

Different time and context = different goals and emotions? Temporal variability and context specificity of achievement goals for teaching and associations with discrete emotions

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Different time and context = Different goals and emotions? Temporal variability and context specificity of achievement goals for teaching and associations with discrete emotions[☆]

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1. Introduction

Prior research has pointed to the relevance of teachers' achievement goals for their teaching experiences both in school and higher education contexts (e.g., Butler, 2007; Daumiller et al., 2019; Dresel et al., 2013; Retelsdorf & Günther, 2011). In particular, studies suggest that achievement goals are important in terms of maintaining positive perspectives of teaching, as reflected by direct associations with emotional well-being (e.g., Janke et al., 2019; Rinas et al., 2020; Retelsdorf et al., 2010). Notably, most research on the associations between achievement goals and emotional states in teaching has focused on differences *between* individuals (e.g., whether individuals with different goals also experience different emotions). In contrast, relatively little is known about the stability and intraindividual variability of goals and affective

appraisals of teaching. This is noteworthy, as scholars of achievement goals and emotions have made the claim that both goals and emotions strongly vary *within* individuals and situations (see Goetz et al., 2016; Seo & Patall, 2021). It is thereby important to acknowledge and investigate this within-variation in educational research—not only to develop a better understanding of these constructs and the psychological processes underlying them, but also for their application in practice. We propose and test a model that allows for a fine-grained differentiation of variation in goal pursuit between and within individuals. We posit that both temporal variability and context-specificity represent independent sources of goal variability. Our model elucidates the extent to which achievement goals depend on stable-general aspects (differences between teachers), variable-general aspects (e.g., different semester weeks), stable-specific aspects (e.g., different courses taught), and

[☆] All study materials and code underlying the presented analyses are provided in an open repository (<https://osf.io/26r3h/>).

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variable-specific aspects (e.g., different sessions of a given course). We investigate how variability of goal pursuit regarding these aspects is related to variability in experienced emotions in the underexamined population of higher education teachers.

1.1. Achievement goals for teaching

The achievement goal approach distinguishes different types of goals that individuals can pursue to different strengths in achievement contexts and that go along with different affective, cognitive, and behavioral consequences (Hulleman et al., 2010). Fundamentally distinguished are mastery aims (development of own competence and task mastery) and performance aims (demonstration of competence and performance relative to others) as well as a focus on approaching success or avoiding failure. This leads to four types of goals: mastery approach, mastery avoidance, performance approach, and performance avoidance (Elliot & McGregor, 2001). Especially within literature on achievement goals for teaching, two further types of goals are frequently considered given their relevance for teaching and work contexts (Butler, 2012): work avoidance goals (striving to get through the day with little effort) and relational goals (striving to create close and caring relationships with students). Studies on higher education teachers have identified interindividual differences in the strength to which teachers pursue these goals, which were in turn associated with their teaching quality, attitudes, learning, and affect (e.g., Daumiller et al., 2016, 2019, 2020, 2021a; Daumiller & Dresel, 2022; Hein et al., 2019, 2020; Rinas et al., 2020).

Researchers have acknowledged that a finer differentiation and disentanglement based on the content of mastery- and performance-based goals is necessary, as conflating different goal facets can lead to distorted findings (Elliot & Hulleman, 2017; Grant & Dweck, 2003; Hulleman et al., 2010). To address this, performance goals have been further distinguished (see Elliot & Hulleman, 2017; Hulleman et al., 2010; Lee & Bong, 2016; Senko & Dawson, 2017) based on an appearance component (wanting to be perceived as competent or not wanting to be perceived as incompetent) and a normative component (wanting to be more competent than others or not worse than others). Mastery goals have also been further distinguished (e.g., Elliot et al., 2011) according to whether the standard for evaluating one's own competence lies in the task ("task goals") or in one's intrapersonal development ("learning goals"). As these two mastery-based components (task, learning) and two performance-based components (appearance, normative) demonstrate differential associations with potential outcomes (Daumiller et al., 2019), we use the same goal distinction in the present work to contribute to a clear and detailed understanding of these goals. Given that several studies on higher education teachers in particular have found little predictive power of task and learning avoidance goals (e.g., Daumiller et al., 2019; Rinas et al., 2020), we do not investigate them in the present work (see also Murayama et al., 2011).

Moreover, we examine performance goals solely in terms of the appearance component, as we expect clearer associations between this goal type and emotions. This is based on the rationale that normative aspects of performance goals are more ambiguous regarding the reasons why individuals strive to outperform others (see Senko & Tropicano, 2016). Teachers may, for instance, seek to outperform others to impress them, but also to challenge themselves or to feel accomplished. While the latter may be associated with positive emotions of enjoying such a challenge, striving to appear competent by outperforming others is likely more strongly linked with negative emotions (see Hulleman et al., 2010). Therefore, appearance goals (with a clearer definition on the reason for goal pursuit) should lead to more distinct associations with emotions compared to normative goals. This theoretical argument is also

mirrored in past empirical research (see Rinas et al., 2020, 2022, who only found significant linkages for appearance goals and emotions for teaching, but not normative goals).¹

1.2. Temporal variability and context specificity of achievement goals for teaching

Preferences for achievement goals contain fractions that are rather stable or variable over time (Bürger & Schmitt, 2017; Fryer & Elliot, 2007; Muis & Edwards, 2009; Jagacinski et al., 2010; Praetorius et al., 2014). Moreover, they are considered partly general and partly context-specific (e.g., Bong, 2001, 2004; Sparfeldt et al., 2015). In a first attempt to further differentiate different parts of variation, Praetorius et al. (2014) proposed a model on the temporal stability of goal pursuit in secondary school teachers. This model considered temporally stable and temporally variable aspects, but did not differentiate whether variation was bound to the respective situation or not. We amended this model to additionally incorporate this important source of variation (as depicted in Fig. 1), thus yielding two bipolar dimensions of temporal stability and context stability (conceptually similar to Weiner, 1985). The different sources or fractions of variation are also in line with basic ideas of attribution theory assuming covariations to be associated with variations across individuals (consensus), across entities (distinctiveness), and across time (consistency; see Kelley, 1967).

The most investigated source of variation is stable variation between individuals (*stable-general fraction*). This between-person variation is bound to general traits of the individual, such as achievement motives or personality traits, and rather stable features of the overall surrounding institution, such as educational policies and evaluation standards. Within-person variation, in turn, can be based on changing characteristics of the individual that are not situation-specific, such as one's current mood, and changing general circumstances, such as work-load (*variable-general fraction*). Further, within-person variation can also be attributed to context-specific factors (such as the different courses taught by a teacher): Specifically, variation can depend on stable characteristics of the different courses, such as an individual's familiarity with the topic of the course or the teaching format of the course (*stable-specific fraction*). Finally, currently pursued teaching goals may also depend on situation-specific experiences and perceptions, such as how one feels and their interest in the current topic, as well as changing contextual features, such as students' behaviors in a given course session (*variable-specific fraction*).

