

# **Title: Impact of COVID-19 Pandemic on Musician's Wellbeing and Mental Health**

Maria Michaelidou

Department of Psychology, MSc in Clinical Psychology

Student Number: 9088156

Date: July 2022

Course code: 201500819

## **Context in which this research was performed:**

Data for the current study was collected as part of a bigger study currently running in Cyprus at CYENS – Centre of Excellence, investigating musicians' wellbeing and mental health.

## **Acknowledgement**

I want to express my gratitude to my project supervisors Dr. WJM (Mark) van Overveld, and Dr. Christos Ioannou for their constant support throughout this project. Their contributions are sincerely appreciated and gradually acknowledged.

## Abstract

**Objective:** The present study experimentally investigated any difference the impact COVID-19 pandemic had on the wellbeing and mental health of musicians and non-musicians in Cyprus. Furthermore, differences on the mental health of the musicians who stopped any practice and performances during lockdown were examined. **Methods and Materials:** The analysed data included 60 adults who participated in an online survey in Cyprus. In addition to demographic, data including terms related to music routines during lockdown, psychiatric symptoms such as depression, anxiety, and quality of life were measured by using the Feelings of Threat and Uncertainty scale (FTUS), Patient Health Questionnaire-9 (PHQ-9), General Anxiety Disorder-7 item (GAD-7), and generic Quality of Life Scale developed through the World Health Organization (WHOQOL-BREF). **Results:** No significant difference were found on the mental health between musicians and non-musicians. Correlation analysis revealed no substantial association between feelings of threat and uncertainty for COVID-19 and any mental health variable. This may suggest that the impact the pandemic had on the population mental health since the first lockdown (March 2020), may be moderate. For the second hypothesis, findings revealed that the musicians who stopped any practice during lockdown restrictions, significantly affected scores of depression. No significant comparisons were observed with other variables. **Conclusions:** Findings from the current study raise the importance of further investigating the impact COVID-19 had on population mental health. It becomes apparent that greater focus should be placed on artists who were forced to change their routines due to the restrictions.

*Keywords:* mental health, musicians, COVID-19 pandemic, wellbeing

## **Impact of COVID-19 Pandemic on Musician's Wellbeing and Mental Health**

### **Introduction**

The COVID-19 pandemic severely impacted the wellbeing and mental health of people around the world (WHO, 2022). Countries imposed different measures to help contain the spread of the COVID-19 virus. These measures varied greatly in lockdown restrictions, duration, and timing, with some being very strict (Thomas et al., 2020). Amongst other symptoms, due to lockdown, high levels of depression, stress, anxiety, and feelings of loneliness have been reported in adults of various ages (Justo-Alonso et al., 2020; Sandín et al., 2020; Spiro et al., 2021).

Further, these measures impacted daily routines throughout the whole society. Certain sectors, especially the cultural sector was significantly affected by the strict restrictions (e.g., FIM – International Federation of Musicians, 2020). Specifically, in the music industry, almost all performing stages and concert halls were forced to remain closed resulting in musicians facing both personal and professional challenges (Cohen and Ginsborg, 2021). Professional musicians' financial situation and their sense of identity were highly affected after the immediate need of Western countries to go into lockdown (e.g., Crosby and McKenzie, 2021; Curry, 2021; Spiro et al., 2021). Continuing threats have resulted in significant increases in anxiety that affected the wellbeing of musicians worldwide (Schwalje and Hoffman, 2020; Spiro et al., 2021; Vance et al., 2021).

According to recent research, it has now been established that the pandemic has impacted the normal forms of music-making, especially those related to group interactions (Cai et al., 2021). Orchestras, chamber ensembles bands and generally traditional music configurations have been most affected due to the limitations of coordinated simultaneous synchronous music performance. Taylor et al. (2020) characterized this as a crisis of spatial materiality. During lockdown and periods of social distancing, spaces of music production (e.g., rehearsal

studios) and consumption (e.g., nightclubs) were suddenly unable to serve their intended purposes. Social distancing restrictions forced musicians to be isolated, raising concerns for increased loneliness and mental health deficits (Fram et al., 2021).

The COVID-19 stay-at-home orders found many successful classical musicians unable to perform or earn a living from musical work, raising financial, social, and mental health concerns. Indeed, a recent study on classical musicians during the pandemic, found that classical orchestral musicians were severely impacted by the closures enacted due to COVID-19 (Cohen and Ginsborg, 2021). Using thematic analysis, researchers identified common themes indicating the impact the pandemic had on their mental health. Amongst others, such themes include: anxiety about the future of the music profession and the loss of a much-loved performing career (Cohen and Ginsborg, 2021). Another study in the USA examined for the first time the impact the pandemic had on classical musicians' emotional experience, and how factors such as loneliness and social relationships mediated this experience. Results indicated that loneliness negatively correlated with several indicators for wellbeing. For musicians who usually perform with others in an ensemble, such solitude did not only result in loneliness, but also inhibited a key aspect of their music (Wang et al., 2022). This may suggest that in occupations where the artist has close contact with other people (audience), like musicians, COVID-19 restrictions would have a greater impact on their mental health and wellbeing.

Surprisingly, some argue that despite these occupational stressors, classical musicians often tend to maintain relatively high levels with respect to both their job and life satisfaction (Bonneville-Roussy et al., 2011; Brodsky, 2011). Many musicians report performing as a lifestyle, rather than a way of earning a living (Oakland et al., 2012). Interestingly, this appears to hold true for the pandemic's disruptions as well. Gelt (2021) interviewed classical musicians, who described these disruptions to their career as bringing about "existential

questions,” ranging from “how do we find meaning?” to “do we even continue to play music?” (Gelt, 2021). Remarkably, some musicians creatively adapted their daily musical practices and/or performances during lockdown restrictions. Alternative approaches to music making that were in-line with the various restrictions, such remote musical interactions, have thrived (Keller, 2020). Several musicians chose to creatively adapt their performances, from concert hall to places like balconies, the internet, and porches (Gelt, 2021).

