



Research paper

# Teachers emotionally profit from positive school leadership: Applying the PERMA-Lead model to the control-value theory of emotions

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## ABSTRACT

Based on Pekrun's (2006) control-value theory (CVT) of achievement emotions, we investigated the antecedents of school teachers' emotions. We hypothesized that teachers' perception of positive leadership at school as assessed via PERMA-Lead, a leading style grounded in positive psychology, would lead to teachers' experiences of high positive and low negative teaching emotions. According to CVT, those relations should be mediated by teachers' perceptions of control and value of their work at school. We could confirm this mediation hypothesis based on a sample of  $n = 446$  teachers. Implications for research and practice are outlined.

## 1. Introduction

In educational institutions around the world, there is a growing body of evidence suggesting that teachers' emotional experiences at school are far from optimal. For instance, teachers often exhibit very high burnout rates (García-Carmona et al., 2019), report excessive job demands (Granziera et al., 2022), report poor general well-being (Skaalvik & Skaalvik, 2017), and feel undervalued in society (Akiba et al., 2023). Moreover, negative emotional experiences among teachers (Frenzel et al., 2021) may contribute to teacher shortages in numerous countries, leading to significant societal issues (Organization for Economic Cooperation and Development [OECD], 2021). Despite the potential detrimental effects of these less-than-ideal emotional experiences on teachers and the broader educational landscape, research examining teacher emotions has been largely neglected (Frenzel et al., 2021). Consequently, we still lack a comprehensive understanding of the factors that influence teachers' emotions within the school environment, especially in terms of the distal antecedents of teachers' emotions (e.g., the social environment at school; Pekrun, 2023).

To bridge this research gap, we aim to draw on Pekrun's control-value theory of achievement emotions (Pekrun, 2006, 2018, 2023). According to this theory, teachers' perceived control and value related to their teaching (i.e., proximal antecedents of emotions) should mediate the effects of the social environment (i.e., a distal antecedent) on their emotions. In this study, we particularly focus on the school

leadership as a potentially highly important distal antecedent of teachers' emotions that has been significantly overlooked in previous research. We refer to positive leadership at school as a leadership style grounded in the PERMA model, as founded within positive psychology (Seligman, 2011). Specifically, we focus on PERMA-Lead, a more behaviourally defined positive leadership style that evolved from the original, rather generally formulated positive leadership approach (Ebner, 2019, 2020).

## 2. Theoretical background

### 2.1. Antecedents of teachers' emotions: the control-value theory of achievement emotions

A core theory concerning the antecedents of emotions in the context of learning and achievement is Pekrun's (2006, 2018, 2023) control-value theory of achievement emotions (CVT). CVT is based on appraisal theory but also incorporates propositions from transactional theories of stress-related emotions (Lazarus & Folkman, 1984), attribution theory (Graham & Taylor, 2014; Weiner, 2007), and is conceptually related to expectancy-value theories of achievement motivation (Eccles & Wigfield, 2002; Pekrun, 1993; Wigfield & Cambria, 2010).

In the CVT framework, achievement emotions are defined as "emotions that occur in response to events and actions that are judged according to competence-based standards of quality" (Pekrun et al., 2023,

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p. 146). This definition aligns with classic definitions of correlated concepts, including goals and motivation, as found in the literature on achievement motivation (e.g., Elliot et al., 2011).

According to the CVT, two appraisals are particularly significant in eliciting achievement emotions: individuals' subjective control over learning- and performance-related activities and outcomes, and their subjective value of these activities and outcomes (Pekrun et al., 2023). Subjective control refers to the perception that one is able (or unable) to influence performance activities and their outcomes (Skinner, 1996), while value appraisals refer to how important or personally significant the activities or achievement results are (Gaspard et al., 2015). High levels of control should foster positive emotions (e.g., enjoyment, pride) and reduce negative emotions (e.g., anxiety, anger). High levels of value are assumed to enhance both positive and negative emotions. However, one exception with regard to the latter contingency is boredom, in that boredom should be less pronounced when a learning task or a situation is considered important or personally relevant (Goetz et al., 2019).

The social-cognitive basis of CVT suggests that the social environment, as perceived by individuals, plays a crucial role in shaping their control and value appraisals in a particular situation (Pekrun, 2023). For example, if tasks are assigned to individuals that match their strengths, the situation is likely to be perceived as highly controllable. Similarly, if the meaning of a specific task is implicitly or explicitly outlined by others, it is expected to enhance perceptions of value. Thus, CVT highlights that appraisals of control and value (i.e., proximal antecedents of emotions) mediate the effects of the social environment (i.e., distal antecedents) on emotions. Importantly, although CVT is rooted in appraisal theory, which primarily proposes that environmental factors predict cognitive appraisals, leading to emotional experiences, it also acknowledges that emotions are reciprocally linked to their cognitive antecedents and the social environment (Goetz et al., 2021).

CVT has been predominantly used in research on high school and university students (Pekrun, 2023). The assumed links between students' control and value appraisals and a range of achievement emotions (e.g., enjoyment, pride, anxiety, anger, boredom) have been supported by extensive empirical evidence (e.g., Forsblom et al., 2022; Goetz et al., 2010; Loderer et al., 2020; Pekrun & Perry, 2014; Putwain et al., 2018; Shao et al., 2020). The same applies to the mediating role of control and value appraisals (e.g., Flunger et al., 2019; Goetz et al., 2020; Lazarides & Buchholz, 2019).

CVT can clearly be adapted to study teachers' emotions, as their work reflects an achievement situation as outlined in the CVT (Frenzel, 2014; Frenzel et al., 2009). As such, core facets of CVT, namely perceived control and value, can be assumed to play a crucial role for teachers (e.g., control with respect to achieving classroom goals, value with respect to the importance of the class achieving good achievement outcomes). There are scattered findings which indicate that facets of control and value, as well as facets of the social environment, are related to teachers' emotions. For example, Becker et al. (2015) found that goal conduciveness, which can be seen as a facet of control, is positively related to teachers' enjoyment and negatively to their anger, which is in line with assumptions of CVT. Additionally, class motivation (distal antecedent) was positively related to teachers' enjoyment, and class discipline was negatively related to teachers' anger, also aligning with CVT. In this study, goal conduciveness partly mediated the effects of class motivation and class discipline on teachers' emotions. However, aspects of perceived value were not investigated. Furthermore, scattered studies have found relations between teachers' emotions and their instructional strategies (Frenzel et al., 2021). For example, teachers' enjoyment was positively related to teaching strategies that support self-regulation in students (Chatzistamatiou et al., 2014).

