (e.g., the perceived social significance of prior occupations was positively related to social values for choosing teaching as a career)
- *Teachers' engagement in professional tasks (other than instructional practices)*: positive associations with teacher-reported involvement in extracurricular activities, continuous course improvement, effort toward teaching, self-regulation toward teaching, planned persistence in teaching as a career
- *Professional and psychological wellbeing*: positive associations with affective commitment to the teaching profession and job satisfaction
- *Teacher-reported instructional practices*: positive associations with teacher-reported change in classroom practices toward implementation of strategies learned in professional development, use of cooperative learning strategies (predicted by expectancies and values specifically for these strategies), use of computer technology related to teaching (predicted by expectancies and values specifically for this outcome), endorsement of autonomy-supportive practices (predicted by values specifically for these practices), positive teaching style (e.g., high expectations for students, positive relationships, structure), and teacher-reported encouragement of students' self-regulation skills
- *Other*: Intrinsic and social motives for teaching were weakly positively related to general pedagogical knowledge (cross-sectionally)

***Teachers' achievement and relational goals/goal orientations (cf. Part 2, Table 3)***

35. Achievement goal theory suggests that both the degree and the quality of engagement in achievement situations depend on the types of goals individuals pursue in these situations (Elliot, 2005). Achievement goals, often referred to as goal orientations, reflect habitual tendencies to pursue a particular type of goal in achievement settings, including the goals to learn, to outperform others, to avoid displaying inferior ability, or to get by with minimal effort (Dweck, 1986; Elliot, 2005; Elliot & McGregor, 2001; Nicholls, 1984). The type of goal that is activated in a given situation has implications for the individual's learning, performance, and intrinsic motivation toward achievement tasks (Dweck & Grant, 2008; Elliot, 2005; Elliot & McGregor, 2001; Elliot, Shell, Henry, & Maier, 2005). Antecedents of particular goals include such dispositional motives as the need for achievement and fear of failure (Elliot & Church, 1997), but also situational characteristics such as goals assigned by others (Elliot et al., 2005).

36. The achievement goal framework was adapted for the teaching profession by Butler under the assumption that "the school is an achievement arena not only for students but also for teachers

who presumably strive to succeed at their job but who may differ in the ways they define success, in the goals they strive to attain, and, thus, in their personal achievement goal orientations for teaching“ (Butler, 2007, p. 242). Analogous to research with students, the following goal orientations have been distinguished in research with teachers (Butler, 2007; Nitsche et al., 2011; Papaioannou & Christodoulidis, 2007): Mastery or learning orientation reflects the goal to learn and develop teaching mastery and professional competence. Ability approach or performance approach orientation reflects the goal to demonstrate superior teaching ability relative to other teachers. Ability avoidance or performance avoidance orientation reflects the goal to avoid the demonstration of inferior teaching ability relative to others. Work avoidance goal orientation reflects the goal to minimize effort investment in teaching.

37. More recently, Butler (2012) has argued that achievement goals are insufficient to describe the teaching role, which is focused not only on personal performance and professional learning, but also has an inherent social component oriented toward students (see also Klassen, Perry, & Frenzel, 2012). Accordingly, Butler modified her achievement goal framework for teaching to include a focus on teachers’ social or relational goal orientations, which reflect the goal to establish positive relationships with students.

38. Unlike assessments discussed in the previous sections, there is relatively little variation in the level of specificity of assessments of teachers’ goal orientations, perhaps due to the fact that the type of outcome toward which each goal is oriented is implied in the definition of that goal (e.g., the goal to learn, to outperform others, or to develop close relationships with students). Nitsche et al. (2011) recently introduced a modified assessment of teachers’ achievement goals, in which the authors distinguished between different aspects of teachers’ learning goals (namely the goals to gain pedagogical knowledge, content knowledge, and pedagogical content knowledge), performance-approach goals (namely the goals to demonstrate superior competence in front of colleagues, students, the school administration, and the self), and performance-avoidance goals (namely the goals to avoid the demonstration of inferior competence in front of colleagues, students, the school administration, and the self). The authors demonstrated that learning goals, performance-approach goals, and performance-avoidance goals formed separate second-order factors. Accordingly, assessments of teachers’ goal orientations typically capture general motivational tendencies in how teachers approach their professional tasks rather than goals for accomplishing specific tasks.

39. The preponderance of available evidence supports positive implications of teachers’ mastery goals and relational goals for their self-reported and student-reported quality of instruction, as well as for teachers’ professional engagement and psychological wellbeing (e.g., burnout and job satisfaction); there is mixed evidence regarding the implications of ability-approach goals for teachers’ instructional quality and professional and psychological wellbeing; and there are generally negative implications of avoidance-oriented goals for both teachers and students (Butler, 2007, 2012; Butler & Shibaz, 2008, 2014; Nitsche et al., 2011; Papaioannou & Christodoulidis, 2007). Although the evidence is still relatively scarce, links between teachers’ goals and student outcomes have been documented. Teachers’ relational goals were related to students’ adaptive help seeking; both teachers’ relational and mastery goals were related to students’ interest in the teacher’s subject area (Butler & Shibaz, 2014); and teachers’ ability-avoidance goals were related to such undesirable outcomes as student-reported cheating (Butler & Shibaz, 2008).

40. The following types of associations with teachers’ goals were identified in research reviewed in Part 2 of this report:

- *Teachers’ engagement in professional tasks (other than instructional practices):* teachers’ adaptive help seeking for professional tasks (positive associations with mastery goals, and negative associations with ability avoidance and work avoidance goals), positive attitude toward and attendance of professional development (positive association with learning goals and negative association with performance-avoidance goals and work avoidance goals)

- *Teacher beliefs and personality characteristics*: Teacher self-efficacy (positive associations with learning goals and performance-approach goals and negative associations with performance-avoidance goals)
- *Professional and psychological wellbeing*: interest in teaching (positive association with mastery goals, negative association with work avoidance), burnout (negative association with mastery goals, positive associations with ability-avoidance goals and work avoidance), occupational strain (negative association with learning goals and positive association with performance-approach goals, performance-avoidance goals and work avoidance goals), job satisfaction (positive association with learning goals, negative association with performance-avoidance goals)
- *Teacher-reported instructional practices*: mastery-oriented instructional practices and cognitively stimulating instructional practices (positive associations with mastery goals and relational goals, and in some studies negative associations with work avoidance), performance-oriented practices (positive associations with work avoidance goals, and in some studies with ability-approach goals and ability-avoidance goals), social support for students (positive association with relational goals), use of individual reference norms when evaluating students (positive association with mastery goals), use of social reference norms when evaluating students (negative association with mastery goals, positive associations with ability-approach goals, ability-avoidance goals, work avoidance goals), endorsement of surface-level learning strategies (positive association with ability-approach goals), low demands for students (positive associations with ability-approach, ability-avoidance and work avoidance goals)
- *Student-reported instructional practices*: perceived teacher support (positive associations with relational goals and mastery goals, negative associations with ability avoidance goals); mastery-oriented and cognitively stimulating instructional practices (positive associations with relational goals and mastery goals); low academic demands by the teacher (negative association with relational goals), performance-oriented instruction (negative association with mastery goals)
- *Student outcomes*: student cheating (positive associations with ability avoidance goals), adaptive help seeking (positive association with relational goals), interest in subject area (positive association with relational goals and mastery goals)

***Teachers' autonomous motivation and self-determination (cf. Part 2, Table 4)***

41. The degree and quality of engagement in various tasks and activities depends on whether the motivational source for this engagement is within the individual (i.e., self-regulated, autonomous motivation) or is a consequence of external forces (i.e., externally controlled motivation; see Ryan & Deci, 2000, 2006). An example of autonomous motivation would be engagement in an activity for its own sake and out of pleasure and satisfaction with the activity (*intrinsic motivation*). An example of externally controlled motivation would be engagement in an activity as a means of avoiding punishment or in order to obtain an extrinsic reward (*extrinsic motivation*). The degree to which an activity is internally versus externally regulated can vary. Higher levels of internal regulation correspond to higher levels of autonomous motivation (e.g., Ryan & Deci, 2000).

