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How self-efficacy beliefs are related to assessment practices: A study of experienced university teachers

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Abstract

Based on social cognitive theory, this study focused on how self-efficacy beliefs were related to assessment practices among experienced university teachers. The data consisted of 16 thematic interviews of university teachers from various faculties who had received awards of excellence in teaching. The thematic interviews were content analyzed both inductively and deductively. Academics' self-efficacy experiences were related in four assessment modes: assessment in general, diagnostic assessment, formative assessment and summative assessment. As sources of self-efficacy experience were identified by mastery experience, vicarious experience, social persuasions and physiological and affective states. The mastery experience was the most common source of self-efficacy in assessment practice, and for experienced teachers, fairness was the prominent feature in assessment.

Keywords: self-efficacy beliefs, assessment practices, academics, higher education,

Introduction

What expresses academics' self-efficacy beliefs in assessment practices? Academics are experts of their field with profound knowledge of their subject as they have achieved their position in university mainly based on research merits. Many of them are also experienced teachers and educated in university pedagogics. Based on previous research, academics seem to have high self-efficacy in research and teaching (Bailey, 1999; Chang, Lin and Song, 2011). It may also be an unquestioned assumption that they also hold high self-efficacy beliefs concerning their assessment practices. Assessment, however, often seems to be a demanding task – even for experienced teachers (van Lankveld et al. 2016; Myyry et al. 2020). Furthermore, assessment is a task that invokes various emotions such as frustration, anger or joy (Myyry et al. 2020) which may influence both attitudes towards assessment and self-beliefs as assessor.

In order to support academics in developing pedagogical competence besides research competence, many universities have offered pedagogical development courses and programs for their academic staff. Issues of the assessment practices have been one of the main themes in those courses, as assessment of students' learning and theses is one of the most important part of academics' work. As assessors, academics have at least two roles: supporting learning and development through assessment and being gatekeepers of high-standard academic achievements (Vehviläinen, Löfström and Nevgi, 2018).

A few studies have focused on academics' emotions related to their development in teaching (e.g Postareff and Lindblom-Ylänne, 2011) and their emotions concerning student feedback (Lutovac et al. 2017). In the context of school education, teachers' teaching efficacy (e.g., Caprara et al. 2006; Klassen and Tze, 2014) has been studied widely, but to our knowledge,

research focusing on academics' efficacy in assessment and how self-efficacy beliefs are related to assessment is rare.

A person may have firm trust in his/her ability to perform one kind of task but hold a disbelief concerning another type of task. Self-efficacy belief always pertains to a certain performance, and should not be mixed with the concept of self-esteem, the feelings of self-worth and self-respect, the overall evaluation of ourselves (Morf and Koole, 2012). Self-efficacy theory (Bandura 1977; 1982; 1986; 1997) has engendered extensive research on how teachers' self-efficacy beliefs are related to their actions in teaching and to their effectiveness and outcomes of teaching (Tschannen-Moran, Woolfolk Hoy and Hoy, 1998; Tschannen-Moran and Woolfolk Hoy, 2007; Takahashi, 2011; Tschannen-Moran and Johnsson, 2011; Klassen and Tze, 2014). However, most of the studies have examined teachers at schools. Teachers' self-efficacy has been found to be at least moderately related to students' academic achievement (Caprara et al. 2006; Klassen and Tze, 2014; Zee and Koomen, 2016). Teachers' self-efficacy is also positively associated with their self- and student-rated instructional quality (Holzberger, Philipp and Kunter, 2013), their job satisfaction (Caprara et al. 2006), and negatively with their burnout (Zee and Koomen, 2016).

Chang, Lin and Song (2011) designed a measure of teaching efficacy for higher education teachers with six subscales. One of them was learning assessment, indicating how confident respondents were in assessment. They observed that the score of the learning assessment subscale was higher for females than males, higher for teachers giving courses matching their specialty than teachers giving courses not matching their specialty as well as teachers with longer teaching experience than shorter one. Research looking at relationship between teachers' self-efficacy and assessment especially in higher education is scarce. In our

paper, we aim to investigate how academics' self-efficacy beliefs are related to their assessment practices.

Self-efficacy beliefs in academic assessment practices

Self-efficacy belief can be defined as a person's judgement and belief in capability to perform and execute a certain task (Bandura, 1997). According to Bandura's (1986, 1997) social cognitive theory, self-efficacy develops through interaction between personality and environment and individuals progress in it based on four sources of capability-related information. First, they interpret their experiences and outcomes of their actions in various situations. Success yields mainly into interpretation of mastery experience and increases self-efficacy, and contrary, failure in action lowers self-efficacy. Mastery experiences seem to be the strongest contributors to self-efficacy (Palmer, 2006; Usher and Pajares, 2008): Success strengthens self-beliefs and failure fuels self-doubt. Second, when observing others acting, people witness their successes and failures and compare these to their own experiences, and these vicarious experiences may influence their self-efficacy. Vicarious experiences influence self-efficacy particularly for uncertain people. However, even self-assured people can raise their self-efficacy by modelling better ways of doing things (Bandura, 1986; 1997). Thirdly, people are influenced by the efficacy-relevant information that comes from others as feedback, evaluations of their action and these social persuasions alter their self-efficacy. Finally, in various actions people's physiological and affective states such as anxiety, stress, fatigue and mood influence how they interpret the outcomes of their actions and their perceived capability. A negative mood activates thoughts of past failings, whereas a positive one activates thoughts of past successes (Bandura, 1997).

