Title: Caught Between Relief and Unease: How University Students' Well-Being Relates to Their Learning Environment During the COVID-19 Pandemic in the Netherlands

Short title: Caught Between Relief and Unease

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THIS PAPER IS UNDER REVIEW.

Abstract:

Background

Previous literature shows that university students are particularly vulnerable to psychological ill-being. Also throughout the COVID-19 pandemic, stressors ranging from uncertainty to disruption of social lives have influenced their well-being. Resilience as a psychological resource could help students deal with such crises. Furthermore, students' learning environment can substantially determine their well-being and resilience, by satisfying their basic psychological needs for autonomy, competence, and relatedness.

Aims

The present study aims to longitudinally investigate students' well-being and resilience in relation to their learning environment.

Sample

Altogether, we interviewed six participants, of which two were university students, two university teachers, one study advisor, and one student psychologist.

Methods

With a longitudinal interview study with four dates of measurement, spanning the pre- to mid-COVID-19 pandemic period, we gathered commentary about the evolution of student well-being, resilience factors, and the effects of the learning environment. To analyse the interview data, we used thematic inductive and deductive coding.

Results

The participants confirmed the postulated stressors, but also positive consequences for student well-being, including resilience growth. Interviewees also reported a variety of resilience factors, both within the individual (e.g. social support) and within academia (e.g., impaired student–teacher

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relationship, diminished sense of belonging). Furthermore, the interview data indicate changes in teaching related to students' needs for autonomy, competence, and relatedness, which in turn have consequences for learning and engagement, including challenges, opportunities, and positive outcomes.

Conclusions

These findings, connecting the learning environment to student well-being and resilience, may help reshape academic systems for the post-pandemic future.

Keywords:

student well-being; resilience; longitudinal interview study; learning environment; COVID-19

Data availability statement:

The raw data that support the findings of this study are not publicly available due to privacy or ethical reasons. The processed data are available in the supporting information of this article.

Acknowledgements:

We thank Friederike Axmann for her help in analysing the data as an independent coder.

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First it was a relief and then it was a bit more stress because it was such uncertainty about many things and then ... things became a bit more certain and more things became online, so they [took place], but online. So I think that helps, too.

—University student (April 2020)

At the beginning of 2020, the COVID-19 pandemic hit the world abruptly and with a societal impact rarely seen in modern history. Considering that the “psychological footprint” of COVID-19 may be even greater than its “medical footprint” (Taylor et al., 2020, p. 712), it is critical to investigate its psychological effects. For instance, governments introduced persisting restrictions on social and public life, including temporarily closing educational institutions. These intense restrictions have substantially reshaped the academic learning environment (LE), defined as teachers, educational methods, and structural aspects. As university students, hence, faced unexpected remote teaching, social distancing, and lockdown, their well-being and resilience resources may have considerably impacted. Therefore, we investigate academic well-being and resilience in relation to students' LE throughout the initial months of the COVID-19 pandemic.

Student Well-Being in Pandemic Times

With the substantial effect of societal restrictions on people's life, the COVID-19 pandemic has affected overall well-being, including social, emotional, physical, and psychological facets (e.g. González-Sanguino et al., 2020; for a thorough definition of student well-being, see Kiltz et al., 2020; World Health Organization, 2020). Taylor (2019) identifies various pandemic-related stressors associated with well-being, including uncertainty, disruption of routines, separation from family, social isolation, financial insecurity, and closure of educational institutions. Additionally, Holmes et al. (2020) propose a general sense of loss as potential psychological consequence.

Research has demonstrated that young adults have been particularly affected by the current pandemic (Curnow & Knight, 2020; González-Sanguino et al., 2020; Ozamiz-Etxebarria et al., 2020; Pollak et al., 2020). For instance, both a UK and US study implemented shortly before and one month into the pandemic found a significant increase in psychological distress and ill-being among young adults (Hagemeier & Dowling-McClay 2020; Pierce et al., 2020). Particularly students' psychological well-being was significantly more impaired compared with other population groups (González-Sanguino et al., 2020; Ozamiz-Etxebarria et al., 2020). They reported elevated symptoms of depression and anxiety as well as decreased quality of life, for example (Cao et al., 2020; Firkey et al., 2021; Kaparounaki et al., 2020). Likewise, a longitudinal research project on students' pandemic-related well-being in the Netherlands found that students report the absence of crucial social interaction and connection, accompanied by higher stress (Stevens et al., 2020). In summary, prior research consistently highlights students' compromised well-being throughout the COVID-19 pandemic. Individual and institutional resources, however, may counteracting this tendency and support student well-being.

Students' Resilience in Pandemic Times

Resilience refers to an individual capacity to bounce back from a stressor and regain one's former psychological health (Masten, 2001; Masten & Garmezy, 1985; Tugade & Fredrickson, 2004). Studies have repeatedly demonstrated that resilience promotes student well-being and counteracts negative experiences (Bore et al., 2016; Denovan & Macaskill, 2017; Wu et al., 2020). In times of extraordinary strain, such as the pandemic, resilience may be the key to handling stressors and minimising their impact (Bonanno, 2020). However, not everyone possesses such resources, leading to individual differences (Chen & Bonanno, 2020; Shigeto et al., 2021). For instance, more resilient medical students perceived less stress (Pollak et al., 2020). Likewise, students' resilience moderated pandemic-related stressful experiences and acute stress disorder, a precursor of post-traumatic

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 stress disorder (Ye et al., 2020). Next to these studies, however, resilience research during the
 COVID-19 pandemic remains scarce.

When bouncing back from adversity, individuals mobilise personal and environmental resilience resources to deal with stressors (IJntema et al., 2021). Several studies aim to categorise such resources, such as Mansfield et al. (2016) who classify resilience factors in four overarching categories: personal and contextual resources, strategies, and outcomes. Also regarding the COVID-19 pandemic, Chen and Bonanno (2020) state that resilience depends on both individual and structural characteristics, including family and community surroundings. Nonetheless, such resilience and risk factors during COVID-19 require further investigation. Research investigating well-being specifically for the population of university students has already identified several protective factors: enhanced social support, shared emotions, time for family and hobbies, self-efficacy, and effective coping (Mukhtar, 2020; Ye et al., 2020; Zhang & Ma, 2020). However, most research thus far do not focus on resilience as crucial to support student well-being in times of crisis. Our study aims to further define and categorise factors that could promote students' resilience.

Beyond its cross-sectional definition, the resilience concept implies that experiencing adversities may result in a process of positive adaption, or so-called resilience growth (Hanswille & Kissenbeck, 2008; Masten, 2001; Walsh, 1998). Within this process, more severe stressors might produce greater resilience than less intense stressors (Galatzer-Levy et al., 2018). Therefore, people who have never experienced difficulties may be less likely to have already developed any substantial resilience (Masten, 2001). During the pandemic, students, who have less life experience than older people, may possess fewer personal resources (Curnow & Knight, 2020; González-Sanguino et al., 2020). However, they might learn quickly how to cope with adversities and grow personally due to the pandemic demands. Therefore, we take a longitudinal perspective on resilience development in students in the present study, as called for previously (Chen & Bonanno, 2020).

