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Motivated to learn? Investigating the link of achievement goals and informal workplace learning of lecturers in higher education

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Abstract

Research on lecturers' achievement goals and their impact on professional learning in higher education is a topic that has assumed importance in recent years. However, previous studies have neglected the multidimensionality of informal workplace learning and ignored the differences between self-based and social-based informal learning. Based on the Achievement Goal Theory, we propose positive links between learning approach goals and self-based informal learning, as well as positive links between normative goals and social-based informal learning. Findings from a first cross-sectional study with 317 lecturers from higher education institutions in Germany show associations that are largely consistent with our hypotheses. While learning approach goals are moderately related to self-based informal learning, normative avoidance goals are slightly related to social-based informal learning. In a second study, 185 lecturers from higher education institutions in Austria received three text-based vignettes and answered a survey about which teaching-related informal learning activities they would use in specific situations (i.e., before, during, and after the teaching phase). The results replicate most of the findings from the first study; however, the results are not stable

when various control variables are included. Moreover, the associations between achievement goals and informal learning are largely consistent across the simulated semester, although lecturers with strong learning approach goals engage in self-based informal learning particularly before and during the teaching phase. Our findings provide support for the notion that personal motivational characteristics, in the form of achievement goals, are associated with informal learning in the workplace. We conclude by discussing practical implications for those teaching in higher education.

KEYWORDS
achievement goals, faculty development, informal learning, lecturers, semester situations

1 | INTRODUCTION

Lecturers[1] at universities must continuously keep themselves updated to meet their professional requirements, for instance, to teach high-quality courses. Student engagement, learning, and achievement benefit from high-quality teaching (BrckaLorenz et al., 2012; Schneider & Preckel, 2017; Umbach & Wawrzynski, 2005). The work of lecturers is also societally relevant beyond teaching, as it is used to advise policy decisions (Landry et al., 2003) and is even linked to economic activity (Weinberg et al., 2014). As a result, lecturers themselves (Diethert et al., 2015), students, and society benefit from faculty development. Due to the importance of lecturers' professional learning, research on motivation as a predictor of faculty development has assumed importance (Daumiller et al., 2020; Daumiller & Dresel, 2020; Diethert et al., 2015; Hein et al., 2021).

However, previous studies on lecturers' professional learning and motivation have mostly neglected three aspects: (a) the importance of informal workplace learning (IWL), as up to 90% of professional learning does not take place in formally organized training but informally at the workplace (Cerasoli et al., 2018; Eraut, 2011), and IWL contributes to personal development, performance, and employability (Cerasoli et al., 2018; Decius, Knappstein, et al., 2023; Kyndt et al., 2016); (b) the multidimensionality of IWL, consisting of behavioral and cognitive components (Decius, Knappstein, Schaper et al., 2023; Tannenbaum et al., 2010); and (c) possible fluctuations in professional learning in different semester situations due to changing tasks and demands in teaching (e.g., preparation for teaching, delivery of teaching, evaluation of teaching, and student assessment).

According to Lewin (1951), behavior is a function of the person and their environment. Tannenbaum et al.'s (2010) Dynamic Model of Informal Learning also distinguishes between personal and environmental predictors of IWL. Thus, in our two-study paper, we examine both personal factors of university lecturers and external teaching conditions as facilitators of learning. According to Achievement Goal Theory (Elliot & Church, 1997), motivation in form of achievement goals is a key predictor of achievement-related behavior. In study 1, we therefore focus on lecturers' achievement goals as a personal driver for IWL—as recently suggested by Tannenbaum and Wolfson (2022), whose review highlighted the investigation of different forms of goal orientation and different dimensions of IWL as

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[1]The term *lecturer* (or *instructor*) within the German and Austrian higher education systems includes all people with a university degree that take on tasks in teaching students at universities. Typically, members of the academic staff take on tasks in teaching students and in research. Lecturers include, for example, doctoral candidates, post-docs, full professors, and practical working graduates with a teaching contract. Doctoral candidates at German/Austrian universities are typically academic staff members (and not doctoral students).

a notable research gap. External environmental teaching conditions for lecturers arise from specific job demands during a semester: during the semester, for instance, lecturers may feel pressured to prepare and deliver proper teaching (see, Hein et al., 2020), whereas during semester breaks, they have more time for professional development as they do not have to teach courses. Accordingly, in study 2, we use text-based vignettes to consider situations before, during, and after the semester. This allows us to examine the boundary conditions of the relationship between achievement goals and IWL more proximately to lecturers' everyday life. To sum up, in our two-study paper we focus on motivation in the form of achievement goals—a personal characteristic—as an antecedent of IWL and on different semester situations—an environmental condition.

Our study makes several contributions. First, we argue that IWL can be distinguished into self-based IWL and social-based IWL. Despite the general agreement on the heterogeneity of IWL, studies on promoting IWL have often referred to the overall construct without considering differences in different categories (e.g., Cerasoli et al., 2018; Decius, Schaper, & Seifert, 2021; Jeong et al., 2018; Noe et al., 2013). With our distinction, we extend the theoretical assumptions of the Octagon Model of IWL (Decius et al., 2019). Second, we propose that different achievement goals have different associations with the self- and social-based dimensions of learning activities. These associations may vary at different teaching stages throughout the semester, as the demands placed on lecturers vary. Third, by considering three semester situations, study 2 also provides opportunities for two additional exploratory analyses: We can compare the strength of the association between achievement goals and IWL in the three situations, and—in addition to our broader distinction between self-based IWL and social-based IWL—we can also examine whether the level of each IWL subcomponent according to the Octagon Model (Decius et al., 2019) differs across the fictitious semester course. In the following section, we present the theoretical and empirical background of IWL and achievement goals.

2 | THEORETICAL BACKGROUND

2.1 | Conceptual roots of informal workplace learning

Previous research has demonstrated the importance of IWL for teachers in various settings (Kwakman, 2003; Kyndt et al., 2016; Lecat et al., 2019; Lohman, 2005, 2006). IWL refers to "non-curricular behaviors and activities pursued in service of knowledge and skill acquisition that take place outside formally-designated learning contexts" (Cerasoli et al., 2018, p. 204). In contrast to formal learning, IWL is characterized by a low degree of planning and organization in terms of learning context, learning support, learning time, and learning goals (Kyndt & Baert, 2013). Early models characterized IWL as a learning cycle consisting of reflecting on new experiences, creating solutions, evaluating consequences, and drawing conclusions (Marsick & Watkins, 1990). Whereas earlier conceptualizations, such as by Eraut (2004), included implicit learning through unconscious processing of memory content in addition to near-spontaneous reactive learning and planned deliberative-behavior learning, more recent conceptualizations of IWL emphasized the intention to learn and thus the distinction from incidental learning plays an important role (Decius, 2020; Tannenbaum et al., 2010).

According to the Octagon Model of IWL (Decius et al., 2019)—which is an extension of the Dynamic Model of Informal Learning by Tannenbaum et al. (2010)—IWL is a multidimensional construct consisting of behavioral, cognitive, and intentional components (cf. Decius, Knappstein, et al., 2023). What both models have in common is the multidimensional perspective on IWL. According to Tannenbaum et al. (2010), IWL includes the four components of experience/action, feedback, reflection, and intent to learn. The authors argued that IWL is most effective when all four components are involved in the learning process. In the Octagon Model, the four components are each divided into two subcomponents: *experience/action* is divided into *trying/applying own ideas* and *model learning; feedback* is divided into *direct feedback* and *vicarious feedback; reflection* is divided into *anticipatory reflection* and *subsequent reflection;* and *intent to learn* is divided into *extrinsic intent to learn* and *intrinsic intent to learn* (Decius et al., 2019).