Drawing from the conflicting literature above, the current study contributes to the growing body of evidence on the psychological impact of the current COVID-19 pandemic, by examining the impact it had on musicians’ wellbeing in Cyprus. Data for the following study was collected from musicians and people from other occupations. The initial aim of this study is to examine whether there is a difference in the wellbeing scores of musicians compared to other non-artistic professions, following the 2-year pandemic. As previously mentioned, behavioural and psychological differences were noticed between individuals. Some chose to creatively adapt to the new measures and find alternative ways to perform, others, avoided any performance related actions. Therefore, this study further examines the possible differences of mental health between musicians’ who creatively adapted their performances and those who did not. To this end, the following hypotheses form the basis of the current study:

1. There will be a difference between the impact COVID-19 had on the mental health of musicians and non-musicians in Cyprus.
2. There will be a difference in the wellbeing between musicians who creatively adapted their performances during strict restrictions to those who did not.

## **Materials and Methods**

In this chapter light is shed upon the materials used when conducting the study. In particular, it focuses on their description and justification, illustrating an analysis by looking at the underlying reasons behind the rationale of using these specific instruments. Further to that, data collection and statistical analysis are examined, drawing attention on the methods and procedures used.

### ***2.1 Research design***

To answer the two research questions imposed for this study and identify any differences on the impact the pandemic had on the mental health of musicians and the control group (non-musicians), surveys were handed out to participants. The independent variable of this study are the scores of feelings of threat and uncertainty regarding COVID-19 pandemic.

Dependent variables intend to measure the mental health of participants are scores of depression, anxiety, and quality of life.

### ***2.2 Participants***

Seventy-two participants completed the online survey. From those, 12 were not eligible according to our inclusion criteria. Therefore, data from 60 participants (30 males,  $M = 39$ ,  $SD = 12.5$ , age range = 23-65) were analysed for the purposes of the current study. Thirty participants were musicians (experimental) whereas the remaining thirty were not involved in music industry or other artistic occupations (control). Both groups were not significantly different in terms of age and gender. For further details regarding participants' demographic characteristics, please refer to Appendix A.

Exclusion criteria: a) Participants under the age of 17, b) University students, c) People who reported any artistic occupation outside the music industry field.

### **2.3 Instruments**

Feelings for the uncertainty of the lockdown periods were assessed using the adapted version of the Feelings of Uncertainty and Threat Scale (FUTS), (Chen et al., 2015) by Vermote et al., (2021). For the purposes of this study, the concept of mental health was conceptualized using three dimensions: depression, general anxiety, and quality of life (QoL). The three dimensions were assessed by administrating the Patient Health Questionnaire -9 (PHQ-9; Spitzer et al., 1999), the General Anxiety Disorder-7(GAD-7; Spitzer et al., 2006), and the WHOQOL-BREF (World Health Organization, 1995).

**Feelings of Threat and Uncertainty Scale (FTUS).** The adapted scale was specifically adjusted to examine experienced insecurity during the lockdown (Vermote et al., 2021). There were five different subscales with two questions each, including Personal Health, Financial Concerns, Unstable Situation, Supply of Sufficient Food, and Health of Loved Ones. The scale consists of ten items (e.g., item 3 “I was concerned about my financial situations”). The participants reflected on their feelings and thoughts since the first lockdown of March (2020) using a 5-point Likert scale from 1 (= Strongly Disagree) to 5 (=Strongly Agree). Higher scores on this scale represent higher perceived feelings of threat and uncertainty reflecting the lockdown period. Prior research showed that FUTS has high internal consistency  $\alpha=.79$  (López-Íñiguez et al. 2022).

**The Patient Health Questionnaire (PHQ-9).** PHQ-9 consists of nine items (e.g., item 2, “Feeling down, depressed, or hopeless”; item 4, “Feeling tired or having little energy”; Appendix B) and is a useful tool to recognize major depression and subclinical levels of depressive symptoms in the general population (Martin et al. 2006). It is a self-report measure, having participants to respond to the nine items on a 4-point Likert-type scale (0 = not at all to 3 = nearly every day). A score ranging from 0 to 4 indicates no or minimal depression; 5 to 9, mild depression; 10 to 14, moderate depression; 15 to 19, moderate severe

depression; and 20 to 27, severe depression (Kroenke et al. 2001). The reliability coefficient of the scale was found to be  $\alpha = .84$  (Kroenke et al., 2001). Greek version of the scale also demonstrated overall good internal consistency  $\alpha = .75$  (Karekla et al., 2012).

**Generalized Anxiety Disorder Assessment (GAD-7).** GAD-7 consists of seven items (e.g., item 2, “Not being able to stop or control worrying”; item 7, “Feeling afraid as if something awful might happen”) assessing the severity of the generalized anxiety disorder corresponding to worry and anxiety symptoms. It is a self-report measure rated on a 4-point Likert-type scale (0 = not at all to 3 = nearly every day). The total score ranges from 0 to 20, with higher scores representing greater severity. A score above 10 is considered clinically significant anxiety (Spitzer et al. 2006). The GAD-7 scale was found to have internal reliability  $\alpha = .79$  (Tsiropoulou et al., 2020). Greek version of GAD-7 of the scale was also found to have excellent internal consistency,  $\alpha = .90$  (Solomou and Constantinidou, 2019).

**WHOQOL-BREF.** To evaluate participants’ QoL within the context of an individual’s culture, value systems, personal goals, standards, and concerns, the WHOQOL-BREF was administered. The WHOQOL-BREF was developed by the World Health Organization Quality of Life Group (Webster et al., 2010). It is a self-report questionnaire that contains 26 items, and each item represents one facet. The facets are defined as those aspects of life that are considered to contribute to a person’s QoL (Webster et al., 2010). Among the 26 items, 24 make up the four domains of: physical health (seven items), psychological health (six items), social relationships (three items) and environment (eight items). The remaining two items measure overall QoL and general health (e.g., item 1 “How would you rate your quality of life?”) (Webster et al., 2010). For the calculated domain scores, higher scores denote higher quality of life. Following the WHOQOL Manual, each domain is calculated following different rules. For instance,

$$\text{Physical domain: } ((6-Q3) + (6-Q4) + Q10 + Q15 + Q16 + Q17 + Q18) \times 4.$$



The remaining two items that measure the overall QoL ask about an individual's overall perception of his or her health. The higher the score, the higher the reported QoL for these items. Cronbach alpha values for each of the four domain scores ranged from .66 (for domain 3) to .84 (for domain 1), demonstrating good internal consistency (The WHOQOL Group 1998).