Learning Environment and Basic Psychological Needs

From a systemic perspective, based on social constructivism (Burr, 2003; Gergen, 1985), people are influenced by the system surrounding them. The academic system, for instance, is shaped by interactions between stakeholders including students, teachers, and support staff. These interconnected stakeholders collectively determine both teaching and learning (Cherrington et al., 2018), emphasising the LE's nature as an interdependent system (Geertsema, 2016; Sutherland, 2018). Consequently, the responsibility for students' well-being cannot solely be ascribed to the students; rather, a lack of well-being is a warning signal of a malfunctioning system (Minuchin et al., 1978; Schlippe & Schweitzer, 2015). Therefore, the LE's systemic factors are fundamental to investigating student well-being.

Within the LE, student well-being relies on the satisfaction of their basic psychological needs (BPNs). These needs stem from the self-determination theory, identifying aspects that foster well-being (Deci & Ryan, 1985) and have been associated with well-being also during the COVID-19 pandemic (e.g., Besser et al., 2020; Cantarero et al., 2021). Educational structures can promote the BPN: autonomy, defined as a sense of freedom and control; competence, or self-efficacy and a capacity to thrive; and relatedness, defined as social support and sense of belonging (Hofmann et al., 2020; Stanton et al., 2016). Likewise, satisfying students' BPNs through interpersonal student–teacher relationships can lead to enhanced well-being and academic learning. In particular, autonomy can be stimulated by providing students with the freedom to shape their studies. Competence relates to giving constructive feedback, and relatedness stems from investing in a respectful, appreciative relationship (Kiltz et al., 2020; Niemiec & Ryan, 2009). Moreover, student involvement and teacher support enhance the positive LE perception, resulting in higher life satisfaction (Zandvliet et al., 2019).

Because distance learning challenges social interactions, satisfying BPNs in a disconnected environment can be undermined (Niemiec & Ryan, 2009). During the COVID-19 pandemic, the LE had to be adjusted abruptly, resulting in hastily realised and often insufficiently elaborated remote

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teaching (Bozkurt et al., 2020; Yang, 2020). Such virtual or hybrid academic surroundings have likely affected students' well-being negatively. For instance, pandemic-related stressors complicate satisfying students' BPN (Besser et al., 2020; Pelikan et al., 2021). More specifically, although distance learning may enhance students' autonomy and offer greater independence (Boling et al., 2012), losing freedom and control due to external restrictions could relate to its deprivation. Likewise, missing feedback and educational opportunities might result in fewer experiences of competence. Last, social distancing may deprive students' feelings of relatedness or being part of a community (Besser et al., 2020; Pelikan et al., 2021). Many students thus have experienced isolation, unproductiveness, mental overload, as well as lack of motivation and engagement (Scull et al., 2020; Stevens et al., 2020). Students' relationships with peers and teachers have especially suffered (Crawford & Stone, 2020; Meulenbroeks, 2020). At the same time, interventions designed to foster BPN satisfaction during the pandemic promoted well-being (Behzadnia & FatahModares, 2020; Cantarero et al., 2021). Consequently, we propose that the pandemic has explicitly affected students' need satisfaction within the LE and, in turn, their well-being.

Research aims

Building on this framework, the present study focuses on three aspects: the pandemic's effects on student well-being, relevant resilience factors, and the role of the LE in this regard.

Accordingly, we formulate three research questions:

- RQ.1 How do university students, teachers, and support staff perceive student well-being and pandemic-related stressors throughout the COVID-19 crisis?
- RQ.2 According to university students, teachers, and support staff, which resilience factors support students' well-being, and how have they changed? Which factors offer the potential to result in resilience growth due to the COVID-19 crisis?

- RQ.3 How do university students, teachers, and support staff perceive changes in the LE, relating to student well-being and their need satisfaction throughout the COVID-19 crisis?

Methods

With a longitudinal, semi-structured interview study, we aimed to shed light on how the pandemic has affected students' well-being and resilience throughout the pandemic. We examined the effects systemically by including various stakeholders' perspectives—namely, university students, teachers, and other faculty members. Planned in pre-pandemic times, we had designed the study as cross-sectional; however, we decided to prolong it to span four measurement waves when the pandemic hit¹. As the situation changed quickly during these months, Figure 1 provides some context for the interviews.

[insert Figure 1 around here]

Participants

Six interviewees participated in the study: two university students (one bachelor's and one master's student), two teachers, one study advisor, and one student psychologist. The participants were recruited personally and had already been in contact with the researchers because of their interest in student well-being. The students, both female, were 22 and 23 years old (at t1); one was Dutch and the other an international student (within Europe). Both were in their final year at t1 and began new studies before t4 at new universities, one in the Netherlands, and the other in her home country. The faculty members' ages ranged between 36 and 57 (at t1), 50% were women, and their work experience ranged from 5 to 23 years. Participants studied or worked for various faculties, including Behavioural and Social Sciences, Spatial Sciences, Arts, and the University Medical Centre.

¹ The initial pre-registration can be found at <https://osf.io/vu9jp>; the updated pre-registration can be found at <https://osf.io/uv2ze>

Interview and Procedure

The ethics committee approved the initial study and the subsequent adjustments (i.e., shifting to a longitudinal study focusing on pandemic-related well-being). All six interviewees consented to participate in the study before the initial data collection. We administered a short questionnaire to collect their socio-demographic information before the first interview.

The interviewer followed a semi-structured guide, similarly structured for all four times. The interview first focused on the state of student well-being, then on the LE's impact, and finally on resilience factors that positively influence student well-being (see supporting information²). The participants were interviewed either in person (mainly at t1) or online (mainly at t2–t4). These interviews lasted 34 to 100 minutes and were audio- or video-recorded, depending on the interview setting. All recordings were transcribed verbatim. During this procedure, all identifiable information were replaced with pseudonyms. After each interview, the participants received a transcription summary, allowing them to report potential misunderstandings or withdraw their data from the study.

Measures surrounding the interviews

During the first interview, participants categorised aspects they mentioned as promoting student well-being. The interviewer collected keywords and wrote them on sticky notes to depict the potential resilience factors. Then participants arranged the sticky notes, added headlines, and created connections. The resulting categorisations served as a basis for subsequent interviews. At t2 for example, participants stated which factors had become more or less essential or changed in nature due to the pandemic. During the last interview, participants reported the factors' potential for resilience growth.

