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Three facets of lecturers' support and relations with students' self-efficacy and performance regarding presentations

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The present study aimed to investigate how students' presentation self-efficacy and presentation performance are associated with perceived lecturer support within a four-month university course that applied seven specific design principles to promote presentation competence. One hundred fifty-eight students participated in the presentation course. The students reported their self-efficacy regarding presentation skills at the beginning and the end of the course and rated their lecturers' support behaviors — particularly providing good course materials, explaining clearly, and giving feedback — halfway through the course. Presentation performance was assessed after course completion through a practical presentation exam rated by independent raters. We applied established and validated measures to assess self-efficacy, lecturer support, and presentation performance. The study followed a quasi-experimental one-group pretest-posttest field design. Latent change score modeling revealed a significant increase in students' presentation self-efficacy over the course. This increase was positively associated with lecturer support through good course materials and feedback but negatively associated with clear explanations. Among the three support behaviors, only feedback also predicted better performance in the final presentation exam. Findings suggest that adequate course materials and lecturers' feedback are significant factors that foster students' presentation self-efficacy. The inhibitory effect of explaining clearly may relate to difficulties for students in performing complex presentation behaviors during training, leading to a discrepancy between explanation and practice, and thus increasing awareness of their own competence gaps. Overall, the findings highlight the significance of courses designed according to specific principles and complemented by targeted lecturer support in enhancing students' presentation self-efficacy and performance.

KEYWORDS

self-efficacy, presentation competence, lecturer support behavior, socialcognitive theory, presentation performance

Introduction

University students across all disciplines have increasingly been taught how to perform adequately during presentations (e.g., Campbell et al., 2001; De Grez et al., 2009b; Smith and Sodano, 2011). This may not come as a surprise since presentation competence constitutes a primary requirement to enter business life and enhance career opportunities. It also represents a supporting factor for successful lifelong learning (e.g., Boud and Falchikov, 2006; Chan, 2011; Dunbar et al., 2006; Ruth et al., 2025; Ulinski and O'callaghan, 2002). In this regard, presentation competence represents the behavioral capability to

competently perform at presentations, and thus combines required knowledge, skills and attitudes for speaking in front of an audience. Depending on the context, the presenter's goal may be to provide information, entertain, convince, build relations, or induce emotions (e.g., De Grez, 2009; Herbein et al., 2021; Liang and Kelsen, 2018; Ringeisen et al., 2019). The interplay of the three competence-constituting components – knowledge, skills and attitudes - leads to the development of presentation competence, which impacts the actual behaviors demonstrated, as well as the organization and preparation of future presentations (e.g., De Grez, 2009; Herbein et al., 2021; Liang and Kelsen, 2018; Ringeisen et al., 2019).

As a response to the growing interest in developing presentation competence in the academic context, research has made an effort to identify supportive lecturer behaviors that are proposed to help students build their respective competencies (e.g., Campbell et al., 2001; De Grez et al., 2009b; Kerby and Romine, 2009). Such forms of instructional support have been shown to be among the most influential predictors of student learning and academic success (e.g., Schneider and Preckel, 2017; Usher and Pajares, 2008), constituting an important factor in the acquisition of presentation competencies (e.g., De Grez et al., 2009a; Kerby and Romine, 2009; Murillo-Zamorano and Montanero, 2018). However, due to its unique characteristics, a thorough investigation of the role of lecturer support for presentation competence requires a differentiated and context-specific perspective (e.g., Herbein et al., 2021). Therefore, the present research required a model specifying the major antecedents and outcomes of presentation competence in reference to key characteristics of the respective context. In this matter, Van Ginkel et al. (2015) conceived a specialized conceptual model to foster students' presentation competence in higher education. Based on a synthesis of 52 studies conducted over the past two decades, the model provides a comprehensive framework outlining essential features of a conducive learning environment to foster presentation performance among university students. Assuming an interplay of characteristics of the learning environment like supportive lecturer behaviors, students' self-efficacy, and their performance during presentations, the model specifies seven design principles on how presentation training should be conducted to enhance university students' self-efficacy and therefore, their performance in presenting. According to the model, relevant forms of lecturer support encompass the conveyance of presentation-related learning objectives to students in written or oral form as well as the provision of explicit presentation-related feedback to students.

Although based on existing research, Van Ginkel et al.'s (2015) model lacks an overall theoretical embedding that connects the proposed lecturer support behaviors to self-efficacy. In this matter, social cognitive theory (SCT; Bandura, 1997) constitutes an appropriate additional framework, as it does not only define the concept of self-efficacy and ways how to enhance it but also allows to conceptualize lecturer support behaviors as sources of self-efficacy. SCT emphasizes the interaction between personal factors (e.g., self-efficacy), behaviors (e.g., presentation performance) and environmental influences (e.g., lecturer support). This is not only essential for understanding the comprehensive development of presentation skills, but is also in accordance with Van Ginkel et al.'s (2015) aforementioned assumed interplay of learning environment's characteristics. Previous higher education studies in the particular context of presenting have successfully applied SCT (e.g., Brown and Morrissey, 2004; Cavanagh et al., 2019; De Grez et al., 2009a,b), highlighting its specificity in examining the effects on self-efficacy and presentation performance. By integrating SCT, the practical framework of Van Ginkel et al.'s (2015) model is complemented, allowing for a more precise investigation of the effects on self-efficacy and presentation performance.

In educational settings, self-efficacy constitutes a dispositional competence belief that promotes self-regulated learning to obtain specific behavioral skills. Regarding presenting, self-efficacy denotes beliefs in one's capabilities to engage effectively in (non-)verbal behaviors (such as appropriate body language and clear pronunciation), which are required to perform well in presentation situations (e.g., De Grez et al., 2009a; Herbein et al., 2021). According to SCT, self-efficacy may be enhanced by educators primarily through verbal persuasion, which in educational settings mostly comprises instructional practices such as lecturer support (e.g., Bandura, 1989; Van Dinther et al., 2011; Van Ginkel et al., 2015). Aligned with Lippke's definition (2020, p. 3), educators can provide verbal persuasion in oral or written format, which may take the quality of "verbal feedback and instruction [that] can come from other people, texts, or self-instruction" (p. 3). Accordingly, lecturers can influence the improvement of students' self-efficacy beliefs through the quality of their persuasive support behaviors (e.g., Bandura, 1989; Margolis and Mccabe, 2006), which in the context of presenting may be provided through oral instruction (in this study: explaining clearly), written self-instruction (here: providing good course materials), and oral feedback (Van Ginkel et al., 2015; Figure 1).

Although Van Ginkel et al.'s (2015) conceptual model provides a valuable framework for fostering students' presentation self-efficacy and performance through seven design principles, a thorough investigation and combined analysis of the lecturer support behaviors specified in the model, as well as a theoretical underpinning that explains how these behaviors affect students' outcomes, are still lacking. To address this, the present study combined Van Ginkel et al.'s model with SCT (Bandura, 1997) to examine how lecturer support behaviors relate to students' presentation self-efficacy and performance in university courses designed to foster presentation competence. We implemented the presentation seminars and the lecturer's support behaviors as proposed by the seven design principles in Van Ginkel et al.'s (2015) model. Drawing on the assumptions of SCT allowed us to define the concept of self-efficacy in relation to its antecedents and to conceptualize lecturer support behaviors as sources of self-efficacy, specifically as forms of verbal persuasion (see Figure 1 and the subsequent section).