The first six components are behavioral and cognitive components that are considered less stable over time (state-oriented), whereas the motivational components of *extrinsic intent to learn* and *intrinsic intent to learn* are

considered less stable over time (trait-oriented) (Decius, 2020). Conceptually, we see some overlap between the achievement goals and the motivational components of IWL. However, the achievement goals refer to how lecturers motivate themselves to do their work; the motivational IWL components encompass lecturers' specific learning intentions to learn informally for intrinsic reasons (e.g., because they enjoy it) or extrinsic reasons (e.g., because they expect to be rewarded for their learning success) (cf. Decius et al., 2019). This intention to learn is part of the learning cycle (Tannenbaum et al., 2010)—in our study, however, we focus on the personal antecedents of IWL, which, according to Achievement Goal Theory (Elliot & Church, 1997; see next chapter), we assume to include the achievement goals of lecturers. Therefore, we consider the behavioral and cognitive components of IWL in our study.

We divide these six components into two dimensions: self-based IWL and social-based IWL. With this dichotomy, we follow up on previous research that, for instance, distinguishes between learning from oneself, from others, and from non-interpersonal sources (Noe et al., 2013). Self-based IWL includes those IWL components that the individual performs primarily on their own without the involvement of others (Decius et al., 2019): *trying/applying own ideas* (e.g., trying out new problem-solving concepts in teaching), *anticipatory reflection* (e.g., recognizing pitfalls and planning solution steps), and *subsequent reflection* (e.g., thinking about what one could do better next time). Social-based IWL includes those IWL components in which the individual primarily interacts directly or indirectly with others: *model learning* (e.g., copying successful patterns of action from colleagues), *direct feedback* (e.g., seeking feedback on one's own teaching), and *vicarious feedback* (e.g., sharing experiences with colleagues about typical teaching situations).

2.2 | Linking achievement goals and informal workplace learning

Building on Achievement Goal Theory (Elliot & Church, 1997), achievement goals predict achievement-relevant outcomes such as learning (Hulleman et al., 2010). Therefore, in line with research on workplace goal orientation (e.g., Theis & Bipp, 2019), we argue that the pursuit of specific goals should also guide human behavior in learning situations. In the context of professional learning, there is empirical evidence to support the notion that motivation is associated with the subsequent participation of employees in learning activities (Hurtz & Williams, 2009). As it can be assumed that lecturers working in higher education institutions are mostly in control of their behavior regarding (in)formal learning activities (Diethert et al., 2015), this target group should be suitable for testing the relationship between achievement goals and professional learning. In line with Achievement Goal Theory, we propose that lecturers' engagement in IWL activities depends on their motivation—which is described by lecturers' achievement goals. In previous studies, several achievement goals have been associated with professional learning (Daumiller & Dresel, 2020; Hurtz & Williams, 2009; Kücherer et al., 2020; Nitsche et al., 2013).

Achievement goals refer to the future-focused cognitive representation of competence-related end states and outcomes that individuals strive for through approach and avoidance behaviors (Hulleman et al., 2010; Payne et al., 2007). Achievement goals can be divided into mastery, performance approach, and performance avoidance goals (Elliot & Church, 1997). We will clearly define each achievement goal in our study to avoid using the same term for conceptually different constructs (Hulleman et al., 2010).

Mastery goals relate to help-seeking for school teachers (Butler, 2007; Daumiller et al., 2019), participation and intended participation in formal learning activities (Diethert et al., 2015; Hurtz & Williams, 2009; Nitsche et al., 2013), and reported learning time for formal and informal learning activities of lecturers (Daumiller & Dresel, 2020; Hein et al., 2020). Mastery goals of lecturers can be further subdivided into task and learning goals (each of which includes an approach and an avoidance component; see Daumiller et al., 2019). However, we consider learning approach goals (i.e., the pursuit of further competency development) due to the focus on intrapersonal development in our studies. This pursuit of competency development goals should be conducive to lecturers' professional learning. Learning approach goals may thus motivate lecturers to engage in *self-based* IWL (i.e., trying and applying one's own ideas, anticipatory reflection, and subsequent reflection).

Hypothesis 1. Learning approach goals are positively associated with self-based IWL.

Previous research has shown inconsistent associations between performance goals and professional learning (especially in relation to formal learning; Daumiller et al., 2020; Nitsche et al., 2013). Associations between performance approach goals and learning time invested in formal and informal learning activities differ in bivariate and multivariate analyses (Daumiller & Dresel, 2020). Meta-analytically, neither performance approach goals nor performance avoidance goals have been found to be significantly associated with distal learning outcomes in samples of adults in educational and occupational settings (Payne et al., 2007).

Despite these empirical findings, lecturers with high performance approach and avoidance goals may engage in IWL to achieve favorable judgments of competence and avoid unfavorable judgments by others (cf. Elliot & Church, 1997). We focus on the normative aspect of performance goals in our study because this goal class is rooted in other-related standards that are used in competence assessment (Daumiller et al., 2019; Elliot et al., 2011; Korn & Elliot, 2016), which seems to be particularly relevant for links to social-based IWL. We distinguish performance goals based on other-related standards into normative approach goals (i.e., striving to be more competent than others) and normative avoidance goals (i.e., striving to be no less competent than others), consistent with prior research (Daumiller et al., 2019). Seeking direct feedback, for example, represents a performance situation in which lecturers receive feedback on how they appear to others. Vicarious feedback allows them to compare their own competencies and strategies to others (without risking unfavorable judgments). Because of their other-related norms (Elliot et al., 2011), normative goals should motivate faculty engagement in *social-based* IWL (i.e., model learning, direct feedback, and vicarious feedback).

> **Hypothesis 2.** (a) Normative approach goals and (b) normative avoidance goals are positively associated with social-based IWL.

2.3 | Achievement goals and informal learning in different semester situations

In order to explain the different strengths of the associations between achievement goals and professional learning (Hein et al., 2020; Payne et al., 2007), we aim to investigate under which conditions learning and normative goals are translated into self-based or social-based informal workplace learning. Research has shown that IWL is not only individual-driven but strongly contextualized—work environment factors are highly related to IWL (Cerasoli et al., 2018; Decius, Schaper, & Seifert, 2021). Different stages in the semester may represent an environmental condition that affects the link between achievement goals and IWL, since the tasks of lecturers vary throughout the semester.

As mentioned, we consider three stages in the semester as a framework of reference for working situations in the learning context of lecturers: preparation of teaching at the beginning of the semester, implementation of teaching in the middle of the semester, and wrap-up of teaching at the end of the semester. According to the Rubicon Model of Action Phases, we refer to these three stages as pre-action phase, action phase, and post-action phase (Heckhausen & Kuhl, 1985). In the learning context, these terms have also been used in the Component Model of Self-regulated Learning (Schmitz & Wiese, 2006). The pre-action phase at the beginning of the semester is characterized by lecturers planning their seminar or lecture. In the action phase, lecturers hold seminars/lectures and guide students. In the post-action phase, lecturers evaluate their teaching experiences.