Purposes of assessment

Assessment is often understood as grading/marking, scoring and testing, but it is a much broader concept (Brown, 2008; Wiliam, 2011). The overall purpose of an assessment is to understand and improve student learning, to give feedback to a student concerning both process in learning and product of the learning (Sadler, 1989, 2010; Knight, 2002). There is general agreement that assessment serves two different purposes. First, the purpose of assessment is to provide certification of achievement, and secondly, to facilitate learning by giving feedback and supporting students' progress in learning (Boud and Falchikov, 2006). Besides these two purposes, Archer (2017) adds accountability as a third purpose of assessment referring to institutions' responsibility to the public and government for the funding received. Institutions are responsible for providing evidence that the goals for learning have been promoted and achieved.

Assessment is an important task for the academics. However, they often perceive assessment as a separate task from their teaching (Parpala and Lindblom-Ylänne, 2007). In general, any assessment decision includes two key steps: identifying assessment criteria or standards and judging how well the assessed work meets these criteria (Boud and Falcikov, 1989). This is usually thought to be an analytical, reflective process (Yan and Brown, 2017), but with practice and experience, it may become more automatic and intuitive and this might be the reason why experienced assessors spend less effort in performing familiar tasks (Tai et al. 2018).

Depending on the context, assessment has different functions and goals, and from this perspective, assessment can be divided into summative, formative and diagnostic assessment (e.g Biggs, 2003; Virtanen, Postareff and Hailikari, 2015). We speak about summative assessment when our purpose at the end of a course is to give grades to students and to assess how they have met the learning objectives. The purpose of formative assessment is to enhance and support

learning. Students and teachers both need to know how learning is proceeding, and formative assessment gives them feedback during learning. When the teacher at the beginning of a course wants to find out what students already know about the topic, it is a question of diagnostic assessment. Diagnostic assessment helps the teacher in course planning and guides students to reflect on their previous knowledge. (Black and Wiliam, 2009; Boud, 2000; Falchikov, 2005; Hattie and Timperley, 2007; Bennett, 2011; Virtanen, Postareff and Hailikari, 2015).

Very often assessment focuses on learning outcomes, i.e. reporting results of learning, and in that case, we speak about assessment of learning. It is closely connected to summative assessment. The purpose of assessment for learning, on the other hand, is to support and improve learning. (Black et al. 2004; Black and Wiliam, 2009; Bennett, 2011; Wiliam, 2011). In that case assessment means giving constructive feedback, engaging students, discussing goals and results with students and increasing confidence and trust in students that everyone can learn and develop.

Fairness of assessment

Fairness of assessment is an important assessment quality, an essential dimension of teachers' assessment literacy, and it also arouses assessment connected feelings by students (Hailikari et al. 2014; Rasooli, Zandi and DeLuca, 2018) and teachers (Myyry et al. 2020). Hailikari et al. (2014) point out that fair assessment is reliable and valid. Tierney (2014, 56), however, underlines that fairness "is an important quality that is distinct from, but related to validity". According to Segers, Dochy and Gijbels (2010) fairness refers to consistent and unbiased treatment of students and use of assessment criteria. Thus, fairness is associated with values of equity and equality (Tierney, 2014; Rasooli, Zandi and DeLuca, 2018). Furthermore, fair assessment is considered transparent (Hailikari et al. 2014; Tierney, 2014; Flores et al. 2015). In

social psychology, fairness is usually separated into distributive justice, which refers to allocating rewards and resources (Deutsch, 1985), such as time used for grading and feedback, procedural justice, which refers to fairness of procedures used in allocation (Leventhal, 1980), and interactional justice, which refers to fair and appreciative interaction with others (Bies and Moag, 1986; Greenberg, 1990). Research has emphasized the importance of fair procedures, such as representativeness (everyone affected by the decision has a voice in the situation), bias suppression (the decision-maker do not favor anyone at the expense of others) and consistency (procedures are consistent across persons and time) (Colquitt et al. 2001). In the context of assessment in higher education, the students' perceived level of fairness in assessment seems to be affected by the assessment methods used: essays and seminars produced more feelings of subjective fairness compared to examinations (Burger, 2017).

Teaching and learning environment

Assessment in higher education is not carried out in a vacuum, but it is affected by the institutional culture related to assessment. Two types of cultures related to assessment have been distinguished: testing culture and assessment culture. Testing culture reflects the traditional approach to education where instruction and testing are seen as separate activities and where teaching means transmitting knowledge to students who memorize and reproduce it. In assessment culture, on the other hand, instruction and assessment are integrated and students are active in the evaluation of their achievement. Learning is seen as meaning-creation, and the teachers are seen as mentors who provide opportunities for the students to use their knowledge (Birenbaum, 1996). However, there has been concerns about how students understand the assessment process (Rust, Price and O'Donovan, 2003). For instance, Sadler (2010) has argued that feedback seems to have little impact on students because they do not understand the

meaning of it. Even if the assessment criteria are explicit, assessing involves a lot of tacit knowledge, knowledge that is highly personal and difficult to communicate or share with others. It is usually rooted in an individual's ideals, values or emotions. Transferring tacit knowledge to students might be difficult (Rust, Price and O'Donovan, 2003).

Entwistle, McCune and Hounsell (2002) identified in their project "Enhancing teaching-learning environments in undergraduate courses" (the ETL model) four elements related to teaching-learning environments: course context, teaching and assessment of contents, relationship between students and staff, and students and their cultures. Course contexts refer for instance to aims of teaching, to course design and organization and to workload. Teaching and assessment of contents include how course content is chosen and organized, teaching methods and assessment and feedback procedures. Staff-student relationship relates to guidance and support of learning, sense of fairness and moral order and affective quality of the relationship. These elements are influenced by teachers' beliefs and conceptions of teaching. Lastly, students and students' cultures consist of both individual factors (abilities, knowledge and skills) and social factors (peer groups, relationships and students' beliefs and values). Students' perceptions of the teaching-learning environment have an impact on their learning approaches and learning outcomes (Richardson, 2006; Parpala et al. 2010).