42. According to self-determination theory, there are three basic psychological needs that determine the degree of experienced autonomous motivation: the needs for competence, relatedness and autonomy (cf., Ryan & Deci, 2000, 2002, 2006). The need for competence implies that individuals are motivated to seek situations in which they experience themselves as competent. The need for relatedness implies motivation to establish close relationships with others and to feel attached to a community. The need for autonomy implies motivation for personal freedom and self-determination of one's own choices and behaviour. Satisfaction of these basic psychological needs not

only leads to increased autonomous motivation (motivation that is self-regulated and independent of external monitoring and control), but also has positive implications for the individual's performance and psychological wellbeing. Substantial evidence suggests that a higher degree of autonomous motivation leads to increased personal commitment, persistence, higher quality of engagement, and positive self-perceptions (Burton, Lydon, D'Alessandro, & Koestner, 2006; Ryan & Deci, 2000, 2002, 2006).

43. Analogous to research with students, adaptations of this theoretical framework for the teaching profession typically ask teachers to reflect on the reasons why they are engaged in various teaching-related tasks. Provided reasons vary in the degree to which the underlying motivation is self-regulated (e.g., genuine interest) versus externally regulated (e.g., to avoid sanctions by a supervisor), and thus capture more or less autonomous forms of motivation (Ryan & Deci, 2000). Some researchers have examined teachers' motivations for one particular task (e.g., participation in professional development; Lam et al., 2010), others have focused on a subset of representative tasks to capture a general motivational orientation toward teaching (e.g., Roth et al., 2007), and yet others have focused on motivations for "teaching well" or for teaching a particular subject area (e.g., Carson & Chase, 2009; Soenens et al., 2012). Researchers typically compute one score indicating the degree to which teachers engage in one particular teaching task or in a selection of representative teaching tasks for autonomous rather than externally controlled reasons.

44. Findings regarding the implications of teachers' autonomous motivation for the instructional process corroborate the theoretical assumptions of self-determination theory. For instance, the degree of experienced autonomous motivation for teaching tasks has been systematically linked to the degree to which teachers' basic psychological needs for autonomy, relatedness, and competence are satisfied in the workplace (Carson & Chase, 2009; Fernet et al., 2008; Taylor, Ntoumanis, & Smith, 2009; Taylor, Ntoumanis, & Standage, 2008). Autonomous forms of teacher motivation have been associated with lower levels of burnout (Eyal & Roth, 2011; Soenens et al., 2012), with teachers' willingness to engage in professional development (Gorozidis & Papaioannou, 2014), and with teacher- and student-reported autonomy-supportive instruction (e.g., Roth et al., 2007). Some researchers found a positive association between teachers' and students' self-reported autonomous motivation (Roth et al., 2007; Soenens et al., 2012), whereas others found no significant association (Taylor & Ntoumanis, 2007). Thus, identified links between teacher motivation and teachers' instructional practices are more consistent than the links between teacher motivation and student outcomes. This is perhaps not surprising, considering that teachers' behaviours are a more proximal correlate of their own motivations than are their students' academic outcomes.

45. The following types of associations with teachers' autonomous motivation and self-determination toward teaching were identified in research reviewed in Part 2:

- *Characteristics of the professional/school context*: positive associations with school collegiality, transformational leadership by the principal, teacher-perceived average self-determination of students taught by the teacher, perceived fulfilment of psychological needs for autonomy, competence, and relatedness, negative associations with perceived constraints at work
- *Teacher beliefs and personality characteristics*: Positive association with teacher self-efficacy
- *Teachers' engagement in professional tasks (other than instructional practices)*: positive associations with interest in professional training in and engagement in project-based teaching (predicted by autonomous motivation specifically toward participation in professional development)
- *Professional and psychological wellbeing*:
  - Positive associations with sense of personal accomplishment
  - Negative associations with emotional exhaustion/ burnout

- *Teacher-reported instructional practices*: positive associations with autonomy-supportive teaching practices, willingness to implement project-based learning (predicted by autonomous motivation for participation in a professional development focusing specifically on this instructional practice)
- *Student-reported instructional practices*: positive associations with autonomy-supportive teaching practices
- *Student outcomes*: positive associations with autonomous motivation for learning (this association was positive, but not significant in one study; Taylor & Ntoumanis, 2007)

***Teachers' enthusiasm, interest, passion and personal responsibility (cf. Part 2, Table 5)***

46. The adaptive role of motivation that stems from “within” the individual for teachers’ professional wellbeing and success has been examined across multiple theoretical frameworks, including self-determination theory (the notion of autonomous motivation as a consequence of basic need satisfaction) and expectancy-value theory (the notion of intrinsic interest as a key contributor toward perceived task value). Kunter and Holzberger (2014) recently reviewed the literature on intrinsic orientations toward teaching across multiple theoretical frameworks and noted that multiple labels such as autonomous motivation, enjoyment, enthusiasm, and interest in teaching seem to reflect an intrinsic orientation toward teaching that captures teachers’ enjoyment, excitement about, and interest in teaching tasks and activities. The authors adopted the term *intrinsic orientations* to capture teachers’ habitual tendency to experience positive emotions and high meaningfulness in the context of the teaching profession.

47. Constructs included in this report that are consistent with the conceptualization of intrinsic orientations include teachers’ enthusiasm, interest, passion, and sense of personal responsibility for educational outcomes. As will be discussed in greater detail subsequently, personal responsibility represents an internal motivational source, and is therefore included in this review. However, it does not necessarily have an affective component such as excitement or enthusiasm for teaching. Accordingly, evidence on teachers’ enthusiasm, interest and passion for teaching and evidence on teacher responsibility are discussed in separate sections.

*Enthusiasm, interest and passion*

48. Teacher enthusiasm reflects the degree of enjoyment, excitement, and pleasure derived from engagement in professional activities; interest reflects a relatively stable disposition that can be both task-oriented or activity-oriented; and passion reflects a strong desire toward an activity such as teaching, and implies liking, perceived importance, and time investment in this activity (for a review, see Kunter & Holzberger, 2014). Only harmonious passion captures an intrinsic orientation toward teaching, since it is harmoniously integrated in one’s identity and other interests; obsessive passion, on the other hand, implies psychological pressure that can stem from such factors as uncontrollable obsession with an activity (Carbonneau et al., 2008).

49. Teachers’ intrinsic orientations have been linked to teachers’ wellbeing, job satisfaction, and use of high quality instructional practices (e.g., Carbonneau et al., 2008; Kunter & Baumert, 2006; Kunter et al. 2011; Kunter et al., 2008; Schiefele et al., 2013). Furthermore, as noted in Part 1 of this report, teacher enthusiasm has emerged as a predictor of teachers’ high quality instructional practices, and of student motivation and achievement, even when teachers’ pedagogical content knowledge, self-regulation skills, and instructional beliefs (constructivist views) are also included as predictors of students’ academic outcomes (Kunter et al., 2013). This recent evidence provides strong support for the inclusion of motivational variables such as teacher enthusiasm in the conceptualization of teachers’ professional competence.

50. It is critical to take into consideration the specific outcome toward which teachers feel enthusiastic or interested. Research focusing on both teachers' enthusiasm (e.g., Kunter et al., 2011; Kunter et al., 2008) and interest (e.g., Schiefele et al., 2013) has demonstrated that teachers' enthusiasm about and interest in teaching students is more strongly related to desirable instructional practices (e.g., individual learning support) than is teachers' enthusiasm about and interest in their subject area. Teachers' enthusiasm for teaching is also more strongly related to the perceived characteristics of students taught by the teacher (e.g., student motivation) than is teachers' enthusiasm for their subject area (Kunter et al., 2011).