² The supporting information includes the interview guides, categorisations identified in interviews, the diary template, the Google Jamboard results of the focus group, and the codebook. We do not provide the interviews, transcriptions, or diaries, due to the sensitivity of these data.

The students kept a diary between t2 and t3 for event-based data collection, including one challenging situation per week. Being less intrusive and closer to relevant events, this method helps gather affective data between measurements (Hannington & Martin, 2012). The students sent the resulting input to the researchers as a basis for the third interview. However, only one student completed the diary; the other reported having been too stressed to find the time.

Five months after the final data collection, we conducted an online focus group with four participants (excluding one teacher and the student psychologist) to allow them to reflect on the results. Using Google Jamboard, the participants suggested practical implications based on the initial results pertaining to the LE's potential for student well-being. Then they commented on the student-teacher relationship during the pandemic and suggested potential solutions for the growing distance.

Analysis

In the initial coding phase, we coded all data partly inductively and partly deductively. For RQ.1, the pandemic-related stressors disruption of social life, uncertainty, financial insecurity, daily routines, and a general sense of loss served as deductive codes. For RQ.3, the deductive codes encompassed the BPNs, autonomy, competence, and relatedness. These codes were enriched with additional codes emerging from the data until saturation. For RQ.2, we approached the analysis differently: one researcher first used the categories participants created during the first interview and clustered them according to their similarities, then matched all resilience factors mentioned during the categorisation task with the category clusters. Subsequently, three researchers grouped and relabelled these factors to represent overarching themes. As some themes resemble Mansfield et al.'s (2016) categorisation of resilience factors, we adopted their terms for these cases.

Based on this first coding phase, we created a codebook for each research question. Three researchers discussed these codes in shared reflection sessions and created final overarching codes. This process reduced the number of codes to 8 to 15 codes for each research question. We adjusted the initial codebooks accordingly and used them as a basis for the second coding round. To ensure

interrater reliability, two independent researchers executed this coding stage, one for the whole data set, the other for 8 of the 20 interviews. They discussed and resolved discrepancies, then addressed any open questions in an additional, shared reflection session with all researchers. This process produced the adjusted final codebook.

Results

RQ.1 Student Well-Being in Times of Crisis

Figure 2 depicts an overview of the clusters that emerged from the analysis, structured according to the three research questions. For student well-being (RQ.1), well-being itself appeared as a cluster, comprising students' physical health and fatigue, heightened awareness of mental health, and delays in seeking help. Moreover, participants reported trends in student well-being, such as whether it had amplified, stayed stable, decreased, or increased. A university teacher stated at t3 that she was "positively surprised" to see her students coping so well, for example. Generally though, negative statements about student well-being outweighed the positive ones across all time points, stated mainly by the students.

[insert Figure 2 around here]

Two single-code clusters referred to external circumstances: the pandemic itself and the societal context. For the former, topics like measurement adherence or crisis-related struggles emerged (e.g., quarantine, lockdown, coronavirus anxiety). Regarding the societal context, issues included how the government had handled the crisis and whether society would fall back into old patterns after the pandemic.

In addition, all four pandemic-related stressors emerged from the data, particularly at t2. For one, students' social life had been significantly disrupted. The interviewees mentioned this stressor most often compared with other stressors, mainly related to compromised social well-being due to social distancing. International students faced additional social disruption in this regard, because of

closed borders amongst others. Second, uncertainty surrounding the pandemic's development emerged as a stressor. Third, participants regularly discussed the loss of daily routines, emphasising the graveness of this stressor. As one student emphasised at t4, the weeks seemed "such a blur, all the things are mashed up together, and [she didn't] know the things [she] did in months". Still, although participants reported losing structure, they highlighted attempts to regain their daily routines. Lastly, the interviewees mentioned financial insecurities, though far less frequently than the other stressors.

Furthermore, all interviewees described a general sense of loss, which we split into three subcategories, pertaining to the loss of experience, control, and development. Loss of experience was the most prominent in all periods, within and outside the university. One participant noted that life had become "a very very very small [one] of staying in the same place" (student, t2). Regarding the loss of control, the student psychologist noted, "especially for students, ... there's a lot that they can't control right now" (t2). To overcome feeling powerless, participants appeared to focus on what they could control. Finally, one teacher noted concerning the loss of development, "all my students can pass, get their ECs ... but [I haven't] challenged them to develop themselves" (t3).

Positive aspects of the pandemic emerged as well, including students' adaptation, mindfulness, resilience, and resilience growth. How students adapted to the new situation appeared essential, because "whether they have accepted that or not [had] a big impact" on their well-being (student, t4). The second aspect of mindfulness implies slowing down and becoming aware of small things, or as one teacher stated, "the appreciation of what we all have here" (t2). The third positive aspect that arose was resilience. Interviewees highlighted reinforced resources due to prior adversity, which led to a strengthened self in the present. Furthermore, interviewees commented on their potential to grow their resilience by experiencing the current crisis, as one teacher emphasised:

Having experienced this is very healthy, actually. ... Adversity helps you to get to know yourself much better – know yourself under different circumstances, so you get to know

your boundaries better, you also get to know ... about your own flexibility, capability.... I also think it humbles you as person ... and makes you more appreciate- appreciative of what you have. (university teacher, t4)

RQ.2 Resilience Factors in Times of Crisis

The categorisations led to two main clusters of resilience factors, one within the individual, the other within academia (RQ.2, Figure 2). Interestingly, students reported relying more strongly on individual compared with academic resilience factors. Beyond that, participants identified aspects regarding their top three resilience factors (t1), the decreased or increased importance of those during the pandemic (t2), and their potential for resilience growth (t4; see Table 1).

[insert Table 1 around here]

The individual resilience cluster entails four sub-factors: personal and social resources, contextual factors, and general learning strategies. Students' personal resources included extracurricular activities (e.g., sports, recreation, relaxation) and personal characteristics (e.g., being reflective, discovering boundaries, being self-compassionate). Furthermore, participants noted how understanding that they others struggle, too, and that their worth remains independent of their study outcomes contributed to the normalisation of negative events. Students' study attitudes, such as not being perfectionistic, also seemed essential as personal resource. Compared with faculty members, students mentioned these personal factors far more frequently. However, they all asserted that personal resources had the greatest potential to result in resilience growth. Secondly, participants emphasised social resources, including both who supported them (e.g., family, friends, fellow students) and how (e.g., by providing study support and socialising opportunities). Throughout all the interviews, students consistently reported social resources when talking about their well-being and resilience. The support staff instead focused more on the third individual resilience factor, contextual factors (e.g., society's achievement culture, students' environment) as essential. Finally,

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students mentioned a wealth of learning strategies as the fourth individual resilience factor, including prioritising and concentration strategies.