**Socio-demographics.** Finally, all participants indicated their age, gender, and profession. For musicians, additional questions were asked. For instance, their professional status (professional players or not), the type of music activity they are performing, and whether during lockdown they stopped any kind of practice and/or performance. Here, they were given the option of an open-ended question to specify. Appendix A includes all the sociodemographic data of musicians.

#### ***2.4 Data Collection and Procedure***

Using Unipark platform by TIVIAN, an online survey was constructed. Data collection started on June 1<sup>st</sup>, 2022, and lasted for 2 weeks.

Participants were reached by random sampling, advertising the online survey in several social-media platforms: LinkedIn, Facebook, Instagram. Many of the musicians used in this study were also part of another greater Marie S. Curie study and were approached to respond to the current survey.

Participants were instructed at the beginning of the survey to choose the language they preferred (Greek or English). All items given to participants, were available either in Greek or in English language. Next, participants were briefed and required to sign (checkbox) an informed voluntary consent form, stating clearly that all personal results are strictly confidential. No monetary compensation was given for completing the questionnaire.

After completing informed consent, the following questionnaires were administered in the following order: Sociodemographic, Feelings of Threat and Uncertainty Scale, PHQ-9, GAD-

7 and lastly WHOQOL-BREF Scale. Instructions for the participants included the period in which they must think of and reflect to properly respond to the questions. For instance, for FTUS items participants had to respond thinking the last two years (from March in which the first lockdown was implemented, until today), for PHQ-9, GAD-7 and WHOQOL-BREF they had to respond based on what their feelings were for the last two weeks. When participants completed the surveys a thank you message appeared. The study was approved by the Bioethics Committee of Cyprus.

### ***2.5 Statistical analyses and Data Cleaning***

For each participant average scores of each tool (FTUS, PHQ-9, GAD-7, WHOQOL-BREF respectively) were calculated. Therefore, participants were classified into experimental (musicians), and control group (non-musicians, non-artistic occupation) based on their profession. During data exploration, 6 outliers with a z score  $> 3$  in more than 3 variables were identified and removed (Appendix C). Therefore, data were analysed from 54 participants (28 musicians and 26 non-musicians).

After removing the outliers, a Shapiro-Wilk test revealed for most of the variables a significant deviation from normality ( $p > .05$ ). Therefore, a non-parametric test Mann-Whitney-U test and Kruskal-Wallis test were deemed appropriate to examine and compare median group differences. For descriptive statistics, median values and their quartiles are presented, as data was not normally distributed. Associations between variables were conducted using the Spearman's Rank Correlation ( $r_s$ ) test. The level of significance was set at  $p < .05$  (two-tailed) and Bonferroni corrections were applied when necessary. All data wrangling, visualisation and analysis was conducted using the R programming environment (Version 4.2.0). The data was pre-processed using the tidyverse library (Version 1.3.1) and associated packages (Wickham et al., 2019). To visualize data, boxplots for each variable and group were designed using the CRAN library (Version 0.4.0).

## Results

In this chapter results of the current study will be objectively presented aiming to answer the two research questions imposed for the purposes of this study. The first hypothesis predicted that there will be difference on the impact COVID-19 pandemic had on the mental health between musicians and non-musicians (control). The second hypothesis expected differences on the mental health scores of the musicians who creatively adapted their musical routines during the lockdown restrictions.

### *3.1 Descriptive Statistics for hypothesis 1*

For the examination of the first hypothesis, median values together with Mann-Whitney-U results for musicians vs. controls per psychometric tool (FTUS, PHQ-9, GAD-7, WHOQOL-BREF) are presented in Table 2. As the three tools (PHQ-9, GAD-7 and WHOQOL-BREF) focus on the assessment of mental health, significant difference was accepted at  $p < .05/3 = .0166$  (Bonferroni correction). Based on Spitzer et al., (2006) norms, both groups display clinically significant anxiety. In particular, median of non-musicians ( $Mdn=14$ ) belonged to moderate depression, whereas that of musicians ( $Mdn=15$ ) to moderate to severe depression. Further to that, Spearman's rank correlations between variables of interest for musicians and non-musicians respectively are presented on Table 3. Association strength values ranges from  $.02 > r_s < .85$ . Moderate association for non-musicians were identified between scores of the COVID-19 pandemic and for three of the subscales of the quality-of-life scale. On the other hand, for musicians all mental health variables seem to weakly correlate with FTUS scores.

### *3.2 Inferential Statistics for hypothesis 1*

The first hypothesis expected a difference on the impact COVID-19 had on the mental health of musicians when compared to the control (non-musicians). All Mann-Whitney-U values are greater than the significance value ( $p > .05$ ; table 2). Findings provide no support for this hypothesis. For instance, no significant difference was found between the two groups

on any variables (FUTS, PHQ-9, GAD-7 and/or WHOQOL-BREF). This means that it cannot be supported that the two groups portray differences on the impact the pandemic had on their mental health.

**Table 2**

*Median values for each group (musicians, non-musicians) and for each variable (FTUS, PHQ-9, GAD-7, WHOQOL-BREF subscales)*

	<i>Mdn (1<sup>st</sup> qrtl, 3<sup>rd</sup> qrtl)</i>		<i>U value</i>	<i>p-value</i>	<i>95% C.I.</i>
	<i>Musicians</i>	<i>Non-musicians</i>			
FTUS	3.95 (3.43-4.40)	3.5 (3.4-4.18)	503	.30	(-0.10/0.50)
PHQ-9	15 (12.25-18.75)	14 (11.25-17)	464	.50	(-0.22/0.33)
GAD-7	13 (10-14)	10 (10-16.25)	357	.44	(-0.43/0.14)
<b>WHOQOL-BREF</b>					
<i>Overall QoL</i>	4.00 (4.0-4.75)	4.00 (3.0-4.0)	347	.42	(-10e <sup>-01</sup> /2.38e <sup>-05</sup> )
<i>General Health</i>	4.00 (4.0-5.0)	4.00 (4.0-5.0)	294	.19	(-10e <sup>-01</sup> /3.58e <sup>-05</sup> )
<i>Physical Health</i>	112.00 (96.0-123.0)	114.00 (94.0-124.0)	417	.62	(-12.00/8.00)
<i>Psychological Health</i>	92.00 (80.0-100.0)	88.00 (76.0-96.0)	479	.37	(-4.00/12.00)
<i>Social Relations</i>	48.00 (37.0-55.0)	44.00 (37.0-56.0)	440	.77	(-4.00/ 8.00)
<i>Environment</i>	114.00 (96.0-136.0)	118.00 (108-128.0)	357	.32	(-20.00/4.00)