51. Teachers' intrinsic orientations (enthusiasm, interest, passion) have been associated with the following correlates in research reviewed in Part 2 of the report:

- *Characteristics of the professional/school context:*
  - positive associations with teacher-reported and principal-reported empowering behaviours by the principal (e.g., encourages collaborative work), more teaching enthusiasm in classes characterized by higher mathematics achievement, higher enjoyment, and less disruption
  - teacher-perceived positive student behaviours such as student cooperation and enthusiasm were positively associated with harmonious passion, and weakly positively related to obsessive passion
- *Teacher beliefs and personality characteristics:* positive associations with teacher self-efficacy, constructivist beliefs about teaching, teachers' mastery-goals; negative associations with teachers' work-avoidance goals
- *Professional and psychological wellbeing:*
  - positive associations with job satisfaction, life satisfaction, sense of flow in teaching; negative associations with job stress, burnout, neuroticism
  - job satisfaction was positively associated with harmonious passion; burnout was negatively associated with harmonious passion, and positively with obsessive passion
- *Teacher-reported instructional practices:* positive associations with effective classroom management, autonomy-supportive teaching, adequate instructional tempo, monitoring of students, cognitive challenge, social support of students, learning support of students, mastery-oriented instructional practices, differentiation of instruction for individual student needs, cognitively-stimulating instruction
- *Student-reported instructional practices:* positive associations with effective classroom management, autonomy-supportive teaching, adequate instructional tempo, student-perceived teacher enthusiasm, monitoring of students, cognitive challenge, social support of students, learning support of students
- *Student outcomes:*
  - positive associations with student enjoyment of subject area (math) and student achievement (in math)
  - increase in teacher-reported positive student behaviours such as student cooperation and enthusiasm was positively related to harmonious passion

### *Responsibility*

52. Personal responsibility is defined as a sense of internal obligation and commitment to produce or prevent designated outcomes, or a sense that these outcomes should have been produced or prevented (Lauermann & Karabenick, 2011, 2013). It is a motivational source since individuals may engage in various activities, because they feel an internal sense of obligation and a sense of duty to do so (Lauermann, 2014a; Lauermann & Karabenick, 2011). Personal responsibility is distinguished

from formal accountability: personal responsibility represents an *internal* source of motivation, whereas formal accountability reflects *externally* imposed duties for which teachers may or may not assume personal responsibility. This distinction is analogous to the differentiation between intrinsic (stemming from within) and extrinsic (stemming from external sources) forms of motivation in self-determination theory (Bacon, 1991; Deci & Flaste, 1995). Accordingly, whereas formal accountability requires external monitoring and control, personal responsibility implies internal motivation and self-regulation.

53. Personal responsibility represents a well-researched area in the organizational literature. Sense of personal responsibility for work outcomes has been consistently linked to intrinsic work motivation, job satisfaction and job performance (for a meta-analysis of the extant literature, see Humphrey, Nahrgang, & Morgeson, 2007). Key antecedents of personal responsibility include characteristics of the work environment, and especially the degree to which individuals have autonomy in how they perform job tasks, situational characteristics such as social roles that apply in a given context, and personal characteristics of the individual such as having strong work ethic or a proactive personality (see reviews in Lauermaun & Karabenick, 2011, 2014).

54. In educational research, teacher responsibility has been linked to fewer disciplinary problems in the classroom (Rose & Medway, 1981a, 1981b), positive affect toward teaching, positive change in student learning (Guskey, 1984), willingness to implement innovative instructional approaches (Guskey, 1988), job satisfaction (van Dick, Schnitger, Schwartzmann-Buchelt, & Wagner, 2001; Winter, Brenner, & Petrosko, 2006), and positive emotions toward teaching (Eren, 2013).<sup>2</sup> A positive association between teachers' self-judgments of responsibility for a student's failure and their reports of felt sympathy toward the student and intentions to actually pass (vs. fail) the student was supported in some studies (Matteucci & Gosling, 2004, Study 1), but not others (Matteucci, 2007; Matteucci & Gosling, 2004, Study 2).

55. The operationalizations of teachers' personal sense of responsibility used in educational research have been problematic (see review in Lauermaun & Karabenick, 2013). For instance, some researchers have used items originally designed to assess internal locus of control (a teacher's belief that educational outcomes depend on factors that are controllable by the teacher) or teacher self-efficacy to assess responsibility (Guskey, 1984; Lee & Smith, 1996). Others have used single items asking teachers to rate their degree of personal responsibility for a given outcome (e.g., student failure), without distinguishing between responsibility for causing the outcome and responsibility for failing to provide help (e.g., Matteuci, 2007). This distinction is important, since causal attributions can deviate from felt responsibility (Ames, 1975). Ames (1975) argued that "it may make perfectly good sense for teachers to say that students failed because they did not try hard enough while ultimately viewing themselves as responsible for arousing student interest." (p. 675).

56. Recent research on teacher responsibility has demonstrated that teachers' judgments of responsibility and self-efficacy are indeed empirically distinguishable (Lauermaun & Karabenick, 2013; Silverman, 2008). Furthermore, a multi-dimensional assessment of teacher responsibility has been proposed, focusing on teachers' willingness to hold themselves responsible for their students' achievement, for students' motivation, for having positive relationships with students, and for the quality of their teaching (Lauermaun & Karabenick, 2013). This outcome-specific operationalization has been beneficial for analyses of student-reported instructional practices. Preliminary evidence suggests that controlling for the effects of teachers' self-efficacy, teachers who felt responsible for their students' achievement, for their relationships with students, and for their teaching quality were

---

<sup>2</sup> Some of this research is not included in Part 2 of the report for the following reasons. Research by Guskey and Rose and Medway operationalized teacher responsibility as internal locus of control and was published prior to 1998 (I was not able to find more recent studies using these scales). Research by van Dick et al. (2001) was published in German. Research by Winter et al. (2006) used an organizational assessment of work responsibility, and it is not clear if the authors used items specifically for teaching. Research by Eren (2013) focused on pre-service teachers.

less likely to engage in differential treatment of students that prioritizes the needs of high-achieving over low-achieving students; only responsibility for relationships predicted student-perceived teacher enthusiasm and mastery-oriented instructional practices (Lauermann, Karabenick, & Butler, in prep.).

57. The following correlates of teachers' sense of personal responsibility for educational outcomes were identified in studies reviewed in Part 2 of the report:

- *Teacher beliefs and personality characteristics*: positive association with teacher self-efficacy
- *Teacher-reported instructional practices*: inconclusive evidence about teacher-reported sympathy toward a failing student and intentions to fail the student
- *Student-reported instructional practices*: positive association between responsibility for relationships with students and student-perceived teacher enthusiasm and mastery-oriented instruction; negative associations between responsibility for student achievement, relationships and quality of teaching and student-reported differential treatment by the teacher (teacher assigns priority to high achieving students and neglects low-achieving students)

### Summary, Limitations and Open Questions

58. The present analysis and discussion of identified studies focusing on teacher motivation suggests that the various operationalizations of teacher motivation have been associated with the following types of variables:

- *Characteristics of the professional context/school environment and of the students taught by the teacher*: Organizational and classroom characteristics (e.g., perceived organizational support) are typically examined as antecedents of teacher motivation. This line of research is important, because it indicates that teachers' motivations are at least to an extent shaped by the context in which they teach. Accordingly, assessments of teacher motivation not only indicate teachers' professional wellbeing, but are also an indicator of more or less adaptive organizational structures.
- *Teacher beliefs and personality characteristics*: Motivational constructs and beliefs about teaching are often interrelated (e.g., reviewed studies in Part 2 of this report revealed positive associations between teacher self-efficacy and other motivational constructs such as teachers' achievement goals, autonomous motivation, intrinsic orientations and responsibility). However, even though multiple motivational constructs have been linked to the same or similar outcome measures (e.g., job satisfaction and burnout), comparative analyses of the unique contributions of motivational factors as predictors of the same types of outcomes are rare.
- *Teachers' engagement in professional tasks (other than instructional practices)*: Various motivational factors (e.g., self-efficacy, autonomous motivation, expectancies and values) have been associated with teachers' engagement in the profession, and especially with interest in professional learning opportunities and planned persistence in teaching. This evidence suggests that the implications of teachers' motivations are not limited to their instructional behaviours, and reflect a much broader commitment to the teaching profession.
- *Professional and psychological wellbeing*: The links between teacher motivation and teachers' professional and psychological wellbeing in terms of, e.g., burnout, stress, and job satisfaction have received substantial attention in research reviewed in the previous section. This includes studies focusing on such motivational factors as teachers' self-efficacy, expectancies and values, goal orientations, and intrinsic orientations toward teaching, which

have consistently emerged as predictors of teachers' professional and psychological wellbeing.