The academic resilience cluster covered five sub-factors. The first and dominant one involved accessing the academic support system, including faculty, study, and mental health support staff, as identified by support staff. In contrast, teachers mentioned educational tools, the second sub-factor, more frequently. The third sub-factor focussed on outcomes including students' progress, engagement, commitment, and academic satisfaction. As fourth sub-factor, the participants mentioned relatedness with faculty and well-being-promoting dynamics within this relationship. For example, teachers might provide students with autonomy, establish open relationships, and help them feel seen as individuals. Whereas university teachers stressed relatedness to faculty members, support staff focused more on students' general sense of belonging, the fifth sub-factor. In a systemic sense, fellow students, student associations, the faculty, and university contribute to an academic sense of belonging. Therefore, feeling connected to these institutions could enhance belongingness, whereas disconnection could diminish it.

RQ.3 The Role of the LE in Times of Crisis

Regarding the LE, we identified a network of clusters surrounding changes within the academic system and consequences thereof. The first cluster pertained to the university's adjustment to a remote LE on curricular and organisational levels. Most participants were pleased with how quickly and flexibly the university reacted. However, abrupt cancellations of internships, exams, and lectures led participants to note a chaotic element within this adjustment nonetheless.

The COVID-19 measures created a mixture of an offline, online, and hybrid LE organisation. Notably, students did not believe online teaching worked "as effectively as face-to-face teaching, which is obvious", but they accepted it as the "second-best option" (student, t2). Interviewees commented on this pandemic-related LE, mentioning transparent crisis communication, home studies, and new opportunities. They noted that challenges and opportunities surrounding online

teaching were closely related and could shape the “new normal”. Such challenges could be exacerbated for potential at-risk groups, two of which emerged from our data: first-year and international students. The former likely experienced fewer social opportunities, whereas the latter mainly suffered time differences. Faculty members mentioned at-risk groups far more often than the students we interviewed, despite one of those students having an international background herself.

The cluster regarding the consequences of remote teaching mainly involved the BPNs of autonomy, competence, and relatedness. Although external restrictions limited students’ autonomy, their ability to schedule time flexibly made “studying, and watching the lectures more their own choice and less something you have to do because it’s scheduled” (university teacher, t2). Therefore, this flexibility and freedom re-established the initially compromised sense of autonomy and control. In this regard, support staff were aware of both restricted and promoted autonomy as a balancing act. Competence, in contrast, appeared the least affected by the pandemic. The lack of structure and self-discipline seemed to affect students’ sense of competence, but experiencing the pandemic also seemed beneficial, because they could learn something from the crisis.

At the same time, students’ sense of relatedness appeared to be the most compromised BPN, emphasising the relevance of social connections during the pandemic. We divided this cluster into relatedness toward fellow students and faculty members. First, students reported their relatedness to fellow students initially in a neutral way; they had made friends and maintained these relationships online. However, both started new studies during the pandemic and highlighted how difficult establishing new relationships could be: “I actually have no idea about other students ... of my master’s, because I don’t really talk to them. I don’t have any kind of ... relationship with them in that sense” (t4). Second, compromised relatedness to the faculty members seemed just as apparent. Specifically at t3 and t4, the growing distance between the two parties was striking. Teachers “[didn’t] talk enough with students anymore. [They didn’t] meet them at the corridors. [They didn’t] meet them during break of classes or whatever” (university teacher, t3). Statements such as these

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highlight faculty members' role in student well-being, as well as their own suffering due to this situation. For instance, teachers noted decreased joy in teaching, though not decreased well-being in general.

The last cluster pertains to students' learning, including detaching, demands, challenges and opportunities, and positive study outcomes. First, students reported detaching from their studies, which led to less engagement and motivation, feelings that increased with time from t2 to t4. They explained "it [was] difficult to ... to stay motivated, to stay driven". Consequently, they felt "very detached" from their studies, as one student remarked. When asked what she felt connected to, she added:

I don't really know. Could I answer the course content? [chuckles] I mean I don't really feel connected to the uni, because I've never been there, ... maybe a few students, I feel a bit connected to, because you've had a few seminars together. ... and maybe, a teacher, but not as a whole. (student, t4)

Second, participants mentioned high study demands. Students realised that the university attempted to maintain the quality of education, though "students [were] really struggling with keeping up the pace" (t2). They suffered from heightened workloads and concentration problems. The retrospective focus group participants connected these two aspects of demands and detaching to the sense of relatedness. According to this logic, impact on one aspect may significantly affect the remaining two as well. Third, students reported challenges and opportunities within the classroom, mainly involving the need to be responsible and flexible, thus, having to structure and discipline themselves. Lastly, the interviewees mentioned positive consequences of online education, such as having more time for and pleasure gained from their studies.

Conclusions

The present study has sought to examine students' well-being, resilience factors, and the LE's role therein during the COVID-19 pandemic. Being longitudinal, the qualitative interview study

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provides essential details about how university students and faculty members perceived the initial months of the pandemic. This long-term, holistic perspective is a specific strength of this research, and the results add valuable information to the field of academic well-being.

We found that pandemic-related stressors and the general sense of loss, as noted by Taylor (2019) and Holmes et al. (2020), influenced student well-being significantly, particularly by disrupting their social lives. The loss of daily routines and the uncertainty of the pandemic affected students nearly as much. Only financial insecurities were less relevant to the participants, which may have been due to the small and, hence, unrepresentative sample size. Regarding students' general sense of loss, the sub-codes provided interesting insights: the loss of experience was the mentioned most frequently, but loss of development and control also appeared relevant. Combined with uncertainty as a pandemic-related stressor, loss of control emerges as highly relevant for well-being research during COVID-19 as well (e.g., Chen & Bonanno, 2020; Shigemura et al., 2020). For instance, the perceived uncontrollability of the pandemic relates to both flexible coping and resilience (Shigeto et al., 2021).

Pandemic-related aspects such as uncertainty, loss of control, and uncontrollability resonate with aspects of traumatic experiences. Previous research similarly locates the COVID-19 pandemic within the context of traumatic psychological responses, within and outside academia (Chen & Bonanno, 2020; Ye et al., 2020). Identifying the COVID-19 pandemic as a potential collective traumatic experience highlights the role of resilience as a psychological counter-process that should be included in pandemic-related well-being research.

Based on our findings, both individual and academic resilience factors emerged. Individual resilience factors included personal and social resources, contextual factors, and general learning strategies; those on an academic level comprised the academic support system, educational tools, outcomes, relatedness with faculty members, and sense of belonging. All participants rated personal resources consistently as very important. Yet they varied in their perceptions of which other

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resilience factors were most important: students mainly mentioned social resources, but university staff considered relatedness with faculty members as more relevant. Nonetheless, faculty members believed social resources to be increasingly relevant during the pandemic, whilst relatedness with faculty members lost significance with further impairments to the relationship. This perception resonates with previous research noting the crucial relevance of social resources, specifically in traumatic event recovery settings (e.g., Lai et al., 2015). Likewise, the student-faculty relationship has been found to promote student well-being already before the pandemic (Trolan et al., 2020) and deserves attention despite the consistent impairments throughout the pandemic.

