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The Relation between Loneliness and the Well-being of Students, and the Influence of Coping-strategies during the COVID-19 Pandemic

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Total number of pages: 33

Data of submission: 8th of July 2021

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Abstract

Background: The rapid spread of the novel COVID-19 virus has created massive psychological pressure on students. Due to the quick adaptation of courses, students have been forced to distance themselves socially, which for many has resulted in loneliness. It has been assumed that loneliness can have an impact on well-being and that coping strategy can work against this impact. In this context, two hypotheses have been developed. The first, that loneliness has a negative effect on well-being. The second, that coping strategies can serve as a moderator effect to reduce the impact of loneliness on well-being.

Aim: The study aimed to measure the relationship between loneliness and the well-being of students during the COVID-19 pandemic.

Methods: A cross-sectional survey, which was conducted to assess the impact of loneliness on the well-being of students, was based on a sample of participants from Germany and the Netherlands through the use of a convenience sampling technique. A total of 54 students participated with a mean age of 22.8. The participants responded to three self-reported questionnaires: The Mental Health Continuum Short Form (MHC-SF), the Short-form UCLA Loneliness scale (ULS-8), and the Psychometric Evaluation of a Coping Strategies Inventory Short-Form.

Results: The results indicated that loneliness has a negative impact on well-being. Regarding the second hypothesis, which indicates the potential buffer-function of the coping strategy: the results showed only the influence of Emotion-Focused Engagement.

Conclusion: Although the number of participants in this study was limited due to lack of time, the results have shown that loneliness can have an impact on well-being during the COVID-19 pandemic. It is, therefore, necessary to monitor the mental health of students in order to minimise long-term consequences and act preventively during the pandemic.

Keywords: COVID-19, pandemic, loneliness, well-being, coping strategies

Introduction

Within a few weeks the new SARS-CoV-2 coronaviruses have spread rapidly worldwide and had an enormous impact on society (He et al., 2020). In order to contain the spread of the virus, almost all states have initiated strict exit restrictions and sanitation measures by closing universities, schools, restaurants, and cafes, as well as cancelling many recreational activities and limiting social contacts (Adams-Prassl et al., 2020). Considering the importance of personal communication in knowledge exchange for higher education, many students' daily lives have changed dramatically in a short period of time (Reverté-Villarroya et al., 2020). A direct consequence for students of the pandemic restrictions in recent years have been the loneliness caused by 'social distancing', which correlates with increased risk of poor health, low well-being, and possibly rising mortality rate (Perlman & Peplau, 1981).

The general Impact of Loneliness on Mental Well-being

Various studies (Werner et al.,2021; Hwang et al.,2020; Emerson, 2020; Perlman & Peplau,1981) have shown that loneliness has always had a negative impact on health. In many cases, loneliness has been associated with depression or severe anxiety. In the wake of the COVID-19 pandemic, these contingencies have increased, which allows the wider analysis of the relation between the variables (loneliness and well-being) in the potentially exacerbated form. According to several studies in the general population, there has been an increase in loneliness since the COVID-19 crisis, especially among "younger people" (Werner et al., 2021), including students. It is important to differentiate between the concepts of loneliness and social isolation. Perlman and Peplau (1981) describe loneliness as a negative feeling that results from a perceived discrepancy between a person's desired and achieved social relationships (p. 31-32). According to Hwang et al. (2020), loneliness and social isolation often occur together, but they differ in definition. The term loneliness refers to subjective feelings and social isolation is defined by the degree and frequency of a person's social interactions (Hwang et al., 2020, p.1217). Studies suggest that while loneliness and social isolation are not equivalent, both can have a harmful effect on health. As an example, they are directly related to increased depressive feelings. Therefore, both social isolation and loneliness are serious issues that have an impact on the overall condition of a person's well-being (Hwang et al.,2020, p.1217). Consequently, it means that social distance, emotional depth, and loneliness are connected and that affection and contact with people are important for psychological well-being. In the current situation of on- and off going lockdown and social instability, these aspects only grow in importance for the public and the researchers. Studies have shown that before the outbreak of COVID-19, the

majority spoke of daily face-to-face interactions (Werner et al., 2021). However, with social distancing, opportunities for face-to-face interactions and meetings have decreased, and a large proportion of participants noted a significant change in their emotional experiences. As reported in various studies, students who live alone and those who have lost their livelihoods are also at high risk of mental illness. Due to the extreme restrictions in everyday life such as lack of physical activity, limited social contacts and restricted access to the outside world, the development of illnesses, for instance, depression, anxiety, and obsessive-compulsive disorders as well as psychosomatic complaints are facilitated in many people (Horesh, et al., 2020).

