

A comparative study of university students' responses in the first and second COVID-19 pandemic waves

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Abstract: The COVID-19 pandemic also affected the university setting, where the study process was conducted remotely for the first time. In our research, we were interested in how students of the Faculty of Education of the University of Ljubljana reacted to the changed emergency situation, both emotionally and cognitively. A total of 291 students participated in the study during the first pandemic wave and 382 students during the second pandemic wave. The aim of the study was to examine their views on emergency remote teaching, their psychosocial experience of the overall situation, self-regulation strategies used in distance learning and positivity. Although the overall psychosocial experience and positivity were comparable in the first and second waves of the pandemic, the emergency remote education in the second wave suited the students better. In the second wave, students reported fewer problems with the organisation of time and space, planning study work, in-depth study work, product quality and efficiency, but more problems with concentration and communication with classmates. Most self-regulation strategies were used to a similar extent. Differences emerged in two self-regulation strategies: in the second wave, students used time management to a lesser extent, but used help-seeking strategies more frequently than students in the first wave. The research findings contribute to a better understanding of the different experiences of students at different periods of the pandemic and provide professionals with an opportunity to focus on the critical elements when looking for ways to support students during emergency remote teaching in the pandemic.

Keywords: emergency remote learning, pandemic, self-regulation, positivity, higher education

Primerjalna študija odzivov študentov v prvem in drugem valu pandemije COVID-19

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Povzetek: Pandemija COVID-19 je imela učinek tudi v univerzitetnem okolju, kjer je študij prvič potekal na daljavo. V pričujoči raziskavi nas je zanimalo, kako so se študenti Pedagoške fakultete Univerze v Ljubljani čustveno in kognitivno odzvali na spremenjene izredne razmere. V prvem valu pandemije je sodelovalo 291 študentov, v drugem pa 382 študentov. Namen študije je bil preučiti njihove poglede na študij na daljavo v izredni situaciji, psihosocialno izkušnjo celotne situacije, učne strategije, ki so jih uporabljali pri učenju na daljavo in pozitivnost. Čeprav je bila splošna psihosocialna izkušnja in pozitivnost študentov v prvem in drugem valu pandemije primerljiva, jim je študij na daljavo v izredni situaciji bolj ustrezal v drugem valu. V drugem valu so študentje poročali o manj težavah z organizacijo časa in prostora, načrtovanjem študijskega dela, poglobljenim študijskim delom in kakovostjo izdelkov, več težav pa so imeli s koncentracijo ter komunikacijo s sošolci. Učne strategije so uporabljali v podobni meri. Razlike so se pojavile v rabi dveh učnih strategij: v drugem valu so študenti v manjši meri uporabljali strategije upravljanja s časom, pogosteje kot študenti v prvem valu pa so uporabljali strategije iskanja pomoči. Ugotovitve raziskave prispevajo k boljšemu razumevanju različnih izkušenj študentov v različnih obdobjih pandemije in nudijo visokošolskim učiteljem in sodelavcem možnost, da se osredotočijo na kritične elemente pri iskanju načinov za podporo študentom med študijem na daljavo v izredni situaciji pandemije.

Ključne besede: Študij na daljavo v izredni situaciji, pandemija, samoregulacija, pozitivnost, visoko šolstvo

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The COVID-19 pandemic has had a significant impact on the lives of people around the world. Health, social, economic and other important conditions of daily life have been subordinated to pandemic measures to prevent the spread of the virus. There have also been a number of challenges and changes in the field of education that suddenly and radically interfered with the otherwise established practices of higher education (Aristovnik et al., 2020). One of these was undoubtedly the change from face-to-face classes to distance teaching and learning, which was not prepared or planned, and thus differed markedly from classic, familiar remote education. Referring to these peculiarities, Hodges et al. (2020) proposed the new term *emergency remote teaching* (ERT) to clarify the difference with terms commonly used in normal, non-emergency situations.

The first COVID-19 wave in Slovenia began in March 2020 and lasted until the end of May. At the time, students were in the spring semester and began ERT that lasted until the end of the semester. The second COVID-19 wave in Slovenia began in October 2020 and lasted until June 2021. In the 2020/21 academic year, students were fully present at university for the first two weeks and then practised ERT until the end of the academic year, with some exceptions (e.g., some laboratory classes).