To the best of our knowledge, no study to date has investigated the assumed mediation mechanisms as outlined in CVT for teachers by taking both perceived control and value into account. The present study aims to close this research gap.

## 2.2. Positive school leadership and teachers' emotions

As outlined above, teachers' emotions can be assumed to be impacted by their social environment (distal antecedents) via perceptions of control and value (proximal antecedents). A core aspect of the social environment at school, which has previously been largely neglected with respect to its importance for teachers' emotions, is leadership at school (cf., Liebowitz & Porter, 2019). For school leadership, the school principal, deputy principals, and, at some schools, the school leadership team are responsible. Furthermore, subject leaders might also play a role in this respect, especially in the first phase of teaching.

Leadership at school is a very new topic in emotion research. In our study, we refer to a leadership style that might have a pivotal role in influencing teachers' emotions, namely positive leadership. Positive leadership represents a rather comprehensive concept, within which there are various more specific models. A very widely known model has been developed by Cameron and colleagues (Cameron et al., 2003). In this model, also called Positive Organizational Scholarship, they describe four organizational factors (positive climate, positive sense, positive communication, positive relations) that lead to a "positive deviation", as they call it. This approach does not define leadership behavior or specific characteristics of a leader directly. Instead, it offers an organizational theory that can lead to indirect derivation of leadership behavior. In line with other positive leadership approaches, the model by Cameron et al. (2003) reflects a strengths-based, resource-oriented approach (Ebner, 2019). Adopting the main ideas of this model to the school context implies that school leaders should become aware of the specific strengths of the teachers working there and foster those strengths. This implies that, above and beyond addressing problems, school leadership centers around nurturing the potentials of teachers at school.

Based on those general ideas on positive leadership as outlined by Cameron et al. (2003), Ebner (2019, 2020) developed a more behavioural oriented model of positive leadership, namely the PERMA-Lead model. In doing so, Ebner (2019, 2020) refers to the PERMA model, which clearly has a behavioural focus, and has adapted it to the general ideas on positive leadership (Cameron et al., 2003). PERMA is an acronym - each letter represents one element of the PERMA model, namely Positive emotions, Engagement, Relationships, Meaning, and Accomplishments (Seligman, 2011). The presence of all five elements of PERMA is theorized to result in flourishing, a state in which individuals find fulfilment and are living 'the good life' (Seligman, 2011). Numerous studies show significant relations between the experience of PERMA (or individual elements from this model) and other relevant factors such as life satisfaction, school engagement, physical vitality (Kern et al., 2014), positive work outcomes, such as organizational citizenship behavior and positive work role performance (Donaldson & Donaldson, 2020), and psychological safety (Lorenz et al., 2023).

Thus, PERMA-Lead is a leadership behavior that refers to a type of leadership that fosters all five PERMA elements among employees, which means enabling positive emotions, fostering engagement, creating sustainable relationships, conveying the meaning of work, and making accomplishments visible.

PERMA-Lead captures a behavioural oriented leadership style which can potentially be realized in rather different contexts and institutions. In the present study, we adopted PERMA-Lead in the school context and examined its effects on teachers' emotions based on the assumptions described in Pekrun's control value theory of achievement emotions (Pekrun, 2006, 2018, 2023). The theoretically supposed mechanisms are outlined in Fig. 1. In this figure, "Teacher Emotion (positively valenced)" means positive emotional experiences in teachers, that is, from a measurement perspective, positively valenced emotions (e.g., enjoyment) and inverted negative emotions (e.g., inverted anger).

A core assumption of CVT is that the social environment does not directly influence our emotions, but that its effects on emotions are

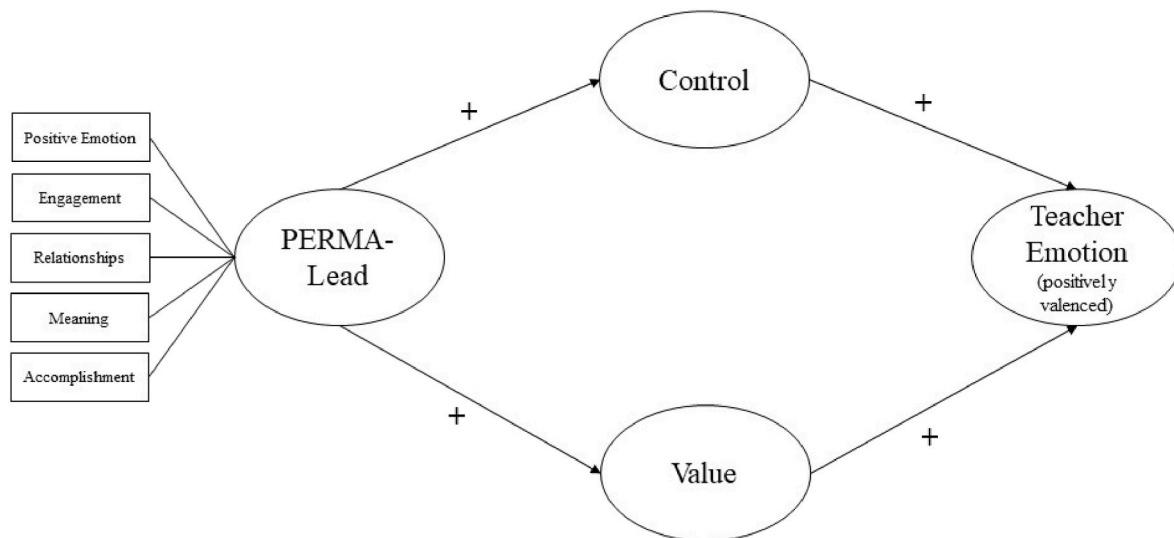


Fig. 1. Theoretically assumed mechanisms based on control-value theory.

mediated through our cognitions, and more specifically through our appraisals of control and value. Applying this assumption to PERMA-Lead as a core facet of teachers' social environment, it can be assumed that (1) PERMA-Lead influences teachers' work and, consequently, their perceptions of control and value in relation to their work in school. Furthermore, it is hypothesized that (2) perceptions of control and value have an impact on teachers' emotions.

Regarding the first aspect (i.e., effects of PERMA-Lead on perceptions of control and value), it can be assumed that PERMA-Lead elements lead to the school environment being perceived as more controllable. As examples of PERMA-Lead's effects on control, positive relations among teachers, as fostered by PERMA-Lead, may increase perceived control because of the likelihood of finding peer support when problems arise. Another example is that making accomplishments visible also contributes to perceptions of control, as teachers experience that they have control over the amount of accomplishments related to their work. Examples of the impact of PERMA-Lead on perceived value include that engagement and perceptions of the high importance of their work reflect a highly valuable work environment.