There are several other physical responses to loneliness that are commonly noted. A further effect of being alone is the sleep disorders and exhaustion conditions which also increased enormously in many observed cases. According to one study, people who experience loneliness take longer to fall asleep (Emerson, 2020). Furthermore, loneliness can cause increased depressive pathology, when combined with poor self-rated health, impaired functional status, vision deficits, and a perceived negative change in the quality of life (Emerson, 2020). Additionally, loneliness can also induce stress, which in turn can lead to increased cortisone levels, resulting in the adoption of an unhealthy lifestyle, such as smoking or drinking (Emerson, 2020). During previous pandemics, such as the SARS-pandemics in Asia in 2003, people have already taken to social isolation for the self-protection of people at risk. Studies from these times showed that these individuals more frequently suffered from symptoms of anxiety, insomnia, or general stress symptoms (Bai et al., 2004).

The Weight of the COVID-19 Pandemic: How Loneliness affects Well-Being in Students

Although students do not belong to the typical risk group, they are also affected by the pandemic in terms of rules. Due to the closure of the universities, students were forced to modify their daily lives. Many universities have had to adopt new strategies and implement digital tools to adequately support their students (Reverté-Villarroya et al., 2020). Consequently, this led to great insecurity among the student population (Van de Velde et al., 2021). According to Werner et al. (2021), central aspects in many counselling interviews with students are currently the reduced social contacts, fears for relatives and the fear of a possibly longer study period (p. 3-4). The switch to home-schooling was one of the changes in daily routine that brought students into this state of stress. More importantly, they are worried about managing the crisis on their own because they have no fellow students or friends to support and collaborate in person. In a longitudinal study conducted regularly by the ETH Zurich, students were asked in detail with whom they maintain social contacts and how they are feeling

psychologically. The results showed that the number of interactions, that were perceived as positive before the lockdown, decreased for many during the pandemic, and studying occurred more often alone (Kreidl & Dittler, 2021).

Regarding mental health, the research showed that, on average, the students were feeling worse than before the lockdown (Karasmanaki & Tsantopoulos, 2021). In most cases, the participants felt stressed, depressed, overwhelmed, and worried about the future. These worries are not the only ones that concern the students. Many of the participants have experienced financial difficulties as a consequence of the pandemic (Hasan, & Islam, 2020). This is either due to the loss of their own job or the loss of their family's job, which has also led to the loss of financial support. Furthermore, some students showed a lack of the required equipment, such as a fitting internet connection or even a laptop to be able to study successfully from home (Hasan & Islam, 2020).

Handling the COVID-19 Pandemic: How Coping Strategies Impact Stressor influence

While stress caused by loneliness is a known risk factor for mental health problems or psychopathology among students, certain coping mechanisms can be used to reduce the stress that is caused by loneliness (Mushquash & Grassia, 2020). However, studies show that people deal with stress differently and that the results depend on their coping strategies. The coping response is described as a conscious or voluntary effort to regulate or manage one's emotions, thoughts, behaviours, and physiological responses to stress (Folkman et al., 1986). The application of coping strategies can thus act defensively against the negative influence on health. Strategies of this kind can be understood within the framework of a four-factor model that distinguishes between engaged coping and disengaged coping: Problem-Focused Engagement, Problem-Focused Disengagement, Emotion-Focused Engagement, and Emotion-Focused Disengagement (Folkman et al., 1986). In this case, an engagement strategy means taking action to directly confront stressors. In contrast, a disengagement strategy aims to seek to limit the discovery of the stimuli (Addison et al., 2007). There is evidence within this four-factor control model of coping that shows that engaged coping responses are associated with lower levels of psychopathology, while disengaged coping responses are associated with higher levels (Nakano, 1991). The evidence from previous literature indicates that the appropriate use of coping strategies can have a moderating effect on the relationship between loneliness and students' psychological well-being during a pandemic. The same can be applied to the circumstances of the COVID-19 pandemic. Due to the fact that students may experience

loneliness during the pandemic, it may be advisable to also consider the aspect of coping strategies as a facilitator (Figure 1).