Empirical investigations exploring the temporal variability of achievement goals are mainly based on samples of students (for an overview see Scherrer et al., 2020) and athletes (see Daumiller et al., 2021b, for an overview). The stability of goals (retest correlations) ranged from $r = 0.40$ to $r = 0.70$ (Senko et al., 2011). Regarding achievement goals for teaching, the few existing studies show that goals contain about half stable and half variable fractions over time, with mastery goals often being more variable than the other goals (Praetorius et al., 2014; see also Muis & Edwards, 2009). For higher education teachers, first investigations indicate similar stability coefficients regarding context-unspecific achievement goals of academic staff members on a day-to-day basis (Janke & Dickhäuser, 2018), achievement goals for teaching and research across two years (Daumiller & Dresel, 2022) as well as achievement goals in the research domain across half a year (Daumiller & Dresel, 2020a). Based on these rather similar findings across different populations, domains, and time intervals, it can be expected that also across multiple weeks, achievement goals for teaching should contain both a substantial part of temporally stable as well as a substantial part of temporally variable fractions. At the same

¹ We assessed mastery avoidance and normative goals for reasons of completeness and examined them in ancillary analyses. They exhibited similar ICCs as the corresponding mastery approach and appearance goals.

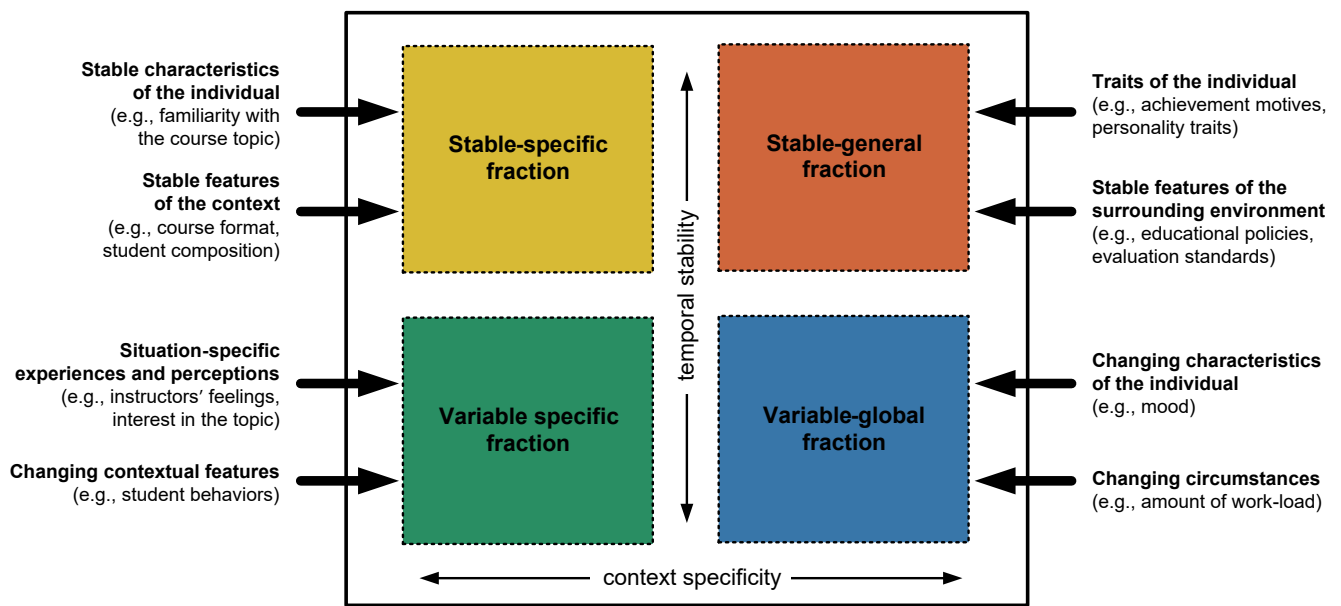


Fig. 1. Conceptual framework for the temporal variability and context specificity (based on Praetorius et al., 2014).

time, these findings highlight that there is more to variation in goals than inter-individual differences.

Concerning the specificity across different domains or contexts, the little research that exists has solely focused on the student level (e.g., Bong, 2004; Sparfeldt et al., 2015). Here, findings point to correlations in high-school students across different subjects to be around $r_{\text{mean}} = 0.41\text{--}0.79$ (Sparfeldt et al., 2015), with mastery goals being more prone to situational variation than performance goals. To the best of our knowledge, context specificity has never been investigated regarding achievement goals for teaching. Analogous to subjects for students, the most natural contexts here are different courses. Based on the argument that achievement goals change when environments change (e.g., Fryer & Elliot, 2007), it can be expected that higher education teachers pursue different goals within different courses. An important premise to this end is that achievement goals have been found to be invariant for the two superordinate work domains within university faculty members, teaching and research, with teaching and research goals sharing around half of their variability (Daumiller & Dresel, 2020a). Being invariant across the two superordinate work domains and sharing variability between them, achievement goals should also be invariant across different courses taught and should contain a substantial part of general context-specific variable fractions.

To more thoroughly understand the variability of achievement goals, it is necessary to simultaneously consider temporal variability and context specificity (which are often confounded when only examining one aspect) by investigating sessions in different courses of different teachers over time. Considering current achievement goals regarding sessions of different courses taught by different higher education teachers over multiple weeks allows us to investigate the magnitude of stable-general, stable-specific, and variable-general fractions, and how much variance remains on the variable-specific level. Knowledge regarding the magnitude of these fractions is highly relevant for conducting research on these constructs (study design, measurement design, formulation of appropriate research questions regarding the operationalization of the constructs), as well as their application in practice (correct interpretation of results and deriving appropriate implications; see Praetorius et al., 2014; Murphy & Alexander 2000; Pintrich, 2000). Further, these findings will facilitate a better understanding of the respective constructs from a theoretical perspective. For example,

researchers have inquired about the stability of mastery goals that have been found to be less stable/general than other types of achievement goals (Praetorius et al., 2014; see also Muis & Edwards, 2009). To better understand this, it is helpful to find out whether this is because these types of goals are less stable due to temporal changes (e.g., different priorities or resources available) or due to different contexts (which may offer different task and learning affordances). Disentangling the different fractions of goal variability also sets the stage for elucidating their interplay with emotions for teaching, which are central to emotional well-being.

1.3. Teaching emotions and their relations with achievement goals

School and higher education teachers' emotions play a key role in educational contexts as a part of their emotional well-being, which is directly tied to retention rates as well as students' experiences and learning (Frenzel et al., 2016; Stupnisky et al., 2016). To this end, emotions can be differentiated in terms of a two-dimensional taxonomy including valence (positive or negative arousal) and activation components (activating or inhibiting activity; Pekrun et al., 2011). Here, we focus on enjoyment, pride, anxiety, shame, and boredom while teaching. Enjoyment and pride encompass positive/activating emotions, while anxiety and shame are negative/activating emotions, and boredom constitutes a negative/deactivating emotion. These emotions in particular have been found to be frequently experienced within school and higher education teaching contexts and seem to be highly relevant therein for teaching-related processes (e.g., Frenzel et al., 2016; Stupnisky et al., 2016, 2019; Thies & Kordts-Freudinger, 2019). Similar to achievement goals, emotions have between- and within-person variation (see Nett et al., 2017, for an overview). Similar to achievement goals, research typically either focuses on temporal variability or context specificity when investigating stability of teaching emotions. In this regard, emotional experiences have been found to be about half temporally stable and half variable (e.g., Nett et al., 2017; Respondek et al., 2019; Yasuda et al., 2004), and can vary considerably depending on the subject and group of students being taught (Frenzel et al., 2015). However, research that investigates the degree to which variation in teaching emotions is bound to temporal variability compared to context specificity is generally lacking.