Acquiring new knowledge may be more important in the beginning of the semester when lecturers prepare teaching materials. Obtaining feedback (e.g., in the form of student evaluations of teaching) is more likely to occur in the middle to the end of the semester than at the beginning. From this perspective, the importance of learning goals compared to normative goals may vary as well as how predictive such goal classes are in terms of IWL. For these reasons, we examine whether and how the proposed links between achievement goals and IWL vary throughout the semester.

> Exploratory research question: Do the proposed associations (see Hypotheses 1 and 2) vary throughout different semester situations?
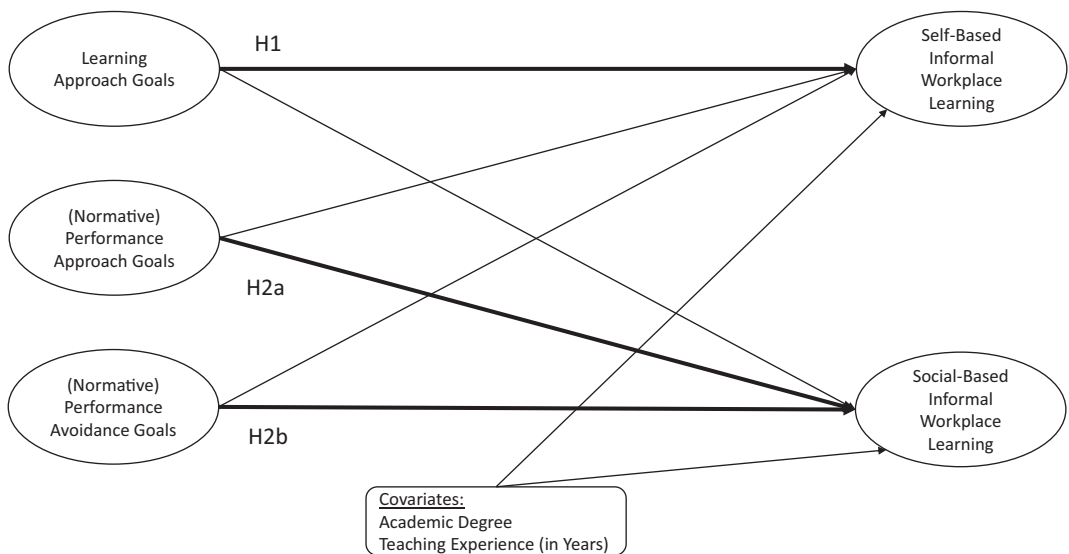
FIGURE 1 Conceptual framework of the hypothesized relationships between achievement goals and informal workplace learning. The thick lines represent the hypothesized relationships (Hypotheses 1 and 2). The thin lines represent paths modeled for the sake of statistical control in the model.

3 | THE PRESENT ARTICLE

In the present article, we report the results of two cross-sectional studies to test the two hypotheses regarding the associations between achievement goals and IWL (see Figure 1). In study 1 ($N = 317$), we analyzed the associations of achievement goals (i.e., learning approach goals, normative approach goals, and normative avoidance goals) with IWL (i.e., self-based and social-based) using a latent structural equation modeling (SEM). We replicated these findings in study 2 ($N = 185$) with a complementary research design, namely, a text-based vignette study in which lecturers were asked to place themselves in each of the three semester situations (i.e., before, during, and after the teaching period). Our purpose here was to investigate the IWL of lecturers more closely in their everyday lives. The vignette study gave us the opportunity to examine possible fluctuations in the associations between achievement goals and self-based/social-based IWL throughout the semester in an exploratory analysis. As the levels of IWL could have varied across the three semester situations as environmental conditions, we included supplementary analyses on this question in an Supplementary Material.[2]

4 | METHODS – STUDY 1

4.1 | Sample ($N = 317$)

A total of 317 lecturers (50.6% female, 47.1% male, 2.3% diverse; age: $M = 39.05$ years, Min $= 23$, Max $= 68$, SD $= 10.71$) employed at seven public universities and six public pedagogical universities in the state of Baden-Württemberg in Germany participated in our cross-sectional online study in October 2018. The lecturers had an average of 8.82 years of teaching experience (Min $= 0$, Max $= 33$, SD $= 7.35$). The sample consisted of doctoral candidates (47.9%), post-docs (41.5%), and full professors (9.9%). It is important to note that most doctoral candidates

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[2]For these analyses, IWL is broken down by the six cognitive and behavioral components of the Octagon Model (Decius et al., 2019) for theoretical reasons (see Supplement Data S1).

are predominantly lecturers (and not students) at German universities and pedagogical universities, and therefore take on tasks in research, teaching, and administration comparable to those of other academic staff. The recruitment strategy resulted in a diverse sample in terms of the ∼50 disciplines in which the lecturers were employed. Most lecturers worked in the humanities (24.9%), followed by the natural sciences (21.8%), social sciences (17.8%), and education (16.7%). Furthermore, smaller groups of participants were working in engineering (10.1%) as well as economics (8.5%).

4.2 | Procedure--Study 1

We invited the lecturers via indirect mail invitations that were forwarded by their secretaries. For this, we contacted 421 secretaries to share the study invitation with the lecturers at their chairs or institutes (response rate: 33.3%). Of the contacted secretaries, 27.1% confirmed that they shared the invitation link, 4.3% of secretaries replied that it was not possible to share the link, and 1.9% of secretaries were unable to share the study link because they were out of office during the time of the study. Secretaries who did not respond could have forwarded the study invitation. Participation in the online study was voluntary for all lecturers. The participants completed a short online survey (which took an average of 15 min to complete) in October or November 2018. The participants had the chance to win a 50 Euro voucher for study participation in study 1.

We assured the participants that their responses would remain confidential and would only be used for scientific purposes in both studies. The study was conducted in full compliance with the ethical guidelines of the German Society for Psychology and the American Psychological Association (APA). At the time the data was acquired, it was not common practice at most German universities to obtain ethical approval for online survey studies on motivation and self-reported learning. The study exclusively used only anonymous survey data. We had no reason to assume that our survey would induce any negative states in the lecturers. At the end of the questionnaire, we asked the study participants for their final consent. Data of participants who refused the final consent was deleted after data collection.

4.3 | Instruments—Study 1

Lecturers reported their current teaching-related achievement goals and IWL in an online survey. We provide McDonalds' Omega (Green & Yang, 2015) as a measure for internal consistencies (see Table 1).

4.3.1 | Achievement goals in teaching

Lecturers reported a selection of their current teaching-related achievement goals (Daumiller et al., 2019). The items included the item stem "In my current teaching activities ...." We assessed lecturers' learning approach (e.g., "... I want to constantly improve my competences"), normative approach (e.g., "... I want to be better than my colleagues,") and normative avoidance goals (e.g., "... I do not want to be worse than my colleagues") with four items each. All 12 items were answered on Likert scales ranging from 1 (do not agree at all) to 8 (completely agree). Confirmatory factor analysis (CFA) speaks to the reliability and structure of this scale, $\chi^2(51) = 132.433$, $p < 0.001$; CFI = 0.977; TLI = 0.970; RMSEA = 0.071, 90% CI = [0.056, 0.086]; SRMR = 0.030.

4.3.2 | Informal workplace learning

We used a slightly adapted scale measuring informal workplace learning (Decius et al., 2019) to assess the behavioral and cognitive components of lecturers' IWL: We changed the wording of the items to maintain a better fit for the

TABLE 1 Descriptive statistics and Pearson correlations among study 1 variables (beneath the diagonal) and study 2 variables (above the diagonal).

