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Metacognitive awareness and justice experience as predictors of master's students' study burnout in supervision

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ABSTRACT

This study investigates students' experiences of master's thesis supervision and analyses the links between metacognitive awareness, justice experiences and study burnout in supervision. University students' study burnout has concerned higher education institutions recently. Especially writing a master's thesis can be stressful, because it demands cognitive involvement and metacognitive awareness. In addition, justice experiences are essential for human beings in organisational contexts, but research integrating supervision and justice experiences in higher education is scarce. Survey responses were collected from 441 master's students from the Faculty of Law. The results revealed that metacognitive awareness and justice experiences in supervision were significant predictors of students' study burnout in master's thesis projects. In particular, lack of knowledge about cognition and poor ethical processes in supervision explained master's students' study burnout. The results confirm earlier findings about the importance of justice experiences and open new avenues for future research in higher education.

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Study burnout; justice experiences in supervision; metacognitive awareness; master's thesis

Writing a master's thesis is a complex task that requires independence and metacognitive awareness, so to say the ability to regulate one's learning and be aware of one's learning processes (Harrison and Vallin, 2018; de Kleijn et al., 2016; Negretti, 2012). It may increase the risk of feeling overwhelmed by study requirements, and it can lead to study burnout (Lesener et al., 2020; Schaufeli et al., 2002). In addition, the relationship between student and supervisor is essential for a successful thesis project (Lee, 2008; Pyhältö, 2018). Due to the unbalanced power between supervisor and supervisee, the relationship is also susceptible to problems that might cause experiences of injustice (Löfström & Pyhältö, 2019). Feelings to be justly treated have been found to affect wellbeing negatively (Cachón-Alonso & Elovainio, 2022; Cloutier et al., 2018). Study burnout among higher education students has been widely discussed and studied recently (Allen et al., 2023; Parpala et al., 2021; Salmela-Aro et al., 2022), and in higher education study burnout symptoms have been found to increase over the course of study

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(Salmela-Aro & Read, 2017). Study burnout and metacognitive awareness have largely been examined independently from one another in higher education studies showing their important role in learning and studying (Harrison & Vallin, 2018; Parpala et al., 2021; Tuononen et al., 2023; Yin et al., 2022), however studies on the relationships between these two aspects are scarce. In particular, studies on master's students' justice experiences in supervision are limited, although unfair procedures seem to increase students' negative emotions in supervision (Horan et al., 2012). Thus, the present study seeks to identify how students' study-related wellbeing in terms of study burnout is associated with metacognitive awareness and justice experiences in master's thesis supervision.

Metacognitive awareness

Students' ability to consciously think of their learning process, i.e., metacognitive awareness (Schraw & Dennison, 1994), is an important characteristic for learners and it is related for instance to academic achievement (Young & Fry, 2008), critical thinking (Rivas et al., 2022) and adaptive learning profiles (Tuononen et al., 2023). Metacognitive awareness is defined as students' ability to regulate and be aware of their own learning processes, as well as their ability to monitor and reflect on their learning and thinking (Azevedo & Witherspoon, 2009; Tuononen et al., 2023; Veenman et al., 2006) and their strengths and weaknesses, and deepen their awareness of their own learning strategies (Harrison & Vallin, 2018; Schraw & Dennison, 1994). Two dimensions of metacognitive awareness are usually identified: knowledge about cognition and regulation of cognition (Kallio et al., 2018; Schraw & Dennison, 1994). Knowledge about cognition refers to knowledge about oneself as a learner and one's learning strategies (declarative knowledge), how we use the strategies (procedural knowledge) and knowledge about when and why to use the strategies (conditional knowledge) (Harrison & Vallin, 2018; Schraw & Dennison, 1994). Regulation of cognition refers to the control aspects of learning, how we plan and monitor our learning and test and evaluate our strategies (Harrison & Vallin, 2018; Schraw & Dennison, 1994). Knowledge about cognition and regulation of cognition are closely related (Tuononen et al., 2023), and regulation of cognition enables one to monitor knowledge about cognition (Harrison & Vallin, 2018). Studies have found variation among higher education students, showing that graduate students were better able to regulate their cognition than undergraduates although there was no difference in their knowledge about cognition (McCardle et al., 2017; Young & Fry, 2008). Further, it has shown large variation between the same year cohort higher education students' regulation of cognition (Lindblom-Ylänne et al., 2017). Writing a master's thesis requires metacognitive awareness from the student. Research linking metacognitive awareness and writing a master's thesis is limited, but Negretti (2012) found that metacognitive awareness helped students to adapt their writing strategies to achieve the purpose of the text in academic writing. For example, in Karlen and Compagnoni's (2017) study, students regarding that writing skill can be developed, planned and monitored their writing more often than their peers who took the writing skill to be stable.

