Master's students' perceptions of final year project supervision: On-campus vs online

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Abstract

Despite existing supervisory training programmes, inappropriate supervisor behaviour is still being reported in the literature, indicating that supervision is a process that involves a complex interpersonal relationship between the supervisor and the supervisee. Literature on the experiences and perspectives of master's students on supervision is lagging. During the pandemic lockdown in 2020, the work condition of all academics and students changed considerably with a sudden move to online teaching and learning, including project supervision. This paper presents a study that compared on-campus face-to-face (summer 2019; *n*=67) and online (summer 2020; *n*=66) students' perceptions of the supervision they received during their final master's project. Both an independent-samples *t*-test (equal variance not assumed) and Mann-Whitney *U* tests showed a statistically significant difference in their perceptions. Online students had more positive perceptions than on-campus face-to-face students. The qualitative data revealed that online students appreciated the academic support they received the most while on-campus students mainly referred to the emotional support aspect of supervision. Future work should investigate supervisors' perceptions of online supervision.

Keywords

postgraduate education, supervision, dissertation, master's project, master's student

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Introduction

Depending on the education system, a master's dissertation is also known as a thesis or project. It carries a larger credit-weighting than the courses students take in the master's programme. As such, the supervision of these projects holds an important place in student achievement. Sinkovics, Richardson and Lew (2015) identified one key usefulness and value of master's level dissertations as enhancing student employability. However, despite existing supervisory training programmes, inappropriate supervisor behaviour is still being reported in the literature (Davis, 2020), indicating that supervision is a process that involves a complex interpersonal relationship between the supervisor and the supervisee (Barnes & Austin, 2009; Grant, 2003, 2005). As a "poorly understood pedagogy" (Grant, 2010, p. 88), master's supervision is a very 'unstable' process (Grant, 2003) with no fixed supervisory models. Moreover, different supervisory practices bring more challenges (Harwood & Petrić, 2017; Pilcher, Smith, & Riley, 2013). There have been studies in specific fields such as education (Anderson, Day, & McLaughlin, 2008), laboratory-based electrical and electronic engineering (McClure, 2005), nursing and the medical field in general (Drennan & Clarke, 2009; Vereijken, van der Rijst, van Driel, & Dekker, 2018). Others have combined various fields (Barnes & Austin, 2009; de Kleijn, Meijer, Brekenmans, & Pilot, 2015). Notwithstanding, as compared to PhD supervision, little attention has been paid to master's supervision, and more research is needed (Anderson, Day, & McLaughlin, 2006; Cornelius & Nicol, 2016; Sinkovics et al. 2015; Ross & Sheail, 2017). Compared to the growing literature that focuses on supervisors' needs (Macfadyen, English, Kelleher, Coates, Cameron & Gibson, 2019; Cornelius & Nicol, 2016), literature on the experiences and perspectives of master's students on supervision is lagging. Furthermore, a literature search of studies that compare online versus on-campus master's supervision did not produce any results.

Background

Previous research has revealed that a constructive relationship between students and their supervisors is a critical factor in completing a successful project (Howells, Stafford, Guijt & Breadmore, 2017; Heyns, Bresser, Buys, Coetzee, Korkie, White, & McCormack, 2019). However, that interaction between the supervisor and supervisee is often undervalued (Del Río, Díaz-Vázquez, & Maside Sanfiz, 2018). Supervisors are responsible for designing learning environments where students can remain motivated and continue learning (Yun & Park, 2020). However, one of the critical challenges of the negotiated practice between supervisor and student is the supervisor's workload (Roberts & Seaman, 2018). The increased number of master's students affects resources availability. It generates additional responsibilities for educators who still have to ensure the research projects are completed in time (Caretta, Drozdzewski, Jokinen & Falconer, 2018) and affects the provision of traditional individual supervision (Wrigley, Wolifson & Matthews, 2021). As a result, conflicts often arise, affecting the interpersonal relationship between the students and supervisor. While most students would be matched with supervisors based on their matching research interests, some students may be allocated to their supervisor based on their workload, which is not ideal (Harwood & Petrić, 2017). Furthermore, project supervision outside the supervisor's expertise could lead to unreconcilable personality conflicts between stakeholders (Rowley & Slack, 2004). In that case, both parties may feel like being in a "marriage of convenience" where they both go through the phases of "Matchmaking and betrothal", "soulmates or not", "married life",

and "giving birth" as metaphorically explained by Kirton, Straker, Brown, Jack, & Jinks (2011, pp. 863-864).

The qualities of a supervisor can impact successful student completion of the dissertation, yet students do not often see them in their supervisors. For example, in Davis (2019), a quarter of students believed that their supervisors did not have the qualities they thought of as ideal supervisors. A study by de Kleijn, Mainhard, Meijer, Pilot, & Brekelmans (2012) showed that emotional involvement is closely related to student satisfaction and learning. Students value when a supervisor is accessible and available. However, mismatched expectations may occur as students expect the supervisor to be emotionally supportive while the supervisors' focus is on the academic aspects of supervision (McGinty, Koo, & Saeidi, 2010).

Online supervision

In late 2019 and early 2020, the coronavirus (Covid-19) outbreak spread quickly across many countries and became a pandemic. Many countries implemented several restrictions, including advice to stay at home unless classed as essential workers. This measure is known as lockdown. During the pandemic and the lockdown, the work condition of all academics and students changed considerably with a sudden move to online teaching and learning, including project supervision. There have been some studies on using technology for postgraduate supervision; however, in general, research on online master's level dissertation processes and outcomes is lagging (Ross & Sheail, 2017). In their study that drew on Heidegger's existential authenticity, Rambe and Mkono (2019) used WhatsApp as a medium to support authentic supervision of postgraduate students and found that students can negotiate and enact their "existential and relational authenticity" (p. 730) when in control of the digital learning environment. They concluded that while the use of that technology fostered sustained negotiation and reconfiguration of the student-supervisor relationship, supervisors must manage the unrecognised "nervous moments" the students have in such an environment. This fed into what has been identified as "a more even distribution of power in the online postgraduate supervisory relationship, formed when expectations and behaviours are aligned between participants forming a positive relationship" (Aitken et al., 2020, p. 13).

