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Sense of Competence and Feelings of Stress of Higher Education Faculty in the Transition to Remote Teaching: What Can We Learn from COVID-19 Pandemic in the Long Run

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Abstract: This study focuses on measuring and characterizing the sense of competence and feelings of stress of higher education faculty in the transition to 'Emergency Remote Teaching' due to the COVID-19 pandemic and their willingness to adopt it in future. A total of 318 higher education faculty responded to a new questionnaire, developed and validated by the researchers. The findings show that the faculty experience a high sense of competence, related to positive feedback on remote teaching, a tighter trust relationship with the students, and their personal and professional development in the field of techno-pedagogy. Higher education faculty indicate feelings of stress on a medium-low level manifested by frustration and overburden due to difficulties in their interaction with the students, lack of reward, vague home–work boundaries, and techno-pedagogical challenges. The findings show that the more competent and the less stress higher education faculty feel regarding remote teaching, the more they wish to adopt it in future. The findings outline a desirable way to support higher education faculty and their professional development, aiming to reduce feelings of stress and enhance their sense of competence in remote teaching. Thus, they can implement changes, facing the challenges and expectations of higher education's "new normal" in which technology will play a key role.

Keywords: remote teaching in higher education; COVID-19 pandemic; feelings of stress; remote teaching adoption; sense of competence

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1. Introduction

The rapid transition to Emergency Remote Teaching (ERT) during the COVID-19 pandemic has entailed many new challenges among the worldwide higher education community. The higher education faculty (hereinafter "faculty") found themselves at the forefront of the change. Now three years into the COVID-19 pandemic, the pandemic is still with us. Hybrid learning, cybersecurity, virtual reality, data management, machine learning, and the metaverse are becoming an integral part of higher education and will take on a more and more central role in future [1]. Furthermore, a generation of new students are learning in higher education, and they are "native speakers" of the digital language [2]. Higher education should plan the transformations in an initiated and empirically based way in order to adapt to the requirements of the changing world. Technology will play a key role in this change [3] and the teaching and learning methods should be updated accordingly. The key to a successful change is the faculty's willingness to embrace new technologies and diversified teaching methods in future [1].

The pandemic has left many faculty with a poor impression of online teaching [1,4–6], so long-term changes will surely require the investment of time and extensive professional training and support. For the purpose of recruiting the faculty and preparing them for these changes, it is necessary to study ERT in-depth and draw new updated conclusions.

These may assist in evidence-based long-term planning and decision making regarding higher education teaching in future, not only during emergency periods but also in the long run [1,7].

Many studies of the pedagogical and techno-pedagogical aspects of faculty's remote teaching have been conducted during the COVID-19 pandemic. For example, Littlejohn [8] investigated UK university educators' learning during the lockdown, emphasizing their challenges, social relationships, and learning opportunities, and colleagues [9] investigated online teaching at the Lebanese University, stressing university instructors' challenges. Adi Badiozaman and Segar [10] examined and compared the teachers' perceptions, competence, and ability in online teaching in two Malaysian higher education institutions. Only a few studies addressed the emotional aspects of faculty's transition to ERT in different countries like the UK [8,11], Australia [12], Israel [13], and more. In their study conducted in Italy, Casacchia et al. and colleagues [14] identified more negative emotions among faculty. Conversely, studies conducted by Collazos and Burbano in Colombia [4] and by Meishar-Tal and Levenberg in Israel [13] suggested that with time, the faculty adapted to the change and their emotions changed to more positive ones.

There is a vague picture and a gap in knowledge regarding faculty's emotional aspects in the transition to ERT and their relation to the willingness to continue with remote teaching in future. This study addresses this gap, integrating valid quantitative measures and qualitative characteristics in order to measure and characterize the sense of competence and feelings of stress in the transition to ERT among faculty in two higher education colleges. This integration of quantitative and qualitative findings assists in the consolidation of insights and concrete recommendations regarding desirable training and support for faculty, adapted to the transpiring and anticipated changes in higher education.

The conceptual framework deals with the transition to remote teaching in higher education and focuses on the emotional aspects thereof. It defines and characterizes the faculty's sense of competence and feelings of stress, as well as their willingness to engage in remote teaching in future.

The research questions are:

What characterizes the sense of competence and feelings of stress of faculty's transition to ERT?

What are the relationships between faculty's sense of competence, feelings of stress, and willingness to continue remote teaching in future?

2. Theoretical Background

2.1. Transition to Remote Teaching in Higher Education

The COVID-19 pandemic has obliged faculty in higher education institutions worldwide to make a rapid, unexpected, and challenging transition from face-to-face teaching to remote teaching [13,15,16]. According to Bozkurt and Sharma [17], remote teaching does not imply a mere delivery of learning materials to students. Rather, it is a complex process that grants students responsibility, autonomy, flexibility, and choice, which requires meticulous planning. Hodges and colleagues [15] coined the term 'Emergency Remote Teaching' as the response to the COVID-19 pandemic. They distinguished it from regular remote teaching in that it is usually conducted with "bare minimum resources and scant time" [15] (p. 7).

One of the major challenges and key to the success of remote teaching is faculty's preparedness [16]. Many faculty, in particular engineering and science faculty, faced this change with little experience in remote teaching and without proper pedagogical training [7,8]. It was a new challenge to move from face-to-face to online mode, changing and developing their teaching methods and contents that not only covered the curriculum but also involved the students [6].

Lassoued and colleagues [18] showed that faculty associated their obstacles of ERT during the COVID-19 pandemic with students' weak motivation to engage in remote learning, their lower level of understanding in the absence of class interaction, incapability

of communicating remotely, and unclear assessment methods. Another factor has been the attainment gap, namely that not all the students could equally manage their time and develop successful strategies needed for remote learning [11].

2.2. Emotional Aspects of Faculty's Transition to Remote Teaching

Even before the outbreak of the COVID-19 pandemic, researchers argued that decision making regarding remote learning involved emotional aspects that should have been taken into consideration [19]. During the COVID-19 pandemic, characteristics of emergency teaching, like lack of advance planning, need for rapid integration of new technological tools, and unexpected change in teaching plans, were added and affected emotional aspects [13,15,20]. New studies have discussed the "zoom fatigue" phenomenon [21,22], feelings of stress, anxiety, physical, mental, and psychological exhaustion, and attention deficit among higher education faculty [8,13,20,23,24].

However, Collazos and Burbano [4] and Nabolsi et al. [20] argue that with time and acquisition of experience in remote teaching, the faculty started adapting to this new change and reported being more relaxed and at ease with online teaching. According to Meishar-Tal and Levenberg [13], the dramatic event of COVID-19 lockdown evoked more positive than negative emotions among higher education faculty during the first semester of the crisis. The emotions of threat that might characterize this period did not affect the willingness to teach online in future as might have been expected [13].

The different findings and the insufficiently clear picture increased the need to examine emotional aspects in the transition to ERT in order to attempt to derive optimal teaching insights later on. The following sections discuss two emotional aspects that are at the focus of this study: feelings of stress and sense of competence.