Achievement goals are posited to guide one's attention and appraisals, and in turn, different emotional experiences (Rinas et al., 2020; Pekrun et al., 2006, 2009). Following this logic, empirical studies have established a close link between these constructs in students (Huang, 2011; Senko et al., 2011), while in teaching populations, such associations are rarely investigated. The few existing studies on teachers have found mastery goals, through their focus on mastery of an activity, controllability, as well as on the positive value of the activity, to be linked with increased positive activity emotions such as enjoyment (secondary school teachers: Janke et al., 2019; Wang et al., 2016; higher education teachers: Rinas et al., 2020; Rinas et al., 2022) as well as decreased negative activity emotions such as boredom (Rinas et al., 2020). Performance approach goals, centered around perceived controllability and the positive value of outcomes, have been found to be associated with increased positive outcome emotions (e.g., pride; Rinas et al., 2020), and in some cases, to have no statistically significant effects at all (e.g., Wang et al., 2016). In contrast, performance avoidance goals, given their focus on perceived uncontrollability and negative value of negative outcomes, have been linked with negative outcome emotions in teaching, such as anxiety and shame (Janke et al., 2019; Rinas et al., 2020; Rinas et al., 2022). Aside from this, relational goals, through their emphasis on developing personal and caring interrelations with students, have been found to foster positive, joyful emotional experiences in school (Wang et al., 2016) and higher education teachers (Daumiller et al., 2019). This stands in line with the notion that the quality of student–teacher interactions is an important social factor contributing to teachers' (emotional) well-being (Hagenauer et al., 2015; Kiltz et al., 2020). Surprisingly, relational goals have also been found to be positively related to shame and boredom in higher education teaching (Rinas et al., 2020)—providing first indication that while relational goals might be helpful for instructional quality, they might also entail emotional costs, warranting further investigation. Lastly, work avoidance goals are typically characterized as being harmful and are paired with demotivation as well as risk for suboptimal performance (see King & McInerney, 2014). As such, this goal type has been tied to less enjoyment in teaching as well as negative emotions such as anxiety, shame, and anger (Janke et al., 2019; Rinas et al., 2020; Rinas et al., 2022; Wang et al., 2016). These initial studies document that achievement goals are intertwined with teachers' emotions.

In the context of our research objective, it should be kept in mind that relationships may differ on an inter- and an intra-individual level, which are typically statistically independent from one another and can produce opposite relationships (Murayama et al., 2017). Most of the empirical research on achievement goals (and also emotions; see Becker et al., 2014; Frenzel et al., 2015 regarding teachers) has relied on between-person analyses while within-person analyses are lacking (Murayama et al., 2017; cf. Goetz et al., 2016; Seo & Patal, 2021). The first existing research in student populations did not indicate variation in relationships depending on the level of investigation (Goetz et al., 2016). However, it is still unclear whether this finding holds when considering finer conceptualizations of between- and within-person variation (see Fig. 1 for an overview) outside of student populations.

Regarding differential associations, it might be the case that certain linkages between achievement goals and emotions only unfold with regard to their stable/general fractions: Stable-general tendencies orienting an individual towards mastery when teaching may go along with better preparation of one's teaching and better interpretations of challenges therein, resulting in more positive and less negative emotions. In turn, having stronger mastery goal strivings in one particular course compared to other courses may not necessarily go along with more adaptive emotional experiences when teaching this course, but could rather be a function of how familiar one is with this course: Teaching a

course for the first time could be tied to stronger mastery goal strivings that do not evoke joy with teaching, as one's focus when teaching in this context may lie in developing new teaching materials, which can be demanding and straining. Furthermore, teachers may experience setbacks and failures in the process, which could cause immediate frustration and anger. Performance avoidance goals, in turn, might primarily matter with regard to temporally variable and context-specific fractions: Pursuing stronger performance avoidance goals in a particular session than usual should go along with increased worries to avoid making a bad impression, which in turn should be linked to less positive and more negative emotions. On the stable-global level, pursuing such goals might instead go along with increased time for and more thorough preparation of one's classes, which counteract the detrimental effects that such goals may hold for affective experiences (see Daumiller et al., 2021a, for a similar argument). Finding such differences can therefore be deemed as very helpful for better understanding and deriving implications surrounding the processes linking achievement goals with emotional experiences (see Voelkle et al., 2014).

2. Research questions

The main aim of the present work was to investigate the variability of higher education teachers' achievement goals for teaching and their associations with affective assessments of teaching. Specifically, we wanted to elucidate the magnitude of temporal variability and context specificity in higher education teachers' achievement goals. In line with previous research, we hypothesized that a significant portion of variance can be attributed to stable-general fractions and that a substantial portion of variance can also be attributed to temporally variable as well as to context-specific fractions. For emotions, we had the same expectations.

Adding to this, we also aimed to investigate the interrelations between achievement goals and emotions. Based on the aforementioned points, we assumed positive linkages with enjoyment and pride, and negative linkages with boredom and shame for mastery-based goals, performance approach, and relational goals. Further, we assumed negative linkages with enjoyment, and pride, and positive linkages with boredom and shame for performance avoidance and work avoidance goals. We tested these associations by investigating whether variability in goal pursuit regarding the different fractions outlined above also went along with variability in emotions regarding these fractions. We had no specific expectations concerning differences in associations based on these fractions and investigated this on an explorative level.

3. Method

To answer our research questions, we conducted a micro-longitudinal study in which higher education teachers filled out questionnaires about their current goals for teaching individual sessions of their courses and the emotions that they experienced within them. The participating teachers completed surveys over multiple courses for multiple weeks and regarding specific course sessions. Using paper-and-pencil questionnaires that were administered by research assistants, the teachers answered questions about their achievement goals immediately before the sessions started and reported their experienced emotions after the end of the sessions. The research assistants collected the individual questionnaires directly afterwards; the questionnaires were linked through an anonymous, self-generated codeword. In each course, we examined the first five sessions of the term after the organizational details were discussed. The sessions were scheduled weekly and in case a particular session got cancelled (which occurred in less than 0.6 % of all cases), we continued with the next one.

This study was approved by the University of Mannheim Ethics Committee (approval no. 25/2018), and all participants provided informed consent before the start of the study. To encourage participation, we provided the participants with a small incentive in form of a booklet with suggestions of teaching methods that we gave them after study completion. Additionally, we provided participants with information about their students' learning processes during the respective timeframe which we additionally assessed as a separate research question.²

We provide all materials, data, and code underlying this study in an open access repository (<https://osf.io/26r3h/>).