- *Teacher-reported and student-reported instructional practices:* Teachers' motivations, including all five approaches to the conceptualization of teacher motivation identified in this report, have been systematically linked to both teacher-reported and student-reported high quality instructional practices. There is little doubt that teachers' motivations are related to their instructional behaviours in the classroom, even though the direction of these relations remains unclear and warrants further research.
- *Student outcomes:* Students' academic and socio-emotional outcomes are by far the least researched correlates of teachers' motivations, likely due to the fact that such analyses require matched teacher and student assessments. The available evidence is promising, however, including positive links between such motivational factors as teachers' self-efficacy, goal orientations and intrinsic orientations, and students' motivation and achievement.

59. Despite such promising evidence, however, there are several limitations and open questions that warrant further consideration:

- Even though some studies have utilized quasi-experimental (e.g., Tschannen-Moran & McMaster, 2009) and longitudinal designs (e.g., Kunter et al., 2013), the majority of identified research is correlational and cross-sectional. Accordingly, the potential for causal inferences about the associations between motivational constructs and hypothesized antecedents and consequences is limited.
- The status of the reviewed variables as "outcomes" versus "predictors" is often unclear, because these constructs influence each other over time (e.g., the associations between self-efficacy and instructional practices; e.g., Holzberger et al., 2013).
- Several motivational constructs have been associated with similar or even the same outcome variables (e.g., burnout and job satisfaction). Yet, comparative analyses of the unique contributions of different motivational constructs as predictors of these outcome measures are rare. Comparative analyses would contribute to the identification of multiple motivational pathways through which desirable outcomes could be influenced.
- Research reviewed in this report is grounded in established theories of motivation. Most of these theories, however, have been developed based on research with students, so that their use with teachers requires adaptations (e.g., the inclusion of relational goals in the achievement goal framework). Because these adaptations are not part of the original theories, further theory development is necessary to provide the foundation for theory-driven hypotheses.
- Due to the complexity of the teaching profession, assessments of general motivational orientations (e.g., autonomous motivation toward teaching) are often assessed in reference to a selected set of teaching tasks and outcomes. Which types of tasks are most suitable to represent general motivational orientations toward teaching is not clear. This is not a trivial question, considering that the type of outcome toward which teachers' motivations are oriented (e.g., enthusiasm for teaching students vs. enthusiasm for the subject area taught by the teacher; Kunter et al., 2011) has implications for the types of outcomes predicted by these motivational orientations.

## **PART 4: OUTLOOK AND RECOMMENDATIONS FOR A LARGE-SCALE INTERNATIONAL STUDY ON TEACHERS' KNOWLEDGE AND PROFESSIONAL COMPETENCE**

60. The purpose of this final part of the report is to provide recommendations for the use of teacher motivation assessments in an international study on teachers' knowledge and professional competence. These recommendations are focused on the following questions:

- (a) Which assessments of teacher motivation have the potential to be implemented on an international scale?
- (b) Which theoretical frameworks can inform the selection of teacher motivation constructs?
- (c) Should the selected assessments of teacher motivation focus on specific teaching tasks or capture general motivational orientations?
- (d) In what ways can assessments of teacher motivation complement assessments of general pedagogical knowledge?

### **Implementation of Teacher Motivation Assessments on an International Scale**

61. Even though studies reviewed in this report represent a broad range of national contexts (see Part 2), relatively few of these studies have conducted international comparative analyses (e.g., Klassen et al., 2008; Reeve et al., 2014). Nonetheless, all of the reviewed motivational constructs are based on established motivation theories that are applicable across national systems and educational contexts. Support for the applicability of teacher motivation assessments internationally exists primarily for teachers' self-efficacy, which is included in such large-scale international assessments as TALIS with 34 participating countries (OECD, 2014). International comparative analyses of pre-service teachers' motives for teaching based on the FIT-Choice expectancy-value framework have also been conducted (Watt et al., 2012).

62. Additional—albeit indirect—evidence for the applicability of the reviewed motivational constructs in a large-scale international assessment of teachers stems from analogous research with students. For instance, several of the motivational constructs reviewed in this report have been included in PISA to study students' motivations (OECD, 2013a). PISA assessments have focused on: perseverance (willingness to persist in the face of difficulty), openness to problem solving (willingness to engage with problems), self-concept of ability, perceived control over success in mathematics and in school (beliefs that academic success depends on own effort), perceived self-responsibility for failing in mathematics (willingness to attribute failure to the self, rather than to ascribe it to external factors), and intrinsic and instrumental motivation to learn mathematics (enjoyment and perceived utility of mathematics for future goals). Analogous constructs in the teacher literature include assessments of teachers' beliefs about their teaching ability (e.g., self-efficacy, expectancy of success in teaching tasks, and ratings of perceived teaching ability), teacher responsibility, teachers' intrinsic orientations (teachers' enthusiasm, interest in teaching, and passion for teaching), and other values such as the perceived utility of particular instructional practices or of teaching as a career choice (e.g., as operationalized in the FIT-Choice framework).

63. Based on these considerations, all of the reviewed motivational constructs seem suitable for inclusion in an international large-scale assessment of teachers' motivations.

### **Theoretical Frameworks that Can Inform the Selection of Teacher Motivation Constructs**

64. In order to capture the various facets of teachers' motivations toward their profession, it is likely necessary to draw on multiple theoretical frameworks. However, different theoretical frameworks have commonalities and complement each other. For instance, teachers' beliefs about their teaching ability play an important role in socio-cognitive theory (reflected in the

conceptualization of self-efficacy), expectancy-value theory (reflected in the conceptualization of expected success and perceived teaching ability), self-determination theory (reflected in the conceptualization of need for competence), and have been conceptualized as an antecedent of teachers' achievement goals (e.g., the links between teachers' self-efficacy and goal orientations were examined in Nitsche et al., 2011). Similarly, teachers' intrinsic orientations play an important role in self-determination theory (reflected in the conceptualization of autonomous motivation) and expectancy-value theory (reflected in the conceptualization of intrinsic value), and have been conceptualized as a consequence of self-efficacy beliefs and achievement goals (e.g., mastery goals predicted intrinsic interest in teaching in Retelsdorf et al., 2011).

65. Thus, key motivational constructs such as beliefs about ability, goals, intrinsic orientations and other values related to teaching are relevant across multiple theoretical frameworks. The major theoretical frameworks utilized in recent research on teachers' motivations are: socio-cognitive theory, expectancy-value theory, achievement goal theory, and self-determination theory (see Part 3 of the report). In addition, such constructs as teachers' intrinsic orientations (e.g., enthusiasm for teaching, interest, and passion for teaching) and personal responsibility for educational outcomes cut across multiple theoretical frameworks.

### **Focus on Specific Teaching Tasks Versus General Motivational Orientations Toward Teaching**

66. As noted previously (see Part 3 of this report), the level of specificity of teacher motivation assessments can vary significantly, ranging from assessments of motivations toward specific instructional practices and toward teaching a particular class of students, to motivations toward teaching as a profession. Assessments of motivational orientations (e.g., goal orientations) generally capture how teachers approach professional tasks rather than teachers' motivations toward engaging in specific tasks. However, even assessments of general motivational orientations toward teaching often reference a subset of representative teaching tasks in order to capture general orientations (see Parts 2 and 3 of the report).

67. Focusing in particular on assessments of teachers' self-efficacy, Tschannen-Moran, Woolfolk Hoy, and Hoy (1998) identified finding the appropriate level of specificity for measurement as one of the main challenges in conceptualizing teacher self-efficacy assessments. Based on Bandura's work (Bandura, 1977; 1997), the authors noted that „In order to be useful and generalizable, measures of teacher efficacy need to tap teachers' assessments of their competence across the wide range of activities and tasks they are asked to perform. And yet there is a danger of developing measures so specific that they lose their predictive power for anything beyond the specific skills and contexts being measured” (p. 219).