For health reasons, the implementation of the study process was moved from university to the online environment for the first time, which affected all stakeholders in the educational context. This change posed a major challenge to both educators and students, as it required active participation in the study process (e.g., motivation and the use of self-regulated learning strategies) and a reconceptualisation of the structure and mode of the study process (Carter et al., 2020). At the beginning of the pandemic, most of the problems stemmed from a lack of planning, coordination and communication, which further strained the situation (Bozkurt et al., 2020). Sahu (2020) reported the following most common challenges in higher education institutions: transferring the study process online, grading and evaluating students' work, offering support to foreign exchange students, and mental health care for university staff and students.

Studying under the extreme circumstances of the pandemic had a negative effect on students, who reported feelings of anxiety, uncertainty and stress (Mudenda et al., 2020; Son et al., 2020). The disadvantages of ERT that elicited these feelings included decreased levels of self-efficacy and deterioration of academic integrity (Li et al., 2020). However, students also reported positive effects of ERT, such as the flexibility of the study process and the ability to adapt their studies to their own needs (Mukhtar et al., 2020). Furthermore, a longitudinal study on psychological distress during COVID-19 (Hamza et al., 2020) showed differential effects on mental health between students with and without pre-existing mental health concerns. Students with pre-existing mental health concerns showed improving or similar mental health during the pandemic, while students without pre-existing mental health concerns were more likely to experience a deterioration in mental health (compared to one year prior), possibly due to increased social isolation.

Self-regulation strategies during emergency remote teaching

Self-regulated learning is a self-directed process in which students set their own learning goals and monitor, control and regulate their behaviour, motivation and cognition (Zimmerman, 2013). Self-regulation strategies are among the most important human skills that enable adaptability in different situations and play a crucial role in academic success, cognition, and social and adaptive functioning (Eisenberg et al., 2004; Zimmerman, 2005). Environmental factors on the micro and macro level (such as the COVID-19 pandemic) also influence self-regulatory processes (Usher & Schunk, 2018). During ERT, self-regulation strategies are particularly important, as students face new challenges and workloads that impact their learning and academic success (Bradley et al., 2017; Eom & Ashill, 2016) and a diverse set of self-regulatory strategies helps them to better manage diverse situations in different contexts (Schunk & Greene, 2018).

Research on self-regulated learning in distance education shows that students use a number of different self-regulation strategies, such as structuring the environment, goal setting, time management, help seeking, specific task strategies and self-evaluation (Barnard et al., 2009). However, research focusing on self-regulated learning in emergency remote education during extreme circumstances such as a pandemic is scarce. Gonzales et al. (2020) examined the performance of Hispanic students in higher education before and after confinement due to the COVID-19 pandemic. The results suggest that confinement had a significant positive effect on the students' performance, as they began studying more continuously (as opposed to before the outbreak), thus improving their self-efficacy. Biver et al. (2021) reported that Dutch university students were, on average, less able to regulate their attention, effort and time, and were less motivated compared to the pre-pandemic situation. Four adaptation profiles were identified in the students' responses, indicating differences in their resource management strategies and adaptations. University students in Slovenia reported frequent use of two self-regulation strategies, environment structuring and goal setting, and less frequent use of task strategies; these self-regulation strategies did not differ by year of study (Žerak et al., 2021). Hong et al. (2021) reported that students who used more online self-regulation strategies procrastinated less and perceived online learning as less ineffective.

Positivity as a protective factor

Positivity is defined as the tendency to view life experiences and life in general in a positive perspective (Caprara et al., 2012). A positive orientation is the basis for self-concept, life satisfaction and optimism (Alessandri et al., 2012). Positivity in university students is positively related to better overall health (Jenaabadi et al., 2015) and the personality traits of energy and emotional stability, while it is negatively related to depression (Caprara et al., 2012). The more positive students are, the more satisfied they are with the quality of university life (Tho et al., 2020). Students are also more successful

academically and socially, because positivity enables them to perceive themselves as capable of dealing with challenges in the academic context (Barbaranelli et al., 2019). Students who report greater optimism at the beginning of their first semester at university report lower increases in stress and depression at the end of their first semester, indicating that optimism also supports better adjustment to stressful life events (Brissette et al., 2002). Yildırım and Güler (2021) examined positivity in the COVID-19 pandemic, finding that COVID-19 perceived risk had a significant direct effect on positivity, which in turn had a significant direct effect on death distress and happiness during the pandemic. Positivity mediated the effect of perceived risk on death distress and happiness.