Variable	M St1	M St2	SD St1	SD St2	Skew St1	Skew St2	Kurtosis St1	Kurtosis St2	1	2	3
1 Trying/applying own ideas	4.47	6.44	0.77	1.35	−0.47	−1.08	0.89	1.44	**0.73/0.78**	0.20**	0.25***
2 Anticipatory reflection	4.99	5.00	0.96	1.93	−1.20	−0.49	2.65	−0.73	0.27***	**0.90/0.88**	0.71***
3 Subsequent reflection	4.49	5.41	1.08	1.93	−0.63	−0.48	0.61	−0.74	0.29***	0.50***	**0.83/0.86**
4 Model learning	3.86	5.64	1.17	1.93	−0.31	−0.71	−0.29	−0.37	0.15*	0.20***	0.17**
5 Direct feedback	2.30	6.70	1.16	1.29	0.83	−1.33	0.23	2.01	0.08	0.06	0.20***
6 Vicarious feedback	4.18	5.65	1.32	1.87	−0.59	−0.80	−0.24	−0.17	0.16***	0.17***	0.13*
7 Self-based IWL (based on 9 items)	4.65	6.26	0.72	1.21	−1.03	−0.83	3.56	0.26	0.63***	0.80***	0.83***
8 Social-based IWL (based on 9 items)	3.45	5.35	0.99	1.78	−0.15	−0.56	0.01	−0.44	0.16***	0.18**	0.20***
9 Learning approach goals	6.68	6.79	1.31	1.36	−1.48	−1.34	2.94	1.38	0.28***	0.28***	0.30***
10 Normative approach goals	3.53	3.53	2.04	1.94	0.36	0.37	−0.96	−0.91	0.09	0.04	0.12*
11 Normative avoidance goals	4.67	5.36	2.22	2.17	−0.14	−0.57	−1.15	−0.75	0.07	−0.01	0.12
12 Prior e-learning teaching experience[b]	-	2.99	-	1.23	-	0.14	-	−1.00	-	-	-
13 Teaching experience (in years)	8.82	13.22	7.35	10.82	1.06	0.68	0.51	−0.49	−0.01	0.08	−0.04
14 Academic degree[a]	2.75	3.38	0.90	1.27	1.37	0.31	1.33	−1.60	−0.01	0.01	−0.06
Variable	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**
1 Trying/applying own ideas	0.15*	0.56***	0.40***	0.78***	0.22**	0.28***	0.21**	0.18*	0.11	−0.04	−0.06
2 Anticipatory reflection	0.78***	0.33***	0.25***	0.32***	0.90***	0.19**	0.15*	0.22**	−0.08	−0.23**	−0.19*
3 Subsequent reflection	0.81***	0.46***	0.46***	0.43***	0.91***	0.27***	0.18*	0.16*	−0.06	−0.29***	−0.28***
4 Model learning	**0.80/0.89**	0.33***	0.33***	0.31***	0.94***	0.19*	0.18*	0.20**	−0.13	−0.27***	−0.26***
5 Direct feedback	0.45***	**0.86/0.81**	0.47***	0.80***	0.41***	0.23**	0.18*	0.13	−0.08	−0.07	−0.15*
6 Vicarious feedback	0.57***	0.46***	**0.93/0.87**	0.83***	0.31***	0.14	0.28***	0.22**	0.07	−0.14	−0.25***
7 Self-based IWL (based on 9 items)	0.23***	0.16***	0.20***	**0.84/0.86**	0.38***	0.25***	0.29***	0.22**	0.05	−0.11	−0.20**

TABLE 1 (Continued)

Variable	4	5	6	7	8	9	10	11	12	13	14
8	Social-based IWL (based on 9 items)	0.82***	0.77***	0.85***	0.24***	**0.89/0.94**	0.23**	0.18*	0.21**	−0.09	−0.29***	−0.26***
9	Learning approach goals	0.08	0.13*	0.18**	0.38***	0.17**	**0.91/0.93**	0.20**	0.19**	0.10	−0.11	−0.23**
10	Normative approach goals	0.15*	0.17**	−0.01	0.11	0.12*	0.11*	**0.95/0.96**	0.56***	−0.03	−0.02	−0.10
11	Normative avoidance goals	0.24***	0.18**	0.10	0.08	0.21***	0.15*	0.52***	**0.95/0.96**	−0.04	−0.13	−0.18*
12	Prior e-learning teaching experience[b]	-	-	-	-	-	-	-	-	-	0.03	0.05
13	Teaching experience (in years)	−0.25***	−0.22***	−0.31***	0.01	−0.32***	−0.06	0.05	−0.04	-	-	0.68***
14	Academic degree[a]	−0.13*	−0.16*	−0.09	−0.03	−0.15*	0	−0.07	−0.02	−0.02	0.57***	-

Note: N varies from 261 to 317 between constructs in study 1 and from 180 to 185 in study 2. Internal consistency reliabilities (McDonald's Omega) are reported on the diagonal (in bold) for study 1/study 2. IWL scales (constructs 1–8) range from 1 (*do not agree at all*) to 6 (*completely agree*) in study 1 and from 1 (*do not agree at all*) to 8 (*completely agree*) in study 2. Scales for achievement goals (constructs 9–11) range from 1 (*do not agree at all*) to 8 (*completely agree*) in both studies. Prior e-learning experience was measured as a control variable only in study 2, which took place during the semester partially online because of COVID-19 pandemic. Informal workplace learning was measured with a six-point Likert scale in study 1 and an eight-point Likert scale in study 2; achievement goals were measured with an eight-point scale in both studies.

Abbreviations: IWL, informal workplace learning; St1, study 1; St2, study 2.

[a]1 = Master's degree (i.e., PhD student); 2 = Doctoral degree (i.e., post-doc); 3 = Habilitation (i.e., professor).
[b]Scale from 1 (*never*) to 5 (*very often*).
*$p < 0.05$; **$p < 0.01$; ***$p < 0.001$.

university context (e.g., *chair* instead of *company*). We also used gender-neutral language. The self-based IWL scale consists of three components with three items each: *trying and applying own ideas* (e.g., "I try out my own ideas with new tasks"), *anticipatory reflection* (e.g., "Before starting a new task, I think about how I can do my work best"), and *subsequent reflection* (e.g., "When I have finished a new task, I think about the quality of my work").

The social-based IWL scale also consists of three components with three items each: *model learning* (e.g., "I look at how others at my chair are working to improve my work"), *direct feedback* (e.g., "I ask my colleagues when I am not sure how well I worked"), and *vicarious feedback* (e.g., "I ask my colleagues about the methods and tricks they use at work"). We combined the respective three components into one higher order factor each of self-based IWL and social-based IWL. All items were answered on Likert scales ranging from 1 (*do not agree at all*) to 6 (*completely agree*). CFA with both higher-order IWL scales as correlated factors in one model speaks to the reliability and structure of IWL, $\chi^2(128) = 256.544$, $p < 0.001$; CFI = 0.953; TLI = 0.944; RMSEA = 0.059, 90% CI = [0.048, 0.069]; SRMR = 0.052.