**Table 3**

*Spearman's rank correlations between variables for musicians and non-musicians*

	1.	2.	3.	4.	4.1	4.2	4.3	4.4	4.5	4.6	
1. FTUS		.39	.35	-	-.03	-.51*	-.46*	-.34	.02	-.50*	
2. PHQ	.06		.85**	-	-.38*	-.33	-.66**	-.62**	-.30	-.41*	
3. GAD	.18	.83**		-	-.28	-.17	-.59**	-.58**	-.19	-.45*	
4. WHOQOL-BREF	-	-	-		-	-	-	-	-	-	
4.1 Overall QoL	.11	-.46*	-.50**	-							
4.2 General Health	-.02	-.46*	-.31	-	-						
4.3 Physical Health	-.20	-.78**	-.62**	-	-	-					
4.4 Psychological Health	.33	-.63**	-.68**	-	-	-	-				
4.5 Social Relationship	.16	-.48**	-.61**	-	-	-	-	-			
4.6 Environment	-.16	-.52**	-.65**	-	-	-	-	-	-		

\*p<.05, \*\*p<.01

### 3.3 Descriptive Statistics for hypothesis 2

For the second Research Question of the study only the group of musicians were involved. Additional questions were asked, requesting them to reflect on their musical routines during the lockdown restrictions. The aim was to examine any differences on the mental health scores 2 years into the pandemic between subgroups of musicians who changed their musical routines. Distributions of the main variables per subgroup are presented via Boxplots in Figure 1. Spearman's rank correlations between variables of interest and musicians' subgroups (musical routines) are presented in Table 4. In particular, there was a positive strong correlation between musical practices and depression. This means that as practice routines decrease in frequency, depression scores increase. Therefore, it can be suggested that the elevated depression scores observed in those who stopped practices during lockdown, are merely explained by their change in their musical routines. No further correlations were observed.

**Table 4**

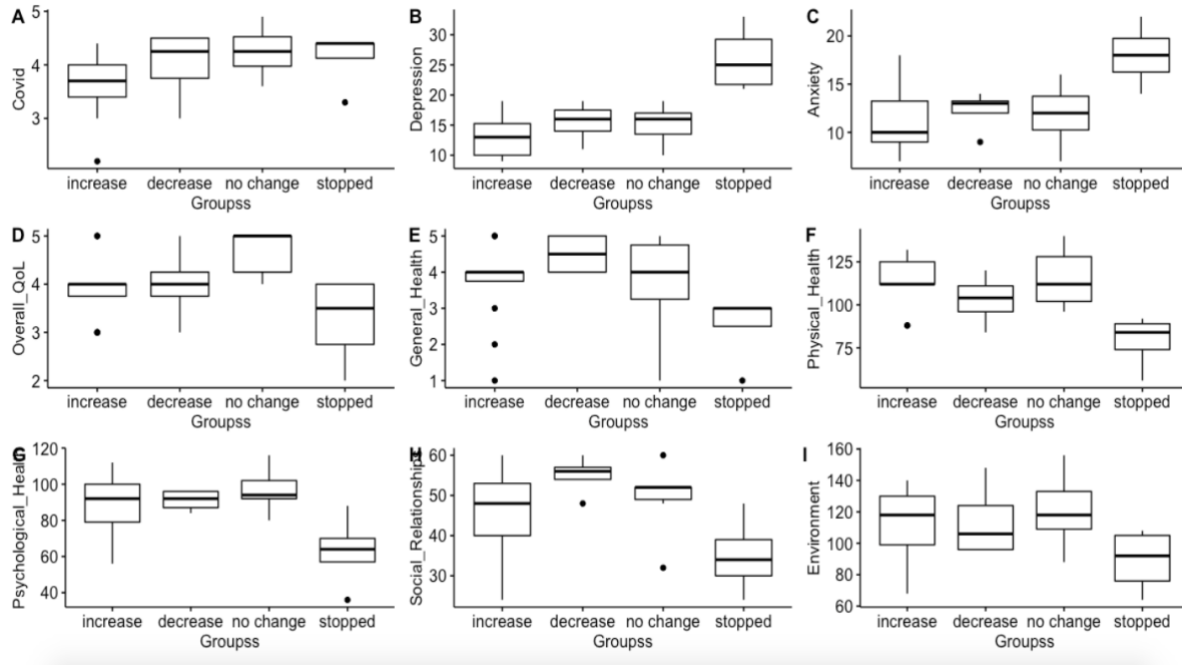
*Spearman's rank Correlation between musical routines (during lockdown) and FTUS, PHQ-9, GAD-7, WHOQOL-BREF subscales*

	FTUS	PHQ-9	GAD-7	WHOQOL-BREF	Overall QoL	General Health	Physical Health	Psychological Health	Social Relationships	Environment
Practice	.44*	.60**	.43*		.05	-.24	-.41*	-.19	-.18	-.22
Performance	-.32	-.37*	-.29		.07	.23	.30	.14	.31	.10

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

**Figure 1**

Boxplots for each group of practice musical routines vs variables of interest (FTUS, PHQ-9, GAD-7, WHOQOL-BREF subscales)



### 3.4 Inferential Statistics for hypothesis 2

As seen on Figure 1, there is a tendency for different mental health scores for the subgroup of musicians who stopped practicing during lockdown. Following this observation, inferential statistics were conducted to test for significance difference between the subgroups. A Kruskal-Wallis test showed that changes in musical practice routines significantly affects depression scores,  $H(3) = 11.60, p = .009$  ( $< .0166$  Bonferroni adjustment). Post-hoc pairwise-comparisons revealed significant differences between those who stopped practicing and the rest of the subgroups (increased / no change / decreased of their practice).

Concerning musicians who were still performing during lock down and those who stopped completely, Mann-Whitney-U tests were performed to test their mental health scores. Even though after the Bonferroni correction no significant comparisons were identified, a difference was observed at the uncorrected significance level -  $p$  value on the depression

scores ( $p < .05$ ). However, the above results should be interpreted with caution, due to the small sample sizes in some of the subgroups.