Purpose of the study

As emergency remote education differs from face-to-face education, it is important to explore students' experiences with it in order to understand these differences in depth and adjust appropriately in further teaching and learning at university during emergencies (Hodges et al., 2020). Therefore, the aim of the present study was to explore and compare university students' responses in the first wave of the pandemic (the 2019/2020 academic year), when students were first confronted with the stressful change, and in the second wave of the pandemic (the 2020/2021 academic year), when students already had more experience with ERT, as the pandemic had already lasted for almost a year. Specifically, we investigated the following research questions:

1. How did students evaluate ERT in the first and second waves?
2. What was the psychosocial experience of students in the context of university study in the first and second waves?
3. Which self-regulation strategies did students use in the first and second waves?
4. How positive was the outlook of students in the first and second waves?

5. How were self-regulation strategies, positivity and the psychosocial experience of university study during the pandemic related in the first and second waves?

The results of the research presented in this paper are part of a larger project entitled *Students' Self-Regulation and Online Education in an Extreme Situation*, which was undertaken at the Faculty of Education of the University of Ljubljana in the 2019/20 academic year. The present study represents an extension of the original study due to the unexpected prolongation of ERT during the COVID-19 pandemic to the 2020/21 academic year.

Method

Participants

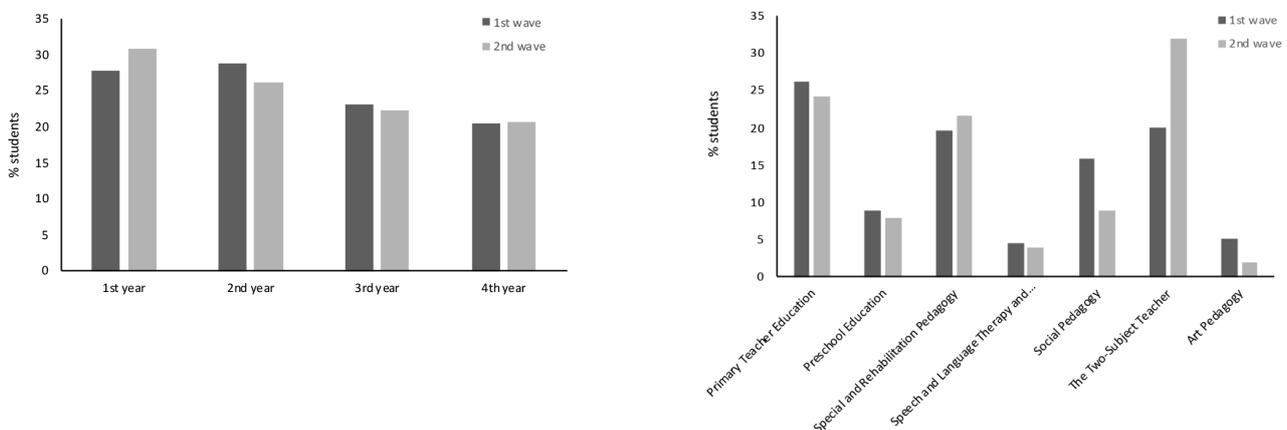
The research was conducted in two time periods with undergraduate students from the Faculty of Education of the University of Ljubljana. In the first COVID-19 wave, 291 undergraduate students participated (92.4% women), representing 19.1% of the population. Their mean age was 21.2 years ($SD = 1.5$) and their grade point average was 8.4 ($SD = 0.7$, on a scale of 1–10). In the second COVID-19 wave, 382 undergraduate students participated (90.8% women), representing 28.4% of the population. Their mean age was 21.1 years ($SD = 1.7$), and their grade point average was 8.0 ($SD = 1.7$, on a scale of 1–10). The percentage of students in each year of the study and in each study programme is shown in Figure 1.