Lastly, we focused on the link between the LE and satisfaction of students' need of autonomy, competence, and relatedness. Of these, competence appeared to have been affected least. For autonomy, the pattern that emerged distinguishes experiences within and outside academia: outside academia, external restrictions imposed by pandemic-related measures impaired students' feelings of autonomy. Within academia, their autonomy increased due to the flexibility and independence provided by remote educational settings. The focus group echoed this duality, for instance, when a teacher expressed the difficulties of finding a good balance between giving students more autonomy or more structure when teaching online.

Relatedness emerged as especially crucial for students' well-being in pandemic times. Although a compromised sense of relatedness and connection should be expected, given social restriction measures, the findings pertaining to growing distances indicate that relatedness has become increasingly disrupted. The students felt disconnected and unrelated to their educational system when they engaged in remote teaching, which may lead to lower adaptability towards changes within their LE (Besser et al., 2020). Disconnection among students and with teachers in online teaching settings has been addressed by prior research, even before the pandemic (Boling et al., 2012). Such studies have shown that students in online teaching programs tend to disengage from peers and actively withdraw from online social activities (Douglas, 2019). Such behaviour may

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amplify social disconnections within the academic system even further. Moreover, our data indicated that participants connected this lack of relatedness with feelings of detachedness and in-class demands. These findings resonate with other studies highlighting the relationship between a lack of relatedness during the COVID-19 pandemic and negative outcomes for learning (Utvær et al., 2021). During the focus group, the participants also noted differences in relatedness, depending on whether students started before or during online teaching: maintaining a sense of connectedness in an online environment is less of a concern than establishing it in the first place.

Ultimately, we found both negative and positive consequences for online learning, revealing the complex aftermath of the pandemic that academia must take into account. Despite positive aspects, previous research has demonstrated that, in general, students prefer offline to online education (Meulenbroeks, 2020), and that studying online is unfavourable for their resilience development (Eley & Stallman, 2014). Therefore, universities must attempt to balance the positive and negative consequences that online teaching entails.

Limitations

Although the findings contribute to a deeper understanding of the interaction between students' well-being and the LE, certain limitations remain. These mainly regard the rather small sample. Interviewing only two students may have excluded essential aspects, such as a precarious financial situation. A sample size of 15 to 20 interviewees would be preferable for qualitative research, though prior research also indicates that 12 participants can suffice and achieve saturation when using thematic coding, and as few as 6 participants may already cover essential elements (Guest et al., 2006). For our study, the six interviewees participated four times throughout the study, adding up to 24 interviews in total. So the present findings may be grounded in sufficient data to ensure basic saturation.

A second limitation involves the interviewees' willingness to participate. The interviewees expressed interest in the topic prior to the study and enough enthusiasm to participate for nearly 12

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months. This recruitment method creates a potential bias though, by focusing on people who are specifically aware of and prone to engage with their well-being; we might have excluded the perspectives of students and faculty members unaware of these topics. Finally, interviewees reported that simply participating in the interview study had promoted their well-being. Therefore, the research itself may have affected them, and the results may be more favourable than they would have been otherwise.

Implications and further research

The present findings support the importance of the BPNs for academic well-being research, highlighting the link between the self-determination theory and the academic system. We recommend that research on this topic continue. As most studies in this vein have been mainly qualitative (e.g., Kiltz et al., 2020; Stanton et al., 2016), researchers should pursue more quantitative insights, to generalize the results.

The current study raises a variety of potential implications for how the LE could enhance student well-being during forced distance learning. Particularly during the focus group, the participants reflected on what our preliminary results could mean for an educational “new normal”. They emphasised best practices that they had already experienced during remote teaching, such as using annotations combined with asynchronous recordings, so teachers and students become pen-pals. Engaging in written instead of verbal conversation also led to more openness involving sensitive issues, and students who were usually quiet participated more. Therefore, such educational practices may be beneficial.

Satisfying students’ BPNs appeared particularly relevant for the educational practice. Investing in need satisfaction is crucial for developing students’ resilience in online LEs (Eberle & Hobrecht, 2021; Liu & Huang, 2021), as evidenced by interventions to promote students’ BPNs in prior research (e.g., Chandler et al., 2020). Moreover, the participants suggested additional educational tools to satisfy various BPNs simultaneously, such as group work. Letting students

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choose between group or individual assignments and choose their groups themselves, may stimulate their feeling of autonomy. Providing a safe shared space within these groups should enhance their sense of relatedness with fellow students.

Participants also suggested ideas to promote students' sense of autonomy specifically. The LE could be designed to counteract negative factors regarding students' uncertainty and loss of control. For instance, being transparent in academic decisions and curricula changes may prevent students from feeling helpless or uncertain. Furthermore, they proposed more flexibility for deadlines, online exams, and the freedom to choose an examination mode themselves, at least for more experienced students. Giving students a participatory voice in shaping their LE may enhance their feeling of control (Stanton et al., 2016). However, giving them flexibility may be counterproductive if the external structure is lacking. Therefore, teachers should juggle providing structure while simultaneously emphasising students' autonomy.

Investing in both student–teacher and student–student relationships may be valuable for students' sense of relatedness. Research already has called for a reconceptualization of the relatedness concept for higher education for post-pandemic times (Murray et al., 2020). Providing time to connect might constitute a first step towards a more connected academic system. Actively investing in relationships is critical though, when conventional means to establish and maintain relationships (e.g., meeting in the hallway) are lacking. Instead, teachers might ask students how they are doing in one-to-one or group settings. Furthermore, new opportunities to connect could arise from small-scale teaching and steady study or mentor groups. Staying together in one fixed study group throughout the class trajectory could contribute to an enhanced sense of relatedness. In addition, students reported that they were more engaged and felt more connected to others when seeing them on video. Considering that turning one's video off has become somewhat standard, reversing this practice would be a quick and easy way to improve students' relatedness. Teachers sharing informal information about themselves also may result in a sense of cohesion and encourage

students to open up, too. Beyond that, student and study organisations could serve as intermediaries to re-engage students with their study surroundings.

The feeling of decreased relatedness between teachers and students is particularly concerning. This phenomenon can arise from non-transparent communication on both sides: Students may not be aware of the teachers' efforts in online teaching, and teachers may have lost sense of their students' well-being. Teachers experienced remote education in the pandemic negatively as well (Moorhouse & Kohnke, 2021; VanLeeuwen et al., 2021), and communicating such struggles to students may create a sense of common humanity. The feeling of being in it together and acknowledging one another's problems could then contribute to a greater feeling of relatedness. Therefore, openness and appreciation on both sides could be a first step toward a more related academic environment.