Overall studies on metacognitive awareness have focused on student learning and the use of learning strategies. It is claimed that reflection is an antecedent of metacognitive awareness (Tuononen et al., 2023), and empirical evidence shows that unreflective

learning is negatively associated to metacognitive awareness (Adadan & Oner, 2018; Tuononen et al., 2023) and positively to study burnout (Asikainen & Katajavuori, 2022; Partanen et al., 2023; Yin et al., 2022). Thus, in this study we will examine the relationship between metacognitive awareness and study burnout more closely.

Justice experiences

As a conscious cognitive process, metacognitive awareness is related to how individuals perceive and interpret their social environment (Dweck & Leggett, 1988). One crucial aspect of learning environment is how fairly students feel they are treated (Cheng & Leung, 2022; Chory-Assad & Paulsel, 2004; Goodboy, 2011; Horan et al., 2012; Löfström and Pyhältö, 2019). In line with organisational and social psychological research, three types of justice—perceptions of fairness regarding outcomes or processes that occur in the instructional context—can be identified in the classroom: distributive, procedural and interactional (Chory-Assad & Paulsel, 2004). Distributive classroom justice refers to fair distribution of grades. Procedural justice indicates that the grading process, scheduling of exams and assignments, workload of the course and how the class is conducted are fair. Interactional classroom justice refers to fairness in the interpersonal treatment received by individuals, and fair interaction between students and teachers. Violations of fair procedures seem to enhance negative reactions towards instructors (Chory-Assad & Paulsel, 2004) and increase negative emotions among learners (Horan et al., 2012). Experiences of unfair procedures and interactions (such as unjust testing, grading, teaching style and offensive instructors) might trigger students' expressions of disagreements with the instructors (Goodboy, 2011).

Supervision and experiences of justice

Academic supervision is perceived as a relationship between supervisor and supervisee (de Kleijn et al., 2012; Zeegers & Barron, 2012). Typically, supervision has two different goals: product, focusing on the contents, and process, focusing on learning and creating scientific expertise (Lee, 2008; Murphy et al., 2007). Pyhältö (2018) defined the main role of a supervisor as facilitating the research process, scaffolding the student (e.g., emotional support, feedback, support agency), and providing project management as well as presence and commitment. Ethical problems and, for instance, violence of fairness norms have been reported in several studies on doctoral supervision (Goodyear et al., 1992; Löfström & Pyhältö, 2014, 2019; Löfström et al., 2023). Ethical aspects are especially relevant in supervision, because it is an important way of socialising students into the research community (Löfström & Pyhältö, 2014, 2020). In general, supervisors are seen as professional role models to supervisees. Löfström and Pyhältö (2019) designed a survey to measure ethical issues in supervision relying on ethical principles of respecting autonomy, avoiding harm and exploitation, being helpful and supporting, upholding justice and being truthful and respectful. It was partly based on the supervisory support items from The Doctoral Experience survey to measure PhD students' study experiences across countries and disciplines, designed by Pyhältö et al. (2019). Löfström and Pyhältö (2019) ended up with three dimensions of their instrument: form, rule and care. Form referred to ethical principles of autonomy, being helpful and being truthful regarding the

research community, rule to justice issues in supervision, such as equal and unbiased treatment and care to the helpfulness and supportiveness of supervisors. They observed that all dimensions positively predicted satisfaction with supervision and negatively predicted study burnout experiences of the doctoral students. Cheng and Leung (2022) interviewed PhD students about their experiences of exploitative supervision. They identified five themes, including justice exploitation, referring to breaches of justice such as unfair distribution of authorship and beneficent exploitation, referring to jeopardising supervisees' wellbeing. Thus, the relation between supervisee and supervisor can also be difficult and increase study burnout (Löfström & Pyhältö, 2014). A master's thesis project also highlights an aspect of the supervisor-supervisee relationship; thus, it is plausible that ethical issues are relevant in master's thesis projects. However, research integrating master's thesis supervision and justice experiences in higher education is scarce.