Regarding the second aspect (i.e., the effects of perceived control and value on teachers' emotions), it is hypothesized that perceived control and perceived value will influence teachers' emotional experiences. As shown in Fig. 1, both high levels of control and high levels of value should contribute to teachers' positive emotional state (i.e., positively valenced emotions). As illustrated above and in Fig. 1, it is hypothesized that the elements of PERMA-Lead will promote both teachers' perceptions of control and value, which in turn should enhance their positive emotional experiences (i.e., high levels of positive emotions and low levels of negative emotions).

To our knowledge, no single study is available that has analysed the effects of PERMA-Lead on teachers' emotions via their cognitive appraisals. However, there are a few studies that have examined the PERMA elements with respect to constructs related to emotions. For example, teacher well-being, as captured through the PERMA model, has been linked to greater life satisfaction and job satisfaction (Kern et al., 2014). Furthermore, and also related to our research, previous studies found that the perception of administration at a school significantly affected general life satisfaction and well-being of teachers (Cenkseven-Onder & Sari, 2009). In addition, social support and leadership support have both been linked to job satisfaction in general (Kuoppala et al., 2008; Viswesvaran et al., 1999) and in teaching specifically (Cansoy, 2019; Kinman et al., 2011). Work-specific context factors in teaching, such as job demands and available resources (Yin

et al., 2018), feedback and variety in tasks (Bermejo-Toro et al., 2016), and autonomy (Ebersold et al., 2019) have been associated with teacher well-being.

In sum, while this is the first study to investigate the effects of PERMA-Lead at school on teachers' emotions based on CVT, previous studies on affective variables (e.g., well-being) indicate that PERMA factors might be related to emotions. However, whether the assumed mediation mechanisms as proposed in CVT work in the context of school leadership is still an open question.

### 3. The present study

Based on the theoretical propositions of CVT (Pekrun, 2006, 2018, 2023), we aimed to test the following hypothesis: Teachers profit emotionally from positive leadership at school, as operationalized via PERMA-Lead (Ebner, 2019, 2020). That is, high levels of the PERMA-Lead factors should go in line with higher levels of teachers' positively valenced emotions. According to CVT, this effect should be mediated by teachers' perceptions of control and value related to their work at school.

## 4. Method

### 4.1. Study design

APA ethical standards were followed in the conduct of the study. In 2022, teachers and school principals in public schools in Austria, Germany, and the German speaking parts of Switzerland, were recruited through various methods. One of the primary recruitment strategies involved leveraging existing contacts with partner schools of the University of Vienna and ministries of education in the participating countries. Additionally, social networks such as WhatsApp, LinkedIn, Facebook, and *lehrerforen.de* were utilized to reach potential participants. Users within these networks were asked to share information about the study, employing a snowball sampling approach (Parker et al., 2019).

To school principals who agreed to participate, a link to an online questionnaire was sent. The school principals then forwarded this link to all teachers at their respective schools or shared it with the teachers via social media. In cases where recruitment occurred through social media, the link to the online questionnaire was already included in the information about the study.

The online questionnaire was created using the SoSci Survey

platform (Leiner, 2019). Upon activating the link, participants received detailed information about the study, data handling procedures, guarantees of full anonymity, and responsible study leaders. Providing their consent was mandatory for participants before proceeding with the questionnaire.

The questionnaire began with gathering information about demographics, followed by the assessment of all further variables. Participants had the option to stop the assessment at any time without needing to provide a reason.

## 4.2. Participants

A total of  $n = 446$  teachers participated in the study, with the majority of teachers teaching in vocational schools ( $n = 161$ ), followed by secondary schools (*Gymnasium/AHS*[*Allgemeinbildende höhere Schule*],  $n = 84$ ; *Mittel-, Haupt-, Real-, Gesamtschule*,  $n = 59$ ), elementary schools ( $n = 96$ ), schools for special needs ( $n = 38$ ), one special school (*Montessori School*) and further schools ( $n = 7$ ). The sample consisted of  $n = 349$  female teachers and  $n = 84$  male teachers ( $n = 3$  teachers indicated non-binary gender and  $n = 10$  did not indicate gender). The average age of teachers was 44.68 years ( $SD = 10.47$ ) with 15.49 years ( $SD = 10.14$ ) working experience as a teacher. The majority of teachers were employed in Germany ( $n = 251$ ), followed by Austria ( $n = 190$ ), and Switzerland ( $n = 5$ ).

Given our recruitment strategies (see above), it can be assumed that our sample is not representative in terms of school types (and possibly other variables). However, due to the relative universality assumptions of CVT (Pekrun, (Pekrun, 2006, 2018, 2021), the structural relations between positive leadership, perceptions of control and value, and teachers' emotions should be quite similar across school types (and possibly other variables with respect to the representativeness of our sample). In other words: While the means of our constructs might differ across school types, the structural relations between these variables, which are the focus of our study, can be expected to be the same across school types.

## 4.3. Instruments

### 4.3.1. Positive leadership – PERMA-lead

The teacher's perceptions of positive leadership in schools were examined via the 15-item PERMA-Lead-Profiler (Ebner et al., 2019), which examines leadership perceptions through the lens of the five factors of the PERMA model (Seligman, 2018). As such, participants were asked to reflect on their direct supervisor's behavior during the past 12 months in the following five PERMA factors: 1. enabling *Positive Emotions* (3 items, e.g. 'My supervisor makes me feel comfortable at work'; McDonald's [1999] omega was  $\omega = 0.947$ ), 2. *fostering Engagement* (3 items, e.g. 'My supervisor gives me tasks that match my strengths';  $\omega = 0.937$ ), 3. creating sustainable *Relationships* (3 items, e.g. 'My supervisor makes sure we support each other in our team';  $\omega = 0.929$ ), 4. conveying the *Meaning* of work (3 items, e.g. 'My supervisor ensures that I experience meaning in my work';  $\omega = 0.939$ ), and 5. making *Accomplishments* visible (3 items, e.g. 'My supervisor is happy with me when I achieve a goal and tells me so';  $\omega = 0.974$ ). The reliability of the full scale was  $\omega = 0.982$ . All items were measured on an 11-point scale, ranging from 0% to 100% with 10% intervals, where 0% indicates minimal agreement and 100% indicates maximal agreement.