References

- Behzadnia, B., & FatahModares, S. (2020). Basic psychological need-satisfying activities during the COVID-19 outbreak. *Applied Psychology: Health and Well-Being*, 12(4), 1115–1139.
<https://doi.org/10.1111/aphw.12228>
- Besser, A., Flett, G. L., & Zeigler-Hill, V. (2020). Adaptability to a sudden transition to online learning during the COVID-19 pandemic: Understanding the challenges for students. *Scholarship of Teaching and Learning in Psychology*. <https://doi.org/10.1037/stl0000198>
- Boling, E. C., Hough, M., Krinsky, H., Saleem, H., & Stevens, M. (2012). Cutting the distance in distance education: Perspectives on what promotes positive, online learning experiences. *Internet and Higher Education*, 15(2), 118–126. <https://doi.org/10.1016/j.iheduc.2011.11.006>
- Bonanno, G. A. (2020). Psychological science and COVID-19: Remaining resilient during a pandemic. <https://www.psychologicalscience.org/news/backgrounders/backgrounder-1-resilient.html>
- Bore, M., Pittolo, C., Kirby, D., Dluzewska, T., & Marlin, S. (2016). Predictors of psychological distress and well-being in a sample of Australian undergraduate students. *Higher Education Research and Development*, 35(5), 869–880. <https://doi.org/10.1080/07294360.2016.1138452>
- Bozkurt, A., Jung, I., Xiao, J., Vladimirschi, V., Schuwer, R., Egorov, G., ... Paskevicius, M. (2020). A global outlook to the interruption of education due to COVID-19 pandemic: Navigating in a time of uncertainty and crisis. *Asian Journal of Distance Education*, 15(1), 1–126.
- Burr, V. (2003). *An introduction to social constructivism*. Routledge.
- Cantarero, K., van Tilburg, W. A. P., & Smoktunowicz, E. (2021). Affirming basic psychological needs promotes mental well-being during the COVID-19 outbreak. *Social Psychological and Personality Science*, 12(5), 821–828. <https://doi.org/10.1177/1948550620942708>
- Cao, W., Fang, Z., Hou, G., Han, M., Xu, X., Dong, J., & Zheng, J. (2020). The psychological impact of

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

the COVID-19 epidemic on college students in China. *Psychiatry Research*, 287(March), 112934.

<https://doi.org/10.1016/j.psychres.2020.112934>

Chandler, G. E., Kalmakis, K. A., Chiodo, L., & Helling, J. (2020). The efficacy of a resilience

intervention among diverse, at-risk, college athletes: A mixed-methods study. *Journal of the American Psychiatric Nurses Association*, 26(3), 269–281.

<https://doi.org/10.1177/1078390319886923>

Chen, S., & Bonanno, G. A. (2020). Psychological adjustment during the global outbreak of COVID-19:

A resilience perspective. *Psychological Trauma: Theory, Research, Practice, and Policy*, 12, S51–S54. <https://doi.org/10.1037/tra0000685>

Cherrington, S., Macaskill, A., Salmon, R., Boniface, S., Shep, S., & Flutey, J. (2018). Developing a pan-

university professional learning community. *International Journal for Academic Development*, 23(4), 298–311. <https://doi.org/10.1080/1360144X.2017.1399271>

Crawford, N., & Stone, C. (2020). Supporting students' well-being during COVID-19: Tips from

regional and remote Australia. <https://www.ncsehe.edu.au/student-wellbeing-covid-19-regional-remote-australia/>.

Curnow, S., & Knight, B. (2020). Generation COVID. [https://www.abc.net.au/news/2020-07-](https://www.abc.net.au/news/2020-07-06/generation-covid-faces-an-uncertain-future/12388308?nw=0)

[06/generation-covid-faces-an-uncertain-future/12388308?nw=0](https://www.abc.net.au/news/2020-07-06/generation-covid-faces-an-uncertain-future/12388308?nw=0).

Deci, E. L., & Ryan, R. M. (1985). *Intrinsic motivation and self-determination in human behavior*.

Springer Science+Business Media.

Denovan, A., & Macaskill, A. (2017). Stress and subjective well-being among first year UK

undergraduate students. *Journal of Happiness Studies*, 18(2), 505–525.

<https://doi.org/10.1007/s10902-016-9736-y>

Douglas, S. (2019). A look inside the black box: Understanding communicative exchanges in online

learning environments. Doctoral dissertation San Jose State University.

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

Eberle, J., & Hobrecht, J. (2021). The lonely struggle with autonomy: A case study of first-year university students' experiences during emergency online teaching. *Computers in Human Behavior*, 121(March), 106804. <https://doi.org/10.1016/j.chb.2021.106804>

Eley, D. S., & Stallman, H. (2014). Where does medical education stand in nurturing the 3Rs in medical students: Responsibility, resilience and resolve? *Medical Teacher*, 36(10), 835–837. <https://doi.org/10.3109/0142159X.2014.917159>

Firkey, M. K., Sheinfil, A. Z., & Woolf-King, S. E. (2020). Substance use, sexual behavior, and general well-being of U.S. college students during the COVID-19 pandemic: A brief report. *Journal of American College Health*, 0(0), 1–7. <https://doi.org/10.1080/07448481.2020.1869750>

Galatzer-Levy, I. R., Huang, S. H., & Bonanno, G. A. (2018). Trajectories of resilience and dysfunction following potential trauma: A review and statistical evaluation. *Clinical Psychology Review*, 63(July), 41–55. <https://doi.org/10.1016/j.cpr.2018.05.008>

Geertsema, J. (2016). Academic development, SoTL and educational research. *International Journal for Academic Development*, 21(2), 122–134. <https://doi.org/10.1080/1360144X.2016.1175144>

Gergen, K. J. (1985). The social constructionist movement in modern psychology. *American Psychologist*, 40(3), 266–275. <https://doi.org/10.1037/0003-066X.40.3.266>

González-Sanguino, C., Ausín, B., Castellanos, M. Á., Saiz, J., López-Gómez, A., Ugidos, C., & Muñoz, M. (2020). Mental health consequences during the initial stage of the 2020 coronavirus pandemic (COVID-19) in Spain. *Brain, Behavior, and Immunity*, 87(May), 172–176. <https://doi.org/10.1016/j.bbi.2020.05.040>

Guest, G., Bunce, A., & Johnson, L. (2006). How many interviews are enough? An experiment with data saturation and variability. *Field Methods*, 18(1), 59–82. <https://doi.org/10.1177/1525822X05279903>

Hagemeier, N. E., & Dowling-McClay, K. (2020). The Impact of COVID-19 Related Transitions on

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

Student Well-being. *American Journal of Pharmaceutical Education*, 85(4), 82–91.