68. The appropriate level of specificity largely depends on the purpose of the research and posed research questions. Measures focusing on a particular class of students may be helpful in order to establish links to self-reported or student-reported practices used in this class (e.g., Frenzel et al., 2009). Outcome-specific measures focusing on selected instructional practices (e.g., Reeve et al., 2014) are useful for understanding the underlying motivations specifically for these practices. Measures of moderate specificity focusing on key domains of the teaching profession are useful due to their relatively broad applicability. Such measures include, for instance, assessments of teachers' self-efficacy for student engagement, classroom management, and instructional practices (Tschannen-Moran & Woolfolk Hoy, 2001); assessments of teacher responsibility for their students' achievement, motivation, for having positive relationships with students, and for the quality of their teaching (Lauermann & Karabenick, 2013); and assessments of teachers' enthusiasm for teaching versus for their subject area (e.g., Kunter et al., 2008).

69. Large-scale international studies like PISA and TALIS typically utilize assessments of moderate specificity (e.g., the assessment of teachers' self-efficacy in TALIS and student motivation assessments in PISA). However, it is noteworthy that student motivation assessments in PISA are subject-specific; for instance, in 2009, the focus of these assessments was on reading, whereas in 2012

the focus was on mathematics. An analogous strategy is possible with teacher assessments. In addition to assessments that capture general motivational orientations toward teaching, outcome-specific measures could be included as well. In order not to increase the length of the assessment excessively, different measures could be included in different cycles of data collection, or different subsets of measures could be presented to randomly selected subsamples of teachers. The selection of specific outcomes on which to focus would largely depend on other included assessments (e.g., assessments of both knowledge about and motivation toward selected instructional practices, learning processes, and student outcomes).

### **The Utility of Teacher Motivation Assessments for a Large-Scale International Assessment of Teachers' General Pedagogical Knowledge**

70. Assessments of teacher motivation warrant consideration as an essential element of teachers' professional competence in terms of teachers' ability to successfully master instructional situations (see, e.g., Kunter et al., 2011), as well as an indicator of teachers' professional and psychological wellbeing (see review in Part 3 of the report). As noted previously, such motivational characteristics as teachers' enthusiasm for teaching not only predict teachers' use of high quality instructional practices, but also an increase in students' motivation and achievement (Kunter et al., 2011). The effects of enthusiasm for teaching on teachers' instruction and students' academic outcomes were confirmed, controlling for the effects of teachers' pedagogical content knowledge. Thus, assessments of motivation complement assessments of knowledge in predicting desirable educational outcomes. Although the available evidence is still very scarce, it suggests that teachers' motivations do indeed matter for their professional success.

71. Furthermore, the majority of motivational constructs reviewed in previous sections of this report have been systematically linked to indicators of teachers' wellbeing, including associations with teacher burnout, occupational strain, job satisfaction, and professional engagement in terms of, e.g., planned persistence in teaching and involvement in professional development. Accordingly, motivational constructs can serve as an indicator of overall professional functioning and engagement.

72. Teacher motivation and professional knowledge can be closely intertwined, and motivation can function as an antecedent, a concomitant, and a consequence of knowledge. For instance, under the assumption that use of selected instructional practices implies knowledge about these practices, the identified associations between teacher motivation assessments and teachers' self-reported, as well as student-reported instructional practices (see Part 3 of the report) suggest a potential link between teachers' motivational characteristics and teachers' knowledge about instructional quality. Links between teacher motivation and instructional practices were confirmed for all of the reviewed teacher motivation constructs, even though there was variation in the specific practices examined in each study.

73. Evidence that teachers' motivations predict interest in and engagement in professional development and learning opportunities suggests an additional pathway through which motivation can affect professional knowledge (e.g., such links were identified for self-efficacy, expectancies and values, goals, and autonomous motivation, see review in Part 3). At the same time, teachers' available knowledge about the instructional process also has the potential to shape teachers' motivations, especially with regard to teachers' beliefs related to their teaching ability (cf. Holzberger et al., 2013).

74. Overall, as noted in previous sections of this report, teacher motivation matters for teachers' psychological wellbeing, professional engagement, decision-making, instructional practices, and for their students. Furthermore, analogous to research with students, teacher motivation matters as an indicator of professional competence. Therefore, the inclusion of teacher motivation assessments in an international large-scale assessment of teachers' pedagogical knowledge is worthwhile.

## REFERENCES

- Abrami, P. C., Poulsen, C., & Chambers, B. (2004). Teacher motivation to implement an educational innovation: Factors differentiating users and non-users of cooperative learning. *Educational Psychology, 24*(2), 201-216.
- Ames, R. (1975). Teachers' attributions of responsibility: Some unexpected nondefensive effects. *Journal of Educational Psychology, 67*(5), 668-676. doi: 10.1037/0022-0663.67.5.668
- Bacon, C. S. (1991). Being held responsible versus being responsible. *The Clearing House, 64*(6), 395-398. doi: 10.1080/00098655.1991.9955903
- Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review, 84*(2), 191-215.
- Bandura, A. (2000). Cultivate self-efficacy for personal and organizational effectiveness. In E. A. Locke (Ed.), *Handbook of principles of organization behavior* (pp. 120-136). Oxford, UK: Blackwell.
- Bandura, A. (2006). Guide for constructing self-efficacy scales. In M. F. Pajares & T. Urdan (Eds.), *Self-efficacy beliefs of adolescents* (Vol. 5, pp. 307-337). Greenwich, CT: Information Age Publishing.
- Bandura, A. (Ed.). (1986). *Social foundations of thought and action: A social cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bandura, A. (Ed.). (1997). *Self-efficacy: The exercise of control*. New York: Freeman & Co. Book Citation.
- Berger, J.-L., & D'Ascoli, Y. (2012). Becoming a VET teacher as a second career: Investigating the determinants of career choice and their relation to perceptions about prior occupation. *Asia-Pacific Journal of Teacher Education, 40*(3), 317-341.
- Blömeke, S., & Delaney, S. (2012). Assessment of teacher knowledge across countries: a review of the state of research. *ZDM, 44*(3), 223-247. doi: 10.1007/s11858-012-0429-7
- Burton, K. D., Lydon, J. E., D'Alessandro, D. U., & Koestner, R. (2006). The differential effects of intrinsic and identified motivation on well-being and performance: Prospective, experimental, and implicit approaches to self-determination theory. *Journal of Personality and Social Psychology, 91*(4), 750-762. doi: 10.1037/0022-3514.91.4.750
- 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. doi: 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. doi: 10.1037/a0028613
- Butler, R., & Shibaz, L. (2008). Achievement goals for teaching as predictors of students' perceptions of instructional practices and students' help seeking and cheating. *Learning and Instruction*, 18(5), 453-467. doi: 10.1016/j.learninstruc.2008.06.004
- Butler, R., & Shibaz, L. (2014). Striving to connect and striving to learn: Influences of relational and mastery goals for teaching on teacher behaviors and student interest and help seeking. *International Journal of Educational Research*, 65(0), 41-53. doi: <http://dx.doi.org/10.1016/j.ijer.2013.09.006>
- Caprara, G. V., Barbaranelli, C., Borgogni, L., & Steca, P. (2003). Efficacy beliefs as determinants of teachers' job satisfaction. *Journal of Educational Psychology*, 95(4), 821-832. doi: 10.1037/0022-0663.95.4.821
- Caprara, G. V., Barbaranelli, C., Steca, P., & Malone, P. S. (2006). Teachers' self-efficacy beliefs as determinants of job satisfaction and students' academic achievement: A study at the school level. *Journal of School Psychology*, 44(6), 473-490. doi: <http://dx.doi.org/10.1016/j.jsp.2006.09.001>
- Carbonneau, N., Vallerand, R. J., Fernet, C., & Guay, F. (2008). The role of passion for teaching in intrapersonal and interpersonal outcomes. *Journal of Educational Psychology*, 100(4), 977-987. doi: 10.1037/a0012545
- Carson, R. L., & Chase, M. A. (2009). An examination of physical education teacher motivation from a self-determination theoretical framework. *Physical Education and Sport Pedagogy*, 14(4), 335-353.
- Chatzistamatiou, M., Dermitzaki, I., & Bagiatis, V. (2014). Self-regulatory teaching in mathematics: Relations to teachers' motivation, affect and professional commitment. *European Journal of Psychology of Education*, 29(2), 295-310.
- Ciani, K. D., Summers, J. J., & Easter, M. A. (2008). A 'top-down' analysis of high school teacher motivation. *Contemporary Educational Psychology*, 33(4), 533-560. doi: 10.1016/j.cedpsych.2007.04.002
- Clotfelter, C., Ladd, H., Vigdor, J., & Diaz, R. (2004). Do school accountability systems make it more difficult for low performing schools to attract and retain high quality teachers? *Journal of Policy Analysis and Management*, 23, 251-271. doi: 10.1002/pam.20003
- Davis, J., & Wilson, S. M. (2000). Principals' Efforts To Empower Teachers: Effects on Teacher Motivation and Job Satisfaction and Stress. *Clearing House*, 73(6), 349-353.
- Deci, E. L., & Flaste, R. (1995). *Why we do what we do: The dynamics of personal autonomy*. New York, NY: G P Putnam's Sons.
- Dweck, C. S. (1986). Motivational processes affecting learning. *American Psychologist*, 41(10), 1040-1048. doi: 10.1037/0003-066X.41.10.1040
- Dweck, C. S., & Grant, H. (2008). Self-theories, goals, and meaning. In J. Y. Shah & W. L. Gardner (Eds.), *Handbook of motivation science*. (pp. 405-416). New York, NY US: Guilford Press.