2.2.1. Faculty's Feelings of Stress Due to Remote Teaching

Stress is a state in which all the physical and mental systems are mobilized in order to overcome a threat that is about to be materialized [25]. If people conclude that the demands of the event exceed their available resources, they will feel stress [26]. In this case, the demands become stress factors and provoke stress reactions that are classified into four main types: physical, cognitive, emotional, and behavioral. Emotional stress reactions can be feelings such as fear, anger, sadness, worry, nervousness, and frustration. This study applies 'feelings of stress' as a concept that combines the variety of emotional stress reactions discussed in the literature [25,27].

Even prior to the COVID-19 pandemic, Mercer and Gregersen [28] pointed out teachers' challenges in remote teaching, resulting from occupational stress caused by multiple teachers' roles. In this context, Bawane and Spector [29] characterized eight different teachers' roles: subject teacher, pedagogue, assessor, administrator, technologist, counselor, researcher, and social mediator. The forced transition to remote teaching, lack of appropriate equipment [8], lack of adequate preparation and experience [4,13,20,28], teachers' multiple roles [20], lack of boundaries between home and work [8,13,20,22,23], the need for spending more time with children assisting their schoolwork [8,24], time-consuming preparation [4,20,30], financial burden [23], and the existential threat of the pandemic [13,23,30] have all increased faculty's feelings of stress, e.g., frustration, confusion, and anxiety. According to Meishar-Tal and Levenberg [13], the technical and pedagogical difficulties and general anxiety that faculty felt during the COVID-19 pandemic undermined their ability to cope with the change in teaching and with the transition to synchronous technology, increasing the 'threat' and 'failure' they experienced. Furthermore, receiving overwhelming information without the ability to critically assess it has evoked faculty's feelings of stress [31]. Another meaningful stress factor of ERT relates to the interaction between faculty and students. That is, frustration and decreased resilience due to the lack of face-to-face communication with the students [32] and discomfort of "speaking in an empty space" [14]. The faculty were stressed as they encountered difficulties in interpreting students' responses to their teaching and assessing students' progress and understanding.

Moreover, the time spent on interaction with students, constant messaging and emails, was double the time they spent in face-to-face teaching [20]. In the absence of multisensory cues that are picked up through physical presence, faculty consider online teaching to be exhausting and isolating [11].

2.2.2. A Sense of Competence in Remote Teaching

The literature presents several concepts that refer to the sense of competence. Bandura [33] addressed the concepts of sense of self-worth and sense of competence (a more specific feeling of confidence in one's ability in a particular field), which this study has adopted and which appears in many other works (e.g., Averill and Major [34]).

Naylor and Nyanjom [35] proposed a model that connected faculty's emotions toward the transition to ERT, their orientations prior to the COVID-19 pandemic, and the level of support they had received. Faculty whose orientation to online teaching was positive and supportive reported more positive feelings in the transition to ERT, manifested by satisfaction, a high sense of self-efficacy, and a wish to continue implementing this method.

Vang, Martin, and Wang [36] indicated a high level of self-efficacy among faculty, with 90% of them attending compulsory remote teaching training programs. Vergara-Rodríguez, Antón-Sancho, and Fernández-Arias [37] showed a positive and moderate influence of faculty's digital self-competence on their adaptation to digital learning environments during the pandemic. Littlejohn [11] maintained that faculty of UK universities who felt more at ease with online teaching tended to make the most of the digital technologies and platforms. On the other hand, faculty who were less confident about online teaching tended to adapt teaching practices they had used during face-to-face teaching, transferring them to the online environment. Positive students' feedback and improved involvement in the lessons enhanced educators' feelings of competence, leading to further assimilation of innovative practices [34]. Meishar-Tal and Levenberg [13] claim that as the level of Israeli faculty's perceived competency increased, online synchronous learning was experienced as more positive and evoked a sense of 'opportunity' and 'success', which were positive predictors of willingness to conduct online courses in future.

3. Research Design and Methodology

The data related to the emotional aspects were collected in 'real time', three months after the outbreak of the COVID-19 pandemic, during the transition to ERT at two higher education colleges in Israel.

3.1. Research Context: The Colleges' Re-Organization towards the Transition to ERT

With the outbreak of the COVID-19 pandemic, the need for remote teaching arose immediately and extensively. Consequently, the staff of the Teaching and Learning Centers at the two colleges developed and mentored an intensive training program for the faculty. The program included setting up an emergency team, loaning remote teaching equipment to the faculty, launching a designated Internet site, and organizing workshops and individual techno-pedagogical mentoring dealing with emotional, academic, and pedagogical aspects (adapting the courses to remote teaching, maintaining high academic level, summative and formative assessment in emergency situations, and building remote exams). Four hundred and sixty faculty members attended these training programs in the two colleges.

3.2. Participants

The research participants consisted of 318 faculty: 203 from the Academic College of Education and Society and 115 from the Academic College of Engineering. A total of 193 (61%) were females and 125 (39%) were males. Their average age was 53.71 years (SD = 9.74 years), and their average seniority in teaching was 19.88 years (SD = 11.40 years). Ethics approval for conducting the study was received from the Research Ethics Committee of the Academic College of Engineering. Participation in the research was voluntary and

all participants had signed a written informed consent form. The purpose of the study was explained to them, and anonymity and confidentiality were ensured.

3.3. Research Instrument

The researchers developed and validated a quantitative self-report questionnaire that examined emotional aspects during the transition to ERT. The questionnaire also included an item about future adoption of remote teaching: "After experiencing remote teaching, in future I will be interested in: ○ Return to the previous method; ○ Return to the previous method while introducing changes after the online instruction; ○ Stay with the online platform". An open-ended qualitative item was added regarding the faculty's insights about the transition to ERT, in order to enrich the information obtained from the close-ended questionnaire.

The Questionnaire Validation Process

The questionnaire was developed by the researchers based on their professional experience: work during the COVID-19 pandemic in guidance and training of faculty; acquaintance with the theoretical framework of remote teaching; and dialogue with colleagues in the Israeli National Forum of Teaching and Learning Centers. The questionnaire included 15 items related to the emotional reactions of faculty to ERT that all three researchers agreed on. The items were designed to assess the faculty members' emotions regarding the following issues: faculty members' level of knowledge and experience in ERT; their confidence and capability in handling ERT-related tasks; the amount of stress, nervousness, anxiety, and frustration experienced in ERT; the level of confusion, difficulty, and helplessness in dealing with ERT; the extent of success in maintaining academic standards; and their motivation. The response options in the questionnaire were on a 5-point Likert scale from 1 (strongly disagree) to 5 (strongly agree). The items were written in Hebrew, the mother tongue of the research participants. A professional translator translated the items from Hebrew into English and then from English into Hebrew, for cross-checking and modifications, in order to confirm clarity and accuracy of meaning. The validation process was performed in two stages: content validity, structure validity, and reliability testing.