4.3.3 | Control variables

Lecturers' professional stages and learning experience might influence both their motivational structures and their professional learning activities. Therefore, we included participants' highest academic degree as a control variable, which was reported in a closed-ended question (1 = *Master's degree*; 2 = *Doctoral degree*; 3 = *Habilitation*). Teaching experience, which lecturers were asked to report in years, served as another control variable.

4.4 | Analyses––Study 1

We conducted structural equation model (SEM) analysis using R (version 4.1.0; R Core Team, 2021) and the lavaan package (Rosseel, 2012). The values for skewness (−1.63 to 1.06) and kurtosis (−1.36 to 3.74) are in a low range for all items, so we can assume normally distributed data (Kline, 2016); therefore, we used the Maximum Likelihood method for model estimation. Non-systematic missing values (0.92%) were imputed using the Full Information Maximum Likelihood (FIML) method, as recommended by Kline (2016) for SEM. We used Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and Standardized Root Mean Square Residual (SRMR) as model fit indices. Absolute fit indices for CFI/TLI ≥0.90, RMSEA ≤0.10, and SRMR ≤0.10 are minimum requirements for a decent model; CFI/TLI ≥0.95, RMSEA ≤0.06, and SRMR ≤0.08 represent a good model fit (Weston & Gore Jr, 2006). If values lie between these limits, "readers should consider the sample size used to estimate the model (using more stringent criteria for samples larger than $N = 500$) and the model complexity (using more stringent criteria for less complex models)" (Weston & Gore Jr, 2006, p. 743).

5 | RESULTS––STUDY 1

Descriptive statistics and correlations can be found below the diagonal in Table 1. SEM analysis revealed good model fits, both for the uncontrolled model, $\chi^2(389) = 716.832$, $p < 0.001$; CFI = 0.950; TLI = 0.944; RMSEA = 0.052, 90% CI = [0.046, 0.057]; SRMR = 0.052, and for the more complex model with academic degree and years of teaching experience as control variables, $\chi^2(495) = 6950.903$, $p < 0.001$; CFI = 0.950; TLI = 0.944; RMSEA = 0.048, 90% CI = [0.042, 0.053]; SRMR = 0.052. In the following, we report the results of the controlled model. Table 2 shows that learning approach goals are positively related to self-based IWL ($\beta = 0.50$, $p < 0.001$); thus, the data from study 1 supports Hypothesis 1. Normative approach goals are not significantly related to social-based IWL

($\beta = 0.03$, $p = 0.703$), providing no support for Hypothesis 2a. In contrast, normative avoidance goals show a positive relationship with social-based IWL ($\beta = 0.19$, $p = 0.021$), supporting Hypothesis 2b.

Following the recommendations of Podsakoff et al. (2012), we used the common method factor technique to assess whether common method variance might be a problem. A model with the three achievement goals as correlating latent factors and the common method factor showed similar latent correlations between the achievement goals as a model without the common method factor (i.e., 0.07/0.14; −0.08/0.11; 0.55/0.56). This suggests that there is no bias due to common method variance. A model with the six latent IWL factors did not converge once we added the common method factor, possibly because we could not account for the more complex second-order structure of the IWL construct in the analysis. Therefore, we additionally use Harman's single factor test, which, however, has some limitations (Podsakoff et al., 2003). The model in which all items from achievement goals and IWL loaded on a single factor yielded a substantially worse model fit than the theory-guided models examined, $\chi^2(405) = 5145.231$, $p < 0.001$; CFI = 0.262; TLI = 0.207; RMSEA = 0.192, 90% CI = [0.187, 0.197]; SRMR = 0.198. Although we were unable to generate definite evidence, we conclude on the basis of the two different techniques employed that common method bias is rather unlikely.

6 | METHODS––STUDY 2

6.1 | Sample ($N = 185$)

A total of 266 lecturers participated in our study. We excluded 12 participants due to the lack of teaching experience and 62 participants due to implausibly low completion times (below 200 s; average time to complete the survey was 10.40 min, SD = 7.16 min). This resulted in a sample of 192 lecturers. We also excluded seven participants due to systematic missing values on the focal variables (i.e., achievement goals and IWL). A total of 185 lecturers (53.3% female, 45.0% male, 1.7% diverse, age: 42.45 years on average, Min = 25, Max = 72, SD = 11.66 years) employed at four public universities in Austria reported on their achievement goals and IWL. The professional contexts in universities in Germany and Austria share many structural similarities.[3] Participation in our cross-sectional online study was possible from September to December 2020. At Austrian universities, this semester was the first complete digital semester due to the COVID-19 pandemic (after they had to spontaneously switch from present to digital teaching in the previous semester). Most of the lecturers reported previous experiences with digital teaching (89.5%). On average, the lecturers had 13.24 years of teaching experience (Min = 0, Max = 42, SD = 10.79). The Austrian sample consisted of doctoral candidates (33.1%), post-docs (31.5%), and full professors (35.4%). Lecturers worked in different disciplines. Most lecturers worked in the natural sciences (32.0%), followed by humanities (21.5%), education (18.8%), and the social sciences (12.1%). Furthermore, smaller groups of participants worked in law (7.2%), economics (6.1%), and engineering (2.2%).

6.2 | Procedure––Study 2

The procedure for study invitation, anonymity, and ethical approval was similar to study 1. We contacted 498 secretaries to share the study invitation with the lecturers at their chairs or institutes (response rate: 63.1%). Of the

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[3]The academic staff at Universities in Germany and Austria take on tasks in both teaching and research and can be described as integrated systems (Kwiek & Antonowicz, 2013). Academic staff in both countries spend on average most hours on research-related activities (39% of the working hours in Austria and 41% of the working hours in Germany; Kwiek & Antonowicz, 2013). The proportion of temporary positions is high (see Huisman et al., 2002, for details on temporary contracts in Europe), work conditions for junior academics are precarious (Gallas, 2018), doctoral candidates conduct teaching (Kwiek & Antonowicz, 2013), and the proportion of junior academics within the academic staff is high in both countries. Furthermore, the same language, German is spoken in both countries. Due to the similarities, there is a significant fluctuation of academic staff between Austria and Germany.

TABLE 2 Associations between achievement goals and informal workplace learning in study 1 and study 2.

Independent variable	Self-based informal workplace learning								Social-based informal workplace learning							
	Study 1				Study 2				Study 1				Study 2			
	B	β	SE	p	B	β	SE	p	B	β	SE	p	B	β	SE	p
Without controls																
Learning approach goals	0.212	0.459	0.033	<0.001	0.170	0.205	0.078	0.030	0.099	0.145	0.049	0.042	0.198	0.137	0.119	0.095
Normative approach goals	0.030	0.102	0.025	0.241	0.083	0.180	0.051	0.099	−0.002	−0.004	0.036	0.964	0.043	0.053	0.078	0.581
Normative avoidance goals	−0.003	−0.010	0.025	0.918	0.067	0.164	0.045	0.134	0.092	0.234	0.034	0.007	0.146	0.204	0.071	0.038
With control for academic demographics																
Learning approach goals	0.213	0.499	0.031	<0.001	0.118	0.161	0.071	0.099	0.087	0.131	0.045	0.056	0.137	0.112	0.101	0.175
Normative approach goals	0.021	0.078	0.024	0.374	0.096	0.190	0.057	0.089	0.013	0.031	0.034	0.703	0.062	0.073	0.081	0.446
Normative avoidance goals	−0.002	−0.007	0.023	0.937	0.069	0.152	0.050	0.168	0.074	0.192	0.032	0.021	0.119	0.158	0.074	0.109
Academic degree[a]	−0.051	−0.085	0.054	0.350	−0.132	−0.175	0.091	0.148	0.052	0.056	0.076	0.493	−0.097	−0.077	0.131	0.456
Teaching experience (in years)	0.006	0.079	0.007	0.392	0.003	0.033	0.010	0.772	−0.044	−0.385	0.009	<0.001	−0.030	−0.200	0.015	0.049
Prior e-learning teaching experience[b]	-	-	-	-	0.049	0.062	0.068	0.478	-	-	-	-	−0.144	−0.111	0.097	0.136

Note: Study 1: N = 317. Study 2: N = 185. Prior e-learning experience was measured as a control variable only in study 2, which took place during the semester partially online because of COVID-19 pandemic. Informal workplace learning was measured with a six-point Likert scale in study 1 and an eight-point Likert scale in study 2; achievement goals were measured with an eight-point scale in both studies.