Figure 1

Research Design
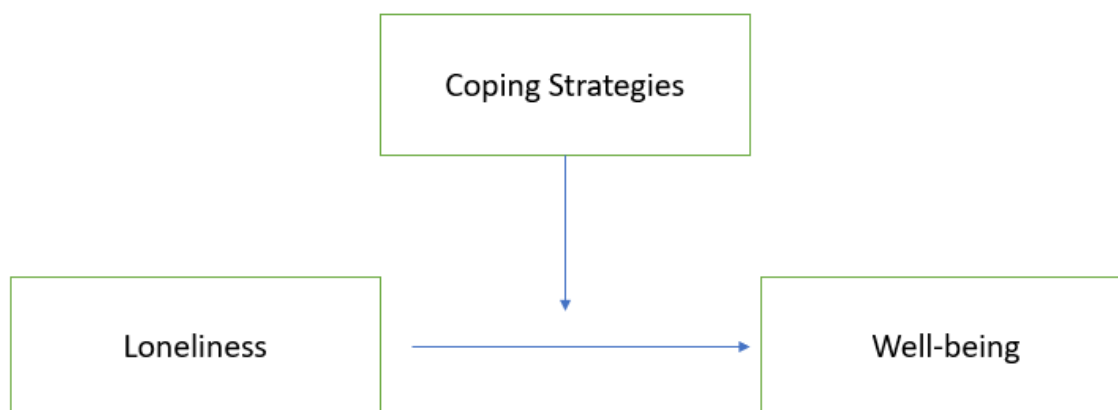
Present Study

  The above-mentioned aspects such as loneliness and social distancing during the pandemic and the pressure they put on well-being are important issues that society, and in particular students, are currently experiencing due to the Corona situation. For this reason, the focus of this research is on students as the target group. The design of the study aims to investigate the emerging consequences of the COVID-19 pandemic on the well-being of students. Hereby, the focus lies in the question of whether feelings of loneliness during a pandemic can have an influence on well-being, and whether certain coping mechanisms can have an impact on well-being as well. This study concentrates on answering the following research question:

"Does loneliness, moderated by coping strategies, influence the well-being of students during the COVID-19 pandemic? "

  Regarding the research question, it is expected that the perceived high level of loneliness during the COVID-19 pandemic has a negative impact on well-being. In contrast, it is expected that a high level of coping strategy reduces the negative effects of loneliness on well-being. The following hypothesis can be derived from this:

1. Loneliness negatively affects students' well-being.

2. The negative effect of loneliness on well-being is buffered by the students' coping strategies.

Methods

Study Design

In this study, a cross-sectional design was provided that combines different questionnaires. Considering that the study is a joint project of two students with different focuses, several scales were included. The Ethics Committee of the Faculty of Behavioural Sciences (ECBMS) at the University of Twente in Enschede has approved this research and provided the application number 210600.

Participants

In the present study, the questionnaire was completed by 90 participants who volunteered to take part. A convenience sampling technique was used to recruit participants by sharing the survey with friends via Facebook, WhatsApp and Instagram and asking them to share the survey further. Furthermore, the survey was published in the University of Twente's online application system SONA. The participants received 0.25 credits for taking part in the survey. The inclusion criteria for participation constituted the following: participants had to be from the age group of 19 to 29 years, they had to be students, and have sufficient knowledge of the English language. The recruitment period started on the 15th of April 2021 and ended on the 9th of May 2021. In total, there were 54 participants left who fulfilled the criteria of this study after incomplete responses and participants, who withdrew their consent at the end of the survey, and the participants who did not meet the inclusion criteria were removed. Of the 54 participants, 36 participants identified as female and 18 as male. The age of participants ranged from 18 to 29 with a mean age of 22.8 (Table 1).

Table 1

Demographic Characteristics of the Participants (n=54)

Characteristics	*n*	*%*
Mean Age	22.8	
(Age SD)	2.9	
Gender		
Female	36	66.7
Male	18	33.3
Nationality		
German	45	83.3
Dutch	2	3.7
Other	7	13.0
Country of residence		
Germany	39	72.2
The Netherlands	14	25.9
Other	1	1.9
Degree program		
Bachelor	45	83.3
Master	9	16.7

Materials

The current web-based study was conducted via digital tools provided by Qualtrics. The three scales were used for the analysis, with each measuring one of the variables of interest: the level of well-being, the level of loneliness, and the level of coping strategies.

The Mental Health Continuum Short Form (MHC-SF)

The Mental Health Continuum questionnaire measures the level of emotional, social, and psychological well-being of individuals, and it is based on the 40-item health continuum of Keyes (Keyes, 2007). The 14 items represent the construct definition for each facet of well-being and consist of three subscales, i.e., 'psychological well-being', 'social well-being' and 'emotional well-being'; six items represent psychological well-being, five items represent social well-being, and three items represent emotional well-being. The responses match a six-point Likert scale (1 = never and 6 = every day) The total score on this scale can have a value from 0 to 70 points and the higher the score, the higher the level of emotional well-being. There have been many studies in the past on the psychometric properties of the MHC-SF, which have shown that it has excellent internal consistency (Cronbach's alpha = .80). In addition, the test-retest reliability of the MHC-SF over three consecutive 3-month periods has been .68 and the 9-month test-retest was .65 (Keyes, 2005b, 2006; Keyes et al., 2008; Lamers et al., 2011; Westerhof & Keyes, 2009). The reliability for the sample in the present study was also good (Cronbach's Alpha= .91).