**Table 5**

*Comparison of Practice Levels between subgroups of musicians (increased / no change / decreased / stopped of their practice) and Levels of Performance (performed/not)*

	Practices (4 levels – increased / no change / decreased / stopped)		Performance (2 levels – performed / did not perform)	
	<i>H</i> (3)	<i>p</i> -value	<i>U</i> value	<i>p</i> -value
FTUS	5.65	.130	144	.092
PHQ-9	11.6	.009	151	.047
GAD-7	7.70	.053	141	.119
WHOQOL-BREF				
Overall QoL	7.54	.057	97	.726
General Health	7.13	.067	77	.223
Physical Health	9.30	.026	68	.115
Psychological Health	7.08	.070	88	.476
Social Relationships	7.53	.057	66	.099
Environment	4.26	.235	92	.605

## Discussion

The aim of this study was to investigate the impact of the COVID-19 pandemic on the mental health of musicians. To examine this, a comparison between musicians and individuals from other non-artistic occupations were conducted. The findings revealed no significant difference between the two groups on all independent variables tested; depression, anxiety, quality of life, suggesting that the pandemic had similar impact on musicians and the rest of the population in Cyprus. Correlation analyses between variables also indicated no associations between FTUS scores and any other mental health variables. On the contrary, as expected, most of the items from the mental health scales were correlated between them, ranging from moderate to high correlations for both groups. This indicates that in all participants, no associations were found between feelings of threat and uncertainty during the pandemic and any mental health variables. As such, it is suggested that in both musicians and

non-musicians, there is no direct relationship between the impact COVID-19 pandemic had on population mental health variables.

In line with the findings reported in this study, other studies have also revealed that the overall effect on population mental health was moderate (Gavin et al., 2021; Hafstad et al. 2021; Sharp et al. 2021). Two studies were recently conducted by Sun et al. (2021) and Pierce et al. (2020) which compare mental health prior- to and during the pandemic. In agreement with this study's results, both studies suggested that while there may have been a brief worsening on the mental health during the early months of the pandemic, there is no strong evidence that mental health in general population has consistently worsened since the beginning of the pandemic (Sun et al., 2021; Pierce et al., 2020; Daly and Robinson, 2021). In greater accuracy, results from both studies found that there was no worsening of mental health from September 2020 and onwards (Pierce et al., 2020; Daly and Robinson, 2021).

While numerous studies have reported moderate effect on mental health, others found an increase in psychiatric morbidity since onset of COVID-19, particularly for levels of depression and anxiety (Gavin et al., 2021; Thorisdottir et al. 2021; Fancourt et al. 2021; Samji et al. 2021). Furthermore, research in the U.S. found strong negative associations with COVID-19 and overall mental health of classical musicians (Wang et al., 2021). However, this study identified loneliness as the indicator that correlated the most. Notably, loneliness was not part of this study's rationale, suggesting that this may be something that could be considered in future investigations.

Further, the second goal of the study was to examine any differences in the mental health between the musicians who stopped any kind of practice and/or performance during lockdown restrictions and those who did not. According to literature, many experienced this "forced" break as a time to be creative and work on their art, whilst others stopped any type of actions altogether (Gelt, 2021; Keller, 2020).



Spearman's rank correlation analysis, followed by test of statistical comparisons were performed to answer the second hypothesis. Descriptive statistics indicated that depression scale, scored higher by musicians who stopped any practice during lockdown, compared to those who either increased, decreased, or made no changes to their routines. Inferential testing indicated significantly statistical comparisons between the participants who stopped their practices during lockdown and levels of depression. No significant differences were found for the rest of the subgroups of musicians. In light of this finding that the musicians who had at least some practice with the musical instruments during lockdown, had no impact on their depression levels. It is worth noting that results should be interpreted with caution, due to the small number of participants.

Findings from a recent research study implies that musicians who are more internally self-motivated seem to be more resilient to the pandemic threats and more capable of managing their practicing routines, whereas more externally motivated musicians experienced a reduction in their dedicated time to practice during lockdown (Lopez-Iniguez et al., 2020). Therefore, it may be suggested that those musicians who stopped practicing during lockdown restrictions, are those who are externally motivated, and those who carried on with their practices are internally motivated. Nevertheless, further investigation should be conducted on this observation, to identify the relationship between motivation and mental health on musicians, as findings here revealed that those who stopped, experience elevated depression scores. Future research should address this issue and examine further this relationship. Practice routines, motivation and mental health should be assessed in more depth, allowing the provision of support to professional musicians by understanding their motivational drives so they can cope with situations that disrupt their professional lives. Differences between the people who creatively adjusted to the restrictions and those who did not should be further examined, as results of the study indicated a strong relationship between depression scores

and those who stopped practices. This would therefore allow for certain adaptations to be done when possible disruptions, like a pandemic, are presented to daily routines.

There are several shortcomings in the current study. First, measuring the impact of the COVID-19 2 years into the pandemic on population mental health poses significant challenges (Gavin et al. 2021). Interpreting the results is complicated due to high variation in population mental distress at different phases of the pandemic, and more specifically to lockdown restrictions imposed at different phases. This can be considered as a limitation of the current study, as such variations could not have been controlled. A second weakness is that this study examines only the impact of COVID-19 on mental health today where restrictions are relaxed and not as intense as they used to be. Differences between individuals of mental health scores prior to the pandemic remain unknown. This may have biased the results of the study, as most of the population today does not feel as threatened as previously by this virus. Another limitation of this study is that data-collection was based on self-report measures, making the reliability and validity of the study questionable. People may have answered in a socially desirable way. A fourth weakness is that participants were asked to answer questions reflecting on their thoughts and feelings from two years ago. It is possible that this may have altered the findings as the responses were based on their memories of that time. Future investigations should examine the inclusion of other mental health variables as well. For instance, another limitation of the current study is that loneliness was not included as a measure, even though there is evidence that supports its significance. It is therefore strongly suggested that further investigations should be conducted on the current topic, including scales of loneliness as well. Lastly, the sample size of the study may be increased to allow for further comparisons to be drawn between gender, and by expanding to other occupations as well.