Students' study burnout

Study burnout has recently been widely examined as an indicator of higher education students' wellbeing (Parpala et al., 2021; Salmela-Aro et al., 2022). It is defined as a syndrome with three key components: exhaustion, cynicism and inadequacy (Salmela-Aro et al., 2009; Schaufeli et al., 2002). According to Salmela-Aro et al. (2009) exhaustion refers to feelings of chronic tiredness and a lack of emotional energy, whereas cynicism involves a lack of interest and a cynical attitude towards studying and inadequacy is defined as a feeling of incompetence and poor achievement in studying. Study burnout occurs when students feel overwhelmed by the study requirements and are unable to meet those requirements despite their best efforts (Schaufeli et al., 2002). Burnout seems to increase along the academic study track in higher education (Liu et al., 2022; Salmela-Aro & Read, 2017; Salmela-Aro et al., 2022). The studies on study burnout have focused on psychological processes, for example on the relationship between study burnout and students' engagement with their studies (Salmela-Aro & Read, 2017; Salmela-Aro et al., 2022). However, there is little research on the relationship between metacognitive awareness and study burnout.

Aims of the study

Prior studies have shown that metacognitive awareness as a reflective skill is an important aspect in learning (Harrison & Vallin, 2018; Tuononen et al., 2023) and in academic writing (Karlen & Compagnoni, 2017; Negretti, 2012) and that justice experiences are essential in a successful supervision process (Cheng & Leung, 2022, Goodyear et al., 1992; Löfström & Pyhältö, 2014), also predicting the study burnout of students (Löfström & Pyhältö, 2019; Löfström et al., 2023). How metacognitive awareness is related to students' study burnout is not clear, albeit unreflective learning is related to higher study burnout (Asikainen & Katajavuori, 2022; Partanen et al., 2023; Yin et al., 2022). As a cognitive process through which individuals interpret their environment, we assume that metacognitive awareness is associated to the perceptions of justice experiences in the supervision process and that both are negatively related to study burnout of master's thesis students.

Thus, based on the empirical findings mentioned above, we expect that:

- (1) metacognitive awareness is positively related to the experiences of justice in supervision,
- (2) metacognitive awareness is negatively related to the components of study burnout, and
- (3) experiences of justice in supervision are negatively related to the components of study burnout.

Method

Context

Students in the Faculty of Law at a large, multidisciplinary public university in Finland were selected through a discipline-specific entrance examination or their National Matriculation Examination grades. These students have the right to complete both the lower and higher academic degrees. The bachelor's degree has limited relevance to the labour market, and thus, the goal of nearly all students is to graduate with a master's degree. The target duration of law studies is five years: three years for the bachelor's degree and an additional two years for the master's. Although Finnish universities follow the Bologna model, university students in Finland have generally had more freedom regarding the length of their studies, as they are not required to complete 60 credits per academic year, but students can progress according to their own study plan. The study time of the master's degree can vary from three to seven years (University of Helsinki, 2023; Ursin, 2019). In Finland, a master's thesis project is a 30 ECTS credit (The European Credit Transfer and Accumulation System) research project that often lasts one year and is completed during the second year of the master's degree (120 ECTS). Personal supervision and group guidance are provided (Annala et al., 2012).

Participants

The study participants comprised law students who had enrolled and participated in a master's level seminar in 2021 and spring 2022. All final-stage master's students in the present university were asked to fill in the online survey as a part of their studies. In addition, students who had started their master's seminar earlier, but had not yet graduated, were also asked to fill in the questionnaire. The questionnaire was sent to 601 students and the response rate was 95.5%. Ethical review and approval were not required for this study on human participants in accordance with the local legislation and institutional requirements (Finnish National Board on Research Integrity, 2019: <https://tenk.fi/en/ethical-review>). The questionnaire included a question about the duration of the thesis process in months and a section asking respondents for consent to use the answers for research purposes, and only the responses of those who gave permission ($n = 441$) were used in the present study. The questionnaire also contained additional measures, not dealt with in this article, and took about 20 min to complete.