Short-form UCLA Loneliness scale (ULS-8)

The UCLA Loneliness scale assesses the subjective feelings of loneliness or social isolation. This short form of the UCLA Loneliness Scale (ULS-8) consists of eight items and a four-point Likert scale was used to measure the questionnaire with "Never" (1), "Rarely" (2), "Sometimes" (3) and "Always" (4) (Hays & DiMatteo, 1987). One example of the ULS-8 is "I feel isolated from others." This scale indicated good internal consistency reliability with a Cronbach's alpha of .84 (Hays & DiMatteo, 1987). The items in this sample from this study showed a Cronbach's alpha of .86.

Coping Strategies Inventory Short-Form (CSI-SF)

The Coping Strategies Inventory Short form is a self-report questionnaire to estimate thoughts in response to a specific stressor (Addison et al., 2007). This questionnaire is applied in the current study to assess the stress factor of the students during the pandemic.

The questionnaire contained the 16 items of the psychometric Evaluation of a Coping Strategies Inventory by Addison (2007). The CSI-SF reflects the original scale with four 4-

subscales consisting of Problem-Focused Engagement, Emotion-Focused Engagement, Problem-Focused Disengagement, and Emotion-Focused Disengagement. Problem-Focused Engagement is about altering the situation or modifying the meaning of the given situation for the individual. These coping skills are directed towards the stressful situation itself. The items of Emotion-Focused Engagement express an open communication of feelings to other individuals. These coping efforts concentrate on the individual's emotional response to the stressful condition. The items in Problem-Focused Disengagement refer to avoidance. They constitute strategies that are used to avoid a stressful situation. In the case of Emotion-Focused Disengagement social withdrawal and self-criticism are at the centre of items' implementation.

Answer options use a five-point Likert scale, ranging from 1 (never) to 5 (almost always) (Addison et al., 2007) (see Appendix C). The alpha coefficients for the CSI range from .71 to .94 [PFE (α) .87, PFD (α) .92, EFE (α).81 and EFD (α) .90] (Tobin, Holroyd & Reynolds, 1984). The Cronbach's alpha of this study ranges from .64 to .84 [PFE (α) .70, PFD (α) .69, EFE (α).84 and EFD (α) .64]. For EFE the alpha coefficient was sufficient with .84.

Procedure

The surveys for the study began with an informed consent form declaring that the data collected would be kept anonymous and that participants could withdraw from the study at any time if they wished (see Appendix A). By clicking on "I agree", the participants accepted the consent form (Appendix 1) and proceeded with the first questions. Subsequently, participants were asked to provide their demographic information such as their nationality, age, gender, country of residence and degree program (see Appendix B). Next, they filled out the Mental Health Short Continuum (MHC-SF), the short-form UCLA Loneliness scale and the Psychometric Evaluation of a Coping Strategies Inventory Short-Form (CSI-SF) questionnaire. After the questionnaire, there was a short debriefing section where the participants learned more about the purpose of the study and the significance of this topic (Appendix E).

Data Analysis

For the analysis all obtained data were analysed by using the statistical software SPSS (version 25). First, data that did not fulfil the inclusion criteria, such as missing information or individuals who were not students, were excluded. Next, descriptive statistics were used

to record the relevant demographic information by calculating the frequencies, the mean scores, and the standard deviations.

Further, a Pearson correlation has been performed to see how all variables correlate with each other. In order to answer the first hypothesis that loneliness negatively affects students' well-being, a regression analysis was used. It examines whether loneliness as an independent variable can have an influence on well-being as a dependent variable. Lastly, for the second hypothesis that the negative effect of loneliness on well-being is buffered by the students' coping strategies the program PROCESS macro from Hayes for SPSS was used. A conceptual model with one moderator was tested in order to see whether coping moderates the effect of loneliness on well-being. Hereby four moderation analyses have been conducted with loneliness as independent, well-being as dependent and the four coping strategies (Emotion-Focused Engagement, Emotion-Focused Disengagement, Problem-Focused Engagement and Problem-Focused Disengagement) as moderators. In order to differentiate coping styles, multiple moderation analyses were performed.

Results

Descriptive Statistics

A descriptive statistic was used as the basis for the analysis. In Table 1 the mean of the relevant variables (well-being, loneliness, and the four coping strategies) is described. The related standard deviations are also displayed in Table 2.