Embedding design principles for presentation training into a social cognitive approach

As aforementioned, Van Ginkel et al. (2015) introduced a conceptual model drawing on a synthesis of empirical findings that identify relevant factors to support building presentation

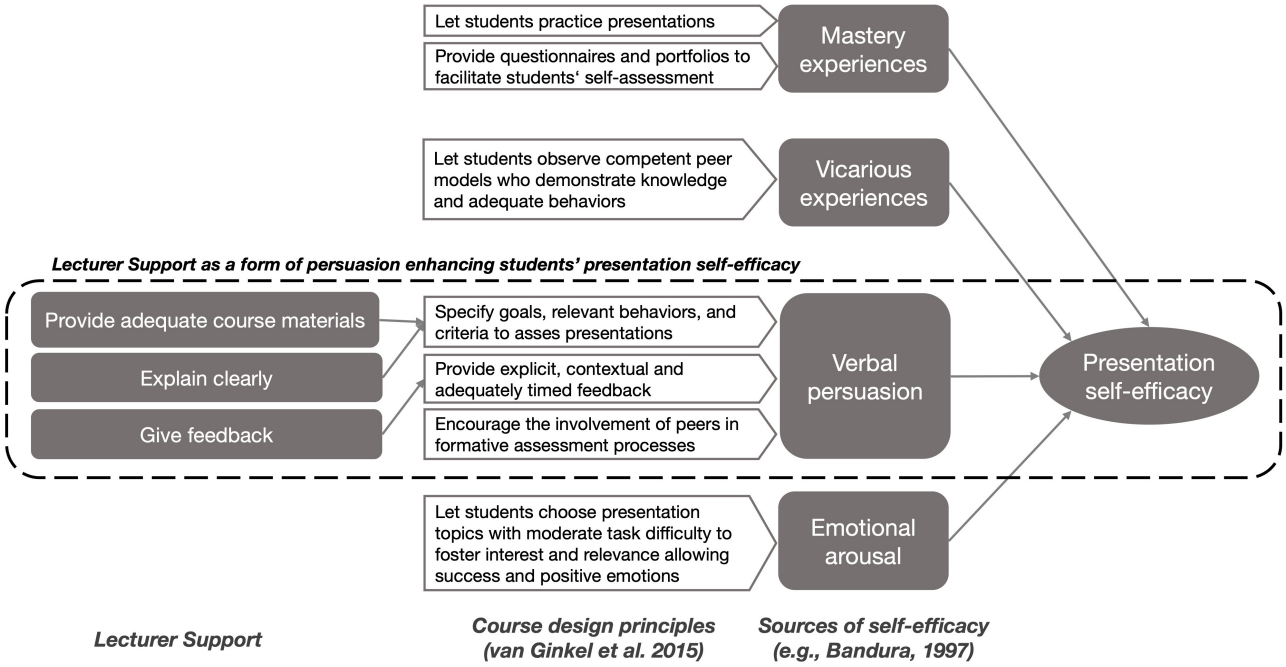

FIGURE 1
Van Ginkel et al.'s (2015) Design principles embedded into the four sources of self-efficacy.

competence at the university level. It specifies the relations between student characteristics such as self-efficacy, environmental characteristics such as lecturer support, learning processes such as model learning, and outcomes such as performance. The authors deduced seven educational design principles, which specify how contents and structures of presentation seminars should be conducted and in which support behaviors lecturers should engage to foster self-efficacy and presentation performance in students.

SCT (e.g., Bandura, 1997) as an overarching framework specifies the underlying processes fostering presentation self-efficacy by defining the association of self-efficacy and intricate behaviors such as presenting, its changes, and the sources of the respective competence beliefs (e.g., Cavanagh et al., 2019; De Grez et al., 2009a; Lippke, 2020; Herbein et al., 2021). It acknowledges four sources of self-efficacy: mastery experiences, vicarious experiences, verbal persuasion, and emotional arousal. Mastery experiences relate to previous performance accomplishments, which raise expectations to cope with similar situations in the future. Vicarious experiences refer to all experiences that are built on observing others who successfully handle the respective situations. Verbal persuasion may be provided in oral and written format from others that help individuals to master the situations under question. Emotional experiences describe the interpretation of accompanying physio-affective states which influence one's behavior by means of suggesting (in)competence and (un)controllability (e.g., Bandura, 1977, 1997; Lippke, 2020; Reeve, 2018; Schunk, 1995).

In education, verbal persuasion is exemplified through supportive teaching in oral or written form (e.g., Bandura, 1977, 1997; Lippke, 2020; Reeve, 2018; Schunk, 1995). Consistent with Lippke's definition regarding verbal persuasion (Lippke, 2020, p. 3), as stated earlier, educators can provide verbal persuasion in oral or written format by encompassing instruction, self-instruction, guidance and verbal feedback, and are thus able to bolster students' confidence and beliefs in their capabilities to obtain specific skills (Bandura, 1977; Reeve, 2018; Schunk, 1995). Notably, feedback, as a form of verbal persuasion, is regarded as one of the most crucial determinants of self-efficacy (Prilop et al., 2021). In presentation training for university students, all three formats – oral instruction, written self-instruction, and lecturer feedback – are considered relevant (Van Ginkel et al., 2015). To our understanding, each of the seven design principles by Van Ginkel et al. (2015) corresponds to one of the four self-efficacy sources specified by SCT, which we depicted in Figure 1. Drawing on these assumptions, we adapted and conceptually aligned the design principles with the four sources of self-efficacy. The processes underlying the seven design principles to build presentation-related self-efficacy may be described as follows:

Reflecting the source of verbal persuasion, lecturers play a crucial role in enabling students to self-assess presentation behaviors and set realistic improvement goals. Therefore, it is essential for lecturers to instruct students on course goals, expected presentation behaviors, and criteria for evaluating the performance of the presentation at the course start (design principle: Specify goals, relevant behaviors, and criteria to asses presentations), both orally (here: explaining clearly) and in written format (here: providing good course materials) (Ayllón et al., 2019; De Grez et al., 2009a; Herbein et al., 2021). In terms of oral support, lecturers should explain clearly which verbal (e.g., speaking clearly with sufficient pauses) and nonverbal presentation behaviors (e.g., keeping eye contact with the audience) are considered adequate during presentations. Complementarily, lectures should provide

written support through course materials such as rubrics. In these materials, students can read about and internalize the expected behaviors, watch models conduct them, and practice and prepare their presentations at home (e.g., Neuville et al., 2007; Ritchie, 2016). The contents of course materials should match what lecturers explain during class, preferably including the same visual aids as the presenting models. Moreover, lecturers should give explicit oral and/or written feedback to the presenting student after an exercise with reference to the rubric. The feedback should address the presenter's behavior and impact on the audience (design principle: Provide explicit, contextual and adequately timed feedback). The observing peer students should also be involved in formative assessment, allowing them to evaluate and discuss the presenter's behavior, based on the same rubric and portfolios that the lecturers use (design principle: Encourage the involvement of peers in formative assessment processes). Earlier studies demonstrated that students, compared to lecturers, have lower abilities to assess the adequacy of peer presentations, detect poor behaviors, and make suggestions for improvement. Students thus benefit from witnessing expert feedback from lecturers to refine their skills regarding assessment and feedback (e.g., De Grez et al., 2009a; Ringeisen et al., 2019).

To collect mastery experiences, students should be given the opportunity to practice relevant verbal and nonverbal behaviors by means of presentation exercises (design principle: Let students practice presentations, according to Van Ginkel et al., 2015) and self-assess their behaviors by means of questionnaires and portfolios (design principle: Provide questionnaires and portfolios to facilitate students' self-assessment). Practicing and reflecting upon their presentation behaviors during exercises helps students identify behavioral improvements over time, which should result in more positive self-evaluations that strengthen their presentation-related knowledge and, consequently, their future presentation behaviors (e.g., De Grez et al., 2009b).