The impact of the pandemic on the mental health and psychological wellbeing needs further consideration (Berenguera et al. 2021). It is indeed injudicious to draw definitive conclusions on a situation that is still ongoing (Gavin et al. 2021). Nonetheless, much remains unclear and needs to be learned, it now seems good time to reflect on what is known about the impact of the pandemic on population mental health and how this is likely to shape prevalence of mental illness and service needs in the short and long term. Based on the aforementioned, it is therefore suggested that investigations on the impact of the pandemic on population mental health should continue.

In sum, findings from both hypotheses provide insightful information on the relationship between COVID-19 pandemic and the population mental health. Remarkably, no significant differences were found between musicians and people from other occupations on the impact COVID-19 had on their mental health. Most importantly however, is that no strong correlations were found between scores of COVID-19 scale and any mental health variable. This may suggest that the impact the pandemic had on population mental health is moderate. Further investigation should be conducted, however, addressing the limitations of the current study. Furthermore, insightful findings were presented here regarding the mental health of the musicians who stopped their musical routines during lockdown, compared to those who did not. Findings indicated that musical practice routines during lockdown significantly affected depression scores. For instance, the musicians who stopped practicing, had significantly higher depression scores. No significance results were revealed for the rest of the mental health scales. Further research should be conducted with greater sample size, examining the relationship between motivation, musical routines, and mental health.

## References

- Bonneville-Roussy, A., Lavigne, G. L., & Vallerand, R. J. (2010). When passion leads to excellence: The case of musicians. *Psychology of Music, 39*(1), 123-138.  
<https://doi.org/10.1177/0305735609352441>
- Brodsky, W. (2011). Rationale behind investigating positive aging among symphony orchestra musicians. *Musicae Scientiae, 15*(1), 3-15. <https://doi.org/10.1177/1029864910393425>
- Brooks, S. K., Webster, R. K., Smith, L. E., Woodland, L., Wessely, S., Greenberg, N., & Rubin, G. J. (2020). The psychological impact of quarantine and how to reduce it: Rapid review of the evidence. *The Lancet, 395*(10227), 912-920. [https://doi.org/10.1016/s0140-6736\(20\)30460-8](https://doi.org/10.1016/s0140-6736(20)30460-8)
- Cai, C. J., Carney, M., Zada, N., & Terry, M. (2021). Breakdowns and breakthroughs: Observing musicians' responses to the COVID-19 pandemic. *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems*. <https://doi.org/10.1145/3411764.3445192>
- Cohen, S., & Ginsborg, J. (2021). The experiences of mid-career and seasoned orchestral musicians in the UK during the first COVID-19 lockdown. *Frontiers in Psychology, 12*.  
<https://doi.org/10.3389/fpsyg.2021.645967>
- Crosby, P., & McKenzie, J. (2021). Survey evidence on the impact of COVID-19 on Australian musicians and implications for policy. *International Journal of Cultural Policy, 28*(2), 166-186.  
<https://doi.org/10.1080/10286632.2021.1916004>
- Daly, M., & Robinson, E. (2021). Longitudinal changes in psychological distress in the UK from 2019 to September 2020 during the COVID-19 pandemic: Evidence from a large nationally representative study. <https://doi.org/10.31234/osf.io/mjg72>
- Fancourt, D., Steptoe, A., & Bu, F. (2021). Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: A longitudinal observational study. *The Lancet Psychiatry, 8*(2), 141-149. [https://doi.org/10.1016/s2215-0366\(20\)30482-x](https://doi.org/10.1016/s2215-0366(20)30482-x)

- Fram, N. R., Goudarzi, V., Terasawa, H., & Berger, J. (2021). Collaborating in isolation: Assessing the effects of the COVID-19 pandemic on patterns of collaborative behavior among working musicians. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.674246>
- García-Dantas, A., Justo-Alonso, A., Rio-Casanova, L. D., González-Vázquez, A. I., & Sánchez-Martín, M. (2020). Immediate psychological responses during the early stage of the coronavirus pandemic (COVID-19) in the general population in Spain: ISAMEC19 STUDY. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3576927>
- Gavin, B., Lyne, J., & McNicholas, F. (2021). The global impact on mental health almost 2 years into the COVID-19 pandemic. *Irish Journal of Psychological Medicine*, 38(4), 243-246. <https://doi.org/10.1017/ipm.2021.75>
- Hafstad, G. S., Sætren, S. S., Wentzel-Larsen, T., & Augusti, E. (2021). Adolescents' symptoms of anxiety and depression before and during the COVID-19 outbreak – A prospective population-based study of teenagers in Norway. *The Lancet Regional Health - Europe*, 5, 100093. <https://doi.org/10.1016/j.lanepe.2021.100093>
- Hale, T., Angrist, N., Goldszmidt, R., Kira, B., Petherick, A., Phillips, T., Webster, S., Cameron-Blake, E., Hallas, L., Majumdar, S., & Tatlow, H. (2021). A global panel database of pandemic policies (Oxford COVID-19 government response tracker). *Nature Human Behaviour*, 5(4), 529-538. <https://doi.org/10.1038/s41562-021-01079-8>
- Karekla, M., Pilipenko, N., & Feldman, J. (2012). Patient health questionnaire: Greek language validation and subscale factor structure. *Comprehensive Psychiatry*, 53(8), 1217-1226. <https://doi.org/10.1016/j.comppsy.2012.05.008>
- Keller, D. (2020). Everyday musical creativity. *Ubiquitous Music Ecologies*, 23-51. <https://doi.org/10.4324/9780429281440-2>