Instruments

The Psychosocial Experience of Emergency Remote Teaching and Pandemic Questionnaire measures the experience of studying during the COVID-19 pandemic. It consists of eight items, four of which were adapted from Ristić Dedić (2020). These four items refer to feeling competent to

Figure 1

Participating students in the first and second Covid-19 wave divided by year of study (left) and study programmes (right)



cope with the situation (“*I feel competent to cope with the difficult situation I am in.*”), emotional experience, level of energy, and the ability to focus on studying during the COVID-19 pandemic. Four additional items about being adequately informed, confidence in completing study tasks, negative thinking, and having support from academic staff were added for the purpose of the present study. These items were added to cover the cognitive, emotional and social aspects of experiencing an emergency situation as a university student during the pandemic. The response format is a 5-point Likert scale (1 – strongly disagree, 5 – strongly agree). Preliminarily, we confirmed the one-factor structure of the questionnaire through exploratory data analysis (KMO = 0.86, Bartlett $p < .001$, one factor explains 44.6% of the variance) and verified the appropriate reliability of the scale ($\alpha = 0.84$). A higher score on this measure indicates a more functional pattern of psychosocial experience during the emergency situation of remote studying during the pandemic.

The *Online Self-Regulated Learning Questionnaire – OSLQ* (Barnard et al., 2009) measures the use of self-regulation strategies in an online learning environment. It consists of 24 items on six scales: Goal Setting (e.g., “*I set standards for my assignments in online courses.*”), Environment Structuring (e.g., “*I choose the location where I study to avoid too much distraction.*”), Task Strategies (e.g., “*I do extra problems in my online courses in addition to the assigned ones to master the course content.*”), Time Management (e.g., “*I allocate extra study time for my online courses because I know it is time-demanding.*”), Help Seeking (e.g., “*I am persistent in getting help from the instructor through e-mail.*”), and Self-Evaluation (e.g., “*I ask myself a lot of questions about the course material when studying for an online course.*”). Participants respond on a 5-point scale (1 – strongly disagree, 5 – strongly agree). Preliminarily, we confirmed an adequate fit of the model to the predicted factor structure ($\chi^2(174) = 434.54$; RMSEA = .07; CFI = .89; TLI = .86) and verified the acceptable reliability of the scales ($.65 < \alpha < .79$).

The *Positivity Scale* (Caprara et al., 2012) measures positivity, defined as an orientation to view oneself, one's own life and the future in a positive perspective. It consists of 8 items (e.g., “*I have great faith in the future.*”) in a 5-point Likert response format (1 – strongly disagree, 5 – strongly agree). Preliminarily, we confirmed an adequate fit of the model to the predicted factor structure ($\chi^2(9) = 64.94$; RMSEA = .14; CFI = .93; TLI = .88) and verified the appropriate reliability of the scale ($\alpha = .85$).

Perceived adequacy of ERT was measured on a 5-point scale (1 – it suits me much less, 5 – it suits me much better) using one question: “*In general, how does ERT suit you compared to regular study?*”. Perceived change in ERT in ten aspects (Motivation to study, Organisation of time and space, Planning study work and scheduling obligations, Concentration in study work, In-depth study work, Product quality, Communication about study work with classmates, Communication about study work with professors, Efficiency in study work, Workload) was measured on a 5-point scale (1 – much worse than usual, 5 – much better than usual).

In addition to the questionnaires, open-ended questions were included to explain the perceived adequacy of ERT and its advantages and disadvantages.

Procedure and Data Analysis

The data were collected with an online questionnaire in the Slovenian open-source application IKA at two time points. The students participated during the first COVID-19 wave over a three-week period from April to May 2020 in the spring semester of 2019/20, and during the second COVID-19 wave in March 2021 in the spring semester of 2020/21. Participation was anonymous and voluntarily, and informed consent was provided by all of the participants.

The data were analysed with IBM SPSS Statistics, version 22 and R, version 4.0.3. Content analysis was performed with open coding developing categories (Glaser & Strauss, 2006).