In their study, Ross and Sheail (2017) found that the issues related to online supervision include feeling a lack of connection where a student can feel being an "item" (p. 846) on their supervisor list rather than being seen as a person. That feeling of disconnection can be blamed on the student's perceived tension between the advice given by their supervisor and the expectations and feedback from their markers. However, the authors argue that many issues that online students attribute to not being on campus are shared by campus-based students, including isolation, disconnection, individual effort; time, space and challenges of doing research; and supervisory relationships (Ross & Sheail, 2017). Furthermore, studies have reported that student-supervisor relationships in face-to-face can be as strong online. In their constructivist, grounded theory study of the relationship between online master's dissertation students and their supervisors, Aitken et al. (2020) found that "Supportive, trusting, and social supervisory relationships require mutual, ongoing monitoring and negotiation" (Aitken et al., 2020, p. 13).

Research Questions

The purpose of this study is to explore on-campus face-to-face and online students' perceptions of the supervision they received during their master's project.

The research questions are:

- To what extent does dissertation supervision affect students?
- Is there any significant difference in the student perceptions of supervision between on-campus and online students?
- What are master's supervision related issues that are reported on-campus and online?

Material and Methods

Participants

Participants are master's students from the School of Computing Science in 2019 (n=67) and 2020 (n=66) at a university in Scotland. The first group did their project during summer 2019, and their supervision would take place in their supervisor's office. The second group was supervised online during summer 2020. The move to online supervision was due to the Covid-19 pandemic, forcing institutions to adapt to a new teaching and learning method overnight. As a result, it was not possible to have face-to-face in-person meetings with the supervisor. As per the school's policy, supervisors are expected to have a weekly meeting with their students. The policy did not change when supervision moved online. However, it is not known if the weekly supervision meeting requirement was respected.

Data collection

At the end of their project, an online survey link was emailed to the students asking them to self-report their perceptions of the supervision they had received. The survey was available on the university's recommended online survey system. Ethical approval was obtained from the university's research ethics committee. It was made clear that if a participant decided to take part, he/she was still free to withdraw at any time and without giving a reason, and their decision to participate would not affect their dissertation grades. They were also informed that data would be dealt with in accordance with the university's GDPR guidelines and that confidentially would be preserved, and no third party would process the information.

Quantitative data

The questionnaire sought to gather their satisfaction scores, perceptions of the supervisory tasks, and feelings after each supervision meeting. (Table 1 presents the items that formed the scales.) The rating questions used a Likert scale of 1 to 10 (1 means "strongly disagree" and 10 means "strongly agree"). Data were analysed in IBM SPSS 27 using descriptive statistics and inferential statistics. Norman (2010), a world-leading expert in medical education research methodology, provided evidence that ordinal data from Likert scale data can be analysed using parametric tests even when assumptions such as a normal distribution of data are violated. Provided the study has an adequate sample size, the total score or mean score of students for the scale items can be used to perform data analysis, and Cronbach alpha is used to provide evidence that the components of the scale are sufficiently intercorrelated and that the grouped items measure the underlying variable. Independent-sample t-tests were conducted on the summated scale data to compare perceptions of face-to-face and online supervision of the final master's project. The Satisfaction (S) scale had a Cronbach alpha of 0.94; (four items, see Table 1). The 'Supervisory Tasks' (T) scale had a Cronbach alpha of 0.93 (six

items). And the Cronbach alpha for the 'Feeling after meeting' (F) scale was 0.97 (seven items, see Table 1).

Qualitative data

Participants were asked the following two open-ended questions:

- What did you like the most about the supervision you received? (Please, do not name or identify your supervisor in your response);
- What did you dislike the most about the supervision you received? (Please, do not name or identify your supervisor in your response).

A total of 94 students commented on what they liked and disliked about the supervision they received on-campus (*n*=45) and online (*n*=49). Their comments were used to bring richness to their perceptions of supervision. Thematic Analysis (TA) (Braun & Clarke, 2019) was used to analyse student comments. TA was chosen because of its "independence from any particular epistemological and ontological base" (Terry, Hayfield, Clarke, & Braun, 2017, p. 7) and its flexibility in the method of data collection, sample size and analysis. Braun and Clarke's (2019) six-phase analytic process was applied: Step 1 familiarisation through "repeated engagement with, the data" for "intimately knowing the dataset" (Terry et al., 2017, pp. 6, 13); Step 2 "iterative and flexible" code generation process of the entire dataset; Step 3, after coding all the responses, related codes are combined into themes; Step 4 These themes are reviewed thoroughly and recoded where necessary; Step 5 The themes and their subthemes are named and defined in a meaningful way; The final step involves writing up the report using a selection of relevant data extracts. Following Clarke & Braun's guidelines, no codebooks and coding frames were used because they do not "cohere with the qualitative sensibility that underpins and shapes our approach" (Clarke & Braun, 2018, p. 108). Rigour and trustworthiness are achieved through "an organic approach to coding and theme development" (Clarke & Braun, 2018, p. 108) as the researcher became immersed in or repeatedly engaged with the data (Terry et al., 2017).

Results

Descriptive results

Table 1 presents descriptive statistics of individual scale items. All individual items were rated positively with mean rates equal to 6 or above, on a scale of 1 to 10. On average, online students had more positive perceptions of the supervision they received than those who had on-campus face-to-face meetings.