<https://doi.org/https://doi.org/10.5688/ajpe8291>

Hannington, B., & Martin, B. (2012). Diary studies. In *Universal Methods of Design: 100 Ways to Explore Complex Problems, Develop Innovative Strategies, and Deliver Effective Design Solutions* (pp. 66–67). Quarto Publishing Group.

Hanswille, R., & Kissenbeck, A. (2008). *Systemische Traumatherapie. Konzepte und Methoden für die Praxis* (3rd Editio). Heidelberg: Carl-Auer Verlag.

Hofmann, Y. E., Müller-Hotop, R., & Datzer, D. (2020). Die Bedeutung von Resilienz im Hochschulkontext-Eine Standortbestimmung von Forschung und Praxis. *BZH - Beiträge Zur Hochschulforschung*, 42. Jahrga(1–2), 10–35.

Holmes, E. A., O'Connor, R. C., Perry, V. H., Tracey, I., Wessely, S., Arseneault, L., ... Bullmore, E. (2020). Multidisciplinary research priorities for the COVID-19 pandemic: A call for action for mental health science. *The Lancet Psychiatry*, 7(6), 547–560. [https://doi.org/10.1016/S2215-0366\(20\)30168-1](https://doi.org/10.1016/S2215-0366(20)30168-1)

IJntema, R. C., Schaufeli, W. B., & Burger, Y. D. (2021). Resilience mechanisms at work: The psychological immunity-psychological elasticity (PI-PE) model of psychological resilience. *Current Psychology*. <https://doi.org/10.1007/s12144-021-01813-5>

Kaparounaki, C. K., Patsali, M. E., Mousa, D. P. V., Papadopoulou, E. V. K., Papadopoulou, K. K. K., & Fountoulakis, K. N. (2020). University students' mental health amidst the COVID-19 quarantine in Greece. *Psychiatry Research*, 290(May), 113111. <https://doi.org/10.1016/j.psychres.2020.113111>

Kiltz, L., Rinas, R., Daumiller, M., Fokkens-Bruinsma, M., & Jansen, E. P. W. A. (2020). "When they struggle, I cannot sleep well either": Perceptions and interactions surrounding university student and teacher well-being. *Frontiers in Psychology*, 11(September), 1–18.

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

<https://doi.org/10.31234/osf.io/7a948>

Lai, B. S., Tiwari, A., Beaulieu, B. A., Self-Brown, S., & Kelley, M. Lou. (2015). Hurricane Katrina:

maternal depression trajectories and child outcomes. *Current Psychology*, 34(3), 515–523.

<https://doi.org/10.1007/s12144-015-9338-6>

Liu, Y., & Huang, X. (2021). Effects of basic psychological needs on resilience: A human agency model.

Frontiers in Psychology, 12(August), 1–8. <https://doi.org/10.3389/fpsyg.2021.700035>

Mansfield, C. F., Beltman, S., Broadley, T., & Weatherby-Fell, N. (2016). Building resilience in teacher

education: An evidenced informed framework. *Teaching and Teacher Education*, 54, 77–87.

<https://doi.org/10.1016/j.tate.2015.11.016>

Masten, A. S. (2001). Ordinary magic: Resilience processes in development. *American Psychologist*,

56(3), 227–238. <https://doi.org/10.1037/0003-066X.56.3.227>

Masten, A. S., & Garmezy, N. (1985). Risk, vulnerability, and protective factors in developmental

psychology. In B. B. Lahey & A. E. Kazdin (Eds.), *Advances in Clinical Child Psychology*, Vol 8 (pp.

1–52). Springer. <https://doi.org/10.1007/978-1-4613-9820-2>

Meulenbroeks, R. (2020). Suddenly fully online: A case study of a blended university course moving online during the Covid-19 pandemic. *Heliyon*, 6(12).

<https://doi.org/10.1016/j.heliyon.2020.e05728>

Minuchin, S., Rosman, B. L., & Baker, L. (1978). *Psychosomatic families: Anorexia nervosa in context*.

Harvard University Press.

Moorhouse, B. L., & Kohnke, L. (2021). Thriving or surviving emergency remote teaching necessitated

by COVID-19: University teachers' perspectives. *Asia-Pacific Education Researcher*, 30(3), 279–

287. <https://doi.org/10.1007/s40299-021-00567-9>

Mukhtar, S. (2020). Mental health and emotional impact of COVID-19: Applying health belief model

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

for medical staff to general public of Pakistan. *Brain, Behavior, and Immunity*, 87(April), 28–29.

<https://doi.org/10.1016/j.bbi.2020.04.012>

Murray, C., Heinz, M., Munday, I., Keane, E., Flynn, N., Connolly, C., ... MacRuairc, G. (2020).

Reconceptualising relatedness in education in “distanced” times. *European Journal of Teacher Education*, 43(4), 488–502. <https://doi.org/10.1080/02619768.2020.1806820>

Niemiec, C. P., & Ryan, R. M. (2009). Autonomy, competence, and relatedness in the classroom:

Applying self-determination theory to educational practice. *Theory and Research in Education*, 7(2), 133–144. <https://doi.org/10.1177/1477878509104318>

Ozamiz-Etxebarria, N., Dosil-Santamaria, M., Picaza-Gorrochategui, M., & Idoiaga-Mondragon, N.

(2020). Stress, anxiety, and depression levels in the initial stage of the COVID-19 outbreak in a population sample in the northern Spain. *Cadernos de Saude Publica*, 36(4), 1–9.

<https://doi.org/10.1590/0102-311X00054020>

Pelikan, E. R., Korlat, S., Reiter, J., Holzer, J., Mayerhofer, M., Schober, B., ... Lu, M. (2021). Distance

learning in higher education during COVID-19 : The role of basic psychological needs and intrinsic motivation for persistence and procrastination – a multi-country study. *PLoS One*.

<https://doi.org/10.1371/journal.pone.0257346>

Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., John, A., ... Abel, K. M. (2020). Mental health

before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*, 7(10), 883–892. [https://doi.org/10.1016/S2215-](https://doi.org/10.1016/S2215-0366(20)30308-4)

[0366\(20\)30308-4](https://doi.org/10.1016/S2215-0366(20)30308-4)

Pollak, Y., Dayan, H., Shoham, R., & Berger, I. (2020). Levels of stress and resilience related to the

COVID-19 pandemic among academic medical staff in Serbia. *Psychiatry and Clinical Neurosciences*, 74(11), 604–605. <https://doi.org/10.1111/pcn.13124>

Schlippe, A. von, & Schweitzer, J. (2015). *Lehrbuch der systemischen Therapie und Beratung II*.

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

Vandenhoeck & Ruprecht Verlage. <https://doi.org/10.13109/9783666462566>

Scull, J., Phillips, M., Sharma, U., & Garnier, K. (2020). Innovations in teacher education at the time of COVID19: An Australian perspective. *Journal of Education for Teaching*, 46(4), 497–506.