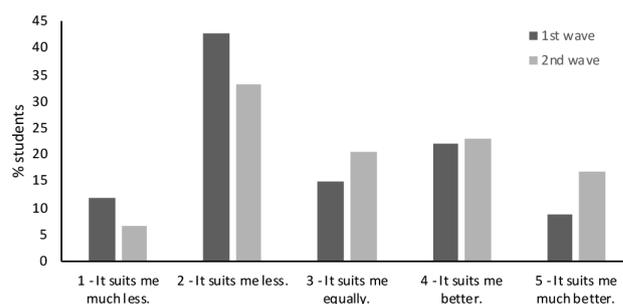
Results

First, we analysed the perceived adequacy of ERT in comparison with regular study in the first and the second waves of the COVID-19 pandemic. In both time points, most of the students reported that ERT suits them less than regular study (Figure 2). We further compared the means in the first and second COVID-19 waves to the average 3, which represents the answer ‘It suits me equally’. The mean statistically significantly differed in the first wave ($M = 2.73$, $SD = 1.18$, $t(262) = -3.65$, $p < .001$, $d = .23$), but not in the second wave, where the mean value was above the average 3 ($M = 3.10$, $SD = 1.22$, $t(381) = 1.64$, $p = .10$, $d = .08$).

We compared the groups of students from the first and second COVID-19 waves using the independent samples t -test. The groups differed statistically and practically significantly in their perceived adequacy for ERT ($t(643) = -3.81$, $p < .001$, $d = .31$). The students in the second wave indicated that ERT was a better fit for them than the students in the first wave. In order to gain a deeper insight into the positive and negative aspects of ERT, we conducted a qualitative analysis of the students' responses about what does and does not suit them. The results are presented in Table 1. In general, the students gave a comparable number of positive and negative reasons. Among the positive reasons, time management stood out (e.g., “*I can organise my time more flexibly, I have the feeling that I have more time in the day – not only for learning, but also for*”).

Figure 2

Students' responses to the question ‘In general, how does ERT suit you compared to regular study?’ in the first and second Covid-19 waves



other activities"). Among the negative reasons, the students reported lower satisfaction with learning and study (e.g., "It is hard for me to stay focused, and I am less motivated to participate in class"), organisation of study (e.g., "It suits me less, especially in terms of the inability to perform teaching practice, simulations, observations, performances, ..., because in this year, and especially in this semester, we learn about things for which practical experiences are extremely important for good understanding and gaining experience"), and social relationships (e.g., "Lack of socialising with classmates, which contributes a lot to motivation, mood, exchange of opinions").

The students also assessed specific aspects of ERT compared to regular study (Table 2). The students in the first COVID-19 wave reported statistically significantly better concentration in study work and communication about study work with fellow students compared to the students in the second wave. The students in the second wave reported statistically significant better organisation of time and space, in-depth study work, planning study work and scheduling obligations, efficiency in study work, and product quality. For motivation to study, communication about study work with

professors, and workload, the differences between the groups were neither statistically nor practically significant.

Next, we compared the students' psychosocial experiences in the context of university study during the COVID-19 pandemic. In general, the students reported similar psychosocial experience in the first ($M = 3.55$, $SD = 0.75$) and the second waves ($M = 3.51$, $SD = 0.68$), $t(620) = 0.71$, $p = .48$, $d = .06$.

The use of self-regulation strategies in the first and second waves is shown in Table 3. The most used self-regulation strategy in both groups was environment structuring, while the two least used were task strategies and time management. Students in the first wave were more likely to use time management strategies than students in the second wave, whereas students in the second wave were more likely to use the help-seeking strategy. Differences in other self-regulation strategies between the groups were not statistically significant.

We also compared the students' positive outlook. The results show that the students did not differ in their positivity in the first ($M = 3.87$, $SD = 0.66$) and the second waves ($M = 3.77$, $SD = 0.70$), $t(637) = 1.73$, $p = .08$, $d = .15$.

Table 1

Frequencies for qualitative analysis of students' answers about what suits them about ERT and what does not in the first and second Covid-19 waves

Reasons for (dis)liking ERT	First wave				Second wave			
	Positive (%)		Negative (%)		Positive (%)		Negative (%)	
Organizational reasons								
Organization of time	102	(51.0)	11	(4.0)	180	(52.6)	6	(1.8)
Environment	14	(7.0)	13	(4.8)	42	(12.3)	21	(6.3)
Organization of study	29	(14.5)	96	(35.2)	43	(12.6)	95	(28.4)
Substantive reasons								
Learning and study	27	(13.5)	56	(20.5)	31	(9.1)	96	(28.7)
Teaching	13	(6.5)	47	(17.2)	9	(2.6)	18	(5.4)
Social reasons	3	(1.5)	42	(15.4)	4	(1.2)	88	(26.3)
Health (mental well-being, physical activity, diet)	9	(4.5)	8	(2.9)	22	(6.4)	10	(3.0)
Finances	3	(1.5)	0	(0.0)	11	(3.2)	0	(0.0)
Sum	200	(100.0)	273	(100.0)	342	(100.0)	334	(100.0)