Stage 1—Content validity by inter-rater agreement through expert validation

The content validity was determined by full agreement between six experts, faculty from the two colleges, holding a PhD degree: the Head of the Center for Teaching and Learning at the Academic College of Education and Society, the Head of the Teaching Department in the Academic College of Engineering, two experts in Techno-Pedagogy and Innovation with over 20 years of experience in E-learning, an expert in Teaching and Learning at the Teaching Department, and the Director of the Teaching ICT Unit at the Center of Engineering Education and Entrepreneurship in the Academic College of Engineering. An initial pool of 15 items was carefully reviewed by these six experts, first by sending the list of items to the experts who read them and clarified what seemed unclear to them, and a week later via a Zoom meeting. All the experts that participated in the meeting agreed on what had to be improved about the formulation. Moreover, a decision was made to remove one item: "Today I feel anxious about emergency remote teaching", because the experts did not concur about its clarity. At the end of this stage, 14 items were left.

Stage 2—Construct validity and reliability testing by using Cronbach Alpha coefficients

In order to examine the questionnaire construct validity, a Principal Component Analysis (PCA) was performed, following listwise deletion, using oblique rotation (direct oblimin). The research validation sample comprised 292 faculty from both colleges. The Kaiser–Meyer–Olkin test was statistically significant and verified the sampling adequacy for the analysis (KMO = 0.87, $p < 0.001$). All KMO values for individual items were >0.80, which was well above the acceptable limit of 0.5 and indicated a sufficient sample size for performing the analysis [38]. Bartlett's test of sphericity ($\chi^2_{(78)} = 1914.98$, $p < 0.001$) indicated that correlations between items were sufficiently large for PCA. The PCA was

performed together with a rotation method that assumed dependence between the factors (direct oblimin). An initial analysis was performed in order to obtain eigenvalues for each data component. Two components had eigenvalues over Kaiser's criterion of 1 and, in combination, accounted for 55.19% of the variance. However, the pattern matrix showed that one item was loaded almost equally on both components: "Unfortunately, remote teaching is something that has been imposed on me". Hence, the analysis was performed again without this item and yielded a two-factor solution with eigenvalues over Kaiser's criterion of 1 and, in combination, accounted for 56.88% of the variance. Table 1 presents the factor loadings after rotation.

Table 1. PCA results for emotional aspects in transition to ERT (N = 292).

	Component	
	Sense of Competence in Transition to ERT	**Feelings of Stress in Transition to ERT**
I have knowledge for converting the direct-teaching materials to remote teaching	**0.82**	0.09
I have enough knowledge and experience in remote teaching	**0.82**	0.10
Nowadays I feel at ease with remote teaching	**0.81**	−0.09
Nowadays I feel confident in remote teaching	**0.78**	−0.10
While shifting to remote teaching, I managed to maintain an appropriate academic level	**0.74**	−0.09
Nowadays I am full of motivation in remote teaching	**0.71**	−0.06
Nowadays I am under stress in remote teaching	−0.20	**0.75**
Nowadays I am nervous in remote teaching	−0.23	**0.75**
Nowadays I struggle with remote teaching	−0.20	**0.75**
Nowadays I am frustrated during remote teaching	−0.40	**0.59**
The burden of remote teaching is too heavy for me	0.12	**0.53**
Nowadays I feel helpless in remote teaching	−0.37	**0.48**
Nowadays I cope with remote teaching	0.17	**0.47**
Eigenvalues	5.64	1.75
% of variance	43.39	13.49
Cronbach α	**0.88**	**0.80**

Items with factor loadings ≥ 0.30 were considered as loaded on the component. The items that are clustered on the same components suggest that factor 1 with six items represents a sense of competence in transition to ERT and factor 2 with seven items represents feelings of stress in transition to ERT. Reliability analysis yielded Cronbach $\alpha > 0.80$ for both components. These values indicate the satisfactory reliability of the questionnaire. At the end of this stage, 13 items were left.

3.4. Procedure

The questionnaire was administered to the faculty at the end of the first semester of the ERT in June and July 2020 through online channels of WhatsApp, e-mail, and text messages. Anonymity and confidentiality were promised to the research participants.

3.5. Data Analysis

As mentioned above, construct validity was tested using PCA and internal consistency reliability (Cronbach α). Means and standard deviations, together with medians and interquartile ranges, were used for descriptive statistics of the questionnaire items. Friedman's ANOVA was performed for testing differences between the rankings of the items, followed by Wilcoxon signed rank test for pairwise comparisons. Bonferroni correction was applied for correction of multiple testing. Findings were considered significant at $p \leq 0.05$. All analyses were performed using SPSS version 25 and R version 4.0.2 software. The qualitative data were analyzed by content analysis to identify themes and categories [39,40].

4. Results

The findings are presented according to the research questions.

4.1. Findings Related to the Faculty's Sense of Competence and Feelings of Stress in the Transition to ERT

This subsection presents the quantitative and the qualitative findings relating to research question No. 1, which characterizes the faculty's sense of competence and feelings of stress in the transition to ERT. First will be presented the quantitative findings and then the qualitative findings.

4.1.1. The Faculty's Sense of Competence and Feelings of Stress (Quantitative Findings)

Table 2 presents the descriptive statistics of the faculty's responses to the Likert scale questionnaire organized by index convergence, as found in the factor analysis.

Table 2. Mean values, standard deviations, and median of the faculty's sense of competence and feelings of stress in the transition to ERT.

Item		Mean (SD)	Median (IQR)
	Sense of competence in transition to ERT		
1	While shifting to remote teaching, I managed to maintain an appropriate academic level	4.17 (0.85)	4 (4–5)
2	Nowadays I feel confident in remote teaching	3.95 (0.90)	4 (3–5)
3	I have knowledge for converting the direct-teaching materials to remote teaching	3.95 (0.89)	4 (3–5)
4	Nowadays I feel at ease with remote teaching	3.79 (0.97)	4 (3–4.25)
5	I have enough knowledge and experience in remote teaching	3.68 (1.03)	4 (3–4.25)
6	Nowadays I am full of motivation for remote teaching	3.51 (1.08)	4 (3–4)
	Feelings of stress in transition to ERT		
7	The burden of remote teaching is too heavy for me	3.47 (1.19)	4 (3–4)
8	Nowadays I cope with remote teaching	3.24 (1.20)	3 (3–4)
9	Nowadays I am frustrated during remote teaching	2.02 (1.17)	2 (1–3)
10	Nowadays I am under stress in remote teaching	1.99 (1.10)	2 (1–3)
11	Nowadays I struggle with remote teaching	1.89 (0.99)	2 (1–2)
12	Nowadays I am nervous in remote teaching	1.66 (0.96)	1 (1–2)
13	Nowadays I feel helpless in remote teaching	1.42 (0.83)	1 (1–2)

Table 2 shows that in all the items that related to the sense of competence, the faculty attested they had a high competence in remote teaching. They indicated the highest sense of competence in the item "While shifting to remote teaching, I managed to maintain an appropriate academic level" and a lower sense of competence in the item "Nowadays I am full of motivation in remote teaching".

The faculty specified a medium-low level of stress feelings and said they coped well with the stress, except for two items for which they indicated a moderate feeling of stress: "Nowadays I cope with remote teaching" and "The burden of remote teaching is too heavy for me".

For the items representing the sense of competence, Friedman's ANOVA test for repeated measurements indicated significant differences in the ranking of the various items ($\chi^2_{(5)} = 167.68$, $p < 0.001$). In order to identify the exact reason for the differences, a Wilcoxon signed rank test was performed for pairwise comparisons. Significance level was set at $p \leq 0.003$, in accordance with Bonferroni correction (0.05/15 pairs of comparisons).