- Killgore, W. D., Cloonan, S. A., Taylor, E. C., & Dailey, N. S. (2020). Loneliness: A signature mental health concern in the era of COVID-19. *Psychiatry Research*, *290*, 113117.  
<https://doi.org/10.1016/j.psychres.2020.113117>
- Kroenke, K., Spitzer, R. L., & Williams, J. B. (2001). The PHQ-9. *Journal of General Internal Medicine*, *16*(9), 606-613. <https://doi.org/10.1046/j.1525-1497.2001.016009606.x>
- López-Íñiguez, G., McPherson, G. E., & Zarza Alzugaray, F. J. (2022). Effects of threat and motivation on classical musicians' professional performance practice during the COVID-19 pandemic. *Frontiers in Psychology*, *13*. <https://doi.org/10.3389/fpsyg.2022.834666>
- Martin, A., Rief, W., Klaiberg, A., & Braehler, E. (2006). Validity of the brief patient health questionnaire mood scale (PHQ-9) in the general population. *General Hospital Psychiatry*, *28*(1), 71–77. <https://doi.org/10.1016/j.genhosppsy.2005.07.003>.
- Oakland, J., MacDonald, R. A., & Flowers, P. (2012). Re-defining 'Me': Exploring career transition and the experience of loss in the context of redundancy for professional opera choristers. *Musicae Scientiae*, *16*(2), 135-147. <https://doi.org/10.1177/1029864911435729>
- Pierce, M., Hope, H., Ford, T., Hatch, S., Hotopf, M., Kontopantelis, E., John, A., Webb, R. T., Wessely, S., McManus, S., & Abel, K. M. (2020). Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3624264>
- Raine, S., Taylor, I. A., & Hamilton, C. (2021). Crisis as a catalyst for change: COVID-19, spatiality and the UK live music industry. *IASPM Journal*, *11*(1), 6-21. [https://doi.org/10.5429/2079-3871\(2021\)v11i1.3en](https://doi.org/10.5429/2079-3871(2021)v11i1.3en)
- Samji, H., Wu, J., Ladak, A., Vossen, C., Stewart, E., Dove, N., Long, D., & Snell, G. (2021). Review: Mental health impacts of the COVID-19 pandemic on children and youth – a systematic review. *Child and Adolescent Mental Health*, *27*(2), 173-189.  
<https://doi.org/10.1111/camh.12501>

- Sandín, B., Valiente, R. M., García-Escalera, J., Campagne, D. M., & Chorot, P. (2020). Psychological impact of the COVID-19 pandemic: Negative and positive effects in Spanish population during the mandatory national quarantine. *Revista de Psicopatología y Psicología Clínica*, 25(1), 1. <https://doi.org/10.5944/rppc.28107>
- Sharp, M., Serfioti, D., Jones, M., Burdett, H., Pernet, D., Hull, L., Murphy, D., Wessely, S., & Fear, N. T. (2021). UK veterans' mental health and well-being before and during the COVID-19 pandemic: A longitudinal cohort study. *BMJ Open*, 11(8), e049815. <https://doi.org/10.1136/bmjopen-2021-049815>
- Solomou, I., & Constantinidou, F. (2020). Prevalence and predictors of anxiety and depression symptoms during the COVID-19 pandemic and compliance with precautionary measures: Age and sex matter. *International Journal of Environmental Research and Public Health*, 17(14), 4924. <https://doi.org/10.3390/ijerph17144924>
- Spiro, N., Perkins, R., Kaye, S., Tymoszuk, U., Mason-Bertrand, A., Cossette, I., Glasser, S., & Williamon, A. (2021). The effects of COVID-19 lockdown 1.0 on working patterns, income, and wellbeing among performing arts professionals in the United Kingdom (April–June 2020). *Frontiers in Psychology*, 11. <https://doi.org/10.3389/fpsyg.2020.594086>
- Spitzer, R. L., Kroenke, K., Williams, J. B., & Löwe, B. (2006). A brief measure for assessing generalized anxiety disorder. *Archives of Internal Medicine*, 166(10), 1092. <https://doi.org/10.1001/archinte.166.10.1092>
- Sun, Y., Wu, Y., Bonardi, O., Krishnan, A., He, C., Boruff, J. T., Rice, D. B., Wang, Y., Jiang, X., Li, K., Markham, S., Levis, B., Azar, M., Thombs-Vite, I., Neupane, D., Santo, T. D., Tasleem, A., Yao, A., Agic, B., ... Thombs, B. D. (2021). Comparison of mental health symptoms prior to and during COVID-19: Evidence from a living systematic review and meta-analysis. <https://doi.org/10.1101/2021.05.10.21256920>

*There are tough choices facing cash-strapped musicians. An L.A. gig artist explains.* (2021, March 11).

Los Angeles Times. <https://www.latimes.com/entertainment-arts/story/2021-03-11/one-year-covid-anniversary-classical-music-corinne-olsen-freeway-philharmonic>

Thorisdottir, I. E., Asgeirsdottir, B. B., Kristjansson, A. L., Valdimarsdottir, H. B., Jonsdottir

Tolgyes, E. M., Sigfusson, J., Allegrante, J. P., Sigfusdottir, I. D., & Halldorsdottir, T. (2021).

Depressive symptoms, mental wellbeing, and substance use among adolescents before and during the COVID-19 pandemic in Iceland: A longitudinal, population-based study. *The*

*Lancet Psychiatry*, 8(8), 663-672. [https://doi.org/10.1016/s2215-0366\(21\)00156-5](https://doi.org/10.1016/s2215-0366(21)00156-5)

Tsipropoulou, V., Nikopoulou, V. A., Holeva, V., Nasika, Z., Diakogiannis, I., Sakka, S., Kostikidou, S.,

Varvara, C., Spyridopoulou, E., & Parlapani, E. (2020). Psychometric properties of the Greek version of FCV-19S. *International Journal of Mental Health and Addiction*, 19(6), 2279-

2288. <https://doi.org/10.1007/s11469-020-00319-8>

Vance, D., Shah, P., & Sataloff, R. T. (2021). COVID-19: Impact on the musician and returning to

singing; A literature review. *Journal of Voice*. <https://doi.org/10.1016/j.jvoice.2020.12.042>

Vermote, B., Waterschoot, J., Morbée, S., Van der Kaap-Deeder, J., Schrooyen, C., Soenens, B.,

Ryan, R., & Vansteenkiste, M. (2021). Do psychological needs play a role in times of uncertainty? Associations with well-being during the COVID-19 crisis. *Journal of Happiness*

*Studies*, 23(1), 257-283. <https://doi.org/10.1007/s10902-021-00398-x>

Wang, G., Fram, N. R., Carstensen, L. L., & Berger, J. (2022). Characterizing the relationship between

the COVID-19 pandemic and U.S. classical musicians' wellbeing. *Frontiers in Sociology*, 7.