Measures

Meta-cognitive awareness was measured with a modified version of the Metacognitive Awareness Inventory (MAI; Harrison & Vallin, 2018; Kallio et al., 2017, 2018, 2021; Schraw & Dennison, 1994). The original MAI consists of 52 items (Harrison & Vallin, 2018; Schraw & Dennison, 1994), but the modified 18-item Finnish version (Kallio et al., 2018) is measured by a 5-point scale (1 = completely disagree; 5 = completely agree). A two-component model (knowledge about cognition and regulation of cognition that are closely related) has been empirically supported in many studies (Harrison & Vallin, 2018; Schraw & Dennison, 1994; Tuononen et al., 2023). Based on the theoretical assumptions and previous empirical evidence, we tested the original model with two factors and conducted a confirmatory factor analysis with MPlus programme. Based on low loadings we discarded two items and with the remaining 16 items the two dimensions (knowledge about cognition and regulation of cognition) model resulted in an acceptable model ($\chi^2(101) = 291.701$, $p < .000$, TLI = .882, CFI = .901, RMSEA = .065, 90% CI for RMSEA = 0.057–0.074, SRMR = 0.057 (e.g., Schreiber et al., 2006).

Ethical supervision experience was measured with a modified version of the Ethical Issues in Supervision Scales by Löfström and Pyhältö (2019). We modified nine items to fit the master's thesis supervision context. In addition, seven items were taken and modified from the Cross-country Doctoral Experience Survey (Pyhältö et al., 2019), thus the instrument had 16 items altogether measured by a 5-point scale (1 = completely disagree; 5 = completely agree). Because some of the items were skewed to the positive end of the scale, we conducted a Principal Axis factoring (EFA) that is not so sensitive for the violations of normal distribution (Costello & Osborne, 2005). We also assumed that the items would correlate with each other and chose an Oblime (oblique) rotation method. Based on the eigenvalues greater than 1.0 and the Scree Plot, two factors were extracted that accounted for 61.90 of the total variance. All the communalities were acceptable. With a cutoff of .40 for inclusion of a variable in a factor, all the 16 variables loaded on one of the factors. The factors were as follows: *quality interaction in supervision* (10 items) and *ethical processes in supervision* (6 items). The items, factors and factor loadings are presented in Table 1.

To validate the two-factor model based on the EFA and on the theoretical assumptions, we conducted a confirmatory factor analysis with MPlus programme. The two dimensions (quality interaction in supervision and ethical processes in supervision) model resulted in an acceptable model ($\chi^2(102) = 382.917$, $p < .000$, TLI = .901, CFI = .916, RMSEA = .079, 90% CI for RMSEA = 0.071–0.088, SRMR = 0.044 (e.g., Schreiber et al., 2006).

Study burnout. The instrument of the Study Burnout Inventory (SBI; Salmela-Aro et al., 2009) was used to measure study burnout. There are nine items measured on a 6-point Likert scale (1 = completely disagree; 6 = completely agree). To test whether the three-scale model fit our data, a confirmatory factor analysis was carried out for the scales of study burnout by using MPlus programme. The three dimensions (exhaustion, cynicism and inadequacy) model resulted in an acceptable model ($\chi^2(24) = 82.862$, $p < .00$, TLI = .936, CFI = .958, RMSEA = .075, 90% CI for RMSEA = 0.057–0.092, SRMR = 0.039 (e.g., Schreiber et al., 2006). The *exhaustion* scale includes four items, such as 'I feel

Table 1. Factor analysis of the ethical issues in supervision scales with factor loadings.