The main findings obtained from the pairwise comparisons were that the rankings of the first three items were significantly higher than those of the other items. This illustrated that the faculty felt more confident in remote teaching but less at ease with this method of teaching and less motivated to continue with it (see Figure 1).

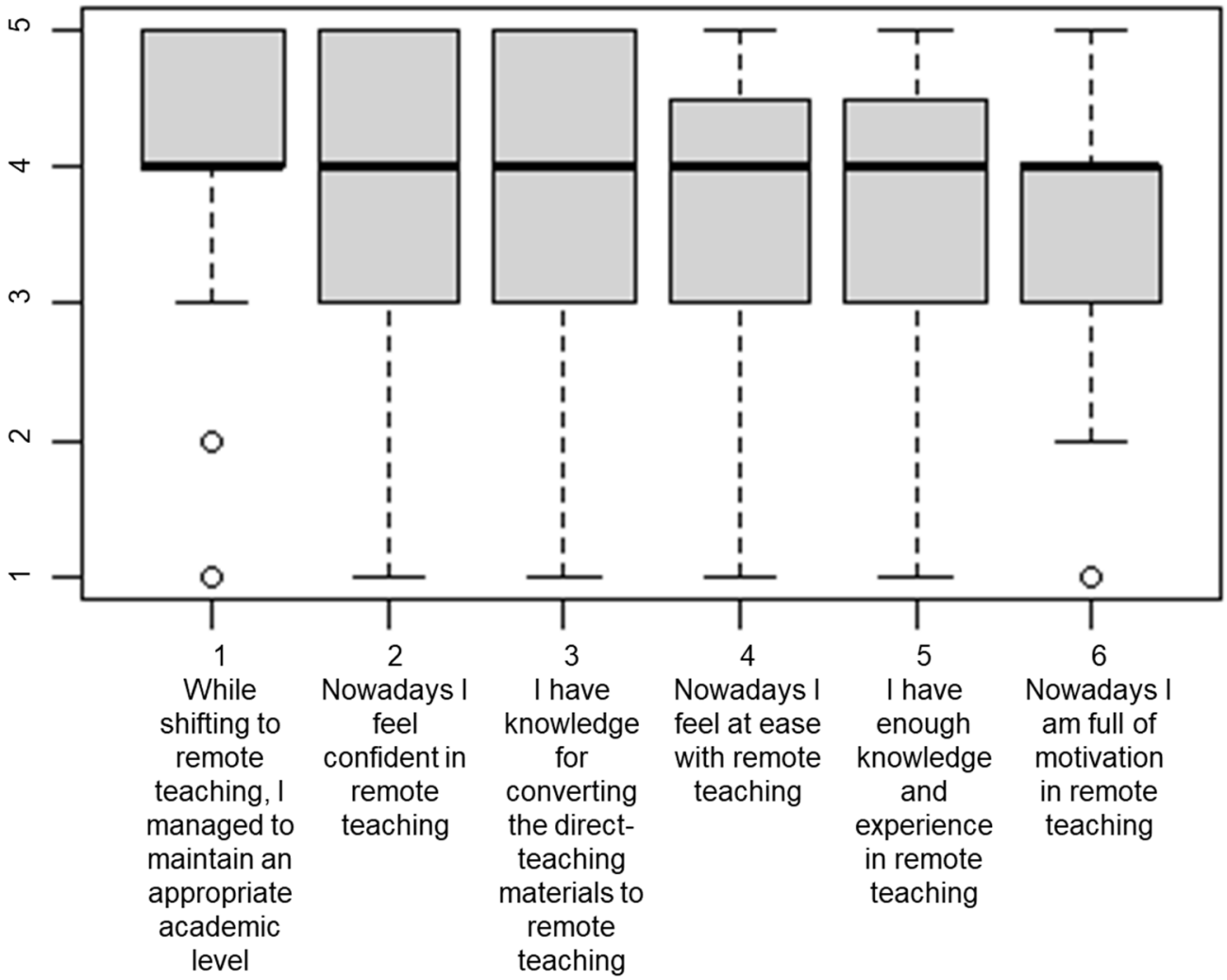

Figure 1. Boxplot of the items composing the sense of competence in the transition to ERT index. The bold line represents the median. The boxes' limits represent interquartile range (IQR), and the whiskers represent IQR × 1.5.

With regards to the items representing the feelings of stress, Friedman's ANOVA test for repeated measurements indicated significant differences in the ranking of the various items ($\chi^2_{(6)} = 833.21$, $p < 0.001$). Bonferroni correction for pairwise comparisons was set at $p \leq 0.002$ (0.05/21 pairs of comparisons). The main findings obtained from the pairwise comparisons were that the rankings of the first two items were significantly higher than those of the other items and the rankings of the last two items were significantly lower than those of the other items. This illustrated that the faculty tended to report greater feelings of burden and difficulties concerning ERT. However, these difficulties were not reflected by feeling nervous or helpless (Figure 2).