Table 1: Descriptive comparison of students' perception of supervision on-campus and online (T= [supervision] Tasks; S = Satisfaction; F = Feeling after supervision meeting).
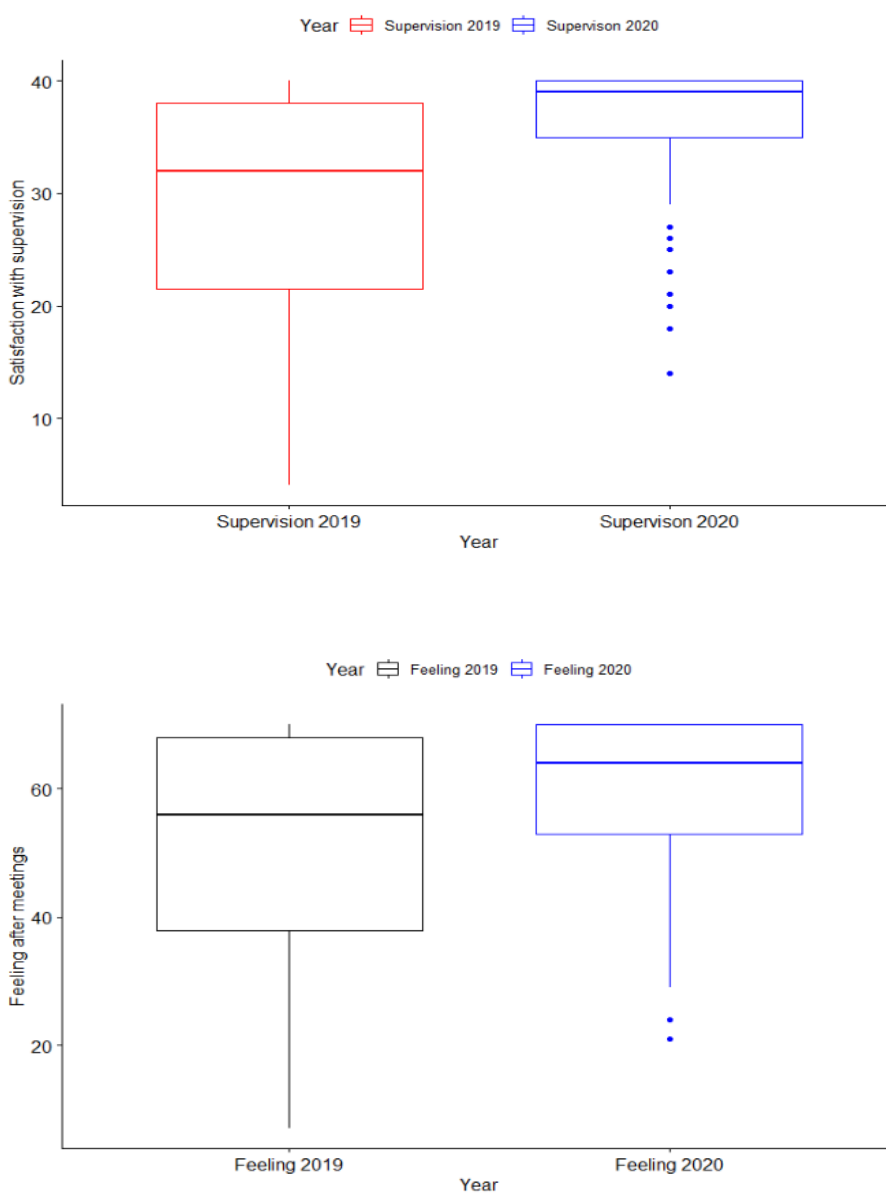
	On-campus (2019)			Online (2020)		
	N	Mean	SD	N	Mean	SD
(T) My supervisor clearly defined his/her supervision responsibilities at the start of my project	67	7.1	3.21	66	8.47	2.28

(T) My supervisor helped me understand what my responsibilities were at the start of my project	67	7.3	3.06	66	8.53	2.05
(S) I am satisfied with the amount of time dedicated to the weekly supervision meeting	67	7.6	2.9	65	8.86	2.17
(T) My supervisor monitored my progression	67	7.5	2.84	66	8.79	2.03
(T) My supervisor often replied to my emails before our next meeting	67	7.8	2.75	66	8.83	2.16
(T) My supervisor gave me verbal or written feedback	67	7.3	3.06	66	8.77	2.21
(T) My supervisor provided hints for how I could do it better	67	7.4	2.81	66	8.86	1.95
(S) I am satisfied with the feedback that I receive	67	7.1	3.04	66	8.68	2.22
(S) I am satisfied with my supervisor	66	7.4	3.05	66	8.79	2.26
(S) I enjoyed working on my project	66	7.5	2.6	66	8.52	2.37
After each supervision meeting ….						
(F). … I understood what was expected from me	67	7.5	2.85	66	8.39	2.10
(F). … I understood what I had to do in order to progress	67	7.6	2.79	66	8.55	2.05
(F) … I understood how I could best handle things	67	7	2.87	66	8.14	2.24
(F). … I understood how I could deal with difficult situations	67	6.9	2.89	66	8.26	2.16
(F). … I felt more engaged in my project	67	7.2	3.03	66	8.56	2.04
(F). … I felt more motivated	67	7.1	3.04	66	8.29	2.42
(F) Because of the feedback of my supervisor, I have learned a lot	67	6.9	3.23	66	8.56	2.18

Quantitative results

The total scores of each student on the different scales were used to perform statistical analyses. Data were not normally distributed, but in accordance with the Central Limit Theorem, data can be used for parametric tests if it has a sample size > 30 as the distribution is then considered normal (Sokal & Rohlf, 1987, p. 107). *T*-tests and corresponding confidence intervals can be used even for heavily skewed data (Fagerland, 2012). Each participant belonged to only one group, either face-to-face or online group.