Item	Factors	
	Quality interaction in supervision	Ethical processes in supervision
I often receive constructive criticism.	.87	
I receive encouragement and personal attention from my supervisors.	.86	
I receive supervision when I need it.	.86	
I can negotiate about central choices regarding my thesis with my supervisors.	.72	
I feel that my supervisors are interested in my opinions.	.71	
I have not been left without supervision during my thesis process. (reversed)	.67	
I can openly discuss any problems related to my doctoral education with my supervisors.	.67	
I can tell my supervisor if a personal matter affects my work with the thesis.	.63	
My supervisors encourage me to explore alternative viewpoints in my research.	.59	
I feel that my supervisors appreciate my work.	.58	
I am treated equally in the thesis project.		.80
My supervisors treat the master's thesis students in a fair way.		.79
My thesis reflects my own choices rather than supervisors' (reversed)		.59
I feel that I am treated with respect in the thesis project.		.57
I chose my thesis topic based on my own interests.		.56
My supervisors express critical comments on my research appropriately		.45

overwhelmed by the work related to my studies' (alpha = .81), *cynicism* consists of three items, such as 'I feel that I'm losing my interest to my studies' (alpha = .86), and *inadequacy* has two items, such as 'I often have feelings of inadequacy in my studies' (alpha = .66).

Results

Table 2 reports the means, standard deviations and inter-correlations of the main variables. Duration of the thesis process was not related to any of the main variables. Our respondents scored highly on knowledge about cognition and relatively low on regulation of cognition. For the ethical issues in supervision, means of subscales were closer to each other. In addition, we can see from Table 2 that metacognitive awareness scales correlate positively with each other and with both supervision scales: quality of interaction in supervision and ethical processes in supervision. Metacognitive awareness

Table 2. Means, standard deviation, and inter-correlations of the main variables.

	M (Sd)	1.	2.	3.	4.	5.	6.	7.
1. Duration of the thesis process in months	7.72 (6.34)	-						
2. Knowledge about cognition	3.85 (.50)	-.04	-					
3. Regulation of cognition	3.01 (.65)	-.02	.44**	-				
4. Quality of interaction in supervision	3.84 (.74)	-.09	.18*	.18*	-			
5. Ethical processes in supervision	4.29 (.59)	.01	.25**	.14*	.79**	-		
6. Exhaustion	2.85 (1.11)	-.04	-.29**	-.12*	-.20**	-.23**	-	
7. Cynicism	2.29 (1.16)	-.01	-.40**	-.26**	-.31**	-.34**	.45**	-
8. Inadequacy	3.31 (1.37)	.01	-.45**	-.28**	-.18**	-.27**	.66**	.55**

* $p < .05$, ** $p < .01$

Table 3. Summaries of the hierarchical regression analysis for variables predicting study-related burnout.

	Exhaustion			Cynicism			Inadequacy		
	β	R ²	ΔR^2	β	R ²	ΔR^2	β	R ²	ΔR^2
Step 1									
Knowledge about cognition	-.28**			-.36**			-.39**		
Regulation of cognition	-.01	.08**	.08	-.11	.17**	.17	-.11*	.21**	.20
Step 2									
Knowledge about cognition	-.25**			-.28**			-.34**		
Regulation of cognition	-.00			-.11*			-.11*		
Quality of interaction in supervision	-.05			-.06			.05		
Ethical processes in supervision	-.15*	.13**	.12	-.23**	.25**	.24	-.23**	.24**	.24

* $p < .05$, ** $p < .01$

scales were lined up negatively with study related burnout, inadequacy showing the strongest negative correlation. Ethical Issues in Supervision scales correlated highly positively with each other, and their association with study burnout was also significantly negative. Compared to metacognitive awareness, the strongest correlation was with cynicism.

To examine whether metacognitive awareness and justice experiences predict study burnout in our context, we conducted a hierarchical regression analysis. Although quality of interaction in supervision and ethical processes in supervision were highly connected to each other, indicating collinearity, the variance inflation factors (VIF) were low, so all the variables could be added to the regression model (Vehkalahti & Everitt, 2019). We ran a separate regression analysis for each study burnout scale: exhaustion, cynicism and inadequacy. Because metacognitive awareness is a cognitive process affecting how students interpret their learning environment and because evidence about the relationship between it and study burnout is not clear, knowledge about cognition and regulation of cognition were entered on the first step to each regression equation. Previous studies show that justice experiences are associated to study burnout, so the Ethical Issues in Supervision variables, quality in interaction in supervision and ethical process in supervision, were entered on the second step. Thus, we wanted to examine if justice experiences explain study burnout scores after the metacognitive awareness has been taken into account. Summaries of the hierarchical regression analysis are reported in Table 3. Exhaustion was significantly predicted by knowledge about regulation even when the ethical supervision variables were taken into account. However, ethical processes in supervision was a significant negative predictor ($\beta = -.15$, $p < .05$). Altogether the model explained 13% of the variance. For cynicism, both metacognitive awareness variables were significant predictors on the second step, but ethical processes in supervision still had some explanatory power ($\beta = -.23$, $p < .01$). The model explained 25% of the variance in cynicism. For inadequacy, knowledge about regulation ($\beta = -.34$, $p < .001$) and ethical processes in supervision ($\beta = -.23$, $p < .001$) were the significant predictors on the second step, and the model explained 24% of the variance.