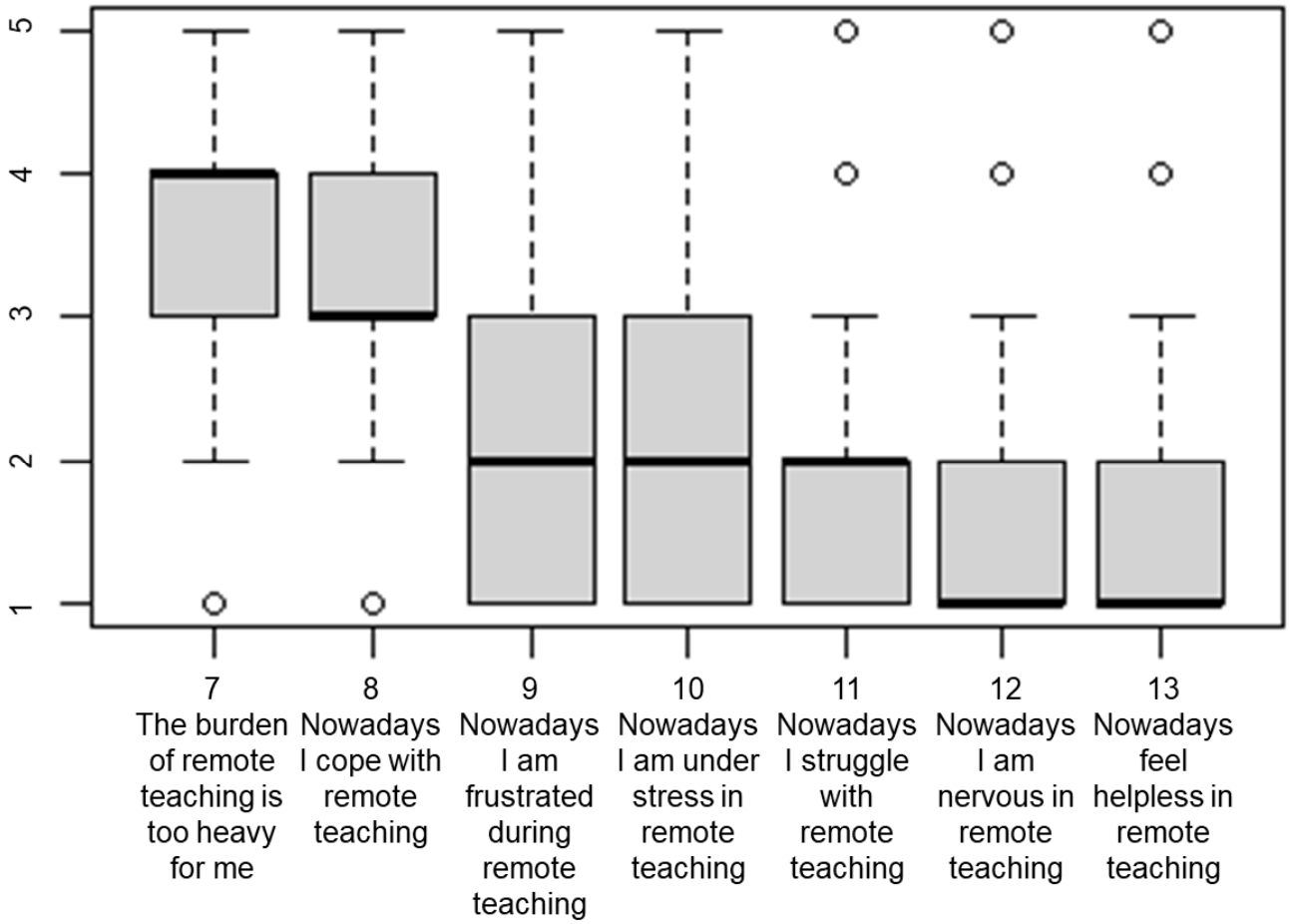

Figure 2. Boxplot of the items composing the feelings of stress in transition to ERT index. The bold line represents the median. The boxes' limits represent interquartile range (IQR), and the whiskers represent IQR × 1.5.

4.1.2. Characteristics of the Faculty's Sense of Competence and Feelings of Stress (Qualitative Findings)

The characteristics of the faculty's sense of competence and feelings of stress were examined through a qualitative open-ended question which was added to the online quantitative questionnaire. A total of 39% of the responses to this question related to the feelings of stress in the transition to ERT, while only 16% of the responses related to the sense of competence. Content analysis was performed by themes and categories.

Feelings of Stress in Transition to ERT

The content analysis related to the feelings of stress yielded two main themes: (1) sense of frustration and (2) sense of overburden. Figure 3 specifies the categories in each theme and the characteristics thereof.

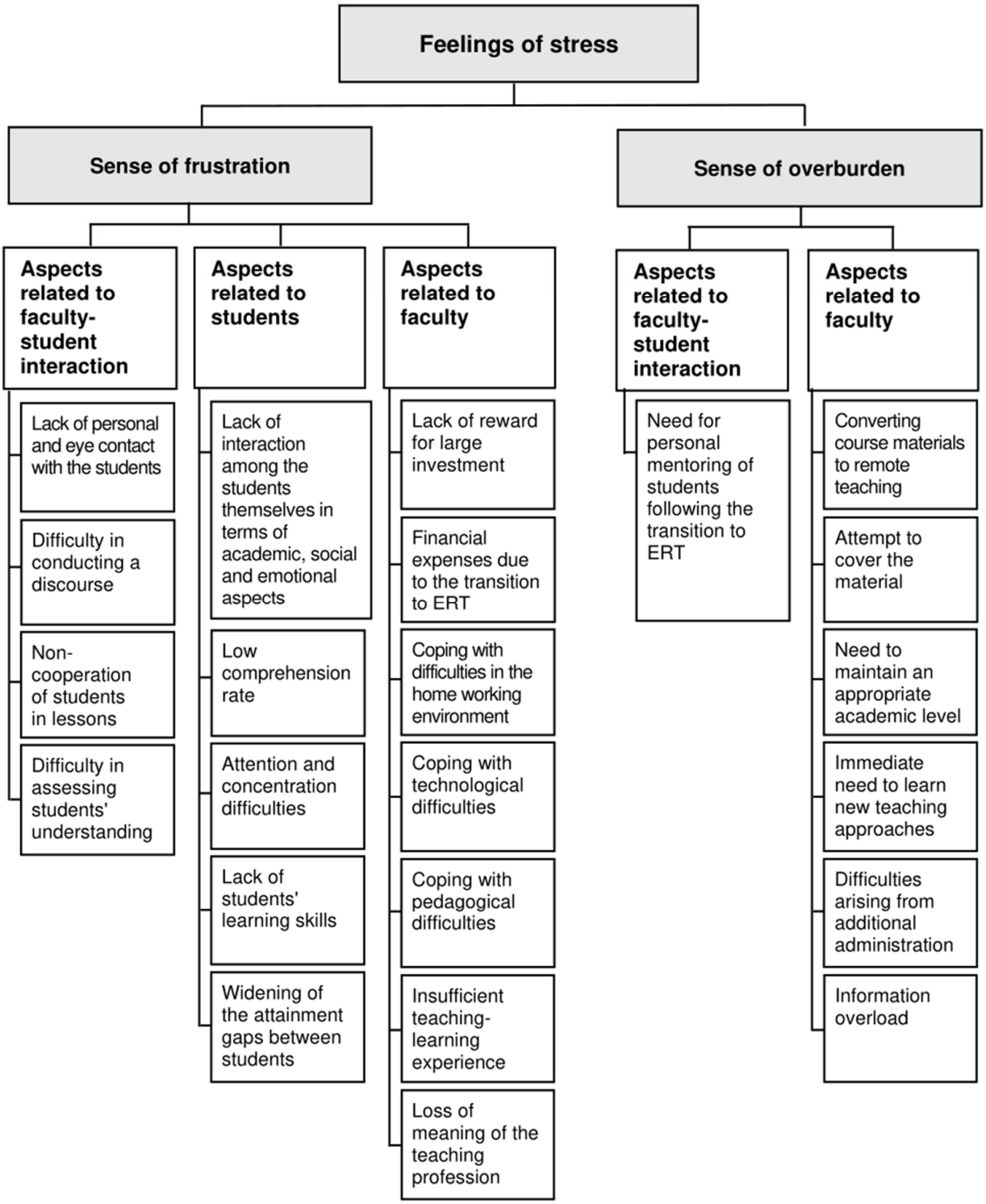

Figure 3. Feelings of stress in the transition to ERT.

Theme 1: Sense of frustration

As can be seen in Figure 3, analysis of the sense of frustration theme yielded three categories: (1) aspects related to faculty–student interaction; (2) aspects related to students; and (3) aspects related to faculty.