Table 2

Comparison of students' assessments of different aspects of ERT compared to regular study in the first and second Covid-19 waves

	First wave		Second wave		$t(642)$	d
	M	SD	M	SD		
Motivation to study	2.67	1.04	2.64	1.09	0.27	0.03
Organization of time and space	3.24	1.21	3.54	1.12	-3.25**	0.26
Planning study work and scheduling obligations	3.29	1.17	3.51	1.05	-2.47*	0.20
Concentration in study work	2.91	1.07	2.58	1.11	3.77***	0.30
In-depth study work	2.90	1.00	3.18	1.04	-3.31**	0.27
Product quality	3.36	0.75	3.51	0.82	-2.39*	0.19
Communication about study work with classmates	3.40	1.01	3.19	1.10	2.40*	0.20
Communication about study work with professors	2.89	0.89	2.90	1.01	-0.16	0.01
Efficiency in study work	2.94	0.96	3.13	0.98	-2.47*	0.20
Workload	3.14	1.32	3.29	1.20	-1.56	0.12

* $p < .05$, ** $p < .01$, *** $p < .001$

Finally, we compared the correlations between the included variables in the first and second waves: psychosocial experience in the context of university study during the pandemic, different self-regulation strategies during ERT, and positivity (Table 4). All correlations between different self-regulation strategies were statistically significant and positive in both the first ($.15 < r < .68$) and the second waves ($.19 < r < .56$). Positivity was statistically significantly and positively associated with the use of self-regulation strategies and COVID-19 psychosocial experience in the first wave, while in the second wave the correlations with different self-regulation strategies were low and not significant. The same pattern was found for COVID-19 psychosocial experience: in the first wave it was statistically significantly positively associated with the use of self-regulation strategies, while in the second wave these associations were low and not statistically significant. However, the results show that positivity as an outlook in life and better COVID-19 psychosocial experience correlated strongly in both time points.

Discussion

The aim of the present study was to explore university students' experiences of ERT and the pandemic, as well as their self-regulated learning and positivity during the

pandemic, and to compare them at two time points, during the first and second waves of the COVID-19 pandemic. The results show that most students rated ERT as less suitable than regular study at both time points, which is consistent with a study by Robson and Mills (2022) in the United States, where students perceived online education to be of lower quality than face-to-face education. Furthermore, students in the first wave rated ERT statistically significantly worse than students in the second wave. In our view, the most compelling explanation for this difference is multifaceted. In the first wave, studies were moved online for the first time in the history of the University of Ljubljana. As a result, students and teachers had to adapt quickly to the change, but not all of them were optimally equipped and competent to deal effectively with the changes and the situation. Teaching and learning at a distance required a new set of skills, such as technological skills and social and emotional skills (Robson & Mills, 2022), as well as appropriate technical equipment. In addition to technological skills, student autonomy was also at the forefront, making the ability to self-regulate learning all the more important (Bradley et al., 2017; Wandler & Imbriale, 2017). Due to inconsistencies in skills, the design of the online courses in the first COVID-19 wave was also highly inconsistent and varied in the frequency of online courses and modes (e.g., video lectures, individual assignments). Students reported frustration with the lack of consistency across remote

Table 3

Comparison of students' self-regulation strategies in the first and second Covid-19 waves

	First wave		Second wave		<i>t</i>	<i>df</i>	<i>d</i>
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>			
Goal Setting	3.63	0.75	3.71	0.73	-1.39	633	0.11
Environment Structuring	4.06	0.69	4.08	0.68	-0.42	633	0.03
Task Strategies	2.91	0.88	2.97	0.72	-0.86	633	0.07
Time Management	3.16	0.95	2.89	0.79	3.78***	633	0.31
Help Seeking	3.44	0.77	3.60	0.76	-2.60*	633	0.21
Self-Evaluation	3.53	1.01	3.61	0.98	-1.02	633	0.08

* $p < .05$, ** $p < .01$, *** $p < .001$

Table 4

Correlations between students' self-regulation strategies, positivity, and COVID-19 psychosocial experience, in the first and second COVID-19 waves