- Eccles, J. S., Adler, T. F., Futterman, R., Goff, S. B., Kaczala, C. M., Meece, J. L., & Midgley, C. (1983). Expectancies, values, and academic behaviors. In J. T. Spence (Ed.), *Expectancies, values, and academic behaviors* (pp. 75–146). San Francisco, CA: W. H. Freeman.
- Elliot, A. J. (2005). A conceptual history of the achievement goal construct. In A. J. Elliot & C. S. Dweck (Eds.), *Handbook of competence and motivation*. (pp. 52-72). New York, NY US: Guilford Publications.
- Elliot, A. J., & Church, M. A. (1997). A hierarchical model of approach and avoidance achievement motivation. *Journal of Personality and Social Psychology*, 72(1), 218-232.
- Elliot, A. J., & McGregor, H. A. (2001). A 2x2 achievement goal framework. *Journal of Personality and Social Psychology*, 80(3), 501-519.
- Elliot, A. J., Shell, M. M., Henry, K. B., & Maier, M. A. (2005). Achievement goals, performance contingencies, and performance attainment: An experimental test. *Journal of Educational Psychology*, 97(4), 630-640.
- Eren, A. (2013). Uncovering the links between prospective teachers' personal responsibility, academic optimism, hope, and emotions about teaching: A mediation analysis. *Social Psychology of Education*, 17(1), 73-104. doi: 10.1007/s11218-013-9243-5
- Eyal, O., & Roth, G. (2011). Principals' Leadership and Teachers' Motivation: Self-Determination Theory Analysis. *Journal of Educational Administration*, 49(3), 256-275.
- 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.
- Finnigan, K. S. (2010). Principal leadership and teacher motivation under high-stakes accountability policies. *Leadership and Policy in Schools*, 9(2), 161-189.
- Finnigan, K. S., & Gross, B. (2007). Do accountability policy sanctions influence teacher motivation? Lessons from Chicago low-performing schools. *American Educational Research Journal*, 44(3), 594-629. doi: 10.3102/0002831207306767
- 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. doi: 10.1037/a0014695
- Goroizidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and Teacher Education*, 39, 1-11.
- Guskey, T. R. (1984). The influence of change in instructional effectiveness upon the affective characteristics of teachers. *American Educational Research Journal*, 21(2), 245-259. doi: 10.2307/1162442
- Guskey, T. R. (1988). Teacher efficacy, self-concept, and attitudes toward the implementation of instructional innovation. *Teaching and Teacher Education*, 4(1), 63-69. doi: 10.1016/0742-051X(88)90025-X

- Helker, K., & Wosnitza, M. (2014). Responsibility in the school context - Development and validation of a heuristic framework. *Frontline Learning Research*, 2(3), 115-139. doi: <http://dx.doi.org/10.14786/flr.v2i3.99>
- Herman, J. L. (2007). Accountability and assessment: Is public interest in K-12 education being served? (CRESST Report 728). Los Angeles, CA: National Center for Research on Evaluation, Standards, and Student Testing (CRESST). Retrieved June 29, 2010, from <http://www.eric.ed.gov/PDFS/ED499421.pdf>.
- Herman, J. L., Abedi, J., & Golan, S. (1994). Assessing the effects of standardized testing on schools. *Educational and Psychological Measurement*, 54(2), 471-482. doi: 10.1177/0013164494054002022
- Holzberger, D., Philipp, A., & Kunter, M. (2013). How Teachers' Self-Efficacy Is Related to Instructional Quality: A Longitudinal Analysis. *Journal of Educational Psychology*. doi: 10.1037/a0032198
- Holzberger, D., Philipp, A., & Kunter, M. (2014). Predicting teachers' instructional behaviors: The interplay between self-efficacy and intrinsic needs. *Contemporary Educational Psychology*, 39(2), 100-111.
- Hong, E., Hartzell, S. A., & Greene, M. T. (2009). Fostering creativity in the classroom: Effects of teachers' epistemological beliefs, motivation, and goal orientation. *The Journal of Creative Behavior*, 43(3), 192-208.
- Humphrey, S. E., Nahrgang, J. D., & Morgeson, F. P. (2007). Integrating motivational, social, and contextual work design features: A meta-analytic summary and theoretical extension of the work design literature. *Journal of Applied Psychology*, 92(5), 1332-1356. doi: 10.1037/0021-9010.92.5.1332
- Jacob, B. A. (2005). Accountability, incentives and behavior: The impact of high-stakes testing in the Chicago Public Schools. *Journal of Public Economics*, 89, 761-796. doi: 10.1016/j.jpubeco.2004.08.004
- Jacob, B. A., & Levitt, S. D. (2003). Rotten apples: An investigation of the prevalence and predictors of teacher cheating. *The Quarterly Journal of Economics*, 118(3), 843-877. doi: 10.1162/00335530360698441
- Jesus, S. N., & Lens, W. (2005). An integrated model for the study of teacher motivation. *Applied Psychology: An International Review*, 54(1), 119-134.
- Kao, C.-P., Wu, Y.-T., & Tsai, C.-C. (2011). Elementary school teachers' motivation toward web-based professional development, and the relationship with Internet self-efficacy and belief about web-based learning. *Teaching and Teacher Education*, 27(2), 406-415.
- Klassen, R. M., & Chiu, M. M. (2010). Effects on teachers' self-efficacy and job satisfaction: Teacher gender, years of experience, and job stress. *Journal of Educational Psychology*, 102(3), 741-756. doi: 10.1037/a0019237
- Klassen, R. M., & Chiu, M. M. (2011). The occupational commitment and intention to quit of practicing and pre-service teachers: Influence of self-efficacy, job stress, and teaching context. *Contemporary Educational Psychology*, 36(2), 114-129.