### 4.3.2. Perceived control

Within research on CVT (Pekrun, 2006, 2018, 2023) perceived control has often been assessed via self-efficacy (Goetz, et al., 2023; Graf et al., 2024). In our study, teachers' perception of the control they have over their teaching environment was examined via the Teacher Self-Efficacy scale (Pfitzner-Eden, 2016). This scale is aligned with Bandura's original definition of task-related self-efficacy (Marsh et al., 2019). The scale models self-efficacy as a multidimensional construct

with the following three subscales: 1. Instructional Strategies (4 items, e.g. 'How convinced are you that you would be able to find an alternative explanations or example when students do not understand something?';  $\omega = 0.681$ ), 2. Classroom Management (4 items, e.g. 'How convinced are you that you would be able to control a disruptive class?';  $\omega = 0.883$ ), and 3. Student Engagement (4 items, e.g. 'How convinced are you that you can foster critical thinking in students?';  $\omega = 0.690$ ). The reliability of the full scale was  $\omega = 0.829$ . All items were measured on a 5-point Likert scale from 'strongly disagree' to 'strongly agree'.

### 4.3.3. Perceived value

Meaning has been found to be a core facet of value (Gaspard et al., 2015) and as such was used as a measure to capture value within the context of CVT. The ME-Work scale (Schnell & Hoffmann, 2020) was utilized to measure teacher's perceptions of meaning in their work. The multidimensional ME-Work scale contains four subscales, namely: 1. Coherence (3 items, e.g. 'My work reflects my interest';  $\omega = 0.855$ ), 2. Significance (3 items, e.g. 'My work makes the world a bit better';  $\omega = 0.862$ ), 3. Purpose (4 items, e.g. 'I see a purpose in my work';  $\omega = 0.866$ ), and 4. Belonging (3 items, e.g. 'We are a great team at work';  $\omega = 0.851$ ). The reliability of the full scale was  $\omega = 0.936$ . All items were measured on a 5-point Likert scale from 'strongly disagree' to 'strongly agree'.

### 4.3.4. Teacher emotions (positively valenced)

We assessed two discrete positive emotions (i.e., enjoyment, pride) and three negative emotions (i.e., anger, anxiety, boredom) which we combined to one overall teacher emotion scale, inverting the negative emotions so that higher values on this scale would indicate more positive emotional experiences. For the assessment of teacher enjoyment, anger, and anxiety we used the general Teacher Emotions Scale (TES; Frenzel et al., 2016). Enjoyment was measured through 4 items (e.g. 'I generally enjoy teaching';  $\omega = 0.869$ ), anger was captured through five<sup>1</sup> items (e.g. 'I often have reasons to be angry while I teach';  $\omega = 0.837$ ), and anxiety was measured through four items (e.g. 'I generally feel tense and nervous while teaching';  $\omega = 0.802$ ). As we aimed to expand the number of emotions assessed, we developed new scales on teachers' experiences of pride and boredom. Seven items each were used to assess boredom (Teacher Boredom Scale, TBoS; e.g., 'During teaching I often have reason to be bored';  $\omega = 0.878$ ) and pride (Teacher Pride Scale, TPrS; e.g., 'While teaching, I feel pride';  $\omega = 0.901$ ). The development of those two scales was inspired by the corresponding scales of the Achievement Emotions Questionnaire (AEQ, Pekrun et al., 2011), the Dutch Boredom Scale (DUBS; Reijseger et al., 2013), as well as the Boredom Proneness Scale-Short Form (PBS-SR; Struk et al., 2017). All items of the newly developed two scales (TBoS, TPrS) are presented in Appendices A and B (in German and English language). All emotion items were measured using a 5-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'. The reliability of the overall "Teacher Emotion" scale containing all 27 items from the five discrete teacher emotions subscales was  $\omega = 0.903$ .

All scales of our study are of course available to the scientific community on request.

<sup>1</sup> It should be noted that the original TES contains 4 items within the anger subscale. However, one item of the scale ("Teaching generally frustrates me") has shown relatively low item-total correlations in previous studies, especially when used in languages beyond German (see Frenzel et al., 2016; Musliu & Frenzel, 2023). Therefore, to ensure a high reliability of this scale, we decided to add a further item. The newly formulated item is as follows: "While teaching, I occasionally get so angry that I notice my heart rate rising" (German: "Beim Unterrichten ärgere ich mich gelegentlich so sehr, dass ich merke, wie mein Puls hoch geht"). For more information on the construct of teachers' anger and frustration, see also Sutton (2007).

#### 4.4. Data analysis

Descriptive analysis, scale reliabilities, and Pearson's correlation coefficients were calculated in JASP version 0.17.1 (JASP Team, 2023). The mediation model (see Fig. 2) was examined via latent mediation in RStudio via the lavaan package (Rosseel, 2012), with maximum likelihood estimation and a bias-corrected bootstrap (500 bootstrap samples; Biesanz et al., 2010). Model fit was analysed through the following fit indices: Root Mean Square Error of Approximation (RMSEA), the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), and the Standardised Root Mean Square Residual (SRMR). Fit index cut-off recommendations proposed by Kenny (2020) were used to evaluate the model with an RMSEA and SRMR below .08, and in turn, a CFI and TLI of larger than 0.90 as indications of reasonable fit.

PERMA-Lead was modelled as a higher-order factor indicated by the manifest variables of subscale average scores (see Fig. 2), following an existing precedent in the literature to examine PERMA as a higher-order factor (Bartholomaeus et al., 2020; Coffey et al., 2016; Tansey et al., 2018; Umucu, 2021). Both control and value variables were also modelled as latent factors indicated by manifest subscale average scores. Lastly, Teacher Emotion (positively valenced) was modelled as a higher-order factor of enjoyment, pride, boredom, anxiety and anger. The three negative emotions (boredom, anger, and anxiety) were included as reverse-scored items in the correlation coefficients and descriptive statistics of Teacher Emotion and thus indicated a lack of negative emotion. In the latent model, the negative emotion variables were included as negative indicators of latent Teacher Emotion. In so doing, we captured emotion as a broad positive construct not indicative of a single emotion but rather a general positive feeling towards teaching.<sup>2</sup> For interested readers, the statistical relationships between lower-order factors are provided via a correlation matrix in the Supplementary Materials (see Table S2).

Finally, mediation was considered on the basis of the following requirements outlined by Kline (2015): (1) The predictor (PERMA-Lead) had a statistically significant effect on the outcome variable of Teacher Emotion (positively valenced); (2) the predictor (PERMA-Lead) had a statistically significant effect on the mediator variables (control and value) - and as such paths  $a_1$  and  $a_2$  are significant; (3) the mediators (control and value) have statistically significant effects on the outcome variable (Teacher Emotion - positively valenced) - thus paths  $b_1$  and  $b_2$  are significant; and (4) full mediation only occurs if the mediators (control and value) are fully responsible for the effect found between the predictor (PERMA-Lead) and the outcome variable (Teacher Emotion - positively valenced) - thus path  $c$  is not significant. Should path  $c$  be statistically significant, a partial mediation would be declared.