Purpose of the study

As assessment is an integral part of teachers' work, it is also related to their well-being and integrity. In a previous study, the importance of teachers' emotions related to assessment has

been found (Myyry et al. 2020). It is also evident that assessment culture (Birenbaum, 1996; Rust, Price and O'Donovan, 2003) and the teaching-learning environment (Entwistle, McCune and Hounsell, 2002) affect the assessment practices. The aim of the study was to investigate how academics' experiences of self-efficacy are related to their experiences concerning assessment through the following two research questions:

1) How sources of self-efficacy beliefs are related to experienced teachers' assessment in different modes of assessment in higher education?
2) What elements of teaching and learning environment are associated with experienced teachers' sources of self-efficacy?

Methods

Collection of the data, respondents and procedure

The data were collected by thematic interviews from the 16 academics (8 males and 8 females) who had received an award of being an excellent university teacher. Participants' position varied from senior lecturer to professor and they all had pedagogical training and a long teaching experience in their discipline. The participants represented various disciplines: medicine, veterinary medicine, biosciences, educational sciences, arts, law and social sciences. The research procedure followed the principles for research with human participants and the study did not involve elements requiring ethical review (Finnish Advisory Board on Research Integrity, 2019). The respondents provided an oral informed consent to participate the study and they were informed that they could withdraw their participation any time without any reason.

The thematic interviews included questions about defining assessment and feedback, assessment methods used and procedures as well as justice issues related to assessment (its reliability and validity). The interviews were conducted by the members of the research group; each member interviewed two participants. The interviews, which lasted from 30 to 80 minutes, were recorded and transcribed verbatim. The interviews were conducted in respondents' office or in some other silent and convenient place.

Analyses

The thematic interviews were analyzed by deductive and inductive content analysis, and each member of the research group coded the two interviews that were conducted by her. Self-efficacy was coded throughout the entire interviews. In the coding process, an attempt was made to identify only unambiguous instances of self-efficacy. In the next step of the analysis process, the members of the whole research group cross-validated the coded text-segments together. The disagreements were resolved by negotiation jointly by all the researchers.

For deductive analyses, we applied Morris and Usher's (2011) recommendations by choosing the following codes: mastery experiences, vicarious experiences, social persuasion, and physiological and affective states. Finally, factors associated with positive or negative self-efficacy experiences and elements of teaching-learning environment were identified by means of inductive content analysis (Matthews and Ross, 2010).

Results

We identified four modes of assessment, which were related to the self-efficacy experiences: assessment in general and diagnostic, formative and summative assessment (Table 1). Assessment in general involved episodes where teachers talked about assessment on a general

level, not connecting it to any specific assessment mode. For instance, referring to assessment system or assessment criteria in general:

"*My evaluation system has gotten a huge amount of praise from the students. And I have modified the system quite extensively over the years based on the student feedback*" (005)

Diagnostic assessment referred to situations where a teacher assesses students to find out their prior knowledge about the topic and to clarify them what the final examination requires:

"*In order to find out the baseline in the beginning of a new course I will use the final exam of the preceding course to increase the student awareness that these are the things you need to know now.*" (009)

Formative assessment represents situations where, for example, feedback about learning process is emphasized:

"*I'll stress that certain issues have been learned and understood and I pay a lot of attention to the feedback; I somehow try to make them realize that it does not end with the evaluation and the grade, but what's more important is what you have learned by the time you are leaving the course*." (006)

In summative assessment teachers talked about the meaning of giving grades to students at the end of the course or scoring the final examinations:

"*When I grade a response to the exam question, I score the main points and then I just grade according to the scores. So, I strive to be completely impersonal so to speak (laugh), in other words, not an awful lot of interpretation. So just giving marks according to predetermined*

criteria, in other words, about this and this issue you should know these main points, and then just see that you tick the appropriate box." (015)

[Table 1 about here]

Across modes of assessment, the most powerful source of feeling self-efficacy were mastery experiences. In the general mode of assessment, 13 teachers described positive experiences of self-efficacy – success experiences – and two negative experiences of self-efficacy – occasions where self-efficacy was challenged. As positive experiences, teachers mentioned how experience had helped them to regulate time used for assessment, to apply assessment criteria or in general made it easier to assess students. Negative experiences were related for instance to challenges in creating good assessment criteria.

"*How do you create good evaluation criteria? Excellent question! At least you need experience, as often you just modify them back and forth."* (009)

In the modes of diagnostic and formative assessment all mastery experiences were positive: three for the diagnostic and eight for the formative assessment. Mastery in diagnostic assessment was mostly related to the growing understanding of students' prior knowledge.

" *...although in a sense I have prepared the course so that it has certain general goals which will be focused on, still I on the first lesson ask what are students' own [goals], in other words why they have come to the course and what their most central expectations are, that is to say what they want to learn in this course, because this tells me always [important things]..."* (010)

In the formative assessment, mastery experiences were involved when developing feedback practices: "*one needs to be a brave teacher […] so I just experiment in a way this, which I think is assessment, that I continuously give feedback*" (005)

Mastery experiences also dominated the summative assessment setting: most of the teachers had experienced positive and only one negative feelings of self-efficacy. Positive experiences were related to increasing competence in doing assessment (creating criteria, developing assessment methods and practices) and increasing efficiency.