<https://doi.org/10.3389/fsoc.2022.848098>

Webster, J., Nicholas, C., Velacott, C., Cridland, N., & Fawcett, L. (2010). Validation of the WHOQOL-

BREF among women following childbirth. *Australian and New Zealand Journal of*

*Obstetrics and Gynaecology*, 50(2), 132-137. [https://doi.org/10.1111/j.1479-](https://doi.org/10.1111/j.1479-828x.2009.01131.x)

[828x.2009.01131.x](https://doi.org/10.1111/j.1479-828x.2009.01131.x)



Wickham et al., (2019). Welcome to the tidyverse. *Journal of Open Source Software*, 4(43), 1686, <https://doi.org/10.21105/joss.01686>

## Appendices

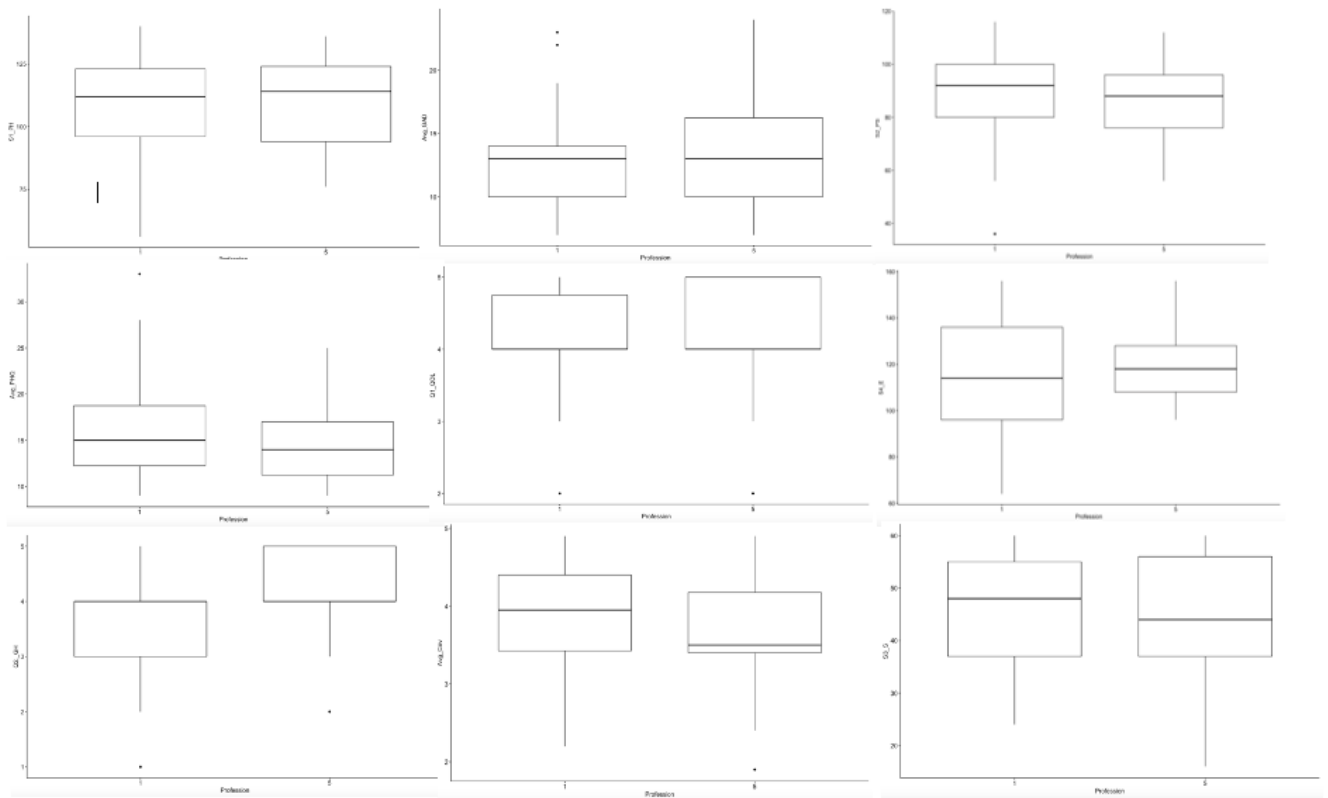
## A. Table with Sociodemographic data for musicians and non-musicians

	<b>Musicians</b>		<b>Non-musicians</b>		
<b>N:</b>	30(F=15)		30(F=15)		
<b>Mean Age:</b>	38.8		39.8		
<b>Sd:</b>	10.9		14.2		
Public Sector	11		6		
Private Sector	12		24		
Freelancer	21		0		
<b>Musicians</b>					
<b>Professional Status</b>					
Professional	Semi- Professional	Amateur	Other		
28	0	0	2		
<b>Type of Music Activity</b>					
Performer	Teacher	Composer	Manager	Other	
25	21	6	3	4	
<b>Music Preferences</b>					
Rock	Jazz	Folk	Classical	Pop	Traditional
6	9	6	20	9	7

## B. PHQ-9 Assessment Tool

<b>Over the <u>last 2 weeks</u>, how often have you been bothered by any of the following problems?</b> <i>(Use "✓" to indicate your answer)</i>	Not at all	Several days	More than half the days	Nearly every day
1. Little interest or pleasure in doing things	0	1	2	3
2. Feeling down, depressed, or hopeless	0	1	2	3
3. Trouble falling or staying asleep, or sleeping too much	0	1	2	3
4. Feeling tired or having little energy	0	1	2	3
5. Poor appetite or overeating	0	1	2	3
6. Feeling bad about yourself — or that you are a failure or have let yourself or your family down	0	1	2	3
7. Trouble concentrating on things, such as reading the newspaper or watching television	0	1	2	3
8. Moving or speaking so slowly that other people could have noticed? Or the opposite — being so fidgety or restless that you have been moving around a lot more than usual	0	1	2	3
9. Thoughts that you would be better off dead or of hurting yourself in some way	0	1	2	3

## C. Boxplots



## Appendix Information regarding your Thesis

Please, enter your information, copy-paste it and send it by email to your supervisor accompanied by the final version of your thesis.



Student ID: *	
Initials & prefix: *	
Last name: *	
Master: *	

*Co-author (if applicable)*

Student ID:	
Initials & prefix:	
Last name:	
Master:	

*Thesis supervisor*

Name supervisor: *	
Name 2nd supervisor: (if applicable)	

*Thesis*

Title thesis: *	
Language of thesis: *	English/Dutch/etc.
Abstract:	

Keywords: (separated by ;)	
Make publicly accessible: *	<u>Yes</u> /No
Or make accessible after date:	(dd-mm-yyyy)

Information entered on: \*

By: \*

\* = mandatory fields