In addition, the total effects, direct effect ( $c$ ), and indirect effects ( $a_1 + b_1$ ;  $a_2 + b_2$ ) of the mediation model were examined. Effect estimates with a 95% confidence interval containing zero were disregarded as insignificant, regardless of the  $p$ -value found (Baron & Kenny, 1986; Kline, 2015).

## 5. Results

### 5.1. Descriptive statistics and correlation coefficients

The descriptive statistics of the variables assessed are shown in

<sup>2</sup> It should be noted that the use of manifest subscales to indicate latent variables can be considered a form of parceling, which has been criticised for increasing the likelihood of Type II errors (Bandalos & Finney, 2001). However, the complexity of the model, number of items in each measure and the limited statistical power provided by the moderate sample size led to the decision to utilise subscales as indicator variables. It is likely that this decision led to the creation of more parsimonious data with less sampling error (MacCallum et al., 1999) and a lower likelihood of distributional violations (Little et al., 2002).

Table 1, with the correlation matrix in Table 2. No multicollinearity or skewness concerns were observed, however, Teacher Emotion (positively valenced) can be considered to have a somewhat leptokurtic distribution ( $>2.00$ ; Field, 2013). The descriptive statistics and correlation matrix of the subscales used in the mediation model can be found in the Supplementary Materials (Tables S1 and S2).

### 5.2. mediation model

The latent mediation model (see Fig. 3) displayed reasonable to close fit ( $\chi^2(113) = 292.392$ ;  $p < .001$ ), with RMSEA = 0.060 indicating a reasonable fit and SRMR = 0.044 a close-fitting model (Kenny, 2020). In addition, the CFI (0.964) and TLI (0.957) both indicated close fit. Both indirect effects were statistically significant (see Table 3), with the indirect effect of value having a considerably larger effect size ( $\beta = 0.295$ ;  $p < .001$ ) than control ( $\beta = 0.060$ ;  $p < .05$ ). Indeed, the indirect effect of control had a poorer significance level and although the 95% confidence interval of the effect size did not contain zero, the lower bound of the interval was very close (0.001). In addition, the direct effect between PERMA-Lead and Teacher Emotion (positively valenced) was significant in terms of the  $p$ -value ( $p = .040$ ), however due to the 95% confidence interval containing zero, the effect is disregarded as insignificant (Kline, 2015). As such, due to the insignificance of path  $c$  in the mediation model, we concluded that control and value fully mediated the relation between PERMA-Lead and Teacher Emotion (positively valenced).

## 6. Discussion

Based on assumptions as outlined in Pekrun's control-value theory (2006, 2018, 2023) we investigated the effects of positive leadership using the PERMA-Lead model (Ebner, 2020) on teachers' positively valenced emotions (i.e., discrete positive emotions and inverted discrete negative emotions). We hypothesized that those relations would be mediated by teachers' perceptions of control and value related to their work. Based on a sample of  $N = 446$  teachers our hypothesis could fully be confirmed. To our knowledge, this is the first study bringing together research on CVT and positive leadership.

Our study follows the tradition of a field of research and practice termed 'positive education' (Seligman et al., 2009; White, 2014), a concept that emphasizes that education should not only focus on academic achievement as outcome, but also on the emotional experiences of learners and teachers (O'Shaughnessy & Larson, 2014). Since the popularisation of 'positive education', the concept has been widely researched and practically implemented in school programmes (for overview, see White & Murray, 2015; White, 2016). However, on the whole, the application of positive psychology in education and the 'positive education' movement, have largely favoured learners as the subject of research studies and interventions, with teacher-focused positive psychology a largely neglected field of research (Mercer et al., 2016).

Our results show that positive leadership is clearly related to teachers' emotions via shaping their cognitions, namely perceptions of control and value related to their work at school. Thus, in the sense of positive psychology, positive leadership can be assumed to contribute to 'the good life' (Seligman, 2011) of teachers.

Fostering teachers' positive emotions via positive leadership likely has an undoing effect (Fredrickson et al., 2000) on the negative outcomes associated with teaching, with positive emotions being linked to lower levels of stress (von der Embse & Mankin, 2021) and burnout (Bermejo-Toro et al., 2016). Further, positive emotions are theorised to broaden the ability of individuals to cognitively engage with challenging experiences and build future capacity and resilience (Fredrickson, 2001, 2004). Specifically, regarding teachers, this broadening-and-building capacity has been observed in the study of Williams et al. (2015), where more hopeful and positive teachers displayed greater resilience and confidence in dealing with environmental challenges. Thus, based