"*I as a teacher need [evaluation criteria] so that I am able to genuinely assess the competence of the students and am able to act in an unbiased way. And then the students, they will see what is expected from them, that is they will see the learning goals and the criteria, in other words these are the ways the competencies should become concrete in the evaluation plan."* (010)

The only negative experience was related to the difficulty in conducting summative assessment:

"*The aim for learning is not primarily to increase knowledge but to stimulate thinking and that leads to a big question how you assess it and I have been thinking about this for 15 years and still have not been able to formulate that at all well to myself, and I have not even found a very good formulation of it myself."* (016)

Vicarious experiences were a less powerful source of feelings of self-efficacy than mastery, and all experiences were positive: nine in general, one in formative and nine in summative setting. Through vicarious experiences, for instance modeling colleagues, learning from pedagogy training or following common norms and regulations, the respondents have improved their summative assessment practices.

"*With my own experience and pedagogical training and all, my own attitude has surely been changed and also my idea of what is included in it, that although I would have had the basis before, then bringing them forward is what I have learned only over the time." (001)*

Social persuasion as a source of self-efficacy was identified both positively and negatively in the general, formative and summative settings. In positive experiences, respondents had received positive feedback from students, from colleagues or from improved results of students' performance.

"*Well, during that [practical] exam there is naturally interaction [with students], and then the students give me feedback that yeah, this is really good, and we should have more like this*." (011)

Negative experiences of social persuasion were related to challenges to create assessment criteria that can be opened to students clearly enough:

"Yes, I do use [the evaluation criteria]. And it is lovely when they have been done, although just right now I should make a set of those, and it is difficult indeed in my opinion to make up those qualitative criteria so that also the student would understand them, you feel rather insignificant when doing them...." (014)

Physiological and affective states were not common sources of self-efficacy related to assessment. General setting, formative assessment and summative assessment generated few experiences. In positive experiences teachers felt comfortable and confident in assessing and in negative ones had feelings of incompetence or insecurity.

In all, we identified the following elements connected to self-efficacy: fairness, openness, easiness, difficulty, reflection, pedagogical knowledge, familiarity with students, responsibility, effectiveness, support from colleagues and student enthusiasm (Table 2).

[Table 2 about here]

Out of the 11 elements related to self-efficacy experiences, six were only present in positive experiences (effectiveness, familiarity with students, easiness, responsibility, support from colleagues, student enthusiasm), one only in negative experiences (difficulty) and four in both situations (fairness, openness, reflection and pedagogical knowledge). Mastery experiences in assessment in general mode were related most often to fairness: validity and reliability of assessment.

"*In my opinion, the system needs to be totally transparent and I think that the students also like that it is, that they know that there is no negotiation in that. To be sure, I have seen some tears here, but then I just say, that I cannot do anything, you just did not know enough*" (015)

Reflection (ability to look back at own work, perhaps discuss with colleague or make plans according to the process), openness (one makes sure that both parties are aware of the learning objectives, assessment methods and assessment criteria) and easiness (assessment can be done effortlessly) were less typical elements.

Familiarity with students which is related to experience was also less prominent. A teacher knows his typical student material and is aware their common capabilities:

"For the first-year students, what they know, I might sound arrogant but I have a certain feel for what they know as I have just read their and their friends' matriculation exams a couple of months earlier and therefore in a sense I do have some information on what to expect." (002)

Some elements were identified only few times from teachers' interviews (Table 2). Relating to assessment procedure, effectiveness related to the time used, and difficulty in performing valid assessment were rarely used. Teachers' pedagogical knowledge (pedagogical training that leads to better knowledge of assessment methodology and theories behind good assessment), responsibility (relating to the teachers' responsibility towards the students' skills in their future profession), and support from colleagues (referring here to working together with colleagues with same interest towards assessment and getting support to your own ideas) were also identified only from some interviews.

Discussion

The aim of the study was to investigate how academics' experiences of self-efficacy are related to their experiences concerning assessment. We identified four modes of assessment, which were related to the self-efficacy experiences: assessment in general, diagnostic assessment, formative assessment and summative assessment. Summative assessment was the most common context of self-efficacy, indicating its predominance in higher education. Diagnostic assessment was mentioned by only three teachers (positive mastery experiences), which may indicate the rareness of diagnostic assessment in general. Negative self-efficacy experiences were only related to summative or to assessment in general. In diagnostic and formative assessment settings, all the experiences of self-efficacy were positive. As formative assessment is often given as a feedback in contact with the students, this is in line with the previous results that

direct contact with students strengthens teacher identity, enhancing also enjoyment and job satisfaction (van Lankveld et al. 2016; Myyry et al. 2020).

In three modes (general, formative and summative) all four sources of self-efficacy were present, mastery experiences being the most common source. This is in line with previous findings (Palmer, 2006; Usher and Pajares, 2008). Experience strengthens academics' self-confidence and skills also in assessment by making it easier and rewarding. Vicarious experiences, social persuasion and physiological and affective states were sources of self-efficacy in general assessment, formative and summative assessment modes, but they were not mentioned in diagnostic assessment context. Our finding that mastery experiences were the most important source is supported by Talsma and her colleagues (2018). In their meta-analysis they tested whether self-efficacy predicts performance or performance self-efficacy. They concluded that both affect each other, and that there is a feedback loop or cycle of performance – self-efficacy – performance.