3.1. Sample

Altogether 108 higher education teachers from two German universities participated with 213 courses (two courses on average per teacher) and a total of 949 course sessions. The two universities are research intensive universities located in the South of Germany and had approximately 18,000 and 12,000 students at the time of data collection—as such, they stand well in line with the average number of students typically enrolled in German universities (Statistisches Bundesamt, 2021). The participating teachers were on average 40.7 years old ($SD = 10.6$) and had an average of 9.4 ($SD = 7.9$) years of teaching experience. Almost half of them were women (49 %), and 58 % had a PhD³ degree while 21 % were full professors. The sample can thereby be characterized as being typical for German higher education teachers (average numbers at the time of data collection across Germany: age: 40.2 years, women: 40.1 %, PhD: 44 %, full professors: 18 %; Statistisches Bundesamt, 2020). The courses they participated with were sampled across the whole range of study programs, including both undergraduate and graduate courses, and were not restricted to specific departments or subjects.

3.2. Measurements

To enable high participation rates and general acceptance of the study, a concise assessment protocol within the sessions was required. Therefore, we used established single item and short measures. The reliability and validity of such an approach has been supported for measuring motivations and experiences. In particular, studies on this topic (see e.g., Goetz et al., 2007; Gogol et al., 2014; Wright & Zimmermann, 2019) document that single-items work especially well and adequately in the case of constructs such as goals and emotions. In our case, we used easily answerable measures that had already been validated as single items in past research (Daumiller et al., 2021b; Goetz et al., 2016). Specifically, Daumiller et al. (2021b) investigated the achievement goal scale in athletes and found that the single items corresponded well to the original scales containing all items (yielding very high correlations, $r = 0.88$ – 0.95 , and reliability scores, 0.87 – 0.93), while the emotion scale that we used is frequently used in state assessments of

² Specifically, parts of this dataset have already been used to examine research questions concerning higher education teachers' motivation and their professional learning (Hein et al., 2020; no overlap with variables reported in this manuscript) and the linkages between teaching motivations and students' evaluation of teaching quality (Daumiller et al., 2021a; partial overlap with achievement goals used for the present study). Besides emotions, we also assessed teachers' satisfaction with the respective course sessions. For satisfaction, we found similar variance components as for the emotions (see Tables S2 and S3 in the supplementary materials).

³ In Germany it is common for doctoral candidates to be hired as faculty members with both teaching and research responsibilities while simultaneously pursuing their PhD. This leads to a larger share of higher education teachers without a PhD in Germany compared to countries such as the U.S. where doctoral candidates mainly focus on their own studies rather than simultaneously working as higher education teachers.

emotions in students (see Respondek et al., 2019). Given this evidence that the respective single-item scales work well for students and athletes, we see strong grounds that they should also work well for higher education teachers—which stands in line with past research on the merits of single items for assessing concrete constructs and subjective experiences in general (see Wright & Zimmermann, 2019).

3.2.1. Achievement goals

Achievement goals were assessed using single items from the higher education teaching achievement goal inventory by Daumiller et al. (2019). Following the item stem (“In today’s session of this course, it is my goal to ...”), the participants made assessments regarding their task approach (“... conduct my teaching tasks as well as possible”), learning approach (“... further develop my own competences as much as possible”), appearance approach (“... that other people notice how good my teaching is”), appearance avoidance (“... that others don’t think my teaching is bad”), relational (“... achieve a personal connection with students”), and work avoidance goals (“... have the least amount of work as possible”). Convergent validity with the full scale and reliability of these single items has been confirmed in prior research on athletes (Daumiller et al., 2021b). Each item was answered on a Likert type scale ranging from 1 (*do not agree at all*) to 8 (*agree completely*). Only the two poles, but not the other points, were labelled.

3.2.2. Discrete emotions

We assessed teachers' discrete emotions using single item measures by Goetz et al. (2016). Following the item stem “In today’s session, I experienced...”, participants rated the extent to which they experienced anxiety (“... anxiety”), enjoyment (“... enjoyment”), boredom (“... boredom”), shame (“... shame”), and pride (“... pride”). At the end of the session, participants responded to their emotions experienced during the session using an eight-point Likert-type scale from 1 (*not at all*) to 8 (*very strongly*). Like the goals, only the two poles, but not the other points, were labelled.

3.3. Analyses

To investigate temporal variability and context specificity, we estimated the extent to which the variance of the session-specific assessments of goals and emotions could be attributed to the teacher level (stable, general), the course level (stable, specific), the week level (variable, general), or remained on the session level (variable, specific). Here, course sessions are nested within courses and assessments for each semester week, which are both nested within teachers (Fig. 2.). To yield the corresponding intra-class-correlations (ICCs), we estimated cross-classified random intercept multilevel models with the ordinal-package

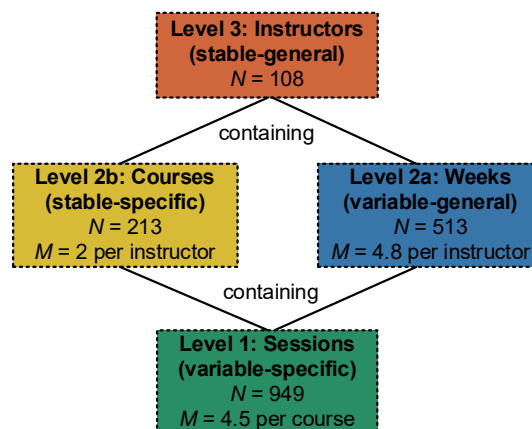


Fig. 2. Overview of the different levels that were used for the estimation of variance fractions in the analyses of temporal variability and context specificity.