Table 2

Mean and Standard deviations of the MHC-SF, ULS-8 and CSI-SF scale

	M	*SD*	*n*
MW	3.50	.92	54
L	2.17	.62	54
PFE	3.39	.66	54
PFD	2.76	.74	54
EFE	3.17	.94	54
EFD	3.30	.77	54

Note. MW=Mental well-being, L=Loneliness, PFE= Problem-Focused Engagement, PFD=Problem-Focused Disengagement, EFE= Emotion-Focused Engagement, EFD= Emotion-Focused Disengagement

Table 3 presents how the variables of relevance to the present study are correlated with each other. The results of the Pearson correlation indicated that there was a significant positive association between loneliness and well-being.

Table 3

Pearson correlation between the Variables of Interest

	MW	L	PFE	PFD	EFE	EFD
MW	.					
L	-.66**	.				
PFE	.53**	-.29*	.			
PFD	-.41**	.34*	-.32*	.		
EFE	.36**	-.30*	.35*	-.08	.	
EFD	-.47**	.46**	-.35**	.36**	-.39**	.

Note. **. Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

MW=Mental well-being, L=Loneliness, PFE= Problem-Focused Engagement, PFD=Problem-Focused Disengagement, EFE= Emotion-Focused Engagement, EFD= Emotion-Focused Disengagement

Relationship between Loneliness and Mental Well-being

In order to answer the first hypothesis a simple linear regression was calculated to predict student's well-being based on loneliness, b= -.66, t (52) = -6.38, p < .001. A significant regression equation was found (F (1, 52) = 40.738, p < .001), with an R^2 of .439. The results showed that there is a significant relationship between loneliness and the dependent variable well-being.

Moderation Testing

The PROCESS analysis was used to determine whether coping moderates the effect of loneliness on well-being. The following data was proven:

Emotion-Focused Engagement. The moderation testing has shown that enactive emotional focus has a significant effect on well-being [B =.30, s.e.=.15, t (50) =2.02, p =.049]. The conditional effect of loneliness on well-being showed corresponding results. For low level of EFE the conditional effect is [-1.2, s.e.= .21, t (50) = -5.65, p < .01]. At middle level of EFE the conditional effect is [-.78, s.e.= .17, t (50) = -4.68, p < .01]. At high level of EFE the conditional effect is [-.51, s.e.= .25, t (50) = -2,08, p = .04]. These results identify Emotion- Focused

Engagement as a positive moderator of the relationship between loneliness and well-being (Figure 2).

Emotion-Focused Disengagement. The moderation testing showed that Emotion-Focused Disengagement had no significant effect on the relationship between loneliness and well-being [B=-.15, s.e.=.19, t (50) = -.83, p=.413].

Problem-Focused Disengagement. Testing the effect of Problem-Focused Disengagement on well-being showed that there is no significant effect on the relationship between loneliness and well-being [B=.06, s.e.=.21, t (50) =.26, p =.795].

Problem-Focused Engagement. The moderation testing indicates that there is no significant effect between Problem-Focused Engagement and well-being [B=.25, s.e.=.51, t (50) =.50, p=.594].

Figure 2:

The Level of Well-being for the Individual's Level of Emotion-Focused Engagement
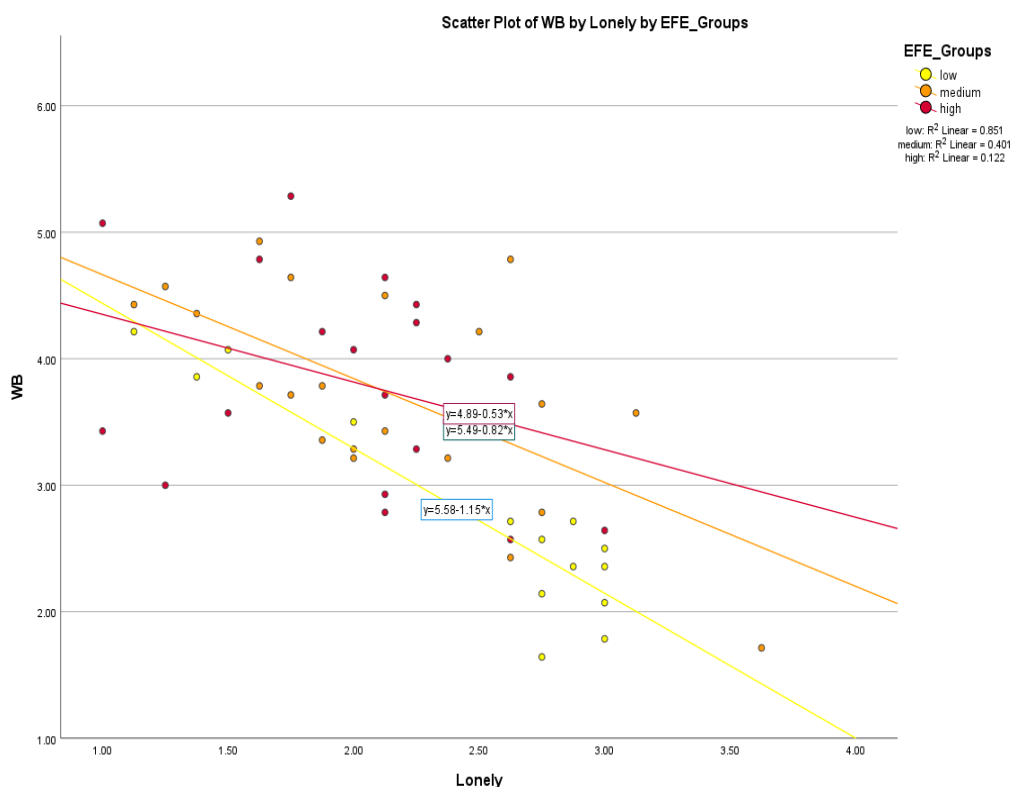
Discussion