However, the test for homogeneity of variance failed. Therefore, the independent *t*-test (equal variance not assumed) or the Welch test or unequal variance *t*-test was used because it performs better than Mann-Whitney *U* tests when variances are unequal (Zimmerman & Zumbo,1993, as cited in Ruxton, 2006). Furthermore, if we want "to compare the central tendency of 2 populations based on samples of unrelated data, then the unequal variance *t*-test should always be used in preference to the student's *t*-test or Mann–Whitney U test" (Ruxton, 2006, p. 690). It is important to clarify that the non-parametric statistical test, Mann-Whitney *U* tests, were also run on those three scales and yielded the same statistically significant results as the independent *t*-tests in comparing the perceptions in supervision scores for both on-campus and online students. Figure 1 presents the boxplots.
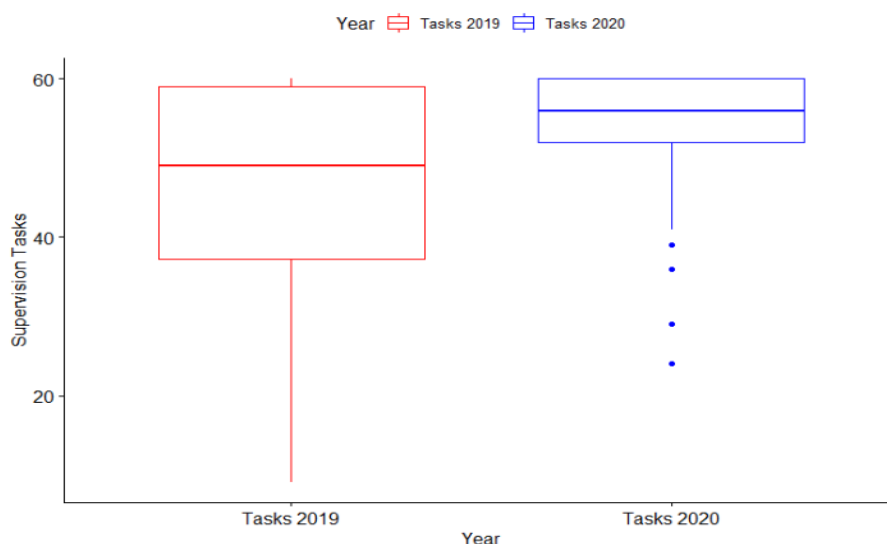
Figure 1: Descriptive diagrams (Boxplots)

Independent-samples *t*-test (equal variance not assumed) results showed a statistically significant difference in the participants' mean scores on satisfaction, supervision tasks, and feelings after supervision meetings between the student groups with $p < .05$, with moderate size effect for "Feeling after meeting" and large effect sizes for "Satisfaction" and "Tasks" according to a common interpretation referring to small (d = 0.2), medium (d = 0.5) and large (d = 0.8) effects, based on Cohen's benchmark for standard deviation units (Cohen, 1988). As seen in Table 2, online students held a more positive perception of their final year project supervision than on-campus face-to-face students. These significant differences in the scales were also observed using Mann-Whitney *U* tests with medium effect size (r values) based on Cohen criteria of .1 = small effect, .3 = medium effect and .5 = large effect. The means and medians in Table 2 are based on students' total scores.

Table 2: Results for Independent-samples *t*-test (equal variance not assumed) and Mann-Whitney *U* tests (U is the test statistics and summarises the difference in mean rank numbers; z-score is used for the comparison of ranks)

Scales	Independent *t*-test (unequal variance *t*-test)						Mann-Whitney *U*				
	tests	N	M	SD	p	Cohen's d	Md	U	z	p	r
Satisfaction	2019	67	29.4	10.7	.000	0.74	32	2958.5	4.02	.000	0.3
	2020	63	35.9	6.33			39				
Tasks	2019	66	45.0	15.4	.000	0.73	49	2801.5	3.46	.001	0.3
	2020	63	54.0	7.94			56				
Feeling after meetings	2019	67	50.3	19.6	.002	0.55	56	2770.5	2.72	.006	0.2
	2020	65	59.5	12.7			64				

Qualitative results

The thematic analysis of the open-ended data revealed two main themes: "The care I received" and "My supervisor support was a key factor in achieving the best outcome of the project".

The care I received

This theme revealed the importance of an emotionally supportive relationship between supervisors and supervisees which focuses not only on the affective states but also on motivational states. This emotional support was reflected across both student groups but appeared most present in those who had face-to-face supervision in 2019. Their comments included words that reflected their affective state during the supervision period and gave them the feeling of being cared for, including "kind", "encouraging", "caring", "attentive", "patient", "understanding", "friendly", "helpful", had "good mood", "gave reassurance", "calm" and made them "feel better". Examples of positive affective related comments include: "The time and care I received" (Student 13, on-campus); "She was very attentive and helpful, especially in difficulty areas" (Student 12, online).

Specific aspects of supervision can also produce this feeling of being emotionally supported. One of these is supervision feedback which has also been highlighted in the literature to significantly influence student engagement and emotion (Neupane Bastola & Hu, 2021). That link between supervision feedback and emotion is highlighted in this quote: "My supervisor was very encouraging, gave me great feedback and made me feel better when I was confused." (Student 34, on-campus).

However, a few students on both campuses did not feel this positive feeling of being emotionally supported. Instead, that lack of emotional support, understanding, encouragement created a feeling of being unwanted, highlighting the importance of emotional support as a key aspect of the supervisory process. For example, a student mentioned a "complete lack of emotional support and understanding" (Student 10, 2020) where "the supervisor gave an impression of wanting to get me out their door as soon as possible" (Student 8, on-campus).

This led to a sense of broken trust where there is mistrust of the supervisors' advice which is deepened by the students' perceptions of their supervisor's level (or lack) of technical expertise: "I also did not trust my supervisor's technical knowledge of my project, which meant I did not turn to them when I was stuck on something technical." (Student 14, on-campus). Other aspects can provoke that feeling of mistrust, including a feeling that the project or dissertation is not a priority in the supervisor's to-do list. Trust can also be broken from a very early stage of the supervisor-supervisee relationship when a supervisee feels that the supervisor does not know their background. It indicates the value supervisees place on that early bonding session and their initial impression of the supervisory task, which subsequently can lead to disengagement if negative. Not having clear expectations and guidelines from an early stage further contributes to that feeling of mistrust. The lack of clear guidelines can also result in a waste of time for both the supervisee and the supervisor as the goal post changes at each meeting, leading to further disengagement, as illustrated in this student's comment:

> *He wasn't that clear what he wanted me to do or what outcome he wants*
> *from the project. The project wasn't related to my interests. I felt*
> *disengaged because, in my every meeting, he used to change the*

*requirements and also, he used to negate the things he told me to do in
the previous meeting. I started taking notes and also showed him that
you told this, then also he used to change the requirements until my very
last meeting.* (Student 27, on-campus)

However, while many students reported the lack of clear guidelines and expectations as a hindrance, having no clear guidelines or expectations can also foster a two-way conversation of *"engagement and exchange of ideas"* (Student 15 – online) where both the supervisor and the student contribute to the project's development process.