Representing the source of vicarious experiences, students should further have opportunities to observe peers who demonstrate knowledge and adequate behaviors while presenting during training. This way, students can learn from competent yet similar models. The lecturer as an expert model may be too dissimilar and/or threatening (design principle: Let students observe competent peer models who demonstrate knowledge and adequate behaviors) (e.g., Margolis and McCabe, 2006).

To reduce negative emotional arousal during presentations as an inhibitory source of self-efficacy (e.g., Putwain et al., 2013; Schönfeld et al., 2017), lecturers should allow students to choose their presentation topic in relation to the course subject to foster interest and relevance. The respective tasks should be of moderate yet increasing difficulty throughout the course to allow success (design principle: Let students choose presentation topics with moderate task difficulty to foster interest and relevance, allowing success and positive emotions). Higher levels of perceived interest, relevance, and adequate levels of difficulty through perceived task controllability increase the chances that students master the presentation successfully and attribute success to their shown behaviors, which enhances positive emotions, for instance, enjoyment, and reduces negative emotions, for instance, anxiety (e.g., Merz and Wolf, 2015; Ringeisen and Bürgermeister, 2015).

The role of lecturer's support for students' self-efficacy

Amongst the sources of self-efficacy, mastery experiences, vicarious experiences, and emotional arousal mainly refer to processes within the person, without direct external guidance. Lecturer support in the form of verbal persuasion, however, signifies an important social source of self-efficacy (e.g., Bandura, 1997; Usher and Pajares, 2008; Van Ginkel et al., 2015; Won et al., 2017). Therefore, the present study is based on the premises of SCT to investigate to which extent the three lecturer support behaviors as outlined in the seven design principles by Van Ginkel et al. (2015), namely, providing adequate course materials, explaining clearly, and giving feedback, are associated with students' self-efficacy and their performance regarding presenting.

Multiple studies from different educational domains have demonstrated that both oral and written lecturer support in the form of verbal persuasion are conducive to building students' academic self-efficacy beliefs (e.g., Luzzo and Taylor, 1994; Shi, 2018; Won et al., 2017). In terms of oral support, clear explanations of the subject matter, the expected content and format of performance evaluations are important because many learners expect their lecturers to communicate accurately and provide clear specifications of learning goals, contents, and exam requirements (e.g., Lippke, 2020; Margolis and McCabe, 2006; Neuville et al., 2007). In terms of written support, lecturers are encouraged to provide students with structured and self-explanatory course materials for self-studying. Good course materials enable students to plan, prepare, practice, and self-assess the learning material and their progress at home, which helps them to develop both knowledge and behavioral skills (e.g., Lippke, 2020; Ritchie, 2016; Shi, 2018). Finally, lecturer support in terms of feedback represents a vital and strongly influential form of verbal persuasion to foster students' self-efficacy beliefs, especially to enhance behavioral skills such as presenting (e.g., Hattie, 2010; Prilop et al., 2021; Usher and Pajares, 2008; Van Dinther et al., 2011; Van Ginkel et al., 2017). Compared to peer feedback or tutor-guided peer feedback, lecturer feedback was found to highlight significant behaviors more accurately, give more tailored hints on which behaviors to modify, and thus improve the respective competence in students more strongly (e.g., De Grez et al., 2009a; Van Ginkel et al., 2017).

The interplay of self-efficacy, supportive teaching and performance

A considerable body of research regarding university students has demonstrated that self-efficacy benefits the development of oral communication skills, particularly presentation performance (e.g., Adams, 2004; De Grez et al., 2009a,b; Schickel et al., 2023; Tucker and McCarthy, 2001). For instance, Brown and Morrissey (2004) showed that self-efficacy acquired in a verbal self-guidance training program positively influenced undergraduates' presentation performance. Cavanagh et al. (2019) showed a beneficial impact of self-efficacy on performance and course grades in a longitudinal study with students practicing presentations for one semester.

While these findings underscore the importance of self-efficacy for presentation performance, far fewer studies have examined how supportive lecturer behaviors contribute to students' development in this domain (e.g., Campbell et al., 2001; Ringeisen and Bürgermeister, 2015). The limited research available suggests that lecturer support - such as providing constructive feedback, offering clear performance criteria, and implementing structured instructional interventions - can create learning environments that foster both competence and confidence in presentation skills (e.g., De Grez et al., 2009a; Van Ginkel et al., 2017). For instance, De Grez et al. (2009a) indicated that structurally supportive instruction provided by lecturers fostered the development of students' presentation skills in an introductory Business Administration course. Likewise, in a case study with undergraduate and graduate accounting students, Kerby and Romine (2009) showed that clear instructional guidance and consistent instructor feedback fostered substantial improvement in students' oral presentation skills. Moreover, several studies have shown that teacher support – particularly in the form of feedback - positively impacts students' presentation performance (e.g., Van Ginkel et al., 2017; Murillo-Zamorano and Montanero, 2018).

Taken together, these findings indicate that instructional guidance in the form of lecturer support do not only facilitate the acquisition of presentation skills but may also strengthen self-efficacy beliefs underpinning successful presentation performance. However, no study to date has explicitly investigated the associations of lecturer support, students' self-efficacy, and students' presentation performance combined within the framework of oral communication skills. Evidence from other educational domains points to robust links between these variables, showing that students' self-efficacy and support by their lecturers are positively related to each other, as well as to academic performance (e.g., Chang and Bangsri, 2020; Luzzo and Taylor, 1994; Mercer et al., 2011; Olani et al., 2010; Usher and Pajares, 2006; Won et al., 2017). For instance, Diseth et al. (2012) showed that higher levels of perceived lecturer support in terms of feedback provision and clear explanations were associated with greater self-efficacy in secondary school students, which was in turn related to better academic performance. A recent study (Chang and Bangsri, 2020) with roughly 8,000 Thai high school students revealed that teacher support influenced students' self-efficacy beliefs and their academic performance in terms of better reading ability. Moreover, Ayllón et al. (2019) showed that better teacher support pertaining to providing good course materials and clear explanations concerning the course content was related to higher self-efficacy beliefs and overall better academic achievement in Spanish university students. Other studies in education that did not include performance assessments also revealed positive associations between instrumental or informational support by teachers or lecturers and students' academic self-efficacy (e.g., Dorman, 2001; Liu et al., 2018; Mitchell and DellaMattera, 2011).

Current study

Building on the aforementioned literature review and in response to the limited empirical evidence on the role of lecturer support in fostering presentation self-efficacy and performance, we set out to investigate their relations in university courses fostering presentation competence. We applied all seven design principles proposed by Van Ginkel et al. (2015), embedding them in the four sources of self-efficacy to ensure effectiveness in the study's seminar. All principles were implemented to create a high-quality and comprehensive intervention, but the empirical focus of the present study was on examining associations between students' presentation self-efficacy and performance and the lecturer support behaviors of providing good course materials, explaining clearly, and giving feedback.

Therefore, we conducted repeated assessments of presentation self-efficacy at the beginning and the end of the course. Students rated their lecturers' support behaviors halfway through the course, while student performance was rated by two independent lecturers in a practical examination of their presentation performance.