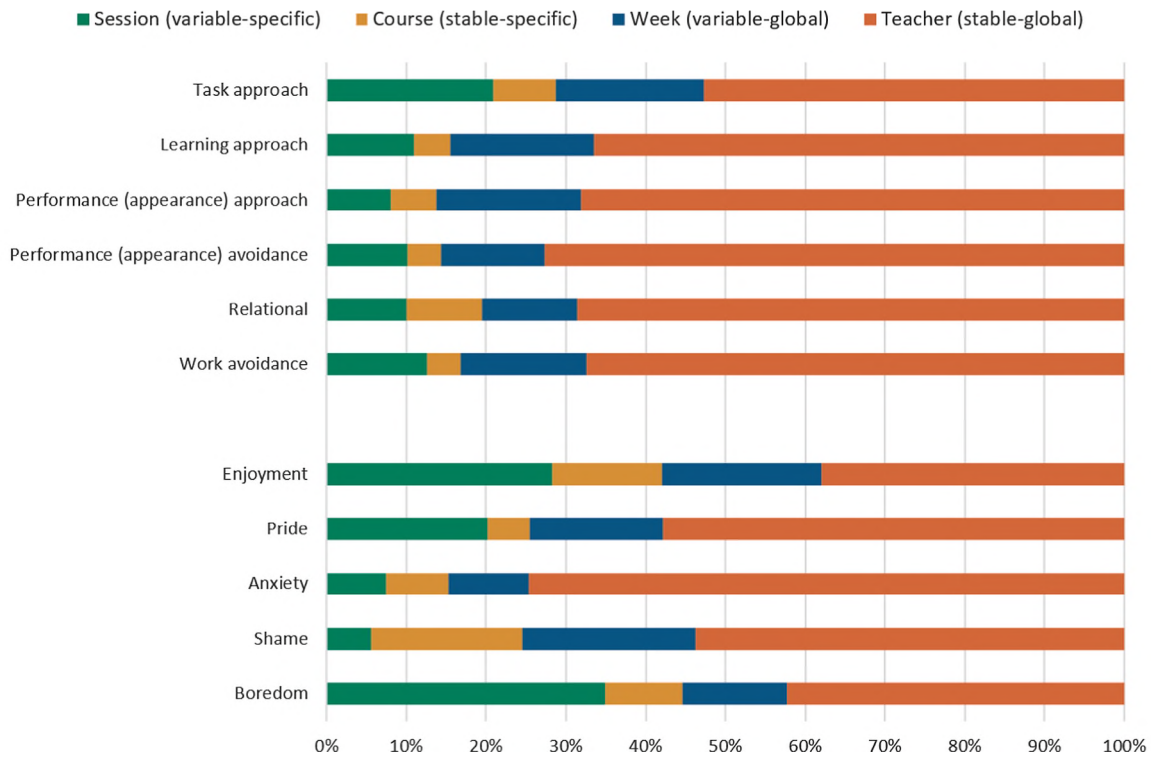


Fig. 3. Visualization of the temporally variable and context specific fractions of achievement goals and emotions.

in R. Doing so enabled us to reflect the ordinal scale format of the measures. However, a limitation of this approach is that standard errors and confidence intervals cannot be computed. We therefore also calculated the ICCs using the `lme4`-package in R (treating the measures as continuous) and employed the included parametric bootstrap `bootMer`-function to calculate 95 %-confidence intervals for the ICCs (based on 1000 iterations that used different values of the random effects that were drawn from a Normal distribution using the parameters derived from the mixed model). This means that the ICCs reported in the manuscript reflect the nature of the data (i.e., ordinal scale format) to a stronger degree than the confidence intervals presented in the [supplementary materials](#), which should be interpreted as approximations (see [Fig. 3](#)).

To analyze the linkages between goals and emotions, we considered the fractions of temporal stability and context specificity that were found to contain substantial variance on average for both goals and emotions. Regarding these, we estimated a multi-level model for each emotion that was regressed on all achievement goals. Correlations between the goals were allowed. Additionally, we tested for potential multicollinearity issues in all models by (1) comparing the parameter estimates with the bivariate correlations and (2) systematically excluding one predictor at a time in order to check the robustness of the other effects and indications of high variance inflation. These additional analyses did not provide indications for multicollinearity problems, speaking to the robustness of our results. We used `Mplus` ([Muthén & Muthén, 2017](#)) and conducted Bayesian analyses that considered the ordinal scale format of the emotions. To gauge the fit of the respective model to the data, posterior predictive p-values (PPP) are reported (with values around 0.50 indicating excellent fit, and $PPP < .05$ indicating poor fit; see [Muthén & Asparouhov, 2012](#)). There were few missing values (less than 2.4 % per item) that were dealt with model-based: As Bayes is a full-information estimator, it produces similar results as Maximum likelihood estimation with missing data (see [Muthén & Asparouhov, 2012](#)).

4. Results

Descriptive results pointed to similar mean levels and variances of achievement goals and emotions as observed in prior research (strong mastery goals, relatively weak levels of negative emotions; e.g., [Dau-miller et al., 2019](#); [Rinas et al., 2020](#)). At the same time, there was a rather large magnitude of variance in the goals and emotions reported regarding the individual course sessions (Table 1), which we used in the subsequent multilevel models to determine how strongly this variability could be attributed to the different courses (stable-specific fraction), semester weeks (variable-general fraction), and teachers (stable-general fraction), and how much variability remained on the course session-level (variable-specific fraction).

4.1. Temporal variability and context specificity of goals and emotions

The decomposition of the variance fractions (see [Table 1](#)) indicated that a large amount of the variance in the pursued goals could be attributed to stable differences between different teachers ($ICC_{teacher} = 0.54-0.75$). Variance could also be attributed to substantial extent to both temporally variable ($ICC_{course\ session} + week = 0.22-0.40$) as well as context specific fractions ($ICC_{course\ session} + course = 0.12-0.27$). With the exception of task goals, for which less variance could be attributed to the teacher level and for which a stronger extent of variance was tied to the course session level, the stable-general fractions (teacher level) were larger than the other fractions (as also indicated by non-overlapping confidence intervals, see [Table S1](#)). This means that a little more than half of the variability in goal pursuit could be attributed to different teachers, with the remaining variability being attributable to both temporally variable as well as context-specific aspects.

For teaching emotions, we also found that all four fractions exhibited substantial amounts of variability. Compared to the goals, the amount of variance that was bound to the teacher level (stable-general fraction) was descriptively smaller, while the specific fractions were larger. Given that the variability on the course level was not substantial for all variables and descriptively rather small, we did not consider this level

Table 1
Descriptive Results and Decomposition of Variance for Course Session, Course, Week, and Teacher.

	Descriptive statistics				Variance fractions (ICCs)					
	<i>M</i>	<i>SD</i>	Range	Skew	Course session (variable-specific)	Course (stable-general)	Week (variable-general)	Teacher (stable-general)		
Achievement goals										
Task approach	7.17	1.18	1-8	-1.99	0.21	0.06	0.19	0.54		
Learning approach	5.11	2.00	1-8	-0.40	0.11	0.03	0.18	0.69		
Performance (appearance) approach	4.51	2.06	1-8	-0.23	0.08	0.04	0.18	0.70		
Performance (appearance) avoidance	4.81	2.34	1-8	-0.24	0.10	0.02	0.13	0.75		
Relational	5.23	1.84	1-8	-0.47	0.10	0.07	0.12	0.71		
Work avoidance	3.02	1.98	1-8	0.76	0.13	0.02	0.16	0.69		
Emotions										
Enjoyment	6.52	1.31	1-8	-1.01	0.28	0.13	0.20	0.39		
Pride	3.91	2.09	1-8	0.02	0.20	0.03	0.17	0.60		
Anxiety	1.50	1.05	1-8	2.86	0.08	0.05	0.10	0.77		
Shame	1.38	0.88	1-7	3.00	0.06	0.17	0.22	0.55		
Boredom	2.06	1.53	1-8	1.67	0.35	0.08	0.13	0.44		

Note. *N* = 949 course session-specific assessments that are clustered within 213 courses and 108 teachers, and within 5 measurement points corresponding to the first five weeks of the term. The theoretical range of all variables is 1-8. For a visualization of the ICC values, see Fig. 3. We additionally computed the ICCs, treating the measures as continuous, in order to additionally compute the confidence intervals. These analyses yielded very similar results overall and are reported in Table S1 in the supplementary materials.