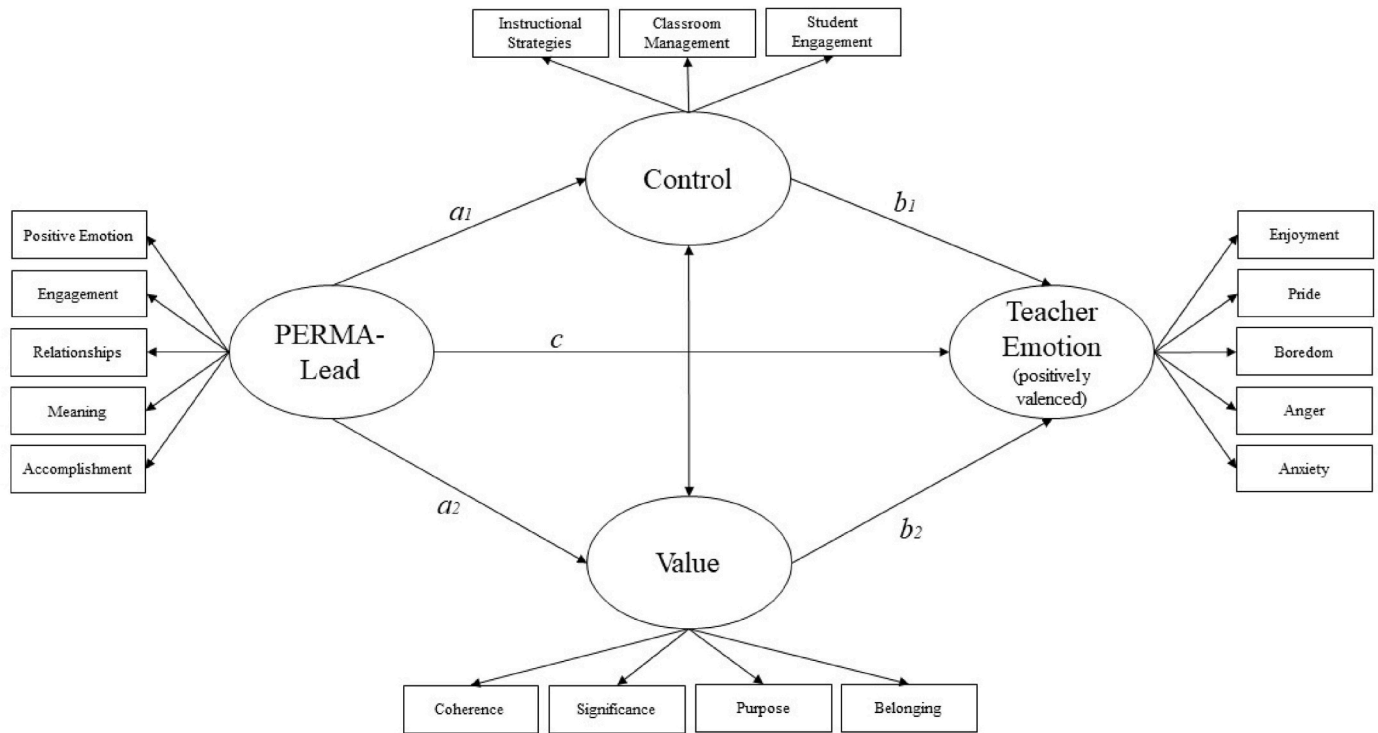


Fig. 2. Theoretical mediation model.

**Table 1**  
Descriptive statistics and normality distribution.

Variable	Mean	SD	Min	Max	Skewness	Kurtosis
PERMA-Lead	7.32	2.88	1	11	-.66	-.71
Control	3.88	0.49	1.50	5	-.77	1.95
Value	4.12	0.69	1.08	5	-1.07	1.44
Teacher Emotion (pos. valenced)	4.30	0.47	2.07	5	-1.27	2.16

Note. PERMA-Lead: items were measured on an 11-point scale, ranging from 0% to 100% with 10% intervals, where 0% indicates minimal agreement and 100% indicates maximal agreement. Control/Value: items were measured on a 5-point Likert scale from 'strongly disagree' to 'strongly agree'. Teacher Emotion (positively valenced): this overall scale includes all items related to enjoyment and pride, as well as all inverted items related to boredom, anger, and anxiety; all emotion items were measured using a 5-point Likert scale, ranging from 'strongly disagree' to 'strongly agree'.  $N = 446$ .

**Table 2**  
Correlation matrix.

Variable	1	2	3	4
1. PERMA-Lead	–			
2. Control	.15*	–		
3. Value	.37**	.38**	–	
4. Teacher Emotion (pos. valenced)	.24**	.49**	.67**	–

Note. \*\* $p < .001$  \* $p < .01$ .  $N = 446$ .

on our study it can strongly be assumed that positive leadership contributes to teachers' positive emotions which in turn can be assumed to broaden teachers' mind and actions in a fruitful way.

The results of our study are in line with previous research showing that the perception of administration at a school was linked with general life satisfaction and well-being of teachers (Cenkseven-Onder & Sari, 2009). Our study has broadened this scope by focusing on teachers' emotions and by analysing the mechanisms leading to teachers' emotions, namely cognitive appraisals which are initiated by the social

environment.

An important finding of our study was that perceived value might play a more important role than perceived control when moderating the effects of positive leadership on teachers' emotions. Thus, when the goal is to foster teachers' positive emotions, the value-inducing facets of PERMA-Lead should be the main focus for school principals, school administration, and education departments.

For example, if the principal ensures that teachers see meaning in their work (e.g., by referring to the social relevance of schools), this should increase the perceived value of teachers' work, which is reflected in higher levels of perceived significance (e.g., making the world a little better) and purpose (e.g., the good of society). Another example: If school leaders make teachers' accomplishments visible (e.g., giving positive feedback when a goal has been achieved), this could lead teachers to perceive higher value, which is reflected in higher levels of perceived coherence (e.g., congruence between professional activities and what one has set out to do in life). According to the control-value theory (Pekrun, 2006, 2018, 2023), it can be assumed that an increased sense of value in turn leads to positive emotions such as enjoyment.

However, perceived control was also found to mediate the effects of PERMA lead on teachers' emotions. Specifically, the mechanisms could be that if the principal promotes positive relationships between teachers (e.g., by ensuring that teachers support each other in their work and teaching strategies), this is likely to increase teachers' perceived control, which could translate into higher levels of classroom management skills (e.g., dealing with classroom disruptions) and higher levels of ability to motivate students. According to the control value theory (Pekrun, 2006, 2018, 2023), it can also be assumed that a high degree of control in turn promotes positive emotional experiences among teachers. These exemplary mechanisms are consistent with our results (see also supplementary materials, Table S2). This and other detailed mediations could be investigated in detail in future quantitative and qualitative studies.

It should be noted that the onus of teachers' emotions should not be directly shifted onto school principals exclusively, as they themselves experience high levels of job burnout and stress (Beausaert et al., 2016;