Based on this rationale, the following hypotheses were derived: We expected that, in courses designed according to Van Ginkel et al.'s (2015) principles, presentation self-efficacy would increase during the seminar (Hypothesis 1). In terms of the role of lecturer support for presentation self-efficacy, we hypothesized that lecturer support behaviors – particularly providing good course materials, explaining clearly, and giving feedback - should be positively associated with the increase in presentation self-efficacy (Hypothesis 2). In addition, we anticipated that the increase in presentation self-efficacy would be positively associated with better presentation performance (Hypothesis 3). Furthermore, we hypothesized that greater perceived support from the lecturer directly predicts superior presentation performance (Hypothesis 4).

Method

Sample

All 160 students enrolled in a course to promote presentation skills within the Faculty of Economics at a German university were invited to participate in the study. One-hundred fifty-eight of these students (98.8%) provided informed consent and took part in the study, resulting in an almost complete sample of the course cohort. The sample can thus be described as a course-based convenience sample, reflecting the characteristics of the enrolled class. Twenty-four and three-tenths years ($SD = 3.96$) was the mean age, with 97 female and 53 male students (eight participants gave no gender information). This proportion corresponded to the gender ratio in the study program. Eighty-five percent of the sample reported German as their mother tongue. The major part of the sample (88.60%) grew up in Germany. Those who did not identify as native German indicated Russian, Vietnamese, Chinese, Polish, Bulgarian, and Israeli cultural backgrounds.

Design and procedures

The study employed a quasi-experimental one-group pretest–posttest field design, as the training was implemented within a regular university seminar, conducted in an authentic

educational context (Shadish et al., 2002). Therefore, data collection was realized within a research project aiming at fostering communication competencies in students. All students participated in a 4-month (one semester) seminar with weekly sessions to develop their ability to hold a presentation. The seminar was an integral part of the students' study curriculum in economics. As such, attendance was mandatory. For practical reasons, the seminar was divided into eight groups with about 20 students each. The seminar concept realized the seven design principles as outlined by Van Ginkel et al. (2015) to promote the development of presentation competence, thereby ensuring to implement the three support behaviors adequately and in conjunction with the assumptions of SCT (Figure 1).

To collect mastery experiences, students could practice the relevant behaviors by means of presentation exercises, which increased in difficulty as the course progressed (principle 4). To enhance self-assessment, students evaluated their presentation behaviors during the exercises using a standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1) with detailed descriptors of (non)adequate behaviors, and questionnaires, which students completed as part of the data collection for this study (principle 7; section measures). If not practicing themselves, students observed their peers while conducting the presentation exercises, which enabled them to collect vicarious experiences on competent yet similar models (principle 3). To reinforce mastery experiences directly by social influences in the form of verbal persuasion, the emphasis was on three lecturer support behaviors: at the beginning of the course, the lecturers gave students adequate materials for self-study that specified study objectives, (non)adequate presentation behaviors listed in the aforementioned standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1), and criteria to assess presentation performance. Complementarily, during the seminar sessions, lecturers clearly explained the expected content, subject matter, and format of the performance evaluations, as well as adequate presentation behaviors by means of visual aids, and explicitly addressed questions and uncertainties (principle 1). After each exercise, practicing students received explicit oral feedback, which pointed out the behavior of the presenter and its impact on the audience (principle 5). Before the provision of the lecturer feedback, the observing students evaluated the presenter's behavior during class discussion and provided feedback to the presenter based on the standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1) (principle 6). To ensure positive emotional arousal and affect, students could freely choose their presentation topics, while lecturers ensured moderate task difficulty in order not to overwhelm both presenting students and the peer audience.

The seminars' protocol was standardized, including structure, contents, exercises, and provision of feedback to the participating students. Standardization was important to ensure that differences in self-efficacy and perceived lecturer support represented interindividual response variability (Herold et al., 2021). To guarantee a consistent delivery of the instructional approach, the two male lecturers who conducted the seminars during the study - and who were also responsible for rating students' final presentations at T4 - participated in preparatory training sessions with students prior to the study. These sessions were supervised by two external, experienced instructors (one male, one female), who critically observed and provided feedback on the implementation of the design principles and the targeted lecturer behaviors. This procedure was intended to promote fidelity of implementation across all seminar groups.

The design comprised four measurement points (T1 to T4) around four weeks distance in each case (Figure 2). The first measurement point (T1) took place in the beginning of the course, T2 followed once lecturers had familiarized students with presentation formats and adequate behaviors. Subsequently, T3 took place toward the end of the course, once students had participated in the presentation exercises. The practical presentation exam took place after the completion of the course (T4). We assessed demographics (age, gender, native language, cultural background) at T1, presentation self-efficacy at T1 and T3, and perceived lecturer support behaviors at T2. To ensure that students were aware of the required presentation behaviors for the exam, they were familiarized with the standardized rating rubric at T1. The university's local ethics committee authorized the conduct of the study. Participation in the study was voluntary, and students could end participation at any time.

Measures

Well-established self-report measures validated with samples of German students were applied to evaluate students' presentation self-efficacy and the three facets of perceived lecturer support. For all measures, descriptive statistics, reliability coefficients, factor loadings, and intercorrelations are presented in Table 2.

Presentation self-efficacy

To assess presentation self-efficacy at T1 and T3, we used the validated self-efficacy scale by Ringeisen et al. (2019). The five items we used capture participants' competence beliefs in their capabilities to engage effectively in (non-)verbal behaviors to perform well in presentation situations. Scored on a 1 ("does not apply") to 5 ("applies to a great deal") Likert scale, the items comprised statements such as "When I give a presentation, I am always able to engage in supportive body language" or "For any topic, I can give a well-structured presentation which splits in an introduction, a main body and a conclusion." Reliability analyses yielded favorable coefficients (T1: α =0.77; T3: α = 0.82) (Tavakol and Dennick, 2011).

Perceived lecturer's support

We measured the three lecturer support behaviors with different instruments. We used the respective subscales of a specific questionnaire to evaluate university courses developed by a German research group from Muenster (MFE-VR, Thielsch and Hirschfeld, 2012) to assess providing good course materials (three items; α = 0.90; e.g., "The media used in the course (slides, videos, sketches, etc.) supported the understanding of the content") and explaining clearly (four items; α = 0.78; e.g., "The lecturer

TABLE 1 Standardized assessment rubric regarding presentations.

Facets of presentation behavior	Indicators
Presentation structure	Presentation is structured into introduction, main part, and conclusion/summary/outlook. Negative indicator: structure is unclear.
Free phrasing	Content is presented in the speaker's own words. Negative indicator: Presentation is read out or fully recited from memory.
Eye contact	Presenter maintains eye contact with the audience. Negative indicator: Gaze drifts away, looks at the wall/beamer, etc.
Posture	Open, relaxed, and audience-oriented posture; upright positioning. Negative indicator: Turning away from the audience, tense/rigid posture.
Gestures and facial expressions	Use of gestures and facial expressions supports the effectiveness of the presentation. Negative indicator: Hands hidden in pockets or folded, lack of facial expressions, fidgeting/restlessness, exaggerated hand movements.
Language	Appropriate pace, use of emphasis, clear and modulated articulation, no filler words (e.g., "uhm," "like"). Negative indicator: Too fast/too slow, too quiet, lack of emphasis, use of filler words.
Rhetorical devices	Use of rhetorical devices [e.g., rhetorical question(s), general or personal anecdote(s), metaphor(s), direct address of the audience]. Negative indicator: no use of rhetorical devices.
Time management	Time limits are met.

Originally published in German (Herbein et al., 2021). The English version presented here was translated by the authors.