<https://doi.org/10.1080/02607476.2020.1802701>

Shigemura, J., Ursano, R. J., Morganstein, J. C., Kurosawa, M., & Benedek, D. M. (2020). Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: Mental health consequences and target populations. *Psychiatry and Clinical Neurosciences*, 74(4), 281–282.

<https://doi.org/10.1111/pcn.12988>

Shigeto, A., Laxman, D. J., Landy, J. F., & Scheier, L. M. (2021). Typologies of coping in young adults in the context of the COVID-19 pandemic. *Journal of General Psychology*, 148(3), 272–304.

<https://doi.org/10.1080/00221309.2021.1874864>

Stanton, A., Zandvliet, D., Dhaliwal, R., & Black, T. (2016). Understanding students' experiences of well-being in learning environments. *Higher Education Studies*, 6(3), 90–99.

<https://doi.org/10.5539/hes.v6n3p90>

Stevens, T., den Brok, P., Biemans, H., & Noroozi, O. (2020). *The transition to online learning: A case study of Wageningen University & Research*. Wageningen.

Sutherland, K. A. (2018). Holistic academic development: Is it time to think more broadly about the academic development project? *International Journal for Academic Development*, 23(4), 261–

273. <https://doi.org/10.1080/1360144X.2018.1524571>

Taylor, S. (2019). *The psychology in pandemics: Preparing for the next global outbreak of infectious disease*. Cambridge Scholars Publishing.

Taylor, S., Landry, C. A., Paluszec, M. M., Fergus, T. A., McKay, D., & Asmundson, G. J. G. (2020).

COVID stress syndrome: Concept, structure, and correlates. *Depression and Anxiety*, 37(8), 706–714. <https://doi.org/10.1002/da.23071>

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

Trolan, T. L., Archibald, G. C., & Jach, E. A. (2020). Well-being and student–faculty interactions in higher education. *Higher Education Research and Development*, 1–15.
<https://doi.org/10.1080/07294360.2020.1839023>

Tugade, M. M., & Fredrickson, B. L. (2004). Resilient individuals use positive emotions to bounce back from negative emotional experiences. *NIH Public Access*, 86(2), 320–333.
<https://doi.org/10.1037/0022-3514.86.2.320>.Resilient

Utvær, B. K., Paulsby, T. E., Torbergsen, H., & Haugan, G. (2021). Learning nursing during the COVID-19 pandemic: The importance of perceived relatedness with teachers and sense of coherence. *Journal of Nursing Education and Practice*, 11(10), 9. <https://doi.org/10.5430/jnep.v11n10p9>

VanLeeuwen, C. A., Veletsianos, G., Johnson, N., & Belikov, O. (2021). Never-ending repetitiveness, sadness, loss, and “juggling with a blindfold on”: Lived experiences of Canadian college and university faculty members during the COVID-19 pandemic. *British Journal of Educational Technology*, 52(4), 1306–1322. <https://doi.org/10.1111/bjet.13065>

Walsh, F. (1998). *Strengthening family resilience*. The Guildford Press.

World Health Organization. (2020). Constitution. Retrieved May 10, 2020, from
<https://www.who.int/about/who-we-are/constitution>.

Wu, Y., Sang, Z. Q., Zhang, X. C., & Margraf, J. (2020). The relationship between resilience and mental health in Chinese college students: A longitudinal cross-lagged analysis. *Frontiers in Psychology*, 11(February), 108. <https://doi.org/10.3389/fpsyg.2020.00108>

Yang, R. (2020). China’s higher education during the COVID-19 pandemic: some preliminary observations. *Higher Education Research and Development*, 39(7), 1317–1321.
<https://doi.org/10.1080/07294360.2020.1824212>

Ye, Z., Yang, X., Zeng, C., Wang, Y., Shen, Z., Li, X., & Lin, D. (2020). Resilience, social support, and coping as mediators between COVID-19-related stressful experiences and acute stress disorder

Preprint: Kiltz et al. (under review) Caught Between Relief and Unease

among college students in China. *Applied Psychology: Health and Well-Being*, 12(4), 1074–1094.

<https://doi.org/10.1111/aphw.12211>

Zandvliet, D. B., Stanton, A., & Dhaliwal, R. (2019). Design and validation of a tool to measure

associations between the learning environment and student well-being: The healthy

environments and learning practices survey (HELPS). *Innovative Higher Education*, 44(4), 283–

297. <https://doi.org/10.1007/s10755-019-9462-6>

Zhang, Y., & Ma, Z. F. (2020). Impact of the COVID-19 pandemic on mental health and quality of life

among local residents in Liaoning Province, China: A cross-sectional study. *International Journal of Environmental Research and Public Health*, 17(7), 2381.

<https://doi.org/10.3390/ijerph17072381>

Tables

Table 1.

Classification of resilience factors: Top 3 resilience factors (t1); which ones have become more or less important or changed in nature due to the pandemic (t2); which ones entail the potential for resilience growth

	Student 1	Student 2	FM 1	FM 2	FM 3	FM 4
Top 1	Individual resources	Social resources	individual resources; outcome	General learning strategies ^a	Individual resources ^a	Individual resources
Top 2	Individual resources	General learning strategies	Relatedness FM	Individual resources ^a	Individual resources ^a	Social resources
Top 3	Social resources	Individual resources	Relatedness FM	Individual resources ^a	Sense of belonging ^a	Relatedness FM
More important	Individual resources	Social resources; general learning strategies; individual resources	Individual resources; relatedness FM	Individual resources; contextual factors	Academic support system; social resources; relatedness FM; individual resources; sense of belonging	Individual resources; social resources
Less important	Social resources; academic support system; contextual factors	Academic support system; individual factors	-	Individual resources	Contextual factors; social resources	Academic support system
Changed in nature	-	Individual resources	Individual resources; relatedness FM	-	Sense of belonging	Academic support system; social resources; contextual factors; individual resources

Potential for resilience growth	Individual resources	Social resources; general learning strategies; individual resources	-	Relatedness FM; individual resources	Individual resources; sense of belonging; academic support system	Individual resources; social resources
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Note. ^a Aspects are interchangeable in their ratings; FM = faculty member.

Figures

Figure 1.

The timeline of the study, including the times of measurement and the relevant events surrounding the pandemic.

Note. After t1, one university teacher (UT2) was interviewed according to another time schedule and displayed as such. All societal events and pandemic developments concern the Netherlands. All university events concern the university in question. Sources: containmentnu.nl, coronavirus.nl, nos.nl, rijksonverheid.nl, rivm.nl, rug.nl, ukrant.nl, who.int

Figure 2.

Code Clusters. This figure includes the codes that emerged during the coding process, which were divided into the three research questions focusing on students' well-being, resilience factors, and learning environment, divided by the dotted lines. The cluster headlines are displayed in boldface.