(1) Aspects related to faculty–student interaction

Forty-two faculty members attested that they were frustrated by the lack of direct connection, lack of eye contact, and the inability to see and relate to the students' responses: "As much as I appreciate technology, I believe there is no substitute for the personal connection and eye contact". The fact that the students did not turn on their camera constituted a meaningful focus of reference: "The college should 'wake up' and oblige the use of cameras so that we do not teach 'frozen wallpapers'—this is terrible". The metaphor of 'frozen wallpapers' demonstrated the great importance faculty attributed to the visual presence. Some of them emphasized that the direct interaction with the students was their favorite part of the teaching profession. The second characteristic of the sense of frustration was the difficulty in conducting a discourse on Zoom: "It is difficult to distinguish who said what and when in a two-dimensional format. Teaching without a multi-dimensional interaction that involves all the senses, is a limited way of teaching". Another characteristic was the students' non-cooperation during online lessons, as well as their scarce presence: "The online teaching is alienating, lowers the level of participation"; "The cooperation of the students was very difficult for me. Only two students agreed to turn on their microphone and speak, while others did not respond at all". The difficulty in assessing the students' level of understanding was also raised in the faculty's responses: "It was unclear who understood and who did not understand, and whether the students actually followed the learned material".

(2) Aspects related to students

Seventeen faculty members related to the lack of interaction among the students themselves in terms of social and emotional aspects, in and out of the classroom: "The interaction among the students themselves was the aspect that was mostly damaged"; "There is no substitute for walking around and chatting in the halls and on the lawn". The faculty pointed out that the students lacked independent learning skills and time management. Another prominent difficulty was the widening gap of higher education attainments between the students.

(3) Aspects related to faculty

One of the reasons for the faculty's deep frustration mentioned by 13 members was the fact that they were not rewarded for their extensive time investment. Furthermore, the faculty talked about additional financial expenses incurred by the transition to ERT. The faculty claimed that coping with vague boundaries between home and work was difficult: "Generally, the college manifested a lot of containment of the students and less of the faculty, some of whom had to deal with children at home during their lectures". Another aspect raised by the faculty was coping with pedagogical and technological difficulties: "The available technological platforms are limited. We have to reinforce the technologies that facilitate interactive learning"; "I felt the need for guidance in educational technology, mainly in courses with more than 60 students". Five faculty members also claimed that, in fact, the meaning of the teaching profession was lost due to lack of interaction with the students and if the learning continued in this way, they would probably not be part of it: "Teaching without a direct contact with the students loses a major part of the learning experience"; "My great love of teaching is grounded in the direct contact with the students and when it is not there, I lose the wish to engage in the profession".

Theme 2: Sense of overburden

Content analysis of the sense of overburden theme yielded two categories: (1) aspects related to the faculty's overburden and (2) aspects related to the faculty–student interaction. Many faculty indicated a considerable sense of overburden in the transition to remote teaching: "I experienced a heavy burden as well as strong emotional and physical stress". Sixteen faculty members described the sense of overburden as highly intense and two of them used the expression of trauma: "Jumping into online teaching from face-to-face teaching in a short time is traumatic".

(1) Aspects related to faculty

The reasons for the sense of overburden mentioned by 17 faculty members were the need for converting all the course materials and adapting them to online teaching and the need to learn new unfamiliar teaching approaches in a short time: "Since this was the first time of using online learning techniques, it was necessary to change, adapt, and actually re-write all the lesson plans of the lectures, exercises and laboratories". Other aspects were the attempt to cover the material and the need to maintain an appropriate academic level: "The strong wish to maintain the pace of studies and, at the same time, also the high academic level of the course, constituted a far-from-simple challenge, putting me under stress and workload that I had not experienced in pre-COVID-19 times". Two other aspects were pointed out by the faculty: difficulties arising from additional administrative matters connected with the transition to remote exams and too much information sent by many emails and messages to the mobile device.

(2) Aspects related to faculty–student interaction

The faculty mentioned the overburden resulting from the need to personally mentor the students following the transition to ERT: "I was available to the students throughout the whole week. These were some sort of private lessons in addition to the weekly group session. In spite of the advantages to the students, I cannot continue doing it on the same level of time as before".

Sense of Competence in Transition to ERT

In their answer to the open-ended question regarding their insights following the transition to ERT, only 16% of the faculty related to their sense of competence for remote teaching. Figure 4 shows the categories obtained from the content analysis regarding the sense of competence in the transition to ERT: (1) aspects related to faculty and (2) aspects related to faculty–student interaction.

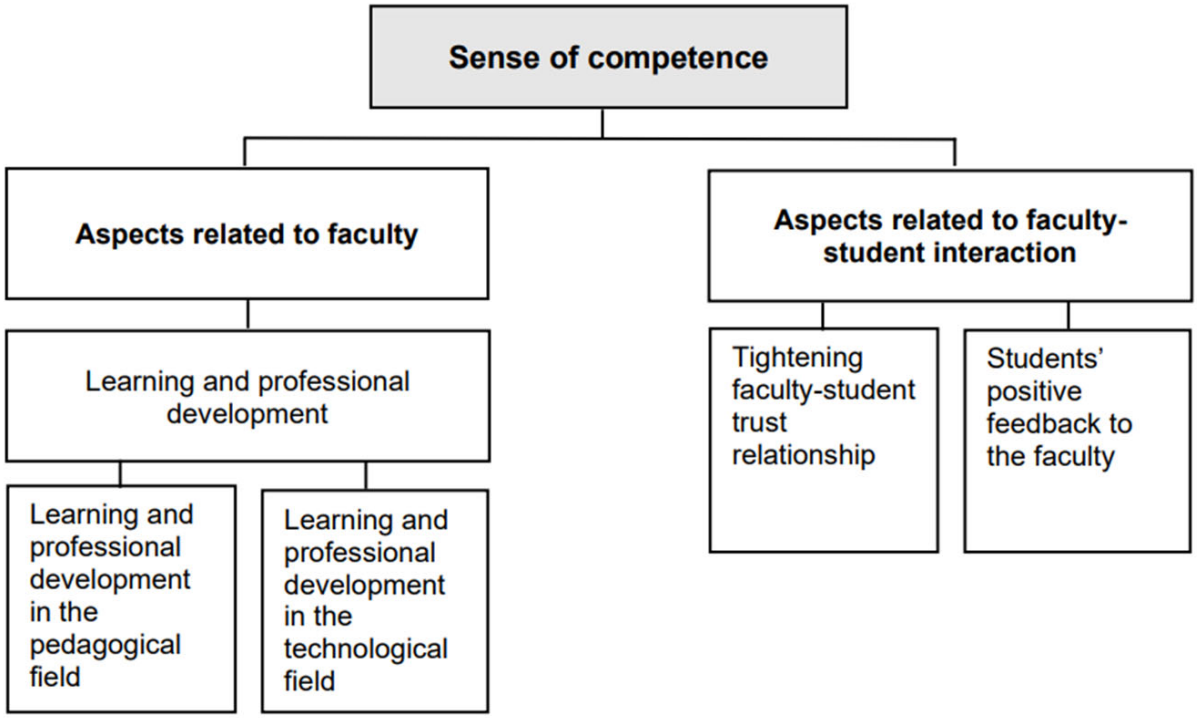

Figure 4. Sense of competence in the transition to ERT and the origin thereof.