Table 2
Three-Level Correlations of Achievement Goals and Emotions.

	1	2	3	4	5	6	7	8	9	10
Achievement goals										
[1] Task approach										
[2] Learning approach	0.16/0.46/0.46									
[3] Performance (appearance) approach	0.24/0.55/-0.02	0.17/0.43/0.13								
[4] Performance (appearance) avoidance	0.12/0.27/0.13	0.21/0.11/0.15	0.20/0.48/0.76							
[5] Relational	0.18/-0.17/0.22	0.25/-0.25/0.29	0.15/-0.16/0.26	0.06/-0.01/0.28						
[6] Work avoidance	-0.18/-0.09/-0.37	-0.12/0.05/-0.17	-0.09/0.11/0.22	-0.12/0.15/0.22	0.03/-0.07/0.14					
Emotions										
[7] Enjoyment	0.11/0.17/0.58	0.01/0.15/0.44	0.07/0.14/0.12	-0.16/0.38/0.09	-0.01/0.40/0.37	0.08/-0.01/-0.32				
[8] Pride	0.15/0.17/0.09	0.02/0.20/0.21	0.00/0.16/0.57	-0.02/0.36/0.49	-0.02/0.33/0.36	-0.12/0.48/0.14	0.49/0.55/0.32			
[9] Anxiety	0.02/-0.25/-0.38	0.13/-0.22/0.07	0.10/0.11/0.18	0.02/-0.08/0.26	0.03/-0.15/0.18	-0.11/0.09/0.39	-0.14/-0.49/-0.10	0.01/-0.32/0.63		
[10] Shame	-0.23/0.35/-0.43	-0.02/0.30/-0.07	-0.04/0.28/0.05	0.13/-0.02/0.20	-0.06/-0.37/0.15	-0.02/0.13/0.46	-0.39/-0.25/-0.19	-0.30/-0.08/0.51	0.62/0.07/0.91	
[11] Boredom	-0.04/-0.23/-0.44	0.08/-0.20/-0.14	-0.05/-0.12/0.23	0.09/0.12/0.18	0.08/-0.31/-0.14	0.05/0.05/0.60	-0.41/-0.32/-0.60	-0.30/-0.35/0.15	0.14/0.19/0.50	0.26/-0.07/0.55

Note. *N* = 949 course session-specific assessments (Level 1: variable-specific) that are clustered within 513 teaching weeks (Level 2: variable-general) of a total of 108 teachers (Level 3: stable-general). Presented are the correlation coefficients on Level 1 / Level 2 / Level 3. Statistically significant ($p < .05$) correlation coefficients are boldfaced. All correlations were modeled simultaneously in a comprehensive three-level model that included the correlations between all variables on each level (Bayesian Posterior Predictive P-Value: 0.46).

Table 3

Results of 3-Level Regression Analyses on the Associations Between Achievement Goals and Emotions.

	Model 1: Enjoyment	Model 2: Pride	Model 3: Anxiety	Model 4: Shame	Model 5: Boredom
Achievement goals					
Task approach	0.09/0.04/ 0.15	0.08/0.12/ -0.23	0.04/ -0.33 / -0.36	-0.20 /0.28/ -0.34	-0.05/ -0.13 / -0.26
Learning approach	0.02/0.13/0.18	0.02/0.19/0.12	0.12/ -0.17 /0.25	0.04/0.01/0.15	0.08/ -0.13 /0.05
Performance (appearance) approach	0.09/0.01/0.07	-0.01/ -0.08 / 0.29	0.06/0.35/ -0.14	-0.08 /0.15/ -0.33	-0.09/0.05/0.13
Performance (appearance) avoidance	-0.16 /0.28/ -0.13	-0.02/0.22/0.17	-0.07 /0.01/ 0.26	0.18 / -0.13 / 0.33	0.08/0.15/0.09
Relational	0.01/ 0.31 / 0.22	-0.03/ 0.32 /0.15	0.01/ -0.19 /0.15	-0.04/ -0.23 /0.21	0.04/ -0.28 / -0.20
Work avoidance	0.10/ -0.15 / -0.21	-0.10 / 0.33 / -0.07	-0.08 /0.12/0.13	-0.11 /0.19/ 0.20	0.01/0.16/ 0.35
R ²	0.06/0.28/0.26	0.03/0.36/0.30	0.07/0.32/0.26	0.12/0.37/0.29	0.04/0.24/0.34

Note. $N = 949$ course session-specific (Level 1: variable-specific) that are clustered within 513 teaching weeks (Level 2: variable-general) of a total of 108 teachers (Level 3: stable-general). Presented are standardized regression coefficients on Level 1 / Level 2 / Level 3. Statistically significant ($p < .05$) parameter estimates are boldfaced. Bayesian Posterior Predictive P-Values for the models: 0.41–0.53.

further for investigating the associations between goals and emotions experienced. Instead, we considered their relations on the remaining three levels, rendering a hierarchical three-level design (multiple course sessions nested within different teaching weeks of different teachers).⁴

4.2. Associations of achievement goals with emotions

Regarding these three levels, the correlations between all variables (Table 2) pointed to systematic associations between goals and emotions that were well in line with the results of the subsequently reported regression analyses. Investigation of these correlations also revealed another noteworthy finding regarding the association of the achievement goals: The correlations between the different goals were typically stronger on the teacher level than on the course session-specific levels. This was especially the case for task approach and learning approach goals as well as performance approach and performance avoidance goals.

4.2.1. Mastery goals

The results of the conducted three-level analyses (Table 3) indicated that stronger mastery goals went along with less negative emotions (anxiety, shame, boredom), more enjoyment, but also less pride. Interestingly, we only found these effects for task approach goals but not for learning goals. Furthermore, we primarily saw these effects on the teacher level but not the course session-specific or week-specific level (for which the parameter estimates were descriptively also mostly much smaller). An exception to this was the link with shame, which we also found on the week-level.

4.2.2. Performance goals

Performance goals were less clearly related to the affective experiences. On the teacher level, performance approach goals went along with increased pride and decreased shame. Performance avoidance goals, in turn, also went along with increased shame as well as anxiety on the teacher level. Further, pursuing stronger performance avoidance goals in a specific session was tied to experiencing less joy in the very session.

4.2.3. Relational and work avoidance goals

Relational goals were associated with increased enjoyment, decreased boredom, and increased pride. We found these effects primarily on the week-specific as well as the teacher-specific level, but not

on the course session-specific level (with the linkages with pride being only statistically significant on the week-specific level). Finally, work avoidance goals went along with less enjoyment and more boredom and shame on the teacher-specific level. Work avoidance goals were also related to pride, for which we observed different effects for the investigated levels. On the course session-specific level, work-avoidance goals went along with decreased pride, however, on the week-specific level, with increased pride.