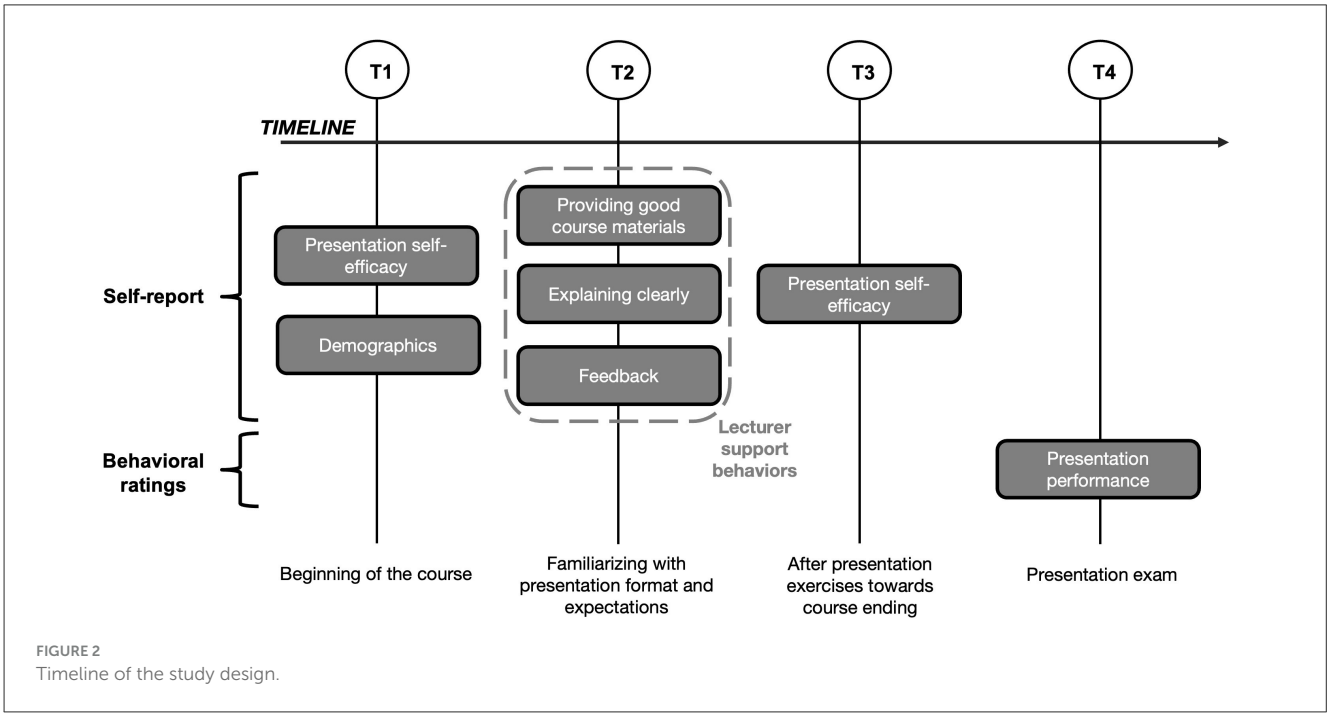

FIGURE 2
Timeline of the study design.

often used examples that contributed to the understanding of the course content."). Participants evaluated all items using a Likert scale that varied between 1 ("not at all") and 7 ("a great deal"). To assess the quality of lecturer feedback, we used the Feedback Reaction Scale from Anseel et al. (2011) (three items; $\alpha = 0.97$; e.g., "The feedback I received helped me learn how I can improve my performance") which scored on a 1 ("not at all") to 6 ("a great deal") Likert scale.

Presentation performance

We evaluated presentation performance using a standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1). The rubric contains behavioral performance criteria covering such aspects as vocal delivery, or presentation structure. To ensure an appropriate and standardized application of the rubric, criteria for good presentation behaviors were described in detail. During the presentation exam, two lecturers rated the students' performance independently by using the standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1) and converting the score into marks in line with the German mark scheme between 1.0 (excellent) and 5.0 (not passed). If there were differences in the ratings, the lecturers jointly analyzed these cases in detail, clarified the differences, and collaboratively decided on a grade. For data analysis, the scoring was inversely encoded for clarity, meaning that higher values correspond to better achievement levels.

TABLE 2 Descriptive statistics, factor loadings, and intercorrelations of the study variables.

Constructs	M	SD	Factor loadings	1.	2.	3.	4.	5.	6.
1. Presentation self-efficacy (T1)	3.02	0.68	0.528 to 0.721; $M_{loadings} = 0.65$	(0.77)	0.63***	−0.08	0.10	−0.09	0.26**
2. Presentation self-efficacy (T3)	3.42	0.77	0.624 to 0.805; $M_{loadings} = 0.69$		(0.82)	0.11	0.13	0.16	0.32**
3. PLS: Providing good course materials (T2)	5.28	1.17	0.781 to 0.908; $M_{loadings} = 0.86$			(0.90)	0.79***	0.23	0.10
4. PLS: Explaining clearly (T2)	5.10	1.11	0.644 to 0.811; $M_{loadings} = 0.74$				(0.78)	0.20	0.17
5. PLS: Feedback (T2)	4.34	1.09	0.788 to 0.965; $M_{loadings} = 0.89$					(0.97)	0.18**
6. Presentation Performance (T4)	2.23	0.63	-						–

N = 158. T1 = beginning of the course; T2 = about half-way though the course; T3 = toward end of the course; T4 = presentation exam after completion of the course. *p <0.05; **p <0.01; ***p <0.001 (2-tailed). PLS = Perceived lecturer support; Cronbach's Alpha for the respective constructs are presented in brackets in the diagonal.

Statistical analyses

M*plus* 8 has been applied to investigate the hypothesized associations (Muthén and Muthén, 1998–2013). We accounted for the nested nature of the data (all participants were clustered into eight groups) by adjusting the standard errors and chi-square statistics by applying the option "type is complex." A robust maximum likelihood estimation (MLR) with robustness to non-normality and missing values accounted for using the FIML algorithm has been applied to provide parameter estimates. We used Hu and Bentler's (1999) suggested primary fit indices to estimate the model fit, which included χ^2 (Chi-Square Test of Model Fit), CFI (Comparative Fit Index), RMSEA (Root Mean Square Error of Approximation), and SRMR (Standardized Root Mean Square Residuals). Kenny (2020) recommends regarding CFI that a magnitude approaching 1 represents an excellent fit, whereas one >0.95/0.90 indicates a good/acceptable fit; a magnitude approaching 0 for both the RMSEA and the SRMR signifies an ideal model fit, while magnitudes of ≤0.06/0.08 indicate of a good/medium fit. Because the latter two indices tend to be larger with smaller sample sizes, some researchers recommend values around 0.10 as the cutoff for acceptably fitting models or even not computing the RMSEA because it may falsely indicate a poorly fitting model if *degrees of freedom* and sample size are small, as was the matter in the present study (Kenny, 2020).

Before applying latent change score modeling (LCS) to investigate the associations of the latent modeled constructs (the three lecturer support behaviors, changes in presentation self-efficacy, presentation performance), we checked for longitudinal measurement invariance of self-efficacy at T1 and T3. In doing so, we compared the relative fit of the hierarchically nested models with equality constraints applied incrementally to the previously stated indices. According to Chen (2007), invariance can be supported to the extent that the changes in CFI are less than or equal to 0.010, RMSEA are less than or equal to 0.015, and SRMR are less than or equal to 0.030, signifying equality constraints did not impair the fit of the more constrained model compared with the fit of the less constrained model. We specified a baseline model testing for configural measurement invariance (model 1), which consisted of two correlated self-efficacy factors representing the two measurement points. To compute metric invariance, we constrained the respective factor loadings of each item on the latent self-efficacy factors to be consistent over time (model 2). Finally, to test for scalar invariance, we restricted the corresponding intercepts of the items to be invariant across time (model 3).