Vicarious experiences were found to be less common source of self-efficacy, for instance modeling colleagues, learning from pedagogy training or following common norms and regulations. Just observing others may not raise self-efficacy belief, as the research on teacher development has revealed the importance of reflection in developing both teacher identity and teacher competence (Postareff and Nevgi, 2014; Nevgi and Löfström, 2015; Pekkarinen, Hirsto and Nevgi, 2020).

Social persuasion was found both in assessment in general and in summative assessment settings. In this source, both positive and negative self-efficacy experiences were presented in equal numbers. This was often related to feedback, which has also previously been a source of

efficacy beliefs by highlighting personal capabilities (Schunk, 1984). Physiological and affective states were minor sources of self-efficacy in this study. This seems to support the findings from other sources; teachers felt at ease and confident or incompetence and insecure in relation to self-efficacy.

Our main finding was that fairness of the assessment is by far the most common element for self-efficacy among our group of awarded teachers. This corresponds well with the finding that fairness is also the major source of emotions related to assessment (Myyry et al. 2020). Fairness was associated with both positive and negative experiences of self-efficacy, especially in summative assessment. Success in fairness enhances self-efficacy whereas fear of failure makes the teacher question her/his abilities. This is in line with earlier findings that teachers' self-efficacy is positively linked to factors underlying teachers' psychological well-being, including personal accomplishment, job satisfaction, and commitment (Zee and Koomen, 2016). Fairness was related both to allocating resources (such as time and effort) and just procedures (such as transparent assessment criteria and consistency in assessment across time and persons), being in line with previous findings (Tierney, 2014; Rasooli, Zandi and DeLuca, 2018; Flores et al. 2015; Hailikari et al. 2014) and confirming the importance of fair procedures to people (Colquitt et al. 2001). In this sense, fairness seems to be related to the elements of organizing teaching and workload as well as to the staff-student relationship (Entwistle, McCune and Hounsell, 2002).

From the other elements of our data, easiness (how effortless assessment is) and effectiveness (assessment should not require too much time) seem to relate to the course organization and workload in the ETL-model of teaching learning environment (Entwistle, McCune and Hounsell, 2002). Difficulty in creating valid assessment criteria can reflect

problems in the assessment procedure, including the teaching and assessment contents element in the ETL-model. Most of the elements identified from our data could be located on the staff-student relationship (i.e. guidance and support of learning, sense of fairness and affective quality of the relationship) component in the ETL-model. Besides fairness, openness (ensuring that the assessment criteria are clear to students), familiarity with students (knowing their level of competence), responsibility (feeling responsible for the competence students are achieving), and support from colleagues, even if it is focused on relationships between teachers. Reflection (reflecting one's work) and pedagogical knowledge could not be clearly linked to the ETL-model's elements, but more to teachers' beliefs and conceptions of teaching, which affect the teaching-learning environment.

Difficulty and openness refer also to teachers' willingness to transfer the tacit knowledge of assessment to students, which may be challenging (Rust, Price and O'Donovan, 2003). Our respondents seem to sustain assessment culture more than testing culture (Birenbaum, 1996), emphasizing students' agency in assessment procedures, fairness of assessment and feeling responsible of learning outcomes and development of students' professional competence.

Limitations

Because our exploratory study included only a small convenience sample from a pool of experienced and awarded teachers, the results cannot be generalized to all university teachers. However, the sample represented teachers who had sustained experience with many-sided assessment methods, and our results provide a baseline for the future research. It would be important to study university teachers in different phases of their careers and their self-efficacy connected to assessment practices. Moreover, experiences of self-efficacy were coded from the

interviews deductively, but the interviews did not include straight questions about self-efficacy. Thus, we may have over interpreted the responses. We had enhanced reliability by cross-coding and iterating the coding process several times. Moreover, the study was conducted in one cultural context. For instance, power distance (the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is distributed unequally) in Finland is relatively low compared to for example United States, Spain and Belgium (Hofstede and Hofstede, 2005). This means that university teachers in Finland may feel to be equal with students in a larger extent than in other countries. This might have affected the results.

Conclusions

In sum, our research indicates that assessment plays an important role in academics' self-efficacy. This study confirms that fairness is a prominent element in assessment. The results reflect teachers' role as judges and on the other hand facilitators of learning. Our results also show that of the elements of teaching-learning environment, especially staff-student relationship is associated with teachers' experiences of assessment-related self-efficacy. Besides concerns of fairness, desire to be open in assessment and with assessment criteria and knowing the students' level of competence suggest that the teacher-student relationship is important to our respondents. Our study suggests that in pedagogical training it is important to pay attention to university teachers' self-efficacy beliefs and especially fairness in assessment practices. For further research, we might ask how teachers' assessment-related self-efficacy develops, what is the role of negative experiences of self-efficacy in professional development of higher education teachers, how their conceptions of teaching-learning environment (e.g., fairness) are related to

assessment practices and how organizational/academic culture affects teachers' conceptions and practices.

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References

Archer, E. 2017. "The Assessment Purpose Triangle: Balancing the Purposes of Educational Assessment." *Frontiers in Education* 2(41), 1-7. doi: 10.3389/feduc.2017.00041.

Bailey, J. G. 1999. "Academics' Motivation and Self-efficacy for Teaching and Research." *Higher Education Research & Development* 18(3): 343–359.

Bandura, A. 1977. "Self-efficacy: Toward a Unifying Theory of Behavioral Change." *Psychological Review* 84: 191–215.

Bandura, A. 1982. "Self-Efficacy Mechanism in Human Agency." *American Psychologist* 37(2): 122–147.

Bandura, A. 1986. "The Explanatory and Predictive Scope of Self-efficacy Theory." *Journal of Social and Clinical Psychology* 4(3): 359-373.