5. Discussion

We proposed and tested a conceptual framework that provides the foundation for a nuanced conceptualization of between- and within-person variability and tested this regarding higher education teachers' goals and emotions. We found that between half and three quarters of the variability in goal pursuit could be attributed to a stable-general fraction of variation (different teachers), and that goal pursuit also had substantial amounts of variable-general (different semester weeks of the teachers), stable-specific (different courses of the teachers), and variable-specific (remaining course session variance) fractions. Emotions also contained these four fractions to a substantial extent, exhibited lower stable-general fractions than goals (i.e., less variation on the teacher level), and were systematically related to the achievement goals, with different effects being observable for the different levels. This illuminates the extent of temporal variability and context specificity and indicates that at least in the teaching domain, different effects may be observed depending on the different sources of variation.

5.1. Differentiating temporal stability and domain specificity

Our investigation into the temporal stability and context specificity of achievement goals was grounded in the notion that achievement goals describe an aspect of motivation that is influenced by a multitude of factors bound to dispositional characteristics as well as aspects of the context or the situation (Kaplan & Maehr, 2006). To shed light on the situative construction of goals and the role of dispositions in this construction, our theoretical model defines four sources of variation that characterize achievement goal pursuit. Confirming our expectations and in line with previous research on school teachers (e.g., Praetorius et al., 2014) and high-school students (e.g., Bong, 2004; Sparfeldt et al., 2015), we found that achievement goals for teaching are characterized by stability bound to aspects of the teacher and the context as well as malleability bound to factors bound to the respective situation and temporal change.

Here, we observed that the stable-general fraction (i.e., variance bound to the teacher level) was larger than the other fractions and accounted for more than half and up to three quarters of the variability in goal pursuit. This implies that with regard to a set of subsequent sessions in multiple courses in a given semester, a given teacher tends, to a large extent, to pursue similar achievement goals for teaching

⁴ To test the robustness of the effects, we reran all models reported with week as level 2 (instead of courses) and found that all effects on the other two levels held robust for this alternative hierarchical structure). Additionally, we reran the analyses considering discipline (natural sciences, social sciences, humanities), teaching experience, and teaching rank (without PhD, with PhD, full professor) as control variables. We did not find indications of these aspects influencing the results of our main analyses.

regardless of situational influences. Thus, achievement goals can be considered a sensible avenue to characterize inter-individual differences in teacher motivation. However, we also found that specific and variable aspects mattered for goal pursuit (referring to the respective courses or sessions that a teacher was teaching or the week that they were teaching in).

This was especially the case for task approach goals, which exhibited more variability on the course session level than the other goals. These findings extend prior research suggesting that mastery goals are less stable than the other goals (Praetorius et al., 2014) in two ways: First, we only observed this pattern for task approach but not learning approach goals, pointing to different mechanics immanent in pursuing these goals. Task goals might be bound more strongly to contextual features of the taught courses and sessions: For example, depending on the relevance or the merits of the specific teaching situation, stronger or weaker task goals could be pursued (e.g., stronger task goals for courses or sessions that a teacher deems particularly important or where students participate especially well). Considering such aspects of the specific teaching situation might thus constitute a meaningful approach to better understand when teachers pursue different levels of task goals despite similar learning goals. Second, this greater variability in task goals remaining within teachers was due to variable as well as context specific fractions. This implies that higher education teachers adjust their task goal pursuit according to the demands of the current situation (e.g., the workload in a given week) and the affordances of the current context (e.g., difficulty of the session to be taught) to a greater extent than their learning goals.

Alongside achievement goals, we also found higher education teachers' emotions to have both temporally stable/variable and context specific/general fractions, which indicates that our proposed model on temporal stability and context specificity also extends to these constructs. This corroborates prior research on emotions experienced in educational settings (see Nett et al., 2017; Respondek et al., 2019), as well as our findings for achievement goals in the present study. As such, this affirms that, similar to achievement goal research, also for emotional well-being research, considering not only a state and trait perspective, but also a more specific elucidation of general and variable aspects of state variability, seems warranted. An interesting observation to this end was that emotions exhibited lower stable-general fractions (i.e., variability at the teacher level) than achievement goals did (with the exception of pride). An explanation for this might lie in achievement goals being focused on desired states in the future, while emotions are evaluations of a current situation. Thus, goals might be construed in a more abstract form that renders them more stable and general than emotions, whose emergence can depend more strongly on critical events during teaching.

5.2. Linkages between goals and emotional well-being: Different effects for different fractions of stability and Specificity?

In terms of the linkages between achievement goals and emotions, our findings confirmed that these constructs are meaningfully and intricately intertwined. The overall patterns of associations with mastery, performance approach, and relational goals being positively (except the negative association between task goals and pride) and performance avoidance and work avoidance being negatively tied to experiences of more positive emotions and less negative emotions confirmed our expectations and largely fell in line with prior research (e.g., Daumiller et al., 2019; Janke et al., 2019; Rinas et al., 2020; Wang et al., 2016).

More interestingly, we found that the effect of mastery goals on teaching emotions was mostly bound to the striving for mastering teaching tasks and not as much to the striving for competence development in teaching. The non-significant effects for learning approach goals may not be surprising, as studies that have simultaneously examined task and learning approach goals with affective variables have also found effects for solely-one or the other (e.g., Daumiller et al., 2019;

Rinas et al., 2020), and research has indicated that for teachers (as opposed to students where the main task usually is defined by learning and improving own competences), task and learning goals may unfold distinct effects. Given the short time frame in which we investigated achievement goals, the pursuit of complex learning goals might have not have been feasible. In our view this speaks to the distinction between learning and task goals, and a consideration of moderators, to illuminate when the respective goals might particularly matter. For instance, investigating the relevance of the specific teaching situation, but also other aspects of personal motivation, such as autonomous versus controlled reasons to engage in teaching (see Vansteenkiste et al., 2014), could be an important future step to further disentangle how mastery goals matter for emotional well-being.

Besides largely confirming the expected linkages between goals and emotions, the main contribution of our study is that our findings indicate that these linkages can differ depending on the different stability and specificity fractions. This stands in contrast to the findings by Goetz et al. (2016) that did not indicate variation in relationships between goals and emotions depending on the within or between level. Our findings paint a more nuanced picture of the relationship between goals and emotions which might be a function of the finer conceptualization of between- and within-person variation (Fig. 1) or the consideration of a population where goals and emotions may be linked in a more complex way. In particular, we found linkages between goals and emotions on all three levels, with the majority located on the teacher level (stable-general variance fraction) and only few on the course session level (variable specific fraction). Most of these linkages were only found on one of these levels and not on the other levels as well.

For example, we primarily observed the associations of task and work avoidance goals on the stable-general level. This means that individual differences in these goals are particularly important for explaining teachers' emotional experiences, possibly because they impact teachers' general preparation for teaching. One may reason that a general orientation towards optimal resource and time allocation has more impact on feelings of accomplishment than respective intentions for a singular course or session, as such intentions will likely fall flat if not embedded in an overarching plan. Future research should follow up on this by also considering third variables that might explain these differential linkages further (e.g., experience with teaching particular sessions or courses).