Subsequently, we ran multi-variate confirmatory factor analysis (CFA) to determine the measurement model of lecturer support behaviors and their latent associations with presentation self-efficacy at T1 and T3, and the grade in the presentation exam (model 4). The three lecturer support behaviors and presentation self-efficacy were modeled as latent constructs, and the students' grade was employed as a manifest indicator of presentation performance (e.g., Kline, 2016). Based on these results, we applied LCS modeling to investigate the changes in students' self-efficacy beliefs regarding presentations from T1 to T3, and its associations with the three support behaviors and students' presentation performance (model 5). We modeled the study variables in sequential arrangement, incorporating direct effects from the three lecturer support behaviors on the modeled change score of presentation self-efficacy from T1 to T3, and presentation performance, as well as direct effects from the change score on presentation performance (Figure 3). The latent change score represented the difference in self-efficacy levels at T1 and T3, allowing us to assess the magnitude and direction of change over the course of the semester (e.g., Geiser, 2013). For models 4 and 5, we added students' gender, age, and mother tongue as control covariates. Thereafter, we omitted the latter two because they yielded no significant effects and repeated the respective analyses.

We confirm that all measures and conditions used in the study are reported, and that no participants were excluded from the analyses. The sample size was based on practical considerations and aligns with commonly followed conventions in structural equation modeling and latent change score approaches (e.g., Kline, 2016).

Results

To examine longitudinal measurement invariance of presentation self-efficacy, we compared models specifying configural invariance, metric invariance, and scalar invariance. Considering the small sample size, the three models reflected an acceptable fit (Kenny, 2020). Because parameter changes were below the specified thresholds (Chen, 2007), scalar measurement invariance could be supported (Table 3: models 1 to 3). Subsequently, a multi-variate CFA was conducted (model 4) incorporating the two presentation self-efficacy factors (T1

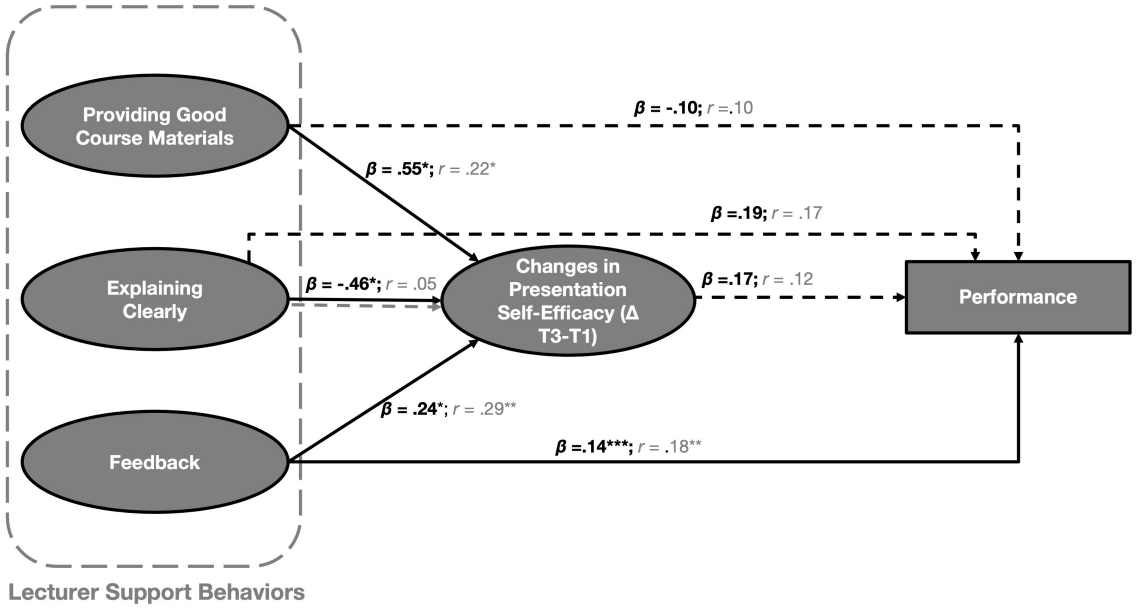

FIGURE 3
Latent Change Score Models depicting Unidirectional (model 5) and Bidirectional Pathways (model 6) among the Study Variables. To reduce complexity, the displayed pathways are depicted as unidirectional, although figure contains unidirectional (model 5) and bidirectional coefficients (model 6); coefficients of model 5 are presented first (in bold); coefficients of model 6 second (in gray). *$p < 0.05$; **$p < 0.01$; ***$p < 0.001$

TABLE 3 Fit indices of the structural equation models.

Models	*df*	χ^2	*p*	CFI	RMSEA	SRMR
Model 1	29	80.684	0.000	0.903	0.108 (0.081–0.137)	0.064
Model 2	33	82.698	0.000	0.907	0.100 (0.073–0.127)	0.071
Model 3	37	84.681	0.000	0.910	0.092 (0.066–0.118)	0.087
Model 4	165	262.894	0.000	0.927	0.062 (0.048–0.076)	0.060
Model 5	176	288.603	0.000	0.916	0.065 (0.051–0.078)	0.069
Model 6	175	283.245	0.000	0.919	0.064 (0.050–0.077)	0.065

N = 158. Model 1 = baseline model to test for configural measurement invariance; Model 2 = baseline model to test for metric measurement invariance; Model 3 = baseline model to test for scalar measurement invariance; Model 4 = multi-variate confirmatory factor analyses (CFA); Model 5 = latent change score model (LCS) with unidirectional pathways; Model 6 = latent change score model (LCS) with bidirectional pathways; CFI = comparative fit index; RMSEA = root mean square error of approximation (90% CI is presented in brackets); SRMR = standardized root mean square residual.

and T3), all support behaviors, and the grade obtained in the presentation exam. The model reached a satisfactory fit (Table 3).

To investigate hypotheses 1 to 4, we conducted LCS (model 5) to investigate the students' changes in self-efficacy over time, and its relations with the support behaviors and the students' performance. We allowed the competence behaviors to covary. Again, the model reflected a satisfactory fit (Table 3). The identified association patterns partially supported the hypotheses. As predicted in hypothesis 1, presentation self-efficacy increased significantly over time ($\Delta M_{T3-T1} = 0.51, p < 0.001$), with significant interindividual differences (Var = 0.41, $p < 0.001$), indicating a slight variability among participants. The increase in presentation self-efficacy was positively related to providing good course material ($\beta = 0.55$, $SE = 0.24$, $p = 0.021$) and feedback ($\beta = 0.24$, $SE = 0.10$, $p = 0.014$), yet unexpectedly negatively to explaining clearly ($\beta = -0.46$, $SE = 0.22$, $p = 0.033$) (hypothesis 2). Surprisingly, the growth in self-efficacy was not related to better presentation performance ($\beta = 0.17$, $SE = 0.13$, $p = 0.200$), as postulated in hypothesis 3. Regarding hypothesis 4, greater support through feedback at T2 ($ß = 0.14$, $SE = 0.04$, $p < 0.001$) predicted a better grade during the presentation exam at T4. Neither providing good course materials ($ß = -0.10$, $SE = 0.24$, $p = 0.682$) nor explaining clearly ($ß = 0.19$, $SE = 0.23$, $p = 0.427$) were associated with the grade. Additionally, the following association emerged: Relative to female students, males reported a lower growth in presentation self-efficacy across time ($\beta = -0.17$, $SE = 0.06$, $p = 0.007$).