My supervisor support was a key factor in achieving the best outcome of the project

One of the components of supervision is academic support. Students, mainly online students, significantly valued the academic support they received because of its impact on their project outcome. Most students were appreciative of the help they received in overcoming the initial learning curve through the provision of dissertation writing sessions, additional academic material, and introduction to methodologies. Furthermore, this theme revealed that the quality of "individualised", "personalised" supervisory feedback which provided feedforward is necessary as it gives students full reign of their project: "Feedback was always provided when asked for. I felt like I controlled the direction of the project" (Student 9, online). These comments highlight the critical role of supervisory feedback in guiding and scaffolding students' learning and development during their project or dissertation.

Despite that overwhelming positive perception, some online and on-campus students' comments revealed an underlying dissatisfaction in supervision that is indicated by their negative comments related to the lack of in-depth constructive feedback on dissertation drafts, which tells the student what they did well and what is wrong and how they can improve. For example, these students said:

*Feedback was not deep enough. The draft review did not provide enough
information regarding whether the dissertation was in good or bad
tracks. I felt really lost most of the time since the questions asked were
poorly solved. (Student 7, online)*

*I would have liked more general support in the dissertation on top of the
existing technical support with documentation. More "you don't have to,
but if you wanted to improve your dissertation, you could do this"
feedback. (Student 7, on-campus)*

*Supervisor wasn't afraid to tell me where I'd gone wrong, which was a
great thing. (Student 9, on-campus)*

The explicit recognition of supervisors' level of subject expertise as an instigator to good supervisory feedback was revealed as many students believed it to have influenced the supervisory feedback they received. Supervisors' expertise enables the supervisees to have a "knowledgeable conversation" in their field, allowing the "erudite" supervisor to correct any misconceptions in their guidance throughout the project duration. This theme also raises the issues related to finding the correct balance in supervision while ensuring that the level of supervision provided is adequate and characterised not only by the nature of the project itself but also by the supervisee. On the one hand, a few students

had a negative opinion of their supervision because it was too "relaxed", "very hands-off", and lacked "depth" with projects being "too independent" or repetitive. In contrast, other students were appreciative of that because it gave them the flexibility to solve their problems and fostered their independent learning while providing guidance where needed. For example, some students commented:

I would've liked more input in general; the project is too independent.
(Student 12, on-campus)

It was relaxed, and I had creative freedom. (Student 6, on-campus)

Also, he led the project in a way that allows independent learning while providing guidance where needed. (Student 47, on-campus).

Moreover, supervisor-supervisee timely and consistent meetings are very important in the supervision process. Many students in both cohorts appreciated that their supervision meetings were consistent and had frequent meetings with their supervisors. However, some students were unsatisfied with the lack of one-to-one meetings and complained about the lack of quality of timely and consistent supervision meetings. For example, Student 12 reported a repeated experience of meeting cancellation without notice. However, the student's comments also highlight students' greater expectation of their supervisor's availability and immediate reply to their emails, "cancellation without sending mail and when you send the supervisor an email, then the exclamation oh this I had sent two hours ago. Not once, not twice but several times" (Student 12, online).

Discussion and conclusions

This study compared the perceptions of master's project supervision of students who had on-campus face-to-face meetings with those who had online supervision during the Covid-19 pandemic lockdown during summer 2020. Results showed that students' perceptions of the supervision they received were more favourable for online students than those who received on-campus face-to-face supervision. The online cohort rated all three scales (satisfaction, supervision tasks and feeling after meetings) higher with statistical differences in scores than the on-campus students. It indicates that the move to online dissertation supervision did not affect students' perceptions negatively. These positive views for online supervision could be because technology fostered sustained negotiation and reconfiguration of the student-supervisor relationship because students felt in control of the digital learning environment, which enabled them to negotiate and enact their "existential and relational authenticity" (Rambe & Mkono, 2019, p. 730).

On the other hand, as we moved online in March 2020, supervisors may have put a lot more effort into providing support, clear guidelines, and clarifying expectations while maintaining a one-to-one relationship with their supervisees. This may have created "a more even distribution of power in the online postgraduate supervisory relationship, formed when expectations and behaviours are aligned between participants forming a positive relationship" (Aitken et al., 2020, p. 13). Hence, that overwhelming positive feeling from online supervision students on satisfaction, supervision tasks, and feelings after supervision meeting. Ross and Sheail (2017) identified that the issues related to online dissertations include feeling a lack of connection where a student can feel like an "item" (p. 846) on their supervisor list rather than being seen as a person. However, this was not

observed in this study; instead, this study showed that the online student-supervisor relationship seemed better than face-to-face.

These findings are reflected in the number of comments students left on what they liked and disliked the most about the supervision they received. Online students had more positive comments than negative ones, while it was the reverse for the on-campus cohort. While the on-campus cohort appreciated the affective aspects discussed in the following paragraphs, the online cohort comments were more appreciative of the academic support. However, the issues identified in this study were shared by both on-campus and online supervision students. In this study, the analysis of students' comments revealed themes that complement students' perceptions of their supervision in more detail. It is important to note that although a picture of students' perceptions of their supervision was revealed across the data, on the idiographic level, there were individual differences in how each student perceived the supervision they received.

Qualitative findings attest to the importance of timely and consistent supervision meetings. While having a clear routine was appreciated, those online students enjoyed the flexibility in terms of time and meetings. However, not all supervisors' supervisory styles were the same as some supervisors "ignored" their students' emails, although sometimes, students' expectations of a speedy reply were not realistic, thus raising the challenge of the adequacy of supervisory time. Indeed literature (Neupane Bastola & Hu, 2021) also highlights inadequate supervision time as a challenge; hence the importance of appropriate interaction between supervisors and their supervisees is crucial. It can be achieved with "sustained and substantial contact" (Richardson & Radloff, 2014, p. 610), which subsequently leads to higher levels of student engagement and satisfaction (Richardson & Radloff, 2014). Another issue raised was group supervision meetings that do not give the students the "freedom" to ask questions, indicating the importance of providing a personal space to enhance student confidence. At our institution, group supervision was adopted by some academics because of the increased number of students they had to supervise, resulting in a reduction in time dedicated for supervision. Similar issues have been identified in the literature. The number of master's students can lead to the decline in resources available and additional responsibilities for educators who still have to ensure the research projects deadlines are met (Caretta et al., 2018). As a result, it affects individual modes of supervision (Wrigley et al., 2021).