When it comes to other fractions of variance, we found that performance avoidance goals were the type of goal that exhibited the largest associations with session-specific emotions. This could be explained from the angle that higher education teachers sometimes have to teach sessions on topics in which they feel less competent—even if their course in general falls in their field of expertise. If teachers consider such sessions under the lens of performance avoidance goals, they may experience particularly strong (and negative) emotions. Moreover, relational goals unfolded relatively strong associations on the level of temporal change (bound to the respective teaching week). Given that relational goals were positively linked to enjoyment and pride, this could mean that teaching courses may allow instructors to satisfy a temporary enhanced need for relatedness (e.g., due to rejection experiences in other domains).

5.3. Limitations, future research directions, and practical implications

Interpreting our findings, it should be borne in mind that we assessed achievement goals at the beginning of each course session and emotions at the end. This means that on the course session level, the linkages between goals and emotions likely represent effects from goals on emotions, while on the other levels, the linkages are also conflated with reverse and reciprocal effects. For work avoidance goals, for example, this could mean that experiences of maladaptive emotions, which are an indicator of compromised well-being, might elicit pursuit of stronger work avoidance goals as a coping mechanism (see Authors,

anonymized). This might thus lead to stronger effects on the stable-general level compared to smaller effects on the variable-specific level. Thus, future longitudinal or experimental research is warranted to further elucidate the mechanisms behind these associations.

Further, it should be considered that we surveyed teachers for five weeks and that the different contexts that we considered (different courses) are usually more closely aligned than, for example, different subjects of students (with vastly different valuations and characteristics). It stands to reason that if we had surveyed the teachers for a longer time frame (e.g., half a year), the temporally variable fractions would have been larger. The same goes for investigations of different work domains (such as teaching and research). However, it is worth noting that the research works that considered temporal stability of achievement goals over half a year (e.g., Daumiller & Dresel, 2020b, 2022) or their associations between teaching and research (Daumiller & Dresel, 2020a), also found around half of the variability in achievement goals to be temporally stable or general across the two domains. Thus, it is likely the case that our results would not have substantially changed even if a longer time frame or more contexts were considered. This goes along with the largely similar stability findings of achievement across different populations, contexts, and time-intervals, speaking to universal attributes of achievement goal pursuit. Nevertheless, it would be interesting for future research to follow up on this by considering different contexts and time frames. We believe that our model can provide a sensible starting place for such investigations to illuminate the temporal stability and context specificity of achievement goal pursuit further.

Further caution in interpreting the exact magnitude of the stability and specificity fractions is warranted because the teachers in our sample participated on average with a larger number of weeks compared to courses, potentially making it more difficult to find systematic variability bound to the course level. Also, it should be considered that course session specific variability also contains measurement error aside from the actual course session-specific variance fractions. While the single item scales that we used have been shown to have high reliability in past research and the associations between the assessed constructs imply high systematic variation, the exact magnitude of variable-specific fractions might still be overestimated.

Finally, it should be noted that goals and emotions were measured solely through self-report measures. Given that goals are cognitive constructs that are assumed to be conscious and accessible to the individual (Fulmer & Frijters, 2009), this approach is well suited for their assessment. Emotions, likewise, are posited to be mentally represented in the conscious mind and are widely assessed through self-reports (Pekrun, 2016). It should be borne in mind that self-reports may hold certain dangers, such as being subject to response sets and memory biases (see Pekrun, 2020). Therefore, other methods (e.g., physiological measures or behavioral observations of emotions during teaching) might be considered to be supplemented in the future to avoid such biases. However, such supplementary approaches may not be well compatible in terms of a practical perspective when using experience sampling approaches, similar to the present work, to assess emotional experiences (Pekrun, 2016). Importantly, our research attended to these issues directly through measuring goals and emotions with two separate surveys and specifically assessing goals immediately before the start of the session and the emotional experiences immediately afterwards to enable most accurate assessments (see Elliot et al., 2011).

In terms of implications for future research and practice, one important point that can be derived from our study was that achievement goals were found to be malleable. This marks an encouraging step for intervention development research aimed at fostering more adaptive achievement goals in teachers. Given the linkages of goals with positive and negative emotions that we found, our findings imply that arrangements of contextual features and professional development should focus on developing and enhancing task goals and reducing work-avoidance goals. Specifically, these findings add to the accumulating evidence that with regard to achievement goals for teaching supporting task goals

might, not only regarding performance but also emotional experiences, be even more relevant than learning goals (see Daumiller et al., 2019, 2021; Mascaret et al., 2017). Professional training can therefore be targeted to support task goals and provide alternatives to work-avoidance goals in times of stress. Besides such direct approaches, different goals are also made salient through features of the surrounding context (achievement goal structures, Ames, 1992; Bardach et al., 2020; Kaplan et al., 2002). Identifying relevant contextual features (e.g., balance, clarity of expectations, feedback and collaborative culture at the department; see Dickhäuser et al., 2021, Stupnisky et al., 2017) that enhance or undermine adaptive goal pursuit can therefore be considered an important research direction for enabling further practical impact to support higher education teachers' goal pursuit. Additionally, from our findings we can conclude that achievement goals are situated. Therefore, addressing achievement goals not only on a general level, but also regarding, for example, a given week or specific sessions (e.g., through minimal daily workplace intervention such as inspirational reminders on why good teaching matters in terms of student learning), may provide critical information when seeking to assess or alter goal pursuit.

Another interesting observation that can inspire future research was further that the often fairly high correlations between performance approach and avoidance goals were primarily found on the stable-general level, but not so much on the specific and variable levels. This implies that individuals who may be driven by high performance motivation pursue either performance approach or performance avoidance goals depending on aspects of the specific achievement situation. Examining theoretically relevant moderators, such as perceived competence regarding the current situation (see hierarchical model by Elliot, 2006), would thereby be an interesting future research avenue to help elucidate differences in (performance) goal pursuit further.

6. Conclusion

Through investigating achievement goals for teaching specific course sessions, we found that half to three fourths of the variability in goal pursuit could be attributed to a stable-general fraction (different teachers), but that goal pursuit also had substantial amounts of variable-general (different semester weeks of the teachers), stable-specific (different courses of the teachers), and variable-specific (remaining course session variance) fractions. Emotional experiences also contained these four fractions to a substantial extent and were systematically related to the achievement goals, with different effects being observable for the different levels. This illuminates the extent of temporal variability and context specificity in achievement goals and emotions, and indicates that, at least in the teaching context, different effects may be observed depending on the different fractions of these constructs. Taken together, our results contribute to a better understanding of the variability of higher education teachers' achievement goals for teaching, and how this is associated with variability in their experiences of discrete emotions. These findings can thereby act as a stepping stone for future research aimed at elucidating and supporting higher education teachers' goals and emotional well-being concerning their teaching activities and beyond.

Declaration of competing interest

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

Data availability

We provide all materials, data, and code underlying this study in an open access repository (<https://osf.io/26r3h/>)

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.cedpsych.2022.102139>.

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