Abbreviations: B, unstandardized coefficient; β, standardized coefficient.

[a]1 = Master's degree (i.e., PhD student); 2 = Doctoral degree (i.e., post-doc); 3 = Habilitation (i.e., professor).

[b]Scale from 1 (*never*) to 5 (*very often*).

contacted secretaries, 57.2% confirmed that they shared the invitation link, and 5.8% of secretaries answered that it was not possible to share the link. The participants completed a short online survey (which took them on average 13 min) in October or November 2018. The participants had the opportunity to "win" one of the four trees that would be planted in their name.

Participants reported their current teaching-related achievement goals and were asked to provide details of their teaching-related IWL in three situations. We provided the lecturers with three short vignette texts and asked them to imagine how they would act in these situations: (a) preparing to teach before the start of the semester, (b) teaching within the semester, and (c) revising their teaching at the end of the semester if they were to teach the same content again. Each lecturer received all three vignette texts in the order listed. After the presentation of each vignette text, the lecturers were asked to respond to the IWL items with reference in relation to the situation presented. The IWL items were presented randomly to reduce bias due to order effects. The translated instructions are printed in Appendix A.

To check whether the lecturers had understood the instructional texts, we used a short task after each scenario description to raise participants' awareness of the situation presented: Participants had to answer which situation they should be in after reading the instructions. We then informed the lecturers again what situation they should imagine, so that they were primed with the semester situations twice before answering the IWL questions. In addition, we used situation-specific item wording to assess IWL for different semester situations. About 62.4% consistently answered the task correctly. Both groups (correct answers vs. incorrect answers) did not differ significantly in their reported IWL, $F(6, 179) = 0.467$, $p = 0.832$. Therefore, we kept all participants in the sample. We pretested our procedure and scenarios using a qualitative interview ($N = 10$, 80.0% female, 20.0% male, age: M $= 27.90$ years, SD $= 2.64$) on comprehensibility and realism.

6.3 | Instruments—Study 2

6.3.1 | Achievement goals in teaching

For measuring achievement goals, we used the same scale as in study 1. We provide McDonalds' Omega (Green & Yang, 2015) as a measure for internal consistencies (see Table 1).

6.3.2 | Informal workplace learning

For IWL, we used a short scale with a small number of items to measure situation-specific IWL after the presentation of each of the three vignette texts, as this is the best way to capture the current experience (see also Goetz et al., 2016). To assess the behavioral and cognitive components of informal workplace learning (Decius et al., 2019), we selected single items for each subscale. We adapted the wording of the items (e.g., *preparation of digital teaching, conducting, and revising digital teaching*) to maintain situation-specific items. We selected the items based on their content that best fit to the situation.[4] In the adapted items we used gender neutral language. All items were answered on Likert-type scales ranging from 1 (*do not agree at all*) to 8 (*agree completely*).

6.3.3 | Control variables

For academic degree, we used the same question as in study 1. We used an open-ended question to capture lecturers' teaching experience: "*Since when have you been teaching courses at the university/college? Please indicate the*

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[4]The six items used were based on the following numbered items from Decius et al. (2019): 2, 4, 9, 10, 15, 16.

year since which you have been teaching (e.g., 2007)." We transformed this variable to teaching experience in years by subtracting the self-reported value from the year the study was conducted. Because study 2 largely took place during a virtual semester due to the COVID-19 pandemic, we also controlled for prior experience with e-learning in their teaching, using one item on a Likert-type scale ranging from 1 (*never*) to 5 (*very often*): "*How often did you provide courses using e-learning prior to this semester?*"

6.4 | Analyses—Study 2

As in study 1, we conducted SEM analysis using R (version 4.1.0; R Core Team, 2021) and the lavaan package (Rosseel, 2012). The values for skewness (-1.70 to 0.51) and kurtosis (-1.10 to 3.69) are in a low range for all items, so we can assume that the data are normally distributed (Kline, 2016). Due to the fact that each lecturer was presented with the same IWL items three times—each time after the text vignette for one of the three semester phases—we added three uncorrelated methodological control factors to the model in order to statistically control for this interdependence. Therefore, each item was loaded in the model not only on its content factor (i.e., self-based IWL or social-based IWL), but also on its method factor (i.e., situation 1, situation 2, and situation 3).

7 | RESULTS—STUDY 2

Descriptive statistics and correlations are shown above the diagonal in Table 1. SEM analysis revealed acceptable model fits, both for the uncontrolled model, $\chi^2(362) = 679.764$, $p < 0.001$; CFI $= 0.936$; TLI $= 0.924$; RMSEA $= 0.069$, 90% CI $= [0.061, 0.077]$; SRMR $= 0.055$, and for the more complex model with academic degree, years of teaching experience, and prior e-learning teaching experience as control variables, $\chi^2(446) = 794.333$, $p < 0.001$; CFI $= 0.931$; TLI $= 0.919$; RMSEA $= 0.065$, 90% CI $= [0.058, 0.072]$; SRMR $= 0.062$.

Table 2 shows that in the uncontrolled model, learning approach goals are significantly positively related to self-based IWL; however, the relationship is not stable when the control variables are included ($\beta = 0.16$, $p = 0.099$). Thus, the data from study 2 do not provide sustained support for Hypothesis 1. The picture looks similar for normative avoidance goals and social-based IWL: While a significant positive relationship emerges in the uncontrolled model, it is no longer apparent in the controlled model ($\beta = 0.16$, $p = 0.109$). Thus, Hypothesis 2b is also not supported by the data. Hypothesis 2a—the hypothesized relationship between normative approach goals and social-based IWL—is not significant in either the uncontrolled or controlled model ($\beta = 0.07$, $p = 0.446$).

7.1 | Exploratory analysis and results—Achievement goals and informal learning in different semester situations

With regard to our exploratory question, we computed an SEM analysis similar to that used to test Hypotheses 1 and 2 in study 2 to identify possible differential associations between achievement goals and self-based IWL and social-based IWL. However, instead of using one latent factor for both self-based and social-based IWL, we formed three latent factors. These factors were separated by semester situations. For instance, we modeled the three items for self-based IWL (i.e., trying/applying own ideas, anticipatory reflection, and subsequent reflection) that were asked after the vignette about pre-action phase as manifest indicators of the latent factor self-based IWL in the first semester situation (i.e., in the pre-action phase).