Discussion

The present study aims to clarify the links between metacognitive awareness, experiences of justice and study burnout in supervision and in a master's thesis process. Students scored

relatively high in knowledge about cognition and low in regulation of cognition, which is in line with previous studies related to metacognitive awareness in Finland (Kallio et al., 2021; Tuononen et al., 2023). Both components of metacognitive awareness and ethical supervision experience were negatively related to all aspects of study burnout. Knowledge about cognition showed especially high negative correlations with cynicism and inadequacy. This makes sense considering that metacognitive awareness is a key element of agency, beliefs about one's capacity to act (Bandura, 2006). Hence it is conceptually related to inadequacy, feelings of incompetence in studying (Salmela-Aro et al., 2009). One source of agency is engagement in learning (Jääskelä et al., 2017), and lack of it can be manifested in cynicism as a lack of interest and an indifferent attitude towards studying (Salmela-Aro et al., 2009). Interestingly the duration of the thesis process was not related to any of the main variables. It is possible that students experience the supervisory process as consistent quality, despite the duration of the thesis process or the reasons for the delay in completing the thesis may be varied. According to the subjective judgments of Finnish university students, reasons for delays in duration of studies are for instance problems in arranging livelihood, lack of motivation for studying, demanding nature of the studies or health issues (Penttinen et al., 2017). Moreover, Penttinen et al. (2017) showed that in law education in particular, the amount of guided studying was lower than individual studying, but guided studying was related to graduating within the target time.

Regarding the components of metacognitive awareness, knowledge about cognition was a stronger predictor of study burnout than regulation of cognition. Knowledge about cognition refers to the ability to recognise what kind of learners we are and what our learning strategies are, whereas regulation of cognition relates to how we plan and monitor our learning, and test and evaluate our strategies (Harrison & Vallin, 2018; Schraw & Dennison, 1994). Our results indicate that knowledge about cognition is more important in expressing risk of study burnout than regulation of cognition. Knowledge about cognition is characterised by being aware of and reflecting on one's study strategies, why we use them and when the strategy is most effective (Harrison & Vallin, 2018; Schraw & Dennison, 1994). The result makes sense concerning that a deep approach to learning, which requires reflection on information learned, is positively associated with knowledge about cognition and negatively associated with study burnout (Asikainen et al., 2020; Parpala et al., 2021; Yin et al., 2022). Reflection may be the key issue: for instance, Schön (1983) has argued that through reflection one can comprehend new and uncertain situations, and that might protect against burnout symptoms.

The finding that quality interaction in the supervision process related negatively to dimensions of study burnout confirms the role of interactional justice in education (Goodboy, 2011) and is in line with arguments that the main role of a supervisor is to facilitate the research process and to gradually increase the supervisee's responsibility and agency through dialogue (Pyhältö, 2018; Vehviläinen, 2014; Zackariasson, 2020). If students perceived interaction with their supervisors to be at a high level and well-fitted, they seem to find the thesis project more engaged (Rönkkönen et al., 2023). Regarding learning approaches, deep learners perceive the teaching-learning environment more positively than students with unreflective approaches to learning (Richardson, 2006). Hence, it is possible that engaged and competent students interpret their interactions with supervisors positively. The same might apply to ethical processes, which also associated negatively with the dimensions of study burnout, especially

cynicism and inadequacy. This result confirms that experiences of justice have great meaning for people, and feelings of unfairness can affect wellbeing negatively, as opposed to feelings of being fairly treated (Cachón-Alonso & Elovainio, 2022).