The lack of clear guidelines and expectations can lead to a feeling of wasting time and, subsequently, disengagement and mistrust. This concurs with literature on the importance of clarifying the supervisor's role in advance as this can influence the skills the student develops (Del Río et al., 2018) and leave students dissatisfied with their expectations of supervisory support (Neupane Bastola & Hu, 2021). It is essential because supervisors need to create a learning environment where students can remain motivated and continue their learning. This study agrees with the literature that supervision itself is an adaptive process tailored to students' evolving needs (Katikireddi & Reilly, 2016), in which the level of scaffolding varies depending on the stage. Some students in this study may not realise that a considerable effort and time is spent framing and refining the project proposal idea in the first few weeks, which may look like their supervisors do not know their topics. In addition, some studies demonstrate that diverging expectations are a significant challenge in supervision (Roberts & Seaman, 2018). It is, therefore, essential to discuss and negotiate goals and expectations regarding the procedure and project during the initial stage of supervision (Aitken et al., 2020; Filippou, Kallo, & Mikkilä-

Erdmann, 2017; de Kleijn, Meijer, Brekelmans, & Pilot, 2013) to clarify the different roles and responsibilities. This serves as a foundation to build a trusting relationship with mutual respect, rapport and shared interests (Roberts & Seaman, 2018).

Analysis of student comments overwhelmingly highlights that emotional support is crucial. This was the case for on-campus face-to-face students. Having a friendly and emotionally supportive relationship has a positive impact on students. A study by de Kleijn et al. (2012) showed that emotional involvement is closely related to student satisfaction and learning. Therefore, supervisors should have a friendly attitude towards their students. Findings in this paper agree with the literature on the importance of the affective dimension of supervision. For example, in their study that investigated 695 postgraduate students' perspectives of the qualities of an ideal supervisor, Davis (2020) found that 60% of the qualities students thought an ideal supervisor should have are affective, both personal and relational. Hence the importance of the student-supervisor relationship being guided by genuine care (Bloom, Propst Cuevas, Hall, & Evans, 2007). This may require the supervisor to adopt different roles for different purposes (Harwood & Petrić, 2020). Indeed, previous research has revealed that a constructive relationship between the students and their supervisor is a critical factor influencing the completion of a successful project (Howells, Stafford, Guijt, & Breadmore, 2017; Heyns et al., 2019).

Online students felt they received academic support much more than on-campus face-to-face students, mainly for dissertations. Indeed, constructive feedback that enhances student learning and progress is crucial for project completion (Kara & Can, 2019; Neupane Bastola, 2020; Winstone & Carless, 2020). Another characteristic that students liked was their supervisors' level of expertise reflected in their guidance and supervisors not being "afraid" to tell the students where they have gone wrong. Unfortunately, due to the increase in student numbers, some students may have been matched with a supervisor based on the supervisor's workload, which created a mismatch of research interest. Hence the comments on the supervisor perceived lack of knowledge on the project topic, concurring with the literature that, indeed, one of the critical challenges in supervision is the workload supervisors face (Roberts & Seaman, 2018). The supervisor's perceived lack of expertise can create a sense of mistrust that leave students disengaged and stop relying on their supervisor's support, subsequently affecting student achievement. A trusting relationship between students and supervisor characterises good supervision and can impact the completion of the project. While some found the supervision was "very hands-off" or "too independent", others appreciated it and thought it gave them much flexibility and creative freedom and fostered independent learning. Indeed, diverging expectations are a significant challenge in supervision. The quality of student learning experience, feedback, and satisfaction level depends on support and supervision during their studies. Different supervisory practices pose challenges, but the same supervisory practice might be unsuitable for all supervisees and require negotiation between supervisors and each student because "Different supervision models mirror the supervisors' expectations of how the students will act and how they will perform" (Henricson, Fridlund, Mårtensson, & Hedberg, 2018, p. 12). Furthermore, how well student expectations and needs are mediated by supervisors and other staff at their institution highly influences their experiences (Kidman, Manathunga, & Cornforth, 2017). Finally, the results present different supervision experiences highlighting a multifaceted process that encompasses complex individualised supervisor-supervisee relationship, thus concurring with the literature that master's supervision is indeed a very 'unstable' process with no

fixed supervisory models (Grant, 2003) and master's dissertation is indeed an "elusive chameleon" (Pilcher, 2011, p. 29).

In summary, good supervision is characterised by trusting relationships where supervisors and supervisees are clear on the supervision expectations early, timely and consistent one-to-one meetings, individualised and personalised feedback that feedforward while empowering the students, and emotional support.

Limitations and future work

This study involved one university and one subject area. Further study should look at including master's students from other subject areas. Participants used self-reported questionnaires, and qualitative data were the comments students wrote on the questionnaire. Further work could include qualitative data collection methods such as interviews or focus groups to get an even deeper understating of student perceptions because these allow the researcher to explore the ideas further through prompts. For example, using these methods could have helped the researcher understand why most on-campus students liked the emotional support aspect of supervision while most online students preferred academic support. Future studies should consider demographics in the survey/analysis in order to recognise and reflect the fact that students are not a homogenous group. Further work should also investigate the supervisors' perceptions of online supervision (for example, a weekly think-aloud collection of their perceptions and/or a survey or interviews at the end of the supervisory period). Finally, future work could consider other models of supervision (e.g. group supervision, team supervision where there is not a specific supervisor for each project, but a team of academics share the supervision/meetings).

Declarations

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Conflicts of interest

The authors have no conflicts of interest to declare.

Ethics approval

Ethical approval was obtained from the University's Research Ethics Committee; application number: 300190052.