SEM analysis with academic degree, years of teaching experience, and prior e-learning teaching experience as control variables revealed an acceptable model fit, $\chi^2(423) = 718.054$, $p < 0.001$; CFI $= 0.942$; TLI $= 0.927$; RMSEA $= 0.061$, 90% CI $= [0.054, 0.069]$; SRMR $= 0.070$. SEM analysis results are depicted in Figure 2. Regarding self-based IWL, learning approach goals are positively related to self-based IWL in the pre-action phase and in the
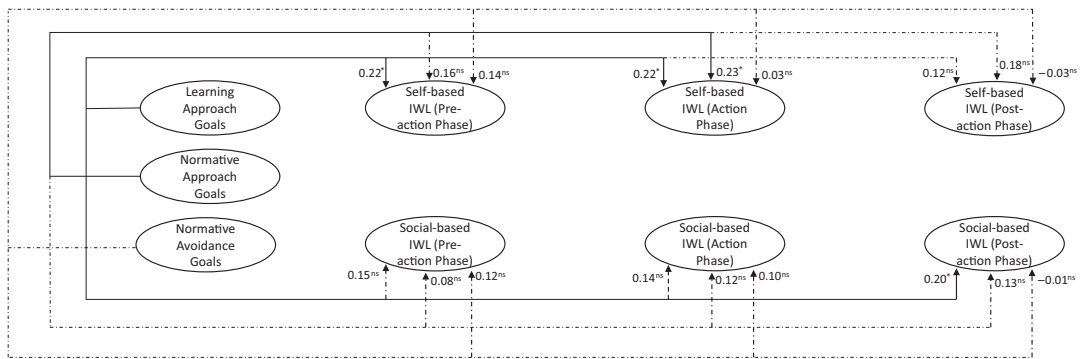
FIGURE 2 Associations between achievement goals and informal learning separately by semester situations. $N = 185$. IWL, informal workplace learning. Standardized coefficients are shown. The Model is controlled for academic degree, teaching experience in years, and prior e-learning teaching experience.

action phase, but not in the post-action phase. Normative approach goals correlate positively with self-based IWL only in the action phase, normative avoidance goals not at all. Regarding social-based IWL, there is a significant correlation between learning approach goals and social-based IWL only in the post-action phase.

8 | DISCUSSION

Study 1 provides support for the relationship between learning approach goals and self-based IWL (Hypothesis 1) and between normative avoidance goals and social-based IWL (Hypothesis 2b), but not between normative approach goals and social-based IWL (Hypothesis 2a). Associations with the same tendency emerge in study 2 when considering the model without including the control variables. However, when controlling for academic degree, years of teaching experience, and prior e-learning teaching experience, the relationships are no longer significant. Thus, study 2 provides no or only very limited support for the hypothesized relationships. However, the small sample size ($N = 185$) must be taken into account: a post hoc sensitivity power analysis performed with gPower (Faul et al., 2007) for correlative designs revealed that, assuming a desired power of 80% and an alpha level of 5%, an effect size of $\rho = 0.18$ could still have been demonstrated in study 2.

Surprisingly, normative approach goals are not related to social-based IWL. Apparently, lecturers who want to appear more competent than others do not consider it a primary strategy to undertake informal learning efforts for this purpose. It is possible that these lecturers rather rely on formal training, as this could be perceived as more valuable due to the stronger structuring in terms of learning goals, time, and setting (Kyndt & Baert, 2013) or, from the lecturers' perspective, and as it could send a signal to colleagues that they engage in self-development. Those who do not learn informally, but participate in formal training, are learning outwardly for all to see. This could be highly relevant for lecturers who want to be evaluated as capable by others. Regarding the finding of associations with IWL only for normative avoidance goals, but not for normative approach goals, we would like to note that inconsistent links between (normative) performance goals and indicators of professional learning are indeed consistent with previous research (Daumiller et al., 2020; Daumiller & Dresel, 2020; Nitsche et al., 2013).

The calculations in study 2 to investigate the exploratory research question whether the associations hypothesized in Hypotheses 1 and 2 vary between different semester situations showed only minor differences: learning approach goals play a role in the pre-actional phase, in the action phase, and in the post-action phase, but in the first two semester phases only related with regard to self-based IWL and in the third semester phase only with regard to social-based IWL. Lecturers who are highly motivated to learn something seem to learn especially in a self-based way during teaching preparation and execution, for example, through their own trial and error and reflection (Decius et al., 2019). However, when evaluating their own teaching at the end of the semester, these lecturers seem to rely more on social-based learning, such

as feedback and exchange with others. Normative approach goals show similarly high coefficients in the three semester phases related to self-based IWL (although only the relationship in the action phase is significant); the nonsignificant coefficients related to social-based IWL are also equally high in the three semester phases. Normative avoidance goals do not show significant associations with IWL in the three semester phases; however, the nonsignificant coefficients related to self-based IWL in the pre-action phase and related to social-based IWL in the pre-action phase and action phase are similarly large, albeit small. In the post-action phase, however, the coefficients for both IWL dimensions are close to zero. Overall, we find that the relationships between achievement goals and IWL are relatively constant across the semester phases, with the minor exception of the relationship between learning approach goals and IWL.

8.1 | Limitations

Despite the strength provided by the combination of a field survey and a vignette design survey with two independent samples, our study also has limitations. First and foremost, both studies have a cross-sectional design, so we cannot draw causal inferences. Due to the conceptually implied rather high stability of achievement goals—which, however, varies across goal categories (Fryer & Elliot, 2007; Muis & Edwards, 2009; Praetorius et al., 2014)—we can only assume that goals might have an impact on IWL activities, but we cannot prove this empirically. Future studies could use longitudinal designs to test the putative effect of goals on IWL or to detect interactions (e.g., in a cross-lagged panel design). In addition, because we used self-report data, we cannot rule out bias due to common method variance and social desirability (Podsakoff et al., 2003, 2012). All of the universities of the lecturers surveyed in study 1 are located in one federal state of Germany (i.e., Baden-Württemberg). This regional focus of the survey might limit the generalizability of our findings.

In study 2, we used vignettes to represent the three semester situations. Although the vignette texts were pretested with 10 lecturers to ensure content validity of the vignette texts, this is a mental simulation. We cannot control how well the lecturers were able to empathize with the three situations. However, a methodological strength of our study is that we presented the IWL items in a randomized order. Instead of simulating the three semester time points with vignettes, future studies should use three measurement time points during the semester. In contrast to a vignette design, which keeps influences such as professional and personal stressors constant throughout the semester, a longitudinal approach might also introduce bias—but scholars can additionally collect variables such as job stressors and thus control for their influences. Time pressure, for instance, has been found to be positively related to exhaustion, and negatively related to work engagement and self-esteem (Schilbach et al., 2022). Overall, the advantages of the more realistic longitudinal design should outweigh potential biases.

In addition, we cannot rule out the possibility that the sudden shift to teaching online due to the COVID-19 pandemic may have influenced our study results in the second study. Achievement goals played a role in how the academic staff experienced the transition to online teaching (compare Daumiller et al., 2021, for associations with attitudes toward the shift in teaching, burnout levels, and teaching quality). The sampling for study 2 was conducted in the semester following the start of the pandemic. Lecturers had already had a semester to adjust to the new situation, which may have reduced the possible influence of the pandemic situation. Nevertheless, we controlled for prior e-learning experience in study 2 to minimize situational bias.