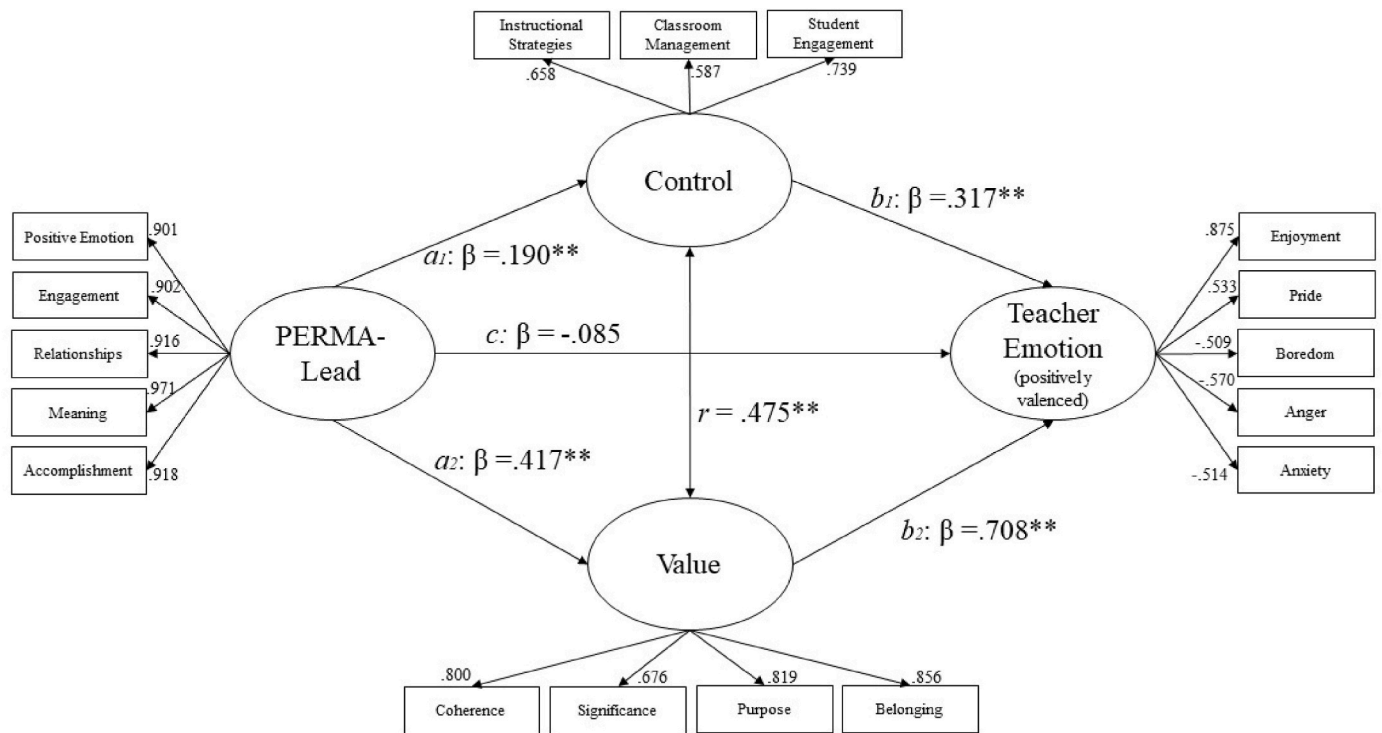


Fig. 3. Mediation Model. Note. All factor loadings are significant at  $p < .001$ .  $^{**}p < .001$ .

Table 3  
Mediation model results.

	B	SE	z-value	p-value	95% Confidence Interval		$\beta$
					Lower	Higher	
<b>Direct Effect</b>							
PERMA-Lead → Teacher Emotion (pv)	-.006	.003	-2.052	.040	-.012	.000	-.085
<b>Indirect Effects</b>							
PERMA-Lead → Control → Teacher Emotion (pv)	.004	.002	2.333	.020	.001	.009	.060
PERMA-Lead → Value → Teacher Emotion (pv)	.022	.004	5.379	<.001	.014	.030	.295
<b>Total Effect</b>							
PERMA-Lead → Teacher Emotion (pv)	.020	.005	4.273	<.001	.011	.028	.271

Note. SE = Standard Error; B = Unstandardised estimate;  $\beta$  = Standardised estimate; pv = positively valenced.  $N = 446$ .

Horwood et al., 2021), and low levels of autonomy when faced with the bureaucracy of school administration, education boards, and educational policies (Fitzgerald, 2009; Horwood et al., 2022; West et al., 2014). Instead, principals, school leadership teams, and school administration departments should prioritize teachers' positive emotional experiences as a shared responsibility and implement needed training and development to leadership teams, engage with teachers regarding their emotional experiences, and make possible changes dependent on the leadership needs of the school. Possible targeted changes, that have been linked to increased positive school leadership, can include examining the organizational culture of the school (Chen et al., 2016), examining workplace values and work-life balance of the leadership team (Cherkowski et al., 2020), and developing positive leader-member relationships between the leadership team and teachers (Louis & Murphy, 2018).

The vast majority of participating teachers were employed in Germany (56%) and Austria (43%). In terms of leadership conditions in schools, both countries have a number of similarities that need to be taken into account when interpreting the results of our study. In both

countries, principals are generally experienced teachers who have applied for the position of principal. It is important to note that, with few exceptions, school principals are also required to teach a certain number of hours per week (depending, for example, on the type of school and the size of the school), mainly on the grounds that head teachers should not lose touch with teaching (Heißenberger, 2019). School leaders are therefore regularly part-time teachers and part-time principals and are often seen as *primus inter pares* by the teachers at their school. They have additional administrative tasks, even though there is a trend in both countries for school principals to increasingly become the strategic head of their school (e.g. quality management, staff development, external relations, monitoring the quality of teaching) and the direct supervisor of teachers. In both countries, head teachers have comparatively little autonomy, e.g. with regard to the scope of budget decisions, the modification of national curricula with regard to the creation of a school-specific pedagogical profile and the right to freely hire and dismiss staff (Kemethofer et al., 2022; OECD, 2016; Schratz & Wiesner, 2019). The professionalization of the training and further education of principals, including their leadership style, is an important and ongoing

process in both countries, but it is still far from optimal. In both countries, there is a strong tendency for school leadership teams to be established beyond the principal, especially in large schools. Principals and school leadership teams have very limited administrative staff to support them (i.e. usually a secretary).

Even though our sample included teachers from different school types and contexts (e.g., countries, regions within countries), due to the ununiversality assumptions of the CVT (Pekrun, 2006, 2018, 2021), it can be strongly assumed that the structural relationships across school types and contexts as found in our study are quite similar. In other words, although the level of PERMA lead in our study might differ across school types and samples, it can be assumed that the effects on perceived control and value with subsequent effects on teachers' emotions are very similar.

Fostering teachers' positive emotions via positive leadership might contribute to reducing serious ongoing problems at schools, as outlined above, namely very high burnout rates, reports of excessive job demands, poor well-being, and teacher shortages in numerous countries. An important aspect in this regard is that optimizing leadership at schools by implementing a positive leadership style does not require a significant investment of resources. Optimizing the positive leadership of school principals and the school leadership team is a relatively low-cost investment that can impact sometimes more than 100 teachers working at schools. Considering the potential effects on students and society, this could be a highly effective investment.

## 7. Limitations

Some limitations of the present study should be noted and can be used to derive directions for future research. First, concerning the assessment of the constructs of this study, we relied on self-report data, which may have resulted in common method bias (Podsakoff et al., 2003). To control for possible biases, future studies may add more objective assessments of positive leadership and teachers' emotions (e.g., observations of leadership practices at school; physiological assessments of arousal in teachers to capture the physiological component of an emotion; see Pekrun, 2023; Roos et al., 2021).

Second, our approach does not allow for conclusions on the causal ordering of variables. Future studies in this field may investigate the assumed relations over a longer time periods by adopting longitudinal designs. Including experience sampling assessments in longitudinal designs (Goetz et al., 2024) could be highly insightful in understanding how causal relations unfold over time (e.g., measurement burst designs; e.g., Sliwinski, 2008).