Bandura, A. 1997. *Self-efficacy: The Exercise of Control*. New York: Freeman.

Bennett, R. E. 2011. “Formative Assessment: A Critical Review.” *Assessment in Education: Principles, Policy & Practice* 18(1): 5–25.

Bies, R., and J.F. Moag. 1986. “Interactional Justice: Communication Criteria of Fairness.” In *Research on negotiations in organizations, vol 1* edited by R.J. Lewicki, B.H. Sheppard and M.H. Bazerman, 43-55. Greenwich, CT: JAI Press.

Biggs, J. 2003. *Teaching for Quality Learning at University.* 2nd ed. Buckingham: The Society for research into Higher Education and Open University Press.

Birenbaum, M. 1996. “Assessment 2000: Towards a Pluralistic Approach to Assessment.” In *Alternatives in assessment of Achievement, Learning Processes and Prior Knowledge* edited by M. Birenbaum, and F. Dochy, 3-30. Boston: Kluwer.

Black, P., C. Harrison, C. Lee, B. Marshall and D. Wiliam. 2004. “Working Inside the Black Box: Assessment for Learning in the Classroom.” *Phi Delta Kappan* 86(1): 9–21.

Black, P., and D. Wiliam. 2009. “Developing the Theory of Formative Assessment.” *Educational Assessment, Evaluation and Accountability* 21: 5–31.

Boud, D. 2000. “Sustainable Assessment: Rethinking Assessment for the Learning Society.” *Studies in Continuing Education* 22(2): 151–167.

Boud, D., and N. Falcikov. 1989. “Quantitative Studies of Student Self-Assessment in Higher Education: A Critical Analysis of Findings.” *Higher Education* 18*:* 529-549.

Boud, D., and N. Falchikov. 2006. “Aligning Assessment with Long-Term Learning.” *Assessment & Evaluation in Higher Education* 31(4): 399–413.

Brown, G. T. L. 2008. *Conceptions of Assessment: Understanding what Assessment Means to Teachers and Students*. New York: Nova Science Publishers.

Burger, R. 2017. “Student Perceptions of the Fairness of Grading Procedures: A Multilevel Investigation of the Role of the Academic Environment.” *Higher Education* 74(2): 301-320.

Caprara, G.V., C. Barbaranelli, P. Steca and P.S. Malone. 2006. “Teachers' Self-Efficacy Beliefs as Determinants of Job Satisfaction and Students' Academic Achievement: A Study at the School Level.” *Journal of School Psychology* 44: 473-490.

Chang, T., Lin, H., & Song, M. 2011. ”University Faculty Members' Perceptions of their Teaching Efficacy.” *Innovations in Education and Teaching International* 48: 49-60.

Colquitt, J. A., D.E. Conlon, M.J. Wesson, C.O.L.H. Porter, and K.Y. Ng. 2001. “Justice at the Millennium: A Meta-Analytic Review of 25 Years of Organizational Justice Research.” J*ournal of Applied Psychology* 86: 425–445.

Deutsch, M. 1985. *Distributive Justice: A Social-Psychological Perspective*. New Haven: Yale University Press.

Entwistle, N., V. McCune and J. Hounsell 2002. *Approaches to Studying and Perceptions of University Teaching-learning Enviroments: Concepts, Measures and Preliminary Findings*. Occasional Report 1, ETL project.

"The Ethical Principles of Research with Human Participants and Ethical Review in the Human Sciences in Finland." *Finnish National Board on Research Integrity TENK guidelines 2019*. Publications of the Finnish National Board on Research Integrity TENK 3/20.

Falchikov, N. 2005. *Improving Assessment Through Student Involvement: Practical Solutions for Aiding Learning in Higher and Further Education*. London and New York: Routledge Falmer.

Flores, M.A., A.M. Veiga Simão, A. Barros, and D. Pereira. 2015. "Perceptions of Effectiveness, Fairness and Feedback of Assessment Methods: A Study in Higher Education", *Studies in Higher Education* 40(9): 1523-1534.

Greenberg, J. 1990. "Employee Theft as a Reaction to Underpayment Inequity: The Hidden Cost of Pay Cuts." *Journal of Applied Psychology* 75: 561-568.

Hailikari, T., L. Postareff, T. Tuononen, M. Räisänen, and S. Lindblom-Ylänne. 2014. "Students' and Teacher's Perceptions of Fairness in Assessment". In *Advances and Innovations in University Assessment and Feedback: A Festschrift in Honour of Professor Dai Hounsell* edited by C. Kreber, C. Anderson, N. Entwistle, and J. McArthur, 99-113. Edinburgh: Edinburgh University Press.

Hattie, J., and H. Timperley. 2007. "The Power of Feedback". *Review of Educational Research* 77(1): 81–112. https://doi.org/10.3102/003465430298487.

Holzberger, Philipp and Kunter. 2013. “How Teachers’ Self-Efficacy is Related to Instructional Quality: A Longitudinal Analysis”. *Journal of Educational Psychology* 105(3): 774 –786. doi: 10.1037/a0032198.

Hofstede, G., and G.J. Hofstede. 2005. *Culture and Organizations. Software of the Mind*. New York: McGraw-Hill.

Klassen, R. M., & Virginia M.C. Tze, 2014. “Teachers’ self-efficacy, personality, and teaching effectiveness: A meta-analysis." *Educational Research Review* 12*:* 59-76. doi: https://doi.org/10.1016/j.edurev.2014.06.001.