8.2 | Practical implications

Motivation in the form of achievement goals is related to IWL activities, mostly consistently across different semester situations. Learning approach goals are related to self-based IWL, and normative avoidance goals are related to social-based IWL. These findings serve as a starting point for promoting IWL among lecturers in higher education. In practice, it may also be possible to activate lecturers' mastery goals through instructions similar to those used with student samples (Elliot & Harackiewicz, 1996; Elliott & Dweck, 1988). Such instructions could emphasize the importance of development, teaching quality, and improvement in teaching based on individual changes over time. Such

goal-activating instructions could be given within formal trainings or by superiors (e.g., full professors in the case of PhD candidates), preferably combined with transformational leadership behaviors, which show positive correlations with informal learning among employees (Zia et al., 2022). For example, superiors could highlight the importance of individual development in teaching across semesters by comparing current teaching evaluations with previous ones and identifying individual learning potential; they could also act as role models by modeling positive behavior and thus inspiring others. As the reported studies are no interventional studies, it is not clear whether the mentioned interventions can activate lecturers' achievement goals and thus influence their professional learning.

Our results also show that the relationship between learning approach goals and self-based IWL is particularly strong at the beginning and middle of the semester. At the end of the semester, however, there is an exploratory positive relationship between learning approach goals and social-based IWL. Faculty developers can use this knowledge to increase lecturers' awareness of their preferences in the intrinsic use of self- and social-based IWL throughout the semester. This raises the question of whether faculty development and their teaching quality would benefit from promoting specific IWL strategies at particular times during the semester. At this point, it is not clear whether faculty should be encouraged to engage in the IWL strategy for which they are motivated by their personal achievement goals at certain points in the semester (e.g., self-based from the beginning to the middle of the semester and social-based at the end of the semester). Potential strategies for faculty developers are to create sufficient opportunities and time for their own experimentation and reflection during the preparation and delivery of teaching, but to involve colleagues in the evaluation of teaching (cf. Cerasoli et al., 2018). In terms of university policy, this also means that faculty exchanges (which may be officially encouraged) should be scheduled at the end of the semester to allow for a summative evaluation of teaching (cf. Knight, 2002).

On the other hand, it might be beneficial to encourage those strategies for which they are less motivated at certain points in the semester (e.g., social-based from the beginning to the middle of the semester and self-based at the end of the semester). In this way, external support from faculty developers could compensate for dips in motivation. Regular opportunities such as peer observation and job shadowing (Yiend et al., 2014) could be offered, especially at the beginning and middle of the semester, as research has shown that participation in and reflection on formal training can stimulate IWL (Richter et al., 2020). Opportunities for individual reflection on one's own courses could be offered at the end of the semester to provide lecturers with a setting and thus time and focus for evaluation. Future research should aim to answer the question of when to encourage IWL and which IWL strategies would most benefit lecturers' teaching quality.

8.3 | Future research agenda

Our study shows differences in the patterns between achievement goals and IWL activities. Thus, we suggest that future studies also consider IWL as a multidimensional construct (cf. Decius et al., 2019) and distinguish between self-based and social-based IWL. Although our results support the stability of the correlations between achievement goals and IWL across different semester situations, we would like to suggest empirical testing. For this purpose, longitudinal quantitative surveys are useful, but also qualitative interviews to learn more about the fluctuations of IWL and the dynamics between achievement goals and IWL during the semester.

The results of study 2 suggest that the associations between achievement goals and IWL depend on the teaching experience and different career stages of lecturers. While we were able to replicate the results of study 1 in the uncontrolled model in study 2, no significant associations emerged when we included the control variables. Future studies could explicitly examine academic career variables as moderators (see Zacher et al., 2019), for instance, the influence of a fixed-term contract versus an open-ended contract and associated differences in lecturers' research and teaching requirements. It might be, for example, that tenured, full professors are more engaged in teaching than junior faculty who are struggling to find a long-term perspective in academia and thus need to focus their work on research—which is likely to entail influences on achievement goals, IWL (see also correlations in Table 1), and the relationship between the two constructs.

In our study, we focused on the teaching activities of university lecturers. However, future studies could address the issue to what extent the same correlational patterns between achievement goals and IWL emerge with respect to lecturers' research activities. Depending on the type of employment, the mission statement of the university, and the lecturers' self-concept, research is a more or less important part of their professional activities. Scholars could investigate whether IWL activities used in teaching and research differ and whether possible differences depend on achievement goals. Furthermore, it should be investigated whether IWL related to research activities is independent of the semester situation or whether there are interactions with teaching phases—possibly influenced by the available time resources of lecturers, as different work demands force university lecturers to constantly decide how much time they want to invest in research versus teaching preparation (Esdar et al., 2016). Likewise, studies could examine whether informal learning by faculty is related to, or even promotes, informal learning by students (see Decius et al., 2022).

Our study results show which achievement goals are associated with which IWL activities (i.e., self-based IWL or social-based IWL). However, the efficiency and effectiveness of these activities were not part of our study. Future research could integrate learning outcomes and examine which activities best produce objective learning outcomes (cf. Cerasoli et al., 2018; e.g., knowledge gain as a proximal outcome, and teaching evaluation results as an indicator of good teaching as a distal outcome). This would also be relevant for achievement goal research, as it would show which achievement goals could lead to outcomes such as competence and performance via IWL as a mediator.

9 | CONCLUSION

The presented cross-sectional research, including a vignette-based study, provides new insights into the relationships between achievement goals and informal workplace learning among lecturers in higher education institutions throughout different phases of the semester. Key findings from our two-study paper are that IWL may depend on the level of achievement goals and that these relationships are largely consistent across different simulated semester situations (i.e., before, during, and after the teaching phase). However, learning approach goals of lecturers in particular seem to be associated with self-based IWL at the beginning and during the semester. The findings of our study bridge the gap between achievement goal research and IWL research and suggest possibilities for a stronger integration of these research strands in future research. Overall, the ideas presented in this article provide a foundation for future research with the goal of promoting IWL among lecturers in higher education by taking into account both personal motivational preferences and situational requirements.

DATA AVAILABILITY STATEMENT
Data are available by the authors on reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

APPENDIX A

A.1 | Instruction texts—Study 2

"Below, you will be presented with three hypothetical scenarios to imagine. To do this, you will first be asked, one after the other, to put yourself in the situation of designing your teaching before the semester, during the semester, and after the semester. You are then asked to indicate the extent to which various approaches would apply to you in these situations." (English translation)

A.2 | Scenario 1—Before the semester

"Imagine you need to prepare your digital teaching before the next semester. As you probably know, digital teaching can include, for example, learning videos, interactive online sessions, or the use of online forums. You know that digital teaching comes with many challenges and you want to improve your current digital teaching; you want to keep this in mind when preparing." (English translation)

A.3 | Scenario 2—Within the semester

"Now imagine you want to do your digital teaching during the semester. As you probably know, digital teaching can include, for example, learning videos, interactive online sessions, or the use of online forums. After all, there is always something to improve, so think about what you can adapt when conducting your teaching." (English translation)

A.4 | Scenario 3—After the semester

"Finally, imagine that you want to revise your digital teaching at the end of the semester, since you will be offering this course again in a year's time. As you probably know, digital teaching can include, for example, learning videos, interactive online sessions, or the use of online forums. The last semester has passed, and you have noticed some things that you could improve about the course. You want to consider these ideas in the revision." (English translation)