While knowledge about cognition remained a strong negative predictor of cynicism and inadequacy in the hierarchical regression analysis, ethical processes in supervision still had explanatory power after that. Thus, it seems that at least in the supervision context, what is meaningful is not just good interaction with the supervisor but also how fair the supervision procedure is perceived to be. In the domain of justice research, the fairness of decision-making processes is often considered more important than their outcomes (Cloutier et al., 2018). Violations of fair procedures seem especially to evoke negative reactions towards instructors (Chory-Assad & Paulsel, 2004). According to Löfström and Pyhältö (2019), supervisors are role models to supervisees in professional conduct, and previous research has shown that instructor credibility is related to experiences of classroom justice (Chory, 2007). It is plausible that fair procedures indicate the credibility and competence of supervisors more than quality of interaction. In addition, justice research suggests that procedural justice matters because it informs the quality of the relationship between individuals and authorities (Cloutier et al., 2018; Sousa & Vala, 2002).

Limitations

This study has some limitations, for instance concerning the target group, which is from one specific degree programme (law) from one university. Justice is the core value of the legal profession (Airaksinen, 1998) and this might have affected the results. Moreover, the shortened version of the Metacognitive Awareness Inventory, albeit validated in previous studies (Kallio et al., 2017, 2018; Tuononen et al., 2023), seems to show challenges in its internal structure (Harrison & Vallin, 2018; Tuononen et al., 2023). Thus, some other measure of metacognition could be used. Furthermore, the means of the ethical issues scales were relatively high on the 5-point scale, and the standard deviations were moderate, which imply that there was not much room for variation. However, the results are in line with previous studies concerning justice experiences. In addition, The Ethical Issues in Supervision instrument was not a validated measure, and the modified version produces somewhat different results from Löfström and Pyhältö (2019) and Löfström et al. (2023), two factors instead of three. However, the two-factor model was validated with the confirmatory factor analysis. In future studies, more diverse samples and valid measures should be used. The data was collected during the COVID-19 pandemic, which might have affected study burnout scores. Nevertheless, the burnout scale means are approximately the same as those of higher education students at the late stages of their studies in Salmela-Aro and Read's 2017 article. Still, the association of study-burnout scores with metacognitive awareness and justice experiences should also be assessed after the pandemic has ended.

Conclusions and implications

Our study indicates that knowledge about cognition in particular as well as ethical processes in supervision were significant predictors of study burnout. Thus, the more aware students

were of different learning strategies, and when to use them, the less they reported experiences of exhaustion, cynicism and inadequacy. In addition, the more that students perceived the supervision process as fair, the less they reported cynical and detached attitudes towards their studies, or feelings of inadequacy. Hence, our study indicates that experiences of a fair process are essential in master's thesis supervision. The results confirmed earlier findings about the importance of justice experiences for human beings.

While metacognitive awareness is an essential aspect of students' agency, which is also the goal of the supervision process (Vehviläinen, 2014), the results indicate that agency and the ability to reflect on one's learning decrease risk for study burnout and it can also be seen as relational and context-bound, where individuals learn to participate in social practices and the social construction of knowledge in a specific context (Jääskelä et al., 2020). Hence, supporting students' metacognitive awareness and agency, for example by helping them to participate as active counterparts in scientific practices of the discipline, can relieve feelings of being overwhelmed by the study requirements and feelings of incompetence in reaching them (Schaufeli et al., 2002). This can be done by clearly showing students the phases of writing a master's thesis and helping them to identify the time required.

It is important that supervisors pay attention to the fairness of the supervision process, for instance that all the master's thesis students are treated as equals and with respect, including when and what type of feedback they receive, and that the students have a voice in the process. We suggest that the importance of metacognitive awareness and justice procedures for students' welfare should be emphasised in the pedagogical training of higher education teachers. Moreover, the links between metacognition, justice experiences and wellbeing should be scrutinised in future studies. The differences between students' metacognition and study burnout levels at the beginning and end of the master's thesis project could be examined to discover whether the supervision process affects them.

In sum, as Löffström and Pyhältö (2014, 2019) have noted, ethical aspects are especially relevant in supervision because it is an important way to socialise students into the research community, and supervisors are role models to supervisees in professional conduct. What kind of social value system the education community represents—highlighting justice, equality and freedom, or competition between individuals—may foster or inhibit students' development towards ethically conscious professionals (Myyry, 2003).

Disclosure statement

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