- Klassen, R. M., Chong, W. H., Huan, V. S., Wong, I., Kates, A., & Hannok, W. (2008). Motivation beliefs of secondary school teachers in Canada and Singapore: A mixed methods study. *Teaching and Teacher Education, 24*(7), 1919-1934.
- Klassen, R. M., Durksen, T. L., & Tze, V. M. C. (2014). Teachers' self-efficacy beliefs: Ready to move from theory to practice? In P. W. Richardson, S. A. Karabenick & H. M. G. Watt (Eds.), *Teacher motivation: Implications for theory and practice* (pp. 100-115). U.S.: Routledge/Taylor & Francis.
- Klassen, R. M., Perry, N. E., & Frenzel, A. C. (2012). Teachers' relatedness with students: An underemphasized component of teachers' basic psychological needs. *Journal of Educational Psychology, 104*(1), 150-165. doi: 10.1037/a0026253
- Klassen, R. M., & Tze, V. M. C. (2014). Teachers' self-efficacy, personality, and teaching effectiveness: A meta-analysis. *Educational Research Review, 12*, 59-76. doi: 10.1016/j.edurev.2014.06.001
- Klassen, R. M., Tze, V. M. C., Betts, S. M., & Gordon, K. A. (2011). Teacher efficacy research 1998–2009: Signs of progress or unfulfilled promise? *Educational Psychology Review, 23*(1), 21-43.
- Kocabas, I. (2009). The Effects of Sources of Motivation on Teachers' Motivation Levels. *Education, 129*(4), 724-733.
- König, J. (2014). Designing an international instrument to assess teachers' general pedagogical knowledge (GPK): Review of studies, considerations, and recommendations. Technical paper prepared for the OECD Innovative Teaching for Effective Learning (ITEL) – Phase II Project: A Survey to Profile the Pedagogical Knowledge in the Teaching Profession (ITEL Teacher Knowledge Survey). Paris: OECD.
- König, J., & Rothland, M. (2012). Motivations for choosing teaching as a career: Effects on general pedagogical knowledge during initial teacher education. *Asia-Pacific Journal of Teacher Education, 40*(3), 289-315.
- Kunter, M., & Baumert, J. (2006). Who is the expert? Construct and criteria validity of student and teacher ratings of instruction. *Learning Environments Research, 9*(3), 231-251. doi: 10.1007/s10984-006-9015-7
- Kunter, M., Frenzel, A., Nagy, G., Baumert, J., & Pekrun, R. (2011). Teacher enthusiasm: Dimensionality and context specificity. *Contemporary Educational Psychology, 36*(4), 289-301. doi: <http://dx.doi.org/10.1016/j.cedpsych.2011.07.001>
- 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: Implications for theory and practice* (pp. 83-99). U.S.: Routledge/Taylor & Francis.
- Kunter, M., Klusmann, U., Baumert, J., Richter, D., Voss, T., & Hachfeld, A. (2013). Professional competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology*. doi: 10.1037/a0032583
- 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. doi: 10.1016/j.learninstruc.2008.06.008

- Lam, S.-f., Cheng, R. W.-y., & Choy, H. C. (2010). School support and teacher motivation to implement project-based learning. *Learning and Instruction*, 20(6), 487-497.
- Lauermann, F. (2014a). Teacher responsibility from the teacher's perspective. *International Journal of Educational Research*, 65, 75-88. doi: <http://dx.doi.org/10.1016/j.ijer.2013.09.005>
- Lauermann, F. (2014b). Teacher responsibility: Ties to pedagogical knowledge and professionalism, Paper presented at an invited expert meeting at the OECD, Brussels, Belgium.
- Lauermann, F., & Karabenick, S. A. (2011). Taking teacher responsibility into account(ability): Explicating its multiple components and theoretical status. *Educational Psychologist*, 46(2), 122-140. doi: 10.1080/00461520.2011.558818
- Lauermann, F., & Karabenick, S. A. (2013). The meaning and measure of teachers' sense of responsibility for educational outcomes. *Teaching and Teacher Education*, 30(1), 13-26. doi: [dx.doi.org/10.1016/j.tate.2012.10.001](http://dx.doi.org/10.1016/j.tate.2012.10.001)
- Lauermann, F., & Karabenick, S. A. (2014). Teacher responsibility: What does it mean for teachers' motivation and emotions? In P. W. Richardson, S. A. Karabenick & H. M. G. Watt (Eds.), *Teacher motivation: Implications for theory and practice* (pp. 116-132). U.S.: Routledge/Taylor & Francis.
- Lauermann, F., Karabenick, S. A., & Butler, R. (in prep.). Teacher responsibility and its links to student-reported instructional practices.
- Lee, V. E., & Smith, J. B. (1996). Collective responsibility for learning and its effects on gains in achievement for early secondary school students. *American Journal of Education*, 104(2), 103-147. doi: 10.1086/444122
- Leithwood, K., & Jantzi, D. (2006). Transformational school leadership for large-scale reform: Effects on students, teachers, and their classroom practices. *School Effectiveness and School Improvement*, 17(2), 201-227.
- Liu, S., & Onwuegbuzie, A. J. (2014). Teachers' motivation for entering the teaching profession and their job satisfaction: A cross-cultural comparison of China and other countries. *Learning Environments Research*, 17(1), 75-94.
- Matteucci, M. C. (2007). Teachers facing school failure: The social valorization of effort in the school context. *Social Psychology of Education*, 10(1), 29-53. doi: 10.1007/s11218-006-9011-x
- Matteucci, M. C., & Gosling, P. (2004). Italian and French teachers faced with pupil's academic failure: The 'norm of effort'. *European Journal of Psychology of Education*, 19(2), 147-166. doi: 10.1007/BF03173229
- Morgan, M., Ludlow, L., Kitching, K., O'Leary, M., & Clarke, A. (2010). What makes teachers tick? Sustaining events in new teachers' lives. *British Educational Research Journal*, 36(2), 191-208.
- Nagengast, B., Marsh, H. W., Scalas, L. F., Xu, M. K., Hau, K.-T., & Trautwein, U. (2011). Who took the "x" out of expectancy-value theory? A psychological mystery, a substantive-methodological synergy, and a cross-national generalization. *Psychological Science*, 22(8), 1058-1066.
- Nicholls, J. G. (1984). Achievement motivation: Conceptions of ability, subjective experience, task choice, and performance. *Psychological Review*, 91(3), 328-346.

- 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.
- Nitsche, S., Dickhäuser, O., Fasching, M. S., & Dresel, M. (2013). Teachers' professional goal orientations: Importance for further training and sick leave. *Learning and Individual Differences, 23*, 272-278.
- OECD. (2004). *Learning for tomorrow's world: First results from PISA 2003*. PISA: OECD Publishing.
- OECD. (2013a). *PISA 2012 results: Ready to learn: Students' engagement, drive, and self-beliefs (Volume III)*. PISA: OECD Publishing.
- OECD. (2013b). *Teachers for the 21st century: Using evaluation to improve teaching*. Belgium: OECD Publishing.
- OECD. (2014). *TALIS 2013 results: An international perspective on teaching and learning*. Belgium: OECD Publishing.
- Papaioannou, A., & Christodoulidis, T. (2007). A measure of teachers' achievement goals. *Educational Psychology, 27*(3), 349-361.
- Raudenbush, S. W., Rowan, B., & Cheong, Y. F. (1992). Contextual effects on the self-perceived efficacy of high school teachers. *Sociology of Education, 65*(2), 150-167. doi: 10.2307/2112680
- Reeve, J., Vansteenkiste, M., Assor, A., Ahmad, I., Cheon, S. H., Jang, H., . . . Wang, C. K. J. (2014). The beliefs that underlie autonomy-supportive and controlling teaching: A multinational investigation. *Motivation and Emotion, 38*(1), 93-110.
- Retelsdorf, J., Butler, R., Streblov, 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. doi: 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.
- Richardson, P. W., Karabenick, S. A., & Watt, H. M. G. (2014). *Teacher motivation: Theory and practice*. NY, USA: Routledge, Taylor & Francis.
- Richardson, P. W., & Watt, H. M. G. (2014). Why people choose teaching as a career. An expectancy-value approach to understanding teacher motivation. In P. W. Richardson, S. A. Karabenick & H. M. G. Watt (Eds.), *Teacher motivation: Implications for theory and practice* (pp. 3-19). U.S.: Routledge/Taylor & Francis.
- Rose, J. S., & Medway, F. J. (1981a). Measurement of teachers' beliefs in their control over student outcomes. *Journal of Educational Research, 74*(3), 185-190.
- Rose, J. S., & Medway, F. J. (1981b). Teacher locus of control, teacher behavior, and student behavior as determinants of student achievement. *Journal of Educational Research, 74*(6), 375-381.
- 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.