(1) Aspects related to faculty

Thirty-one faculty members indicated that their sense of competence stemmed from the college training courses they attended during the transition to ERT which contributed to their professional development in the pedagogical field: "At the end of the semester, all the contents and lessons were upgraded from a professional and pedagogical point of view and today I am teaching much better". Moreover, the faculty attested to learning and development in the technological field: "I underwent a personal transformation with the technological aspects of teaching"; "Remote teaching made me face, at my age, a considerable challenge. In the first three lessons, I made all the possible mistakes from a technical point of view. Then, it grew better and until the end of the semester, everything went very well". The faculty identified an opportunity for learning, and they implemented and leveraged the learning to additional channels: "The opportunity resides at the core of the difficulty. I feel I have made a quantum leap and I am ready to learn more".

(2) Aspects related to faculty–student interaction

This category encompassed two characteristics: tightening trust relationships between faculty and students and getting positive feedback from the students. Ten faculty members attested that the trust relationships with the students were tightened: "I talked with the students about this process that I had also undergone when I wanted to transmit the importance of the reflective process and the powers found in times of great changes. This transparency promoted insights and tightened the trust relationships with the students". The faculty indicated that their sense of competence was also enhanced following feedback from the students: "I received very good feedbacks from the students related both to the course organization in Moodle, and to the fact that in spite of the asynchronous lessons, I managed to make the students feel that I was with them and actually talking to them". The faculty's answers that related to the sense of competence were intertwined with phrases about feelings that accompanied ERT, like pleasure, happiness, a sense of positive experience, and a sense of a meaning: "For me this was an empowering and fascinating experience"; "I liked the interaction with the students and their attention"; "This was a challenging and meaningful period!!!".

4.2. The Relationship between Sense of Competence, Feelings of Stress, and Adopting Remote Teaching in Future

This subsection presents the findings that relate to research question No. 2, which deal with the relationships between the faculty's willingness to embrace remote teaching in future, sense of competence, and feelings of stress.

Higher education faculty were asked about the way they saw their teaching in future after their remote teaching experience, choosing one of three options: (1) return to the previous method; (2) return to the previous method while making changes after the online instruction; and (3) stay on the online platform. Figure 5 illustrates the averages of the sense of competence and feelings of stress among the faculty according to their three categories of preference for remote teaching in future. The columns in the graph represent mean values and the error lines represent standard errors (SEs).

The analysis demonstrated a significant effect for the group with regards to sense of competence ($F(2304) = 38.36$, $p < 0.001$) and feelings of stress ($F(2304) = 15.59$, $p < 0.001$) in remote teaching in the transition to ERT. The effect size for the former was large and medium for the latter ($\Omega^2 = 0.20, 0.09$, respectively) [38]. All post hoc comparisons were significantly different ($p < 0.01$), indicating a linear effect of group on the sense of competence and feelings of stress: the more competent and the less stress faculty felt with regards to remote teaching, the more they would like to adopt remote teaching in future.

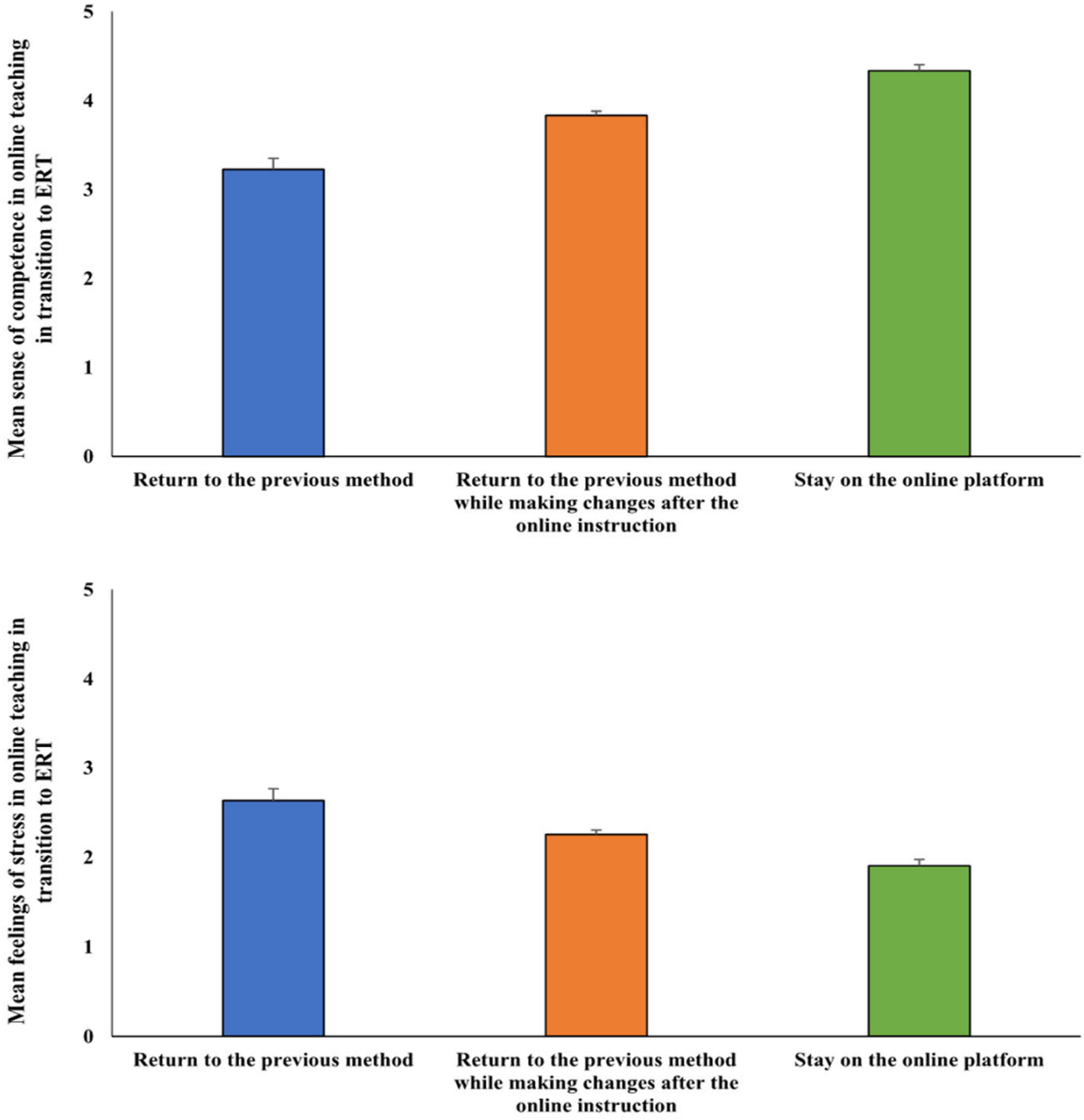

Figure 5. The mean values of the emotional aspects, according to preference for remote teaching in future.

5. Discussion

From the theoretical perspective, this study sheds light on and contributes to knowledge about the faculty's emotional aspects during the transition to ERT. According to the first research aim, the findings illustrated and characterized two main emotional aspects: a sense of competence and feelings of stress.

5.1. A Sense of Competence

Although the rapid transition to ERT was unexpected in a period of isolation and life threat, the faculty specified a high sense of competence level: they felt confident, they had managed to maintain an appropriate academic level, and they had sufficient knowledge in remote teaching. These findings are in line with previous research that indicated a

high faculty sense of competence due to teaching experience in remote teaching, training programs, and the support they had received in ERT [4,13,20,35,36].