	1	2	3	4	5	6	7	8
1 Goal Setting	-	.56***	.42***	.45***	.36***	.22***	.04	.10
2 Environment Structuring	.46***	-	.35***	.34***	.38***	.29***	.05	.12*
3 Task Strategies	.58***	.36***	-	.54***	.28***	.19***	-.02	.04
4 Time Management	.62***	.47***	.68***	-	.27***	.23***	.02	.04
5 Help Seeking	.37***	.26***	.39***	.36***	-	.51***	.06	.14*
6 Self-Evaluation	.19***	.15*	.23***	.16*	.56***	-	.01	.01
7 Positivity	.38***	.26***	.23***	.22***	.24***	.18***	-	.59***
8 COVID-19 Psychosocial Experience	.45***	.23***	.17***	.17***	.19***	.06	.52***	-

Note. Correlations below the diagonal represent the first Covid-19 wave and the correlations above the diagonal represent the second Covid-19 wave.

* $p < .05$, *** $p < .001$.

education design (Cochran et al., 2016), which may be why students in the second wave perceived ERT as more suitable. Thirdly, we can assume that the outbreak of the epidemic was a stressful event that also elicited an emotional response from students (Mosanya, 2020; Robson & Mills, 2022; Wang et al., 2020), which could affect the more negative perception of ERT itself. Over time, in the second wave, the pandemic situation was no longer as new and did not represent the kind of sudden stress that it had at the beginning. Students and academic staff were better equipped and had more experience with learning and teaching in emergency educational settings. This is also evidenced by the fact that students in the second wave reported statistically significantly better organisation of time and space, in-depth study work, planning study work and scheduling obligations, efficiency in study work, and product quality.

The study also looked at students' psychosocial experiences related to their study during the pandemic, rather than their psychosocial state in general. Students in the first wave had comparable psychosocial experiences of studying during the pandemic to students in the second wave. The overall experience, which included cognitive, emotional and social aspects, was similar. This is an encouraging finding, suggesting that despite the long duration of the pandemic, students' experiences were comparable.

Considering the high degree of autonomy and independence in remote education, one could infer the importance of using learning strategies. The results showed that students used a variety of self-regulation strategies and had a similar pattern of use in both the first and second waves. Structuring the environment was used most frequently, showing the importance of a structured study and living environment in remote learning. Task strategies and time management were used least frequently. However, we need to keep in mind that students differ in their use of self-regulation strategies and that there are individual differences (Dörrenbächer & Perels, 2016), which was also demonstrated during ERT in the COVID-19 pandemic (Biber et al., 2021). The differences between the groups showed that students in the second wave were statistically significantly less likely to use time management strategies, which is surprising considering that they reported better organisation of time and space and better planning of study work and scheduling obligations. This finding may be explained by the fact that the change from face-to-face teaching to ERT was sudden and required students to do a lot of planning and set achievable short- and long-term goals, especially in the first wave. When the emergency situation had already lasted for a while, this need for planning and goal setting was no longer as pronounced as in the beginning.

Students in the second wave were more likely to use help-seeking strategies than students in the first wave, probably because the organisation of the ERT improved over time and all of the participants were more familiar with their assignments, the course and the ERT process, as well as knowing whom they could turn to for help and in what way.

Given the importance of self-regulation strategies for academic performance and learning in remote education (Bradley et al., 2017; Eom & Ashill, 2016; Schunk & Greene, 2018), the key is to raise students' awareness of the need to

monitor, control and improve the use of such strategies. An important role in this regard is played by academic staff, who can educate, support and encourage students in self-regulated learning.

Students in the first and second waves reported a positive outlook on life and the future during the pandemic, with no differences in positivity between the groups. Although the present results clearly support comparable positivity among students in the first and second COVID-19 waves, it is appropriate to acknowledge the limitation that there is no comparative data from before the pandemic. Allen et al. (2022) compared students from the UK, Germany, Italy and Spain during the COVID-19 pandemic. The German students reported the highest level of positivity, which may be due to the fact that Germany was in the phase of easing restrictions. In our study, the students' positive perspective did not change despite the fact that the pandemic situation was relatively different at the two time points studied: in the first wave, less was known about the virus, it was less widespread and the restrictions were just coming into effect, whereas in the second wave, much more was known about the virus, it was more widespread and the restrictions had been in place for some time.