Knight, P. T. (2002). “Summative Assessment in Higher Education: practices in disarray.” *Studies in Higher Education* 27(3): 275-286.

van Lankveld, T., J. Schoonenboom, M. Volman, G. Croiset, and J. Beishuizen. 2016. “Developing a Teacher Identity in the University Context: A Systematic Review of the Literature.” *Higher Education Research & Development* 36 (2): 325–342. doi: 10.1080/07294360.2016.1208154.

Leventhal, G.S. 1980. “What should be done with Equity Theory? New Approaches to the Study of Fairness in Social Relationships.” In *Social Exchange. Advances in Theory and Research* edited by K.J. Gergen, M.S. Greenberg and R.H. Wills, 27-55. New York: Plenum.

Lutovac, S., R. Kaasila, J. Komulainen, and M. Maikkola. 2017. “University Lecturers’ Emotional Responses to and Coping with Student Feedback: A Finnish Case Study.” *European Journal of Psychology of Education* 32(2): 235–250. https://doi.org/10.1007/s10212-016-0301-1.

Matthews, B. and L. Ross. 2010. *Research Methods: A Practical Guide for the Social Sciences*. Harlow: Longman.

Morf, C.C, and S.L. Koole. 2012. "The Self." In *An Introduction to Social Psychology,* 5th ed. Edited by M. Hewstone, W. Stroebe and K. Jonas, 121-169. Chichester: BSP Blackwell.

Morris, D.B. and E.L. Usher. 2011. "Developing Teaching Self-Efficacy in Research Institutions: A Study of Award-Winning Professors." *Contemporary Educational Psychology* 36: 232-245.

Myyry, L., T. Karaharju-Suvanto, M. Vesalainen, A-M. Virtala, M. Raekallio, O. Salminen, K. Vuorensola, and A. Nevgi. 2020. "Experienced Academics' Emotions Related to Assessment." *Assessment & Evaluation in Higher Education* 45(1): 1-13. doi: 10.1080/02602938.2019.1601158.

Nevgi, A., and E. Löfström (2015). "The Development of Academics' Teacher Identity: Enhancing Reflection and Task Perception through a University Teacher Development Programme." *Studies in educational evaluation* 46: 53–60. doi: 10.1016/j.stueduc.2015.01.003.

Palmer, D.H. 2006. "Sources of Self-Efficacy in a Science Methods Course for Primary Teacher Education Students." *Research in Science Education* 36: 337-353.

Parpala, A., & S. Lindblom-Ylänne. 2007. "University Teachers' Conceptions of Good Teaching in the Units of High-quality Education." S*tudies in Educational Evaluation* 33: 355-370

Parpala, A., S. Lindblom-Ylänne, E. Komulainen, T. Litmanen, and L. Hirsto. 2010. "Students' Approaches to Learning and their Experiences of the Teaching-Learning Environment in Different Disciplines." *British Journal of Educational Psychology* 80: 269-282.

Pekkarinen, V., Hirsto, L., and Nevgi, A. (2020). "Ideal vs. Experienced: University Teachers' Perceptions of a Good University Teacher and their Experienced Pedagogical Competency. *International Journal of Teaching and Learning in Higher Education* 32(1): 13-30. http://www.isetl.org/ijtlhe/pdf/IJTLHE3634.pdf.

Postareff, L., and S. Lindblom-Ylänne. 2011. "Emotions and Confidence within Teaching in Higher Education." *Studies in Higher Education* 36 (7): 799-813. doi: 10.1080/03075079.2010.483279.

Postareff, L., and A. Nevgi (2014). "Development Paths of University Teachers during a Pedagogical Development Course." *Educar : revista de la Secció de Ciéncies de l'Educació* 51:1. doi: 10.5565/rev/educar.647 .

Rasooli, A., H. Zandi, and C. DeLuca. 2018. "Re-Conceptualizing Classroom Assessment Fairness: A Systematic Meta-Ethnography of Assessment Literature and Beyond." *Studies in Educational Evaluation* 56: 164-181.

Richardson, J. T.E. 2006. "Investigating the Relationship between Variations in Students' Perceptions of their Academic Environment and Variations in Study Behaviour in Distance Education." *British Journal of Educational Psychology* 76: 867–893.

Rust, C., M. Price, and B. O'Donovan. 2003. "Improving Students' Learning by Developing their Understanding of Assessment Criteria and Processes." *Assessment & Evaluation in Higher Education* 28(2): 147-164.

Sadler, D. R. (1989). "Formative Assessment and the Design of Instructional Systems." *Instructional Science* 18:119-144.

Sadler, D.R. 2010. "Beyond Feedback: Developing Student Capability in Complex Appraisal." *Assessment & Evaluation in Higher Education* 35(5): 535-550.

Schunk, D.A. 1984. "Sequential Attributional Feedback and Children's Achievement Behaviors." *Journal of Educational Psychology* 76(6): 1159-1169.

Segers, M., F. Dochy, and D. Gijbels. 2010. "Impact of Assessment on Students' Learning Strategies and Implications for Judging Assessment Quality." In *International Encyclopedia of Education, 3rd ed* edited by P. Peterson, E. Baker, B. McGaw, 196-201. Oxford: Elsevier.

Tai, J., R. Ajjawi, D. Boud, P. Dawson, and E. Panadero. 2018." Developing Evaluative Judgement: Enabling Students to Make Decisions about the Quality of Work." *Higher Education* 76*:* 467–481.

Takahashi, S., 2011. "Co-constructing efficacy: A "communities of practice" perspective on teachers' efficacy beliefs." *Teaching and Teacher Education* 27(4): 732-741. doi: https://doi.org/10.1016/j.tate.2010.12.002.