The unexpected negative effect of explaining clearly on the increase in self-efficacy, which is contrary to prior research (e.g., Ayllón et al., 2019; Diseth et al., 2012), may signify a suppression effect (e.g., Kline, 2016; Lutz, 1983) because of the high positive correlation of $r = 0.79$ between explaining clearly and providing good course materials (Table 2). The high correlation is understandable, as the contents of the course materials precisely matched what lecturers explained on presenting during class,

also reflecting findings on the two sub-scales in the original research that displayed a similarly high association (Thielsch and Hirschfeld, 2012). To explore a potential suppression effect, we computed an additional model (model 6) depicting bidirectional associations between the latent change score of self-efficacy, the three lecturer support behaviors, and presentation performance. Comparing model 5 (unidirectional) and 6 (bidirectional) revealed similar association patterns (Figure 3), except for explaining clearly, which displayed a zero correlation with the latent self-efficacy change score ($r = 0.05$, $SE = 0.09$, $p = 0.577$) in model 6, yet in model 5 a negative regression coefficient ($\beta = -0.56$, $SE = 0.22$, $p = 0.033$). These patterns indicate a classical suppression effect (e.g., Kline, 2016; Lutz, 1983). If the effects of the other two lecturer support behaviors are kept constant in model 5, explaining clearly demonstrates a negative effect on the latent change score of students' presentation self-efficacy compared to the bivariate association.

Discussion

The present study not only corroborates research from other education and work settings regarding the relationship between student self-efficacy and lecturer support (e.g., Ayllón et al., 2019; Chang and Bangsri, 2020; Diseth et al., 2012; Won et al., 2017) but extends it to the field of presentations. Highlighting the significance of social sources in self-efficacy, we conducted empirical tests to discern the varying influence of lecturer support behaviors (e.g., Shi, 2018). The study contributes empirical evidence to the existing research on the role of written and oral forms of verbal persuasion in the acquisition of presentation competence in higher education. As such, it facilitates a concrete understanding of self-efficacy and lecturer support in presentation competence education to enable more effective presentation competence training in higher education.

The data corroborated the hypothesized patterns in the sense that during courses that implement the seven design principles, students' presentation self-efficacy increased significantly over time. This increase was positively associated with students' perceived lecturer support in terms of the provision of good course materials and feedback. Unexpectedly, higher levels of clear explanations predicted a smaller increase in self-efficacy, and a better performance was positively predicted by feedback but neither by the other two support behaviors nor by self-efficacy.

In accordance with research in other domains (e.g., Anseel et al., 2011; Hattie, 2010; Wisniewski et al., 2020), accurate and behavior-based feedback from the lecturer to the presenting students after exercises seemed to sharpen the cognitive representations of the crucial presentation behaviors, through which students could then execute the expected behaviors with greater precision during the presentation examination, thus signifying better presentation performance. Verbal persuasion in the form of lecturer feedback during exercises seemed to heighten students' self-awareness for adequate presentation behaviors and enable them to collect mastery experiences during the presentation exercises, which consolidate presentation-related knowledge and enhance presentation self-efficacy (Bürgermeister et al., 2016; De Grez et al., 2009a,b; Van Ginkel et al., 2015, 2017). This aligns with other research, where meta-analyses have shown a strong correlation between verbal persuasion and mastery experiences, indicating that the presence of verbal persuasion (here: in the form of feedback, Prilop et al., 2021) may enhance subsequent mastery experiences (e.g., Byars-Winston et al., 2017; Usher and Pajares, 2008; Sheu et al., 2018). For the observing students, lecturer feedback and peer observation could have refined their identification of adequate presentation behaviors, contributing to better knowledge consolidation and sharpening the precision of behavior representations (Bürgermeister et al., 2016; De Grez et al., 2009a; Van Ginkel et al., 2015, 2017).

Complementing good course materials as a form of written teacher support, which precisely outlined the course goals, adequate presentation behaviors and criteria for assessment was also beneficial to foster self-efficacy (Van Ginkel et al., 2015). A standardized assessment rubric regarding presentations (Herbein et al., 2021, Table 1) with detailed descriptors of the expected behaviors helped students to adapt to the course requirements and provided them with a concise structure, obviously enhancing their sense of controllability (e.g., Ritchie, 2016; Van Ginkel et al., 2015). As in the current study, course materials seem to be especially effective when they combine written descriptions of adequate nonverbal and verbal presentation behaviors with visualizations, which depict student models that are similar to the course attendees (Ayllón et al., 2019; De Grez et al., 2009a; Herbein et al., 2021). Students may work with these materials at their own pace, which helps them to internalize behaviors both through reading and watching. Moreover, good materials enable students to prepare and practice a presentation at their own pace, thus actively acquiring competence beliefs through self-regulated learning (e.g., Ringeisen and Bürgermeister, 2015; Ringeisen et al., 2019; Van Ginkel et al., 2015).

The unexpected, negative association between explaining clearly and the increase in self-efficacy indicates an inhibitory effect, demonstrating that higher levels of lecturers' clear explanations are associated with a smaller increase in students' self-efficacy over the course. Thus, participants who rated their lecturers higher in terms of clear explanations still experienced an increase in self-efficacy, but it was less pronounced compared to those participants who rated their lecturers lower in terms of clear explanation (e.g., Geiser, 2013; Kline, 2016). Those findings suggest that students may have found the lecturers' explanations too abstract, hindering the execution of the complex presentation behaviors outlined in training. The identified suppression effect indicates that clear explanations only showed an effect when the other lecturer support behaviors remained constant, particularly in combination with clear and effective oral communication and instruction in a written form. First, this implies that relying solely on oral forms of lecturer support such as explaining clearly appears to be insufficient for students to acquire the complex requirements of presentation behaviors. Written reinforcement might be needed for students to internalize the contents at their own pace, and thus increase their self-efficacy beliefs. Second, it seems that oral explanations in combination with course materials are less intelligible than real-life descriptions with less time for internalization. It might have made the expected portfolio of presentation behaviors seem even

more complex, less applicable, and overwhelming. The perceived disparity between the verbal instructions on how to present, and the actual execution of presentations during class may have triggered students' awareness of own competence gaps. Another possible explanation might be that clear and structured explanations may have inadvertently reduced opportunities for mastery or vicarious experiences. This interpretation aligns with research on instructional guidance, which suggests that overly detailed explanations can limit learners' autonomous engagement and diminish the motivational impact of self-directed learning, thereby potentially hindering the development of self-efficacy (Bandura, 1997; Richey and Nokes-Malach, 2013; Lazonder and Harmsen, 2016). Additionally, an initial overestimation of presentation skills and thus their self-efficacy could have led to a smaller-than-expected increase throughout the course (e.g., De Grez et al., 2012). If students perceived the explaining lecturers as highly competent and, thus, dissimilar and threatening, it could intensify the perception of their competence gaps (e.g., Adams, 2004; Schunk, 1995). This aligns with the expert-novice paradigm, where experts underestimate and novices overestimate their abilities (Lambert et al., 2012; Lichtenstein and Fischhoff, 1977). Thus, as students realize the extensive knowledge and skills needed for a successful presentation, they become increasingly aware of the challenges in translating theory into practice.