Availability of data and material

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

References

Aitken, G., Smith, K., Fawns, T., & Jones, D. (2020). Participatory alignment: a positive relationship between educators and students during online masters dissertation supervision. *Teaching in Higher Education,* 1-15. https://doi.org/10.1080/13562517.2020.1744129

Anderson, C., Day, K., & McLaughlin, P. (2006). Mastering the dissertation: Lecturers' representations of the purposes and processes of master's level dissertation supervision. *Studies in Higher Education*, *31*(2), 149–168. https://doi.org/10.1080/03075070600572017

Anderson, C., Day, K., & McLaughlin, P. (2008). Student perspectives on the dissertation process in a masters degree concerned with professional practice. *Studies in Continuing Education*, *30*(1), 33–49. https://doi.org/10.1080/01580370701841531

Barnes, B.J., & Austin, A.E. (2009). The role of doctoral advisors: A look at advising from the advisor's perspective. *Innovative Higher Education*, *33*(5), 297–315. https://doi.org/10.1007/s10755-008-9084-x

Bloom, J.L., Propst Cuevas, A.E., Hall, J.W., & Evans, C.V. (2007). Graduate students' perceptions of outstanding graduate advisor characteristics. *NACADA Journal*, 27(2), 28–35. https://doi.org/10.12930/0271-9517-27.2.28

Braun, V., & Clarke, V. (2019). Reflecting on reflexive thematic analysis. *Qualitative Research in Sport, Exercise and Health*, *11*(4), 589–597. https://doi.org/10.1080/2159676X.2019.1628806

Caretta, M.A., Drozdzewski, D., Jokinen, J.C., & Falconer, E. (2018). "*Who* can play *this* game?" The lived experiences of doctoral candidates and early career women in the Neoliberal University. *Journal of Geography in Higher Education*, *42*(2), 261–275. https://doi.org/10.1080/03098265.2018.1434762

Clarke, V., & Braun, V. (2018). Using thematic analysis in counselling and psychotherapy research: A critical reflection. *Counselling Psychotherapy Research*, 18(2), 107-110. https://doi.org/10.1002/capr.12165

Cohen, J. (1988). *Statistical power analysis for the behavioral sciences (2nd ed.)*. New Jersey: Lawrence Erlbaum.

Cornelius, S., & Nicol, S. (2016). Understanding the needs of masters dissertation supervisors: Supporting students in professional contexts. *Journal of Perspectives in Applied Academic Practice*, 4(1), 2-12. https://doi.org/10.14297/jpaap.v4i1.161

Davis, D. (2020). The ideal supervisor from the candidate's perspective: What qualities do students actually want?. *Journal of Further and Higher Education*, 44(9), 1220-1232. https://doi.org/10.1080/0309877X.2019.1669772

Davis, D. (2019). Students' perceptions of supervisory qualities: What do students want? What do they believe they receive? *International Journal of Doctoral Studies 14*, 431–464. https://doi.org/10.28945/4361

de Kleijn, R.A.M., Mainhard, M.T., Meijer, P.C., Pilot, A., & Brekelmans, M. (2012). Master's thesis supervision: Relations between perceptions of the supervisor–student relationship, final grade, perceived supervisor contribution to learning and student satisfaction. *Studies in Higher Education*, *37*(8), 925–939. https://doi.org/10.1080/03075079.2011.556717

de Kleijn, R.A.M., Meijer, P.C., Brekelmans, M., & Pilot, A. (2015). Adaptive research supervision: Exploring expert thesis supervisors' practical knowledge. *Higher Education Research & Development*, *34*(1), 117–130. https://doi.org/10.1080/07294360.2014.934331

de Kleijn, R.A.M., Meijer, P., Brekelmans, M., & Pilot, A. (2013). Curricular goals and personal goals in master's thesis projects: Dutch student–supervisor dyads. *International Journal of Higher Education*, *2*(1), 1–11. https://doi.org/10.5430/ijhe.v2n1p1

Del Río, M.L., Díaz-Vázquez, R., & Maside Sanfiz, J.M. (2018). Satisfaction with the supervision of undergraduate dissertations. *Active Learning in Higher Education*, *19*(2), 159–172. https://doi.org/10.1177/1469787417721365

Drennan, J., & Clarke, M. (2009). Coursework master's programmes: The student's experience of research and research supervision. *Studies in Higher Education*, *34*(5), 483–500. https://doi.org/10.1080/03075070802597150

Fagerland, M.W. (2012) t-tests, non-parametric tests, and large studies—a paradox of statistical practice?. *BMC Medical Research Methodologies, 12*(1)**,** 78. https://doi.org/10.1186/1471-2288-12-78

Filippou, K., Kallo, J. & Mikkilä-Erdmann, M. (2017). Students' views on thesis supervision in international Master's degree pograms in Finnish universities. *Intercultural Education, 28*(3), 334–352. https://doi.org/10.1080/14675986.2017.1333713

Grant, B.M. (2003). Mapping the pleasures and risks of supervision. *Discourse: Studies in the Cultural Politics of Education*, *24*(2), 175–190. https://doi.org/10.1080/01596300303042

Grant, B.M. (2005). Fighting for space in supervision: Fantasies, fairytales, fictions and fallacies. *International Journal of Qualitative Studies in Education*, *18*(3), 337–354. https://doi.org/10.1080/09518390500082483

Grant, B.M. (2010), Negotiating the layered relations of supervision. In M. Walker & P. Thompson (Eds.), *The Routledge doctoral supervisor's companion* (pp. 88–105). London: Routledge.

Harwood, N., & Petrić, B. (2017). *Experiencing master's supervision: Perspectives of international students and their supervisors*. London: Routledge.

Harwood, N., & Petrić, B. (2020) Adaptive master's dissertation supervision: a longitudinal case study. *Teaching in Higher Education*, *25*(1), 68-83. https://doi.org/10.1080/13562517.2018.1541881

Henricson, M., Fridlund, B., Mårtensson, J., & Hedberg, B. (2018). The validation of the Supervision of Thesis Questionnaire (STQ). *Nurse Education Today, 65*, 11-16 https://doi.org/10.1016/j.nedt.2018.02.010

Heyns, T., Bresser, P., Buys, T., Coetzee, I., Korkie, E., White, Z., & Mc Cormack, B. (2019). Twelve tips for supervisors to move towards person-centered research supervision in health care sciences. *Medical Teacher*, *41*(12), 1353-1358. https://doi.org/10.1080/0142159X.2018.1533241