Positivity and psychosocial experience during the pandemic were strongly positively associated in both the first and second COVID-19 waves, i.e., the more positive students' outlook on life was, the better their experience of ERT and the pandemic. This is to be expected, as research shows that positivity is an important predictor of flexible coping, perceived stress, life satisfaction, well-being, health, academic performance and overall higher satisfaction with studies (Alessandri et al., 2012; Brissette et al., 2002; Caprara et al., 2012; Reed, 2016; Tho et al., 2020). The associations between positivity and self-regulation strategies, and between the psychosocial experience of COVID-19 and self-regulation strategies, were different in the first and second waves. The statistically significant positive correlations that were evident only during the first wave could be explained by the characteristics of the emergency situation at the onset of the COVID-19 disease. At the beginning of the pandemic, a positive outlook and positive psychosocial experiences could be important for a proactive approach to ERT, which includes the use of different self-regulation strategies. The use of different self-regulation strategies also helps students to better cope with diverse situations in different contexts (Schunk & Greene, 2018), and academic self-regulation at the beginning of the pandemic could help students to cope with and manage the emergency situation in general. However, unlike in the first COVID-19 wave, it seems that students' academic self-regulation in the second wave was not related to the indicators of their well-being, which is an unexpected finding. One possible explanation could be that the situation was different in the second wave in that the pandemic had already lasted about a year and the students had already established their routines. Similarly surprising results were reported by Holzer et al. (2021). In their comparative study with secondary school students from Austria and Germany during the pandemic, the results suggested that an abundance of self-regulated learning might also be negatively associated with positive emotions. This shows that research in this area

needs to be deepened, preferably in the context of a well-designed longitudinal study with the same participants at all time points. At the same time, the importance of planned reinforcement of self-regulation and the use of metacognitive strategies in students should not be overlooked.

Limitations

The present study has many notable strengths, including its focus on university students and the use of two data points during the COVID-19 pandemic. However, we must remember that the samples from the two data points were not linked, so we cannot compare them as dependent samples. The participants were also predominantly female and from the Faculty of Education. Furthermore, because the study was conducted via an online survey, the results can only be interpreted from the perspective of the students who participated in the study (slightly less than one-third of the population) and who are perhaps likely to participate in online surveys on a regular basis. Therefore, we have no information on how other students who did not participate in the present study experienced their studies and life during the pandemic (e.g., students with lower GPAs, less motivated students, students from socially weaker backgrounds). The problem of sampling is an issue that is otherwise well highlighted in the literature (Evans & Mathur, 2018; Singh & Sagar, 2021).

Conclusion

The present study provides an insight into the experiences, positivity and learning approaches of university students during the COVID-19 pandemic by comparing students from the Faculty of Education of the University of Ljubljana at the beginning of the pandemic (i.e., the first wave) and after one year of the pandemic (i.e., the second wave). Although the general psychosocial experience and positivity were comparable in the first and second pandemic waves, the emergency remote education in the second wave suited students better. There could be multiple reasons for this, but it is primarily due to the fact that all of those involved in the pedagogical process adapted to the situation of remote teaching and learning (Biwer et al., 2021; Flores et al., 2022; Guskowska & Dąbrowska-Zimakowska, 2022). It can be assumed that the academic staff in the second wave had more experience with remote teaching than in the first wave, both in technical terms (knowledge of computer programs and applications, necessary technical equipment) and in didactic terms with the use of more appropriate teaching methods adapted to the online environment (Vergara-Rodríguez et al., 2022). The same is true for students, who were more experienced in monitoring remote learning after one year of the pandemic. In both the first and second waves, students used most self-regulation strategies to a similar extent. Differences emerged in two self-regulation strategies: in the second wave, students used time management to a lesser extent, but used help-seeking strategies more frequently than students in the first wave. The role of academic staff is important, as they can contribute to more successful self-regulation of student learning by adapting ERT to individual student differences and the specifics of the emergency situation. Moreover, they

can adapt their teaching methods to the online environment (Bozkurt et al., 2020). The results show that after a prolonged pandemic, special attention should be paid to teaching and modelling time management strategies to students and addressing issues such as students' concentration during coursework and their communication about coursework with classmates. Overall, this would be a good starting point for planning policies and interventions to support distance learning students during a pandemic.

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