In this study, the aspect of the sense of competence that received the highest rank was maintaining an appropriate academic level. This might be explained by the fact that, despite the lack of quality standards for remote teaching at the institutional level, the Teaching and Learning Centers of the two colleges investigated in this study had conducted special training programs that put an emphasis on maintaining a high academic level in remote teaching.

The information added through the content analysis of the qualitative open-ended question in the questionnaire indicated that the faculty felt they had benefited from meaningful professional development in the field of techno-pedagogy, received positive feedback on remote teaching, and were able to tighten the relationship of trust with the students. These findings are consistent with those of Averill and Major [34], asserting that positive student feedback improved the educators' sense of competence.

5.2. Feelings of Stress

In the close-ended section of the questionnaire, the faculty reported a high level of sense of competence and a medium-low level of feelings of stress. Conversely, in response to the open-ended question about their insights following the transition to ERT, the faculty mainly focused on the sense of overburden and frustration, and their reference to the sense of competence was limited. This may be explained by the fact that the faculty who responded to the open-ended question experienced mostly feelings of stress during the transition to ERT, i.e., frustration and overburden.

The findings of this study regarding feelings of stress indicated that the highest level was associated with the aspect of overburden. The main reasons for the sense of overburden were related to the need to change and adapt the course materials to remote teaching, maintaining an appropriate academic level, as well as learning new teaching approaches in a very short time. Furthermore, faculty mentioned receiving overwhelming information, dealing with administration demands, and providing personal mentoring to the students as the factors in this sense of overburden. These findings can be explained by the constraints imposed by the COVID-19 pandemic and the multiplicity of roles required from the faculty: subject teacher, pedagogue, assessor, administrator, technologist, counselor, researcher, and social mediator [4,20,23,29,31].

The faculty described a sense of frustration on a high level, stemming from their challenges in the interaction with their students: a lack of personal connection and eye contact, difficulty in conducting a discourse, students' non-cooperation with turned-off cameras ("frozen wallpaper"), and difficulty in assessing students' understanding. These findings are in line with previous studies pointing out the faculty's concerns, frustration, and decreased resilience, due to lack of face-to-face communication with students and the absence of eye contact [6,14,18,20,41]. In this study, some faculty expressed themselves in a more radical way and described remote teaching as an insufficient teaching–learning experience that caused feelings of "loss of meaning of the teaching profession".

The findings of this study showed that the faculty's sense of frustration was also associated with a lack of interaction among the students themselves, which did not allow peer learning and a lack of independent learning skills and attention deficit. Zoom fatigue and attention difficulties can account for the low comprehension rate and attainment gaps between the students [21,22]. Moreover, the difficulties experienced by faculty in maintaining students' engagement can be associated with their lack of preparedness for this kind of teaching technically, psychologically, or/and logistically [8,20,24].

Another finding of this study was that the faculty's sense of frustration was related to a lack of reward for their large investment and the blurred boundaries between home and work. This finding supported the findings of recent studies conducted by Esquivel, Marincean, and Benore [24], Littlejohn [8], and others [13,20,23,30], asserting the need for performing academic work from home at the same time as conducting home and family life.

Furthermore, the sense of frustration stemmed from the need of coping with technological and pedagogical difficulties discussed in many other studies (e.g., Collazos and Burbano [4], Nabolsi and colleagues [20]).

5.3. Adoption of Remote Teaching in Future

The second aim of this study was to explore the relationship between faculty's sense of competence, feelings of stress, and the willingness to continue with remote teaching in future. The research findings indicate that the higher the sense of competence and the lower the feelings of stress, the greater the willingness to adopt remote teaching in future. Regarding the sense of competence, this finding is in line with Meishar-Tal and Levenberg [13], who found that the emotions of opportunity and success have an essential effect on future willingness to continue online synchronous teaching.

5.4. Research Limitations

This study used a self-reporting questionnaire. This is a very common research instrument in the investigation of stress according to the positivist approach [42] and is characterized by limitations connected to social desirability [43]. Consequently, in future studies, we recommend integrating additional research instruments, such as interviews or focus groups. Such instruments will enable us to obtain a more comprehensive picture, examining also what affects the sense of competence and feelings of stress over a long period of time. Another limitation was that the study examined the sense of competence and feelings of stress of faculty members from two colleges only, limiting the research generalizability. Consequently, the mixed-methods approach was used in order to enrich quantitative findings so they can inform future policy.

6. Conclusions and Insights in the Long Run

Researchers and practitioners anticipate meaningful changes in teaching and research in the post-COVID-19 world of higher education. These changes have been transpiring and will continue happening in future [1]. A new generation of students is learning in higher education institutions [3]. At the same time, new worlds of technology are being integrated into teaching and research, leading to changes in traditional roles of higher education faculty and of higher education in general. Hence, we are witnessing an increasingly growing need for mentoring and a continuous professional development framework for faculty, aiming to reduce the feelings of stress and enhance the sense of competence in the new higher education world. These two aspects are particularly important since they are related to the faculty's willingness to adopt remote teaching in future.

The findings of this study underscore the importance of remote teaching practicum and techno-pedagogical knowledge as factors that intensify the sense of competence and reduce the feelings of stress. Consequently, higher education institutions should continue developing faculty in techno-pedagogical aspects, provide new tools and platforms, as well as enable open access to updated databases of teaching materials. This should be done in parallel with a continuous practice with these materials as an inseparable part of the higher education faculty's current work, as well as by offering an appropriate reward that includes acknowledgement of the teaching quality in a higher education career.

The interaction with the students was found as a major and essential factor, contributing to the faculty's sense of competence and to their feelings of stress. The remote teaching practicum should, therefore, provide lesson management tools that require the turning on of cameras and activating the learners. There should also be tools for assessing the students' consistent understanding and nurturing trust relationships and constructive cooperation between the faculty and the students. The teaching should include continuous feedback in order to allow faculty to adapt their teaching methods according to the challenges that emerge in "real time". It is essential to initiate the coordination of expectations between the faculty and the students, conduct an open discourse, and create opportunities for

communication that brings the participants closer and establishes personal relationships of empathy.

The faculty's sense of overburden in the administrative work of remote teaching can be reduced by building a supporting setup and introducing computerized systems for managing the learning. Moreover, it is necessary to clearly define the faculty's working hours, during which a learning response can be provided. This will reduce the sense of frustration caused by the blurred boundaries between work and home. All these measures will constitute meaningful professional and emotional support for the faculty, changing attitudes towards remote teaching, techno-pedagogy, and communication with the students. Furthermore, they will enhance the faculty's self-confidence regarding their ability to lead meaningful and experiential remote teaching.

One of the conclusions drawn from this study is that, sometimes, according to the faculty's opinion, students encounter difficulties in remote learning. This is due to lack of independent learning skills and attention deficit. Hence, it is recommended to initiate remote learning training of the students too, as a necessary preparation for the new world of learning.

Policy makers in higher education should set up learning communities that can assist in intensifying the sense of competence and reducing the feelings of stress and loneliness of the higher education faculty. Moreover, they must devise ways of rewarding the faculty, expressing gratitude and appreciation.

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