This cross-sectional correlational study aimed to gain an insight into the well-being of the target group of students during the COVID-19 pandemic, as the current conditions allow to investigate the intensified picture of general social and individual issues. Specifically for this study, the focus lies on loneliness, its impact on well-being and health, and the potential significance of coping strategies for students. Previous research has shown that loneliness can affect people's well-being (Karasmanaki & Tsantopoulos, 2021). As the students had to switch to home-schooling due to the Corona regulation, they were profoundly affected by the pandemic. The lifestyle changes and also the consequence of not being able to meet with other students has repercussions on their well-being (Mushquash & Grassia, 2020). The results of the study were also in a position to confirm this.

Concerning the first hypothesis, that loneliness negatively influences the students' well-being, the hypothesis could be confirmed in the current study. The results of the survey based on the Loneliness Scale and the Mental Health Scale showed that loneliness was a factor that negatively influenced well-being. This was confirmed by a significant Pearson's correlation as well. At the same time, the simple linear regression additionally proved this assumption. Accordingly, this study also confirms previous research with the finding that loneliness has an impact on well-being (Werner et al.,2021; Hwang et al.,2020; Emerson, 2020; Perlman & Peplau,1981).

Concerning the second hypothesis, that coping strategies can intervene as a moderator and buffer for well-being, the hypothesis could be confirmed only partly. The results from the analyses indicated that not all four coping strategies have an impact on well-being. There was no influence of either Problem-Focused Engagement or Problem-Focused Disengagement, nor of Emotion-Focused Disengagement. Only the category of Emotion-Focused Engagement has shown a significant impact. The second hypothesis was based on the findings of Lazarus (1986). According to his theory, the concept of coping can be used as a defence mechanism to reduce levels or treat the results of a stressful situation (as cited in Folkman et al., 1986, p. 571-579). The scale, which was used here to measure the effect of coping strategy on well-being, is defined by two binary dimensions, specifically Problem-Focused versus Emotion-Focused and Engagement versus Disengagement (Addison ,2007). In conclusion, the considerable risks of loneliness and social isolation for the physical and mental health of students are empirically proven with this study. These findings prove to be in line with antecedent research related to

loneliness and well-being (Werner et al., 2021). Thus, the previously mentioned results of the conducted online survey present a solid basis for further research with regard to paying more attention to the aspect of students' well-being. Nevertheless, there are also some aspects based on the outcomes of the analysis of the collected data that need to be reconsidered and changed in the future. Especially with regard to students, it is important to observe how they are doing mentally, as they are usually not able to cope with the stress due to their young age (Amirkhan & Auyeung, 2007). Under the circumstances, special attention should be paid to the psychological and social situation of this demographic group. Moreover, it is important to offer them prevention options to avoid the long-lasting effects of the pandemic. The usage of multimedia interactive online platforms and diverse media formats (e.g., podcasts, YouTube channels) for teaching, combined with individual counselling meetings could be an option, but a further extensive survey of actual students' needs, and wishes would provide more definite ideas for prevention options. Of course, it cannot be ignored that additional counselling meetings could potentially be equally tiring for both lecturer and a student. In addition, the results of the study can help provide the government with an overview of the current emotional and psychological help of students - future taxpayers - and what actions can be taken in response to that.