Talsma, K., B. Schüz, R., Schwarzer, and K. Norris 2018. "I Believe, therefore I Achieve (and vice versa): A Meta-analytic Cross-Lagged Panel Analysis of Self-Efficacy and Academic

Performance." *Learning and Individual Differences* 61: 136-150. doi: https://doi.org/10.1016/j.lindif.2017.11.015.

Tierney, R.D. 2014. "Fairness as a Multifaceted Quality in Classroom Assessment." *Studies in Educational Evaluation* 43: 55-69.

Tschannen-Moran, M., and D. Johnson. 2011. "Exploring Literacy Teachers' Self-Efficacy Beliefs: Potential Sources at Play." *Teaching and Teacher Education* 27: 751–761.

Tschannen-Moran, M., and A. Woolfolk Hoy, 2007. "The Differential Antecedents of Self-Efficacy Beliefs of Novice and Experienced Teachers." *Teaching and Teacher Education* 23(6): 944-956. doi: https://doi.org/10.1016/j.tate.2006.05.003.

Tschannen-Moran, M., A. Woolfolk Hoy, and W.K. Hoy, W. K. 1998. "Teacher Efficacy: Its Meaning and Measure." *Review of Educational Research* 68*:* 202–248.

Usher, E.L and F. Pajares. 2008. "Sources of Self-Efficacy in School: Critical Review of the Literature and Future Directions." *Review of Educational Research* 78(4): 751-796.

Vehviläinen, S., E. Löfström, and A. Nevgi. 2018. "Dealing with Plagiarism in the Academic Community: Emotional Engagement and Moral Distress." *Higher Education* 75(1): 1 -18. doi: https://doi.org/10.1007/s10734-017-0112-6.

Virtanen, V., L. Postareff, and T. Hailikari. 2015. "Millainen arviointi tukee elinikäistä oppimista?" [What kind of Assessment Supports Life-Long Learning?]. *Yliopistopedagogiikka* 22(1): 1–11.

Wiliam, D. 2011. “What is Assessment for Learning?” *Studies in Educational Evaluation* 37(1): 3–14.

Yan, Z, and G.T.L. Brown. 2017. “A Cyclical Self-Assessment Process: Towards a Model of how Students Engage in Self-Assessment.” *Assessment & Evaluation in Higher Education 42*(8): 1247-1262.

Zee, M. & H. M. Y. Koomen. 2016. “Teacher Self-Efficacy and Its Effects on Classroom Processes, Student Academic Adjustment, and Teacher Well-Being: A Synthesis of 40 Years of Research.” *Review of Educational Research 86(*4): 981–1015.

Table 1. Number of teachers (out of 16) experiencing positive or negative self-efficacy in different modes of assessment according to the four main sources defined by Bandura (1986)

Modes of assessment	**Main sources of self-efficacy**			
	Mastery experiences	Vicarious experiences	Social persuasions	Physiological and affective states
Assessment in general	Positive: 13 Negative:2	Positive: 6 Negative: -[1)]	Positive: 4 Negative: 1	Positive: 1 Negative: 2
Diagnostic assessment	Positive: 3 Negative: -	Positive: - Negative: -	Positive: - Negative: -	Positive: - Negative: -
Formative assessment	Positive: 8 Negative: -	Positive: 1 Negative: -	Positive: 1 Negative: -	Positive: 1 Negative: -
Summative assessment	Positive: 12 Negative: 1	Positive: 9 Negative: -	Positive: 3 Negative: 2	Positive: 2 Negative: -

Note: One teacher is only once in one cell, but same teachers can have experiences in several cells. [1)] - denotes no observation

Table 2. Elements connected with self-efficacy in different modes of assessment according to the four main source categories. Numbers indicate the number of interviews the elements were detected in

Modes of assessment	**Main sources of self-efficacy**			
	Mastery experiences	Vicarious experiences	Social persuasion	Physiological and affective states
Assessment in general	*Positive*: Fairness: 10 Reflection: 2 Openness: 2 Easiness: 2 Familiarity with students: 1 Effectiveness: 1	*Positive*: Reflection: 3 Fairness: 2 Pedagogical knowledge: 1 Easiness: 1	*Positive*: Reflection: 3 Fairness: 1 Openness: 1	*Positive*: Reflection: 1
	Negative: Fairness: 1 Difficulty: 1	*Negative*: - [1)]	*Negative*: Difficulty: 1 Openness: 1 Fairness: 1 Reflection: 1	*Negative*: Fairness: 2
Diagnostic assessment	*Positive*: Familiarity with students: 3	*Positive*: -	*Positive*: -	*Positive*: -
	Negative: -	*Negative*: -	N*egative*: -	*Negative*: -
Formative assessment	*Positive*: Fairness: 1 Reflection: 3 Easiness: 3 Familiarity with students: 2 Responsibility: 1	*Positive*: -	*Positive*: -	*Positive*: -
	Negative: -	*Negative*: -	*Negative*: -	*Negative*: -
Summative assessment	*Positive*: Fairness: 8 Reflection: 3 Openness: 3 Easiness: 8 Responsibility: 1 Effectiveness: 1	*Positive*: Fairness: 5 Reflection: 1 Easiness: 4 Responsibility: 1 Support from colleagues: 1	*Positive*: Fairness: 2 Student enthusiasm: 1	*Positive*: Openness: 1 Easiness: 1

	Negative: Difficulty: 1	*Negative*: -	*Negative*: Pedagogical knowledge: 1 Fairness: 1 Reflection: 1	*Negative*: -

Note: One element from one teacher is only once in one cell, but the same teacher may have several elements in each cell and the same teacher can be in several cells. [1)] - denotes no observation