Thirdly, due to sample size restraints we resorted to parceling the subscales of PERMA-Lead into observed variables as predictors of a latent, higher-order PERMA-Lead factor. In doing so, we assume a higher-order positive leadership construct in line with previous studies examining PERMA as a higher-order factor (Bartholomaeus et al., 2020; Coffey et al., 2016; Tansey et al., 2018). However, the latent structure of PERMA can also be argued to take the shape of a correlated structure (see Jimenez, Hu, Garden, & Xie, 2022; Mendes et al., 2022). Future studies are needed to confirm the latent structure of PERMA and PERMA-Lead. Furthermore, studies examining the individual aspects of PERMA-Lead in relation to teacher emotions may provide additional insights into which facets of PERMA-Lead have the greater impact on teacher emotions.

Fourthly, we asked the teachers to refer to the behavior of their direct supervisor when assessing the perception of positive leadership in the schools. However, it can be assumed that leadership teams are in place in some of the schools in our sample, which may have had an influence

on the responses of teachers working in these schools. As this may have affected the content validity of our study, future studies could differentiate between the behavior of direct supervisors and leadership teams when assessing positive leadership.

Finally, our sample was not representative in nature. In order to validate our findings with respect to different school types, future studies might focus on one specific school type by using representative samples.

## 8. Conclusion

Our study examined the mediating effects of control and value on positive leadership in schools and teacher emotions. We found that positive leadership in schools may play a critical role in promoting teachers' positive emotions at work. Specifically, we found that increasing teacher value of their work could be a key way to improve their positive emotions through positive leadership (i.e., via the PERMA components of meaning and accomplishment) and that these positive emotions were underpinned by the control-value theory of achievement emotions (Pekrun, 2006). As such, we propose that school leadership and administration could utilise positive leadership in an effort to improve some of the highly problematic situations at schools that may be caused in part by teachers' negative emotional experiences, such as high rates of burnout, reports of excessive work demands, and feelings of being undervalued. A first practical step in this direction could be to sensitize school principals and school leadership teams of all school types to this issue, engage with teachers regarding well-being, and to offer corresponding training and development to school leadership teams. Furthermore, positive leadership might contribute via fostering teachers' emotions to reduce the teacher shortages, which is currently a serious problem in numerous countries. However, independently from the effects of positive teacher emotions, experiencing positive emotions can be regarded as a desired outcome in and of itself.

## Author note

We have no conflicts of interest to disclose. The data used for this research and the findings have not previously been disseminated. The data, research materials, and analysis code are available at [link will be provided here].

## CRedit authorship contribution statement

**Thomas Goetz:** Writing – original draft. **Elouise Botes:** Writing – original draft, Formal analysis. **Lea M. Resch:** Writing – original draft, Methodology, Investigation, Data curation, Conceptualization. **Sina Weiss:** Writing – original draft, Methodology, Investigation, Data curation, Conceptualization. **Anne C. Frenzel:** Writing – review & editing, Conceptualization. **Markus Ebner:** Writing – review & editing, Supervision, Methodology, Conceptualization.

## Declaration of competing interest

There are no conflicts of interest including any financial, personal or other relationships with other people or organizations within three years of beginning the submitted work that could inappropriately have influenced, or be perceived to have influenced our work.

## Data availability

Data will be made available on request.



## Appendix

## A Items of the Teacher Boredom Scale (TBoS).

Item-Number	Item (German/English)	M (SD)	Item-total correlation
TBoS-1	Während des Unterrichtens habe ich oft Grund mich zu langweilen. <i>During teaching, I often have reasons to be bored.</i>	1.44 (0.78)	.72
TBoS-2	Während des Unterrichtens schweifen meine Gedanken ab, weil ich mich langweile. <i>During teaching, my thoughts wander because I am bored.</i>	1.33 (0.68)	.71
TBoS-3	Immer wieder das Gleiche zu unterrichten langweilt mich. <i>Teaching the same things over and over again bores me.</i>	1.79 (1.09)	.53
TBoS-4	Manche Unterrichtsphasen ziehen sich wie Kaugummi. <i>Some teaching phases drag on like chewing gum.</i>	1.72 (0.95)	.61
TBoS-5	Zu unterrichten ist manchmal öde und monoton. <i>Teaching can be dull and monotonous at times.</i>	1.50 (0.85)	.78
TBoS-6	In Stillernphasen/Selbstlernphasen wird mir gelegentlich langweilig. <i>During quiet learning phases/self-learning phases, I occasionally get bored.</i>	1.62 (1.00)	.63
TBoS-7	In Phasen zäher Interaktion mit der Klasse langweile ich mich. <i>During phases of slow interaction with the class, I feel bored.</i>	1.54 (0.88)	.65

Note. Values are based on a sample of  $n = 446$  teachers. All items were measured using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

## B Items of the Teacher Pride Scale (TPrS).

Item-Number	Item (German/English)	M (SD)	Item-total correlation
TPrS-1	Während des Unterrichtens empfinde ich Stolz. <i>During teaching, I feel pride.</i>	3.37 (0.97)	.59
TPrS-2	Ich bin stolz, wenn meine Schüler:innen den Stoff verstehen und anwenden können. <i>I am proud when my students can understand and apply the material.</i>	4.43 (0.82)	.71
TPrS-3	Wenn ich eine neue/außergewöhnliche Unterrichtseinheit geplant habe und diese funktioniert bin ich stolz. <i>When I have planned a new/extraordinary teaching unit and it works, I feel proud.</i>	4.54 (0.72)	.77
TPrS-4	Wenn ich merke, dass meine Aufgabenstellung die Schüler:innen motiviert, macht mich das stolz. <i>When I notice that my tasks motivate the students, it makes me proud.</i>	4.49 (0.77)	.76
TPrS-5	Ich bin manchmal stolz auf die Art und Weise, wie ich unterrichte. <i>Sometimes, I am proud of the way I teach.</i>	3.93 (0.95)	.64
TPrS-6	Ich bin stolz, wenn ich eine herausfordernde Unterrichtssituation meistere. <i>I am proud when I successfully handle a challenging teaching situation.</i>	4.33 (0.86)	.74
TPrS-7	Ich bin stolz, wenn auch leistungsschwächere Schüler:innen meinem Unterricht folgen können. <i>I am proud when even academically weaker students can follow my teaching.</i>	4.39 (0.82)	.73

Note. Values are based on a sample of  $n = 446$  teachers. All items were measured using a 5-point Likert scale ranging from 'strongly disagree' to 'strongly agree'.

## Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.tate.2024.104517>.

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