Strengths and Limitations

The present research has both limitations and strengths. One of these limitations is the sampling procedure. One restriction for participation in this study was the age limit, which ranged from 18-29 years. The results of the participants had shown that there were also students who were older than 29. Due to this restriction, they were then excluded from the list of participants. Consequently, there were fewer students in total. The second limitation refers also to the sampling procedure. In order to attract participants, the study was only published in the online application system SONA of the University of Twente and was shared with other students via WhatsApp, Instagram, and Facebook. As a result, the total number of participants was very small, and this weakens the validity of this study. The small number of the sample size can be also explained by the lack of time, as the survey publication time was three weeks only. As a result, only a few people had an opportunity to participate. The third limitation is the design of the study. It was designed as a cross-sectional study. This means that the participants answered the survey questions at a single point in time. Consequently, in this study the degree of loneliness and well-being was measured only once. Therefore, causal conclusions cannot be drawn.

Notwithstanding, the study also shows a positive aspect. The participants came from different countries and thus students from German universities, but also students from the Netherlands, were accepted in the survey. The advantage of this study is the inclusion of participants from two countries (Germany and The Netherlands), that allows, albeit cautiously, to generalise the results. It could provide data support for further research into loneliness and the proceeding work on the coping strategies for other countries and regions.

Recommendation for Future Research

As the topic is currently relevant especially for students, it is also important to implement certain changes for future research, based on limitations that emerged through this study. It is recommended that future research should aim for a more balanced sample of the target group to ensure better generalisability of the results, which brings the wider applicability of the coping strategies for the prospective studies of mental health and well-being. Based on these findings, it is recommended to change the age limit so that the sample size can also be increased. A further way to increase the sample size would be to use certain student forums or to contact other universities with a request to publish this study. Furthermore, it is recommended to change the design of the study from a cross-section to a longitudinal study design. Since this study only had one measurement point, it is not possible to draw any causal conclusions. Accordingly, any future research should use a longitudinal design with many measurement points in order to examine causal effects. In order to exclude possible bias, it would be appropriate to test the participants twice, one possibility would be to do this during and after the pandemic. Finally, when performing such a study again it would be interesting to make a comparison between master and bachelor students to see if master students handle the situation better because of their study experience. In addition, students of different degrees might have different prospects in life (financially and socially), and it enhances the pressure and stress of the restrictions during the COVID-19 pandemic. For this purpose, however, the number of participants should be equal in the proportion between bachelor and master students.

Conclusion

Despite exhibiting some limitations, the present study contributes to the overall knowledge of the current pandemic. Overall, this study provided further insights into the relationship between loneliness and well-being during the pandemic. It is important to know how to support students to overcome this pandemic and to reduce its long-term consequences.

Based on these study's findings, it is therefore recommended to develop interventions that are targeted towards using coping strategies since various studies have shown that the application of specific coping strategies can be helpful in stressful situations.

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Appendix A

INFORMED CONSENT

Thank you for considering participation in this research!

PURPOSE OF STUDY

The purpose of this study is to investigate the emerging consequences of the COVID-19 pandemic on the well-being of young adults.

PROCEDURE

If you agree to participate in this study, you will be asked to answer several demographic questions (age, gender, nationality, etc.). Next, you will be asked to answer four sets of questions concerning different aspects of your well-being, as well as one set of questions with regard to your Social Networking Sites use (e.g., Twitter, Instagram, Facebook, etc.) in the last past month.

Your participation will last approximately 15 minutes. There are no right or wrong answers. Choose the one you believe fits you the best. After completing the survey, you will be provided with more details about the purpose of this study. After receiving information about the full purpose, you will be asked again for your consent to participate in the study. You are able to withdraw your initial consent, and in this case, your recorded data will be deleted.

We are seeking for participants in the age range of 18 to 29 years. Additionally, a proficiency level of the English language is required.

PARTICIPANT RIGHTS

Your participation is completely voluntary. You are free to withdraw from the study at any time without the need to give an explanation.

RISKS

There are no anticipated risks associated with this study.

DATA COLLECTION

The collected data will be anonymized and cannot be traced back to you. No information about your identity will be collected or retained. The information you provide will solely be used in order to investigate the purpose of the study. The information will not be disclosed to

third parties outside the research team.

QUESTIONS

If you have any questions, please do not hesitate to contact us:

h.m.bousardt@student.utwente.nl (**Hannah Bousardt**, Researcher)

r.amanzada@student.utwente.nl (**Regina Amanzada**, Researcher)

n.keesmekers@utwente.nl (**N. Keesmekers**, Supervisor)

I hereby declare that I have read the aforementioned information and consent to participate in this study.

⬤ I agree

⬤ I do not agree

Appendix B

Demographic data

What is your age?