Howells, K., Stafford, K., Guijt, R., Breadmore, & M. (2017). The role of gratitude in enhancing the relationship between doctoral research students and their supervisors. *Teaching in Higher Education*, *22*(6), 621-638. http://dx.doi.org/10.1080/13562517.2016.1273212

Kara, M. & Can, G. (2019). Master's students' perceptions and expectations of good tutors and advisors in distance education. *International Review of Research in Open and Distributed Learning*, *20*(2), 161-179. https://doi.org/10.19173/irrodl.v20i2.3674

Katikireddi, S., & Reilly, J. (2016). Characteristics of good supervision: A multi-perspective qualitative exploration of the Masters in Public Health dissertation. *Journal of Public Health, 39*(3), 625–632. http://dx.doi.org/10.1093/pubmed/fdw107

Kidman, J., Manathunga, C., & Cornforth, S. (2017). Intercultural PhD supervision: Exploring the hidden curriculum in a social science faculty doctoral programme. *Higher Education Research & Development*, *36*(6), 1208–1221. https://doi.org/10.1080/07294360.2017.1303457

Kirton, J., Straker, K., Brown, J., Jack, B., & Jinks, A. (2011). A marriage of convenience? A qualitative study of colleague supervision of master's level dissertations. *Nurse Education Today*, 31(8), 861-865. https://doi.org/10.1016/j.nedt.2010.12.025

Macfadyen, A., English, C., Kelleher, M., Coates, M., Cameron, C., & Gibson, V. (2019). 'Am I doing it right?' Conceptualising the practice of supervising master's dissertation students. *Higher Education Research & Development*, *38*(5), 985-1000. https://doi.org/10.1080/07294360.2019.1597024

McClure, J.W. (2005). Preparing a laboratory-based thesis: Chinese international research students' experiences of supervision. *Teaching in Higher Education*, *10*(1), 3–16. https://doi.org/10.1080/1356251052000291530

McGinty, S.C., Koo, Y.L., & Saeidi, M. (2010). A cross-country study on research students' perceptions of the role of supervision and cultural knowledge in thesis development. *International Journal of Inclusive Education*, *14*(5), 517–531. https://doi.org/10.1080/13603110802668682

Neupane Bastola, M. (2020). Formulation of feedback comments: Insights from supervisory feedback on master's theses. *Innovations in Education and Teaching International*, *58*(5), 565-574. https://doi.org/10.1080/14703297.2020.1804985

Neupane Bastola, M. & Hu, G. (2021). "Chasing my supervisor all day long like a hungry child seeking her mother!": Students' perceptions of supervisory feedback. *Studies in Educational Evaluation, 70,* 101055. https://doi.org/10.1016/j.stueduc.2021.101055

Norman, G. (2010). Likert scales, levels of measurement and the "laws" of statistics. *Advances in Health Sciences Education, 15*(5), 625–632. https://doi.org/10.1007/s10459-010-9222-y

Pilcher, N. (2011). The UK postgraduate masters dissertation: An 'elusive chameleon'? *Teaching in Higher Education*, *16*(1), 29–40. https://doi.org/10.1080/13562517.2011.530752

Pilcher, N., Smith, K., & Riley, J. (2013). International students' first encounters with exams in the UK: Superficially similar but deeply different. *International Journal of Teaching & Learning in Higher Education*, *25*(1), 1–13.

Rambe, P. & Mkono, M. (2019). Appropriating WhatsApp-mediated postgraduate supervision to negotiate "relational authenticity" in resource-constrained environments. *British Journal of Educational Technology*, *50*(2), 702-734. https://doi.org/10.1111/bjet.12688

Richardson, S. & Radloff, A. (2014) Allies in learning: Critical insights into the importance of staff–student interactions in university education. *Teaching in Higher Education 19*(6), 603–15. https://doi.org/10.1080/13562517.2014.901960

Roberts, L.D., & Seaman, K. (2018). Good undergraduate dissertation supervision: Perspectives of supervisors and dissertation coordinators. *International Journal for Academic Development*, *23*(1), 28–40. https://doi.org/10.1080/1360144x.2017.1412971

Ross, J., & Sheail, P. (2017). The 'campus imaginary': online students' experience of the masters dissertation at a distance. *Teaching in Higher Education*, *22*(7), 839-854. https://doi.org/10.1080/13562517.2017.1319809

Rowley, J., & Slack, F. (2004). What is the future of undergraduate dissertations? *Education and Training, 46*, 176–181. http://doi.org/10.1108/00400910410543964

Ruxton, G.D. (2006). The unequal variance *t*-test is an underused alternative to student's *t*-test and the Mann–Whitney *U* test. *Behavioral Ecology*, *17*(4), p. 688–690. https://doi.org/10.1093/beheco/ark016

Sinkovics, R., Richardson, C., & Lew, Y. (2015). Enhancing student competency and employability in international business through master's dissertations. *Journal of Teaching in International Business*, *26(4)*, 293–317. https://doi.org/10.1080/08975930.2015.1130107

Sokal, R.R.,& Rohlf, F.J. (1987). Introduction to biostatistics. 2nd ed. New York: Freeman

Terry, G., Hayfield, N., Clarke, V. & Braun, V. (2017). Thematic analysis. In *The SAGE Handbook of qualitative research in psychology* (pp. 17-36). SAGE Publications Ltd. https://www.doi.org/10.4135/9781526405555

Vereijken, M.W., van der Rijst, R.M., van Driel, J.H., & Dekker, F.W. (2018). Novice supervisors' practices and dilemmatic space in supervision of student research projects. *Teaching in Higher Education*, *23*(4), 522–542. https://doi.org/10.1080/13562517.2017.1414791

Winstone, N. E., & Carless, D. (2020). *Designing effective feedback processes in higher education: A learning-focused approach*. Routledge.

Wrigley, C., Wolifson, P. & Matthews, J. (2021). Supervising cohorts of higher degree research students: design catalysts for industry and innovation. *Higher Education, 8(1),* 1177–1196. https://doi.org/10.1007/s10734-020-00605-3

Yun, H., & Park, S. (2020). Building a structural model of motivational regulation and learning engagement for undergraduate and graduate students in higher education, *Studies in Higher Education*, 45(2), 271-285. https://doi.org/10.1080/03075079.2018.1510910