The missing significant associations of increasing presentation self-efficacy and presentation performance may be surprising, although several studies also failed to demonstrate significant relations in academic settings (e.g., Khan et al., 2013; Neuville et al., 2007; Schickel et al., 2023). Since the missing effect only refers to the increase of self-efficacy during the seminar while absolute self-efficacy levels at T1 and T3 correlated positively with performance, it seems reasonable to assume that the mere increase in students' self-efficacy during the semester was not sufficient to directly promote a better performance. This missing effect may thus not mirror a lack of ability but rather depend on a combination of unrealistic self-evaluations, inadequate monitoring skills, and motivational processes (e.g., Crippen et al., 2009; Khan et al., 2013; Scherer et al., 2016; Wagner et al., 2013). Hence, we still recommend promoting students' self-efficacy development by means of the seven design principles as proposed by Van Ginkel et al. (2015), even though we could not demonstrate a significant relation between increasing self-efficacy and presentation performance. Further clarification on the underlying processes in future research is required.

Limitations and strengths

A number of methodological limitations must be considered when evaluating the present results. First, we did not empirically assess other sources of self-efficacy, aside from instructional forms of verbal persuasion, which could have also affected self-efficacy (e.g., Lippke, 2020; Schunk, 1995), thereby limiting the range of possible statistical analyses and the interpretation of the results. However, our specific interest focused on the role of lecturer behaviors as external sources of students' ability beliefs. Therefore, we only investigated the effects of these three support facets and did not assess internal sources such as mastery experiences, vicarious experiences, or emotional arousal (e.g., Van Dinther et al., 2011). However, we considered these internal sources indirectly because we addressed them by means of our course concept following Van Ginkel et al.'s (2015) design principles. We encourage further research to additionally assess those three internal sources when investigating the role of lecturer support for students' presentation self-efficacy, thereby enabling a dissection of the contribution of each of the four sources defined by SCT (Bandura, 1997). In this regard, assessing presentation-related anxiety as a context-specific indicator of emotional arousal seems promising. It may exert inhibitory or facilitative effects in conjunction with lecturer support and self-efficacy on presentation performance (e.g., Brown and Morrissey, 2004). Notably, unsupportive, controlling teacher behaviors have been linked to detrimental effects on student motivation and engagement, often associated with anxiety (Assor et al., 2005).

Second, one may criticize the tripartite conceptualization of lecturer support we used, as other researchers have suggested alternative taxonomies, which may be rooted in other theoretical frameworks such as self-determination theory (SDT; e.g., Aelterman et al., 2019; Moè et al., 2022). SDT even shares some similar but not identical concepts with SCT, e.g., the basic need for competence, which is related to (but not identical with) self-efficacy. Moreover, various studies based on SDT have considered autonomy-supportive structure support in the classroom (e.g., Cheon et al., 2020; Jang et al., 2010). For instance, it could be interesting to examine the combined effects of structure and autonomy during presentation seminars on the development of self-efficacy (cf. Jang et al., 2010). Therefore, we encourage future research on the role of lecturer support for students' presentation competence to employ SDT, as it could offer additional and more nuanced insights into the role and nature of lecturer support, as it is widely used in various contexts including oral exams (e.g., Schürmann et al., 2022).

Third, the temporally arranged order of key constructs with repeated assessments of self-efficacy did not allow for an examination of the direction of effects between lecturer behaviors, self-efficacy, and performance. However, it facilitated the investigation of the development of presentation self-efficacy and its relations with the other constructs over time. Further, the fit indices indicated only an acceptable to mediocre fit of the estimated models. Accordingly, the overall model quality imposes constraints on the robustness of the conclusions and warrants a cautious interpretation of the results. Nevertheless, we used well-established measures with confirmed construct validity (e.g., Anseel et al., 2011; Thiel et al., 2012). Criticism could be directed at not assessing students' previous knowledge of presenting. Nevertheless, since the course was the very first of its sort in the study program, we deemed such a check not to be required. Furthermore, the sample composition of German students in their twenties in the academic domain of economics deserves attention. We recommend further research with bigger samples to replicate our findings as our sample was relatively small yet acceptable for a real-life intervention with a complex course design and different assessment points. Additionally, we recommend a validation of our findings in other academic programs, ensuring a broader applicability

and generalizability across diverse educational contexts. Moreover, samples that differ from ours concerning cultural markers, socio-contextual variables, or language are of interest to examine potential cultural variations in the structure of presentation self-efficacy and its relations with lecturer behaviors. Although the representativeness for the investigated course was very high, as almost all students enrolled in the course participated in the study, the findings cannot necessarily be generalized to students of other courses, disciplines, or universities, as the sample was not randomly selected.

Notwithstanding these limitations, the present research offers notable strengths. To our knowledge, it is the first study investigating associations of increases in self-efficacy, performance, and lecturer support behaviors in the field of presentations. Our hypotheses and methodology were carefully aligned with the conceptual model of Van Ginkel et al. (2015), which we embedded in the well-established SCT (e.g., Bandura, 1997). This approach allowed us to specify the role of lecturer support behaviors and accompanying processes to develop presentation self-efficacy. We assessed multiple facets of lecturers' support, enabling a simultaneous investigation of their individual contribution in predicting presentation self-efficacy. By determining associations between the respective variables on the latent level, we were able to control for measurement error.

Implications

The current findings provide some interesting implications for practice. If students participate in seminars comprising practical exercises of presentations, it is important for lecturers to support their students with structured and detailed materials combining written and visual information. They could help the students acquire adequate knowledge autonomously while reducing their insecurities regarding presenting (e.g., Ayllón et al., 2019; Margolis and McCabe, 2006). Moreover, lecturers should ensure that students have various possibilities of exercising presentations accompanied by feedback on their presentation behaviors and the integration of reflection, knowledge enhancement, and its application (e.g., Bürgermeister et al., 2016; De Grez et al., 2009a). If the lecturer's explanations address too many presentation behaviors in detail, students might feel overwhelmed by the complex and multi-faceted nature of verbal and nonverbal presentation behaviors. It may hinder the development of students' competence beliefs. Therefore, lecturers are encouraged to narrow their explanations to the most relevant behaviors during training, encourage especially shy and anxious students to participate in exercises, and provide immediate yet precise feedback thereafter. It should combine behavioral strengths and two or three behavioral facets with room for improvement.

Conclusion

In essence, our study findings suggest that lecturers can enhance their students' presentation self-efficacy if they engage in specific facets of support behaviors during courses that aim at developing presentation competence and, consequently, promoting presentation performance. Courses should entail multiple occasions to practice presenting, supplemented by structured course materials for self-study and immediate behavior-based feedback from the lecturer to foster students' self-efficacy. The present findings preliminarily corroborate the differential relevance of instructional support for fostering students' self-efficacy, which may be replicated and extended to reformulate a systematic, standardized, and thorough concept in teaching aiming at enhancing presentation self-efficacy and behaviors in higher education.

Data availability statement

The datasets presented in this article are not readily available because the dataset is part of a larger ongoing research project, and its availability is currently restricted. At this stage, it has not been cleared for sharing due to project-related considerations and coordination requirements. Requests to access the datasets should be directed to tobias.ringeisen@hwr-berlin.de.

Ethics statement

The studies involving humans were approved by Ethics Comittee of University of Applied Sciences Merseburg. The studies were conducted in accordance with the local legislation and institutional requirements. The participants provided their written informed consent to participate in this study.

Author contributions

MS: Writing – original draft, Writing – review & editing. LS: Writing – original draft, Writing – review & editing. TR: Writing – original draft, Writing – review & editing.

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The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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