- Ryan, R. M., & Deci, E. L. (2000). Self-determination theory and the facilitation of intrinsic motivation, social development, and well-being. *American Psychologist*, 55(1), 68-78. doi: 10.1037/0003-066X.55.1.68
- Ryan, R. M., & Deci, E. L. (2002). *Overview of self-determination theory: An organismic-dialectical perspective*. Rochester, NY, US: University of Rochester Press.
- Ryan, R. M., & Deci, E. L. (2006). Self-regulation and the problem of human autonomy: Does psychology need choice, self-determination, and will? *Journal of Personality*, 74(6), 1557-1585. doi: 10.1111/j.1467-6494.2006.00420.x
- Schiefele, U., Streblov, L., & Retelsdorf, J. (2013). Dimensions of teacher interest and their relations to occupational well-being and instructional practices. *Journal for Educational Research Online*, 5(1), 7-37.
- Schunk, D. H., Pintrich, P. R., & Meece, J. L. (2008). *Motivation in education. Theory, research and applications* (3rd ed.). New Jersey, US: Pearson.
- Schwarzer, R., & Hallum, S. (2008). Perceived teacher self-efficacy as a predictor of job stress and burnout: Mediation analyses. *Applied Psychology: An International Review*, 57, 152-171. doi: 10.1111/j.1464-0597.2008.00359.x
- Shulman, L. S. (1986). Those who understand: Knowledge growth in teaching. *Educational Researcher*, 15(2), 4-14. doi: <http://www.jstor.org/stable/1175860?origin=JSTOR-pdf>
- Shulman, L. S. (1987). Knowledge and teaching: Foundations of the new reform. *Harvard Educational Review*, 57(1), 1-22.
- Silverman, S. K. (2008). Comparing teachers' sense of efficacy with sense of responsibility and advocacy. Paper presented at the annual meeting of the American Educational Studies Association, Savannah, GA.
- Skaalvik, E. M., & Skaalvik, S. (2007). Dimensions of teacher self-efficacy and relations with strain factors, perceived collective teacher efficacy, and teacher burnout. *Journal of Educational Psychology*, 99(3), 611-625. doi: 10.1037/0022-0663.99.3.611
- Skaalvik, E. M., & Skaalvik, S. (2010). Teacher self-efficacy and teacher burnout: A study of relations. *Teaching and Teacher Education*, 26(4), 1059-1069.
- Soenens, B., Sierens, E., Vansteenkiste, M., Dochy, F., & Goossens, L. (2012). Psychologically controlling teaching: Examining outcomes, antecedents, and mediators. *Journal of Educational Psychology*, 104(1), 108-120.
- Taylor, I. M., & Ntoumanis, N. (2007). Teacher motivational strategies and student self-determination in physical education. *Journal of Educational Psychology*, 99(4), 747-760.
- Taylor, I. M., Ntoumanis, N., & Smith, B. (2009). The social context as a determinant of teacher motivational strategies in physical education. *Psychology of Sport and Exercise*, 10(2), 235-243.
- Taylor, I. M., Ntoumanis, N., & Standage, M. (2008). A self-determination theory approach to understanding the antecedents of teachers' motivational strategies in physical education. *Journal of Sport & Exercise Psychology*, 30(1), 75-94.

- Thoonen, E. E. J., Slegers, P. J. C., Oort, F. J., & Peetsma, T. T. D. (2012). Building school-wide capacity for improvement: The role of leadership, school organizational conditions, and teacher factors. *School Effectiveness and School Improvement*, 23(4), 441-460.
- Thoonen, E. E. J., Slegers, 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.
- Thoonen, E. E. J., Slegers, P. J. C., Peetsma, T. T. D., & Oort, F. J. (2011). Can teachers motivate students to learn? *Educational Studies*, 37(3), 345-360.
- Tschannen-Moran, M., & Hoy, A. W. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, 23(6), 944-956. doi: 10.1016/j.tate.2006.05.003
- Tschannen-Moran, M., & McMaster, P. (2009). Sources of self-efficacy: Four professional development formats and their relationship to self-efficacy and implementation of a new teaching strategy. *The Elementary School Journal*, 110(2), 228-245. doi: 10.1086/605771
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2001). Teacher efficacy: Capturing an elusive construct. *Teaching and Teacher Education*, 17, 783 - 805.
- Tschannen-Moran, M., & Woolfolk Hoy, A. (2007). The differential antecedents of self-efficacy beliefs of novice and experienced teachers. *Teaching and Teacher Education*, 23(6), 944-956. doi: 10.1016/j.tate.2006.05.003
- Tschannen-Moran, M., Woolfolk Hoy, A., & Hoy, W. K. (1998). Teacher efficacy: Its meaning and measure. *Review of Educational Research*, 68(2), 202-248. doi: 10.2307/1170754
- Van den Berghe, L., Soenens, B., Aelterman, N., Cardon, G., Tallir, I. B., & Haerens, L. (2014). Within-person profiles of teachers' motivation to teach: Associations with need satisfaction at work, need-supportive teaching, and burnout. *Psychology of Sport and Exercise*, 15(4), 407-417.
- van Dick, R., Schnitger, C., Schwartzmann-Buchelt, C., & Wagner, U. (2001). Der Job Diagnostic Survey im Bildungsbereich: Eine Ueberprufung der Gultigkeit des Job Characteristics Model bei Lehrerinnen und Lehrern, Hochschulangehörigen und Erzieherinnen mit berufsspezifischen Weiterentwicklungen des JDS. *Zeitschrift fuer Arbeits- u. Organisationspsychologie*, 45(2), 74-92.
- Van Uden, J. M., Ritzen, H., & Pieters, J. M. (2013). I think I can engage my students. Teachers' perceptions of student engagement and their beliefs about being a teacher. *Teaching and Teacher Education*, 32, 43-54.
- Vieluf, S., Kaplan, D., Klieme, E., & Bayer, S. (2012). Teaching practices and pedagogical innovation. Evidence from TALIS. Belgium: OECD Publishing.
- Watt, H. M. G., & Richardson, P. W. (2007). Motivational factors influencing teaching as a career choice: Development and validation of the FIT-Choice scale. *The Journal of Experimental Education*, 75(3), 167-202. doi: 10.3200/JEXE.75.3.167-202
- Watt, H. M. G., & Richardson, P. W. (2008a). Motivation for teaching. *Learning and Instruction*, 18(5), 405-407. doi: 10.1016/j.learninstruc.2008.06.009

- Watt, H. M. G., & Richardson, P. W. (2008b). Motivations, perceptions, and aspirations concerning teaching as a career for different types of beginning teachers. *Learning and Instruction*, 18(5), 408-428. doi: 10.1016/j.learninstruc.2008.06.002
- Watt, H. M. G., & Richardson, P. W. (2010). Do teaching motivations change following early career teaching experiences? Stability and change for different “types” of beginning teachers. Paper presented at the 12th International Conference on Motivation (ICM), Porto, Portugal.
- Watt, H. M. G., & Richardson, P. W. (2014). Why people choose teaching as a career: An expectancy-value approach to understanding teacher motivation. In P. W. Richardson, S. A. Karabenick & H. M. G. Watt (Eds.), *Teacher motivation. Theory and Practice* (pp. 3-19). New York, US: Routledge.
- Watt, H. M. G., Richardson, P. W., Klusmann, U., Kunter, M., Beyer, B., Trautwein, U., & Baumert, J. (2012). Motivations for choosing teaching as a career: An international comparison using the FIT-Choice scale. *Teaching and Teacher Education*, 28(6), 791-805. doi: 10.1016/j.tate.2012.03.003
- Winter, P. A., Brenner, D. B., & Petrosko, J. M. (2006). Teacher job satisfaction in a reform state: The influence of teacher characteristics, job dimensions, and psychological states. *Journal of School Leadership*, 16(4), 416-437.
- Woolfolk Hoy, A. (2008). What motivates teachers? Important work on a complex question. *Learning and Instruction*, 18(5), 492-498. doi: 10.1016/j.learninstruc.2008.06.007
- Wozney, L., Venkatesh, V., & Abrami, P. C. (2006). Implementing computer technologies: Teachers' perceptions and practices. *Journal of Technology and Teacher Education (JTATE)*, 14(1), 173-207.