What is your gender?

What is your nationality?

What is your country of residence?

What is your occupation?

If you selected 'Student' in the previous question, please select the country in which your university is located. Otherwise go to next.

Appendix C

Psychometric Evaluation of a Coping Strategies Inventory Short-Form (CSI-SF)

In the following questions, you are asked about specific actions that are aimed at managing a stressful situation.

Thinking about the **last past month**, indicate how often each of the following statements applies to you.

1) I make a plan of action and follow it.

- Never
- Seldom
- Sometimes
- Often
- Almost always

2) I look for the silver lining or try to look on the bright side of things.
- Never
- Seldom
- Sometimes
- Often
- Almost always

3) I try to spend time alone.
- Never
- Seldom
- Sometimes
- Often
- Almost always

4) I hope the problem will take care of itself.
- Never
- Seldom

- Sometimes
- Often
- Almost always

5) I try to let my emotions out.

- Never
- Seldom
- Sometimes
- Often
- Almost always

6) I try to talk about it with a friend or family.

- Never
- Seldom
- Sometimes
- Often
- Almost always

7) I try to put the problem out of my mind.

- Never
- Seldom
- Sometimes
- Often
- Almost always

8) I tackle the problem head on.

- Never
- Seldom
- Sometimes
- Often
- Almost always

9) I step back from the situation and try to put things into perspective.

- Never
- Seldom
- Sometimes
- Often
- Almost always

10) I tend to blame myself.

- Never
- Seldom
- Sometimes
- Often
- Almost always

11) I let my feelings out to reduce the stress.

- Never
- Seldom
- Sometimes
- Often
- Almost always

12) I hope for a miracle.

- Never
- Seldom
- Sometimes
- Often
- Almost always

13) I ask a close friend or relative for help or advice.

- Never
- Seldom
- Sometimes
- Often
- Almost always

14) I try not to think about the problem.

- Never
- Seldom
- Sometimes
- Often
- Almost always

15) I tend to criticize myself.

- Never
- Seldom
- Sometimes
- Often

- Almost always

16) I keep my thoughts and feelings to myself.

- Never

- Seldom

- Sometimes

- Often

- Almost always

Appendix D

The Mental Health Continuum Short Form (MHC-SF)

During the last past month, how often did you feel…	Never	Once or Twice	About Once A Week	About 2 or 3 Times a Week	Almost Every Day	Every Day
1. Happy						
2. interested in life						
3. satisfied with life						
4. that you had something important to						

contribute to society					
5. that our society is a good place					
6. that people are basically good					
7. that the way our society works makes sense to you					
8. that you liked most parts of your daily life					
9. that you liked most parts of your personality					
10. good at managing the responsibilities					
11. that you had warm and trusting relationships with others					
12. that you had experiences					

that challenged you to grow and become a better person						
13. confident to think or express your own ideas and opinions						
14. that your life has a sense of direction or meaning to it						

Appendix E

Short-form UCLA Loneliness scale (ULS-8)

1) I lack companionship.
   - Never
   - Rarely
   - Sometimes
   - Always
2) There is no one I can turn to.
   - Never
   - Rarely
   - Sometimes
   - Always

3) I am an outgoing person.

- Never

- Rarely

- Sometimes

- Always

4) I feel left out.

- Never

- Rarely

- Sometimes

- Always

5) I feel isolated from others.

- Never

- Rarely

- Sometimes

- Always

6) I can find companionship when I want it.

- Never

- Rarely

- Sometimes

- Always

7) I am unhappy being so withdrawn.

- Never

- Rarely

- Sometimes

- Always

8) People are around me but not with me.

- Never

- Rarely

- Sometimes

- Always

Appendix F

Thank you for your time and participation in this study!

PURPOSE OF STUDY

Before participating in the survey, you were informed that the purpose of this study is to explore the consequences of the COVID-19 pandemic on the well-being of young adults. In more detail, the recorded data will be used to investigate to what extent the active and passive use of Social Networking Sites is related to feelings of loneliness during the COVID-19 pandemic and the impact of perceived social connectedness on this relationship. Additionally, this study investigates whether feelings of loneliness during a pandemic can have an influence on well-being and whether certain coping mechanisms can influence it negatively or positively.

The precise goal was not revealed before completion of the survey in order to rule out that your responses were biased by being aware of the full purpose.

If you have any questions, please do not hesitate to contact us:

(Hannah Bousardt, Researcher)

(Regina Amanzada, Researcher)

(N. Keesmekers, Supervisor)

As explained in the beginning of this survey, you will now be asked again for your consent. If you want to withdraw from this study, you can do so now, and your data will be deleted from the dataset.