

COVID-19. How did the Coronavirus Pandemic and Lockdown Affect Psychological Functioning? A Micro-study among Romanian Population

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Abstract

Introduction: The Coronavirus outbreak started in 2019 in Wuhan, China, and it spread rapidly all around the world. The actions taken by governments were to isolate the population in order to prevent the spreading of the virus. However, this type of action can have a number of negative psychological effects, such as increased anxiety, depression, fear of death or impaired interpersonal relationships (Wang et al., 2020; Zhang et al., 2020; Shiina et al., 2020).

Objectives: The purpose of this study is to evaluate the effects of the pandemic on depression, anxiety, stress, creativity and optimism among the Romanian population.

Methods: This study was conducted by the use of Millon Clinical Multiaxial Inventory (MCMI), The Fear of COVID-19 Scale (FCV-19S), Hogan Personality Inventory (HPI) and the COPE Scale, but also implied two semi-structured interviews in order to measure the above-mentioned variables. These were applied to 80 participants, of which 40 young adults (19-39 years old) and 40 adults (40-65 years old).

Results: The results show that there are statistically significant differences according to age group in terms of depression, anxiety and stress generated by the coronavirus pandemic, but also changes have been observed concerning creativity and optimism. The young adults obtained higher scores on all the researched variables.

Conclusions: The COVID-19 pandemic has obviously created a state of global uncertainty, as well as provided the context for triggering a psychological crisis, as evidenced by emotional and behavioral changes. This study is a starting point for conducting other researches in order to find ways to address the psychological crisis. Further research can be carried out, taking into account the current context, outside the state of emergency, that allows the direct meeting between the researcher and participants, making possible physical observations, studies on larger samples and also the exploratory research of other psychological variables.

Keywords: coronavirus, COVID-19, pandemic, depression, anxiety, creativity, stress, optimism, coping mechanism

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I. Introduction

The new coronavirus (COVID-19) infection initially broke out in the Wuhan Province, China, in December 2019 and rapidly became a global pandemic in the coming months. Public health emergencies resulting from COVID-19 have had negative impact on the mental health of the population and therefore this disease has led to an increased incidence of psychological crises (Xiang et al., 2020). Corona are viruses that cause respiratory syndromes and other lung infections, such as SARS, MERS or, more recently, COVID-19 which has rapidly spread around the world.

From a psychological perspective, the impact of a pandemic also generates serious effects on the human psyche as well. Isolation, fear of infection, or worse, fear of dying, awareness of the danger that tends to threaten both one's personal life and the lives of their close ones, create the right context for a panic attack or anxiety onset scenario. The perception of the pandemic scale, in the context of a negative news flow, leads to us being more aware of a potential danger that can further worsen the situation, by triggering the chronic stress syndrome, which can cause neuroendocrine changes (Wang et al., 2020). The sudden outbreak of a highly transmissible disease always represents a threat to the mental health of those affected and their close ones. Confirmed patients, persons with suspicion of infection, medical and related staff, close contacts of patients have a higher prevalence of anxiety, depression, anger and other associated psychological problems. Patients may be afraid of death, doctors and nurses who are treating people affected by COVID-19 may experience the fear of infection with the virus and spreading it in the family, to friends or relatives (op. cit., 2020), and burnout. Isolated and quarantined people have to cope with a stressful phenomenon, i.e. they lose face-to-face communication and other common social interventions caused by an outbreak (Zhang et al., 2020). These short-term effects can trigger the onset of adjustment disorders and post-traumatic stress disorder. Moreover, a safe vaccine for the treatment of people affected by COVID-19 has not been contrived up to present. People are not sure when this viral disease will be maintained under full control. The unavailability of the vaccine, the unpredictability of the situation and the quarantine on indefinite periods activate additional stress in the population. Stressful situations can lead to common mental health problems, such as anxiety, depression, etc. Also, the type and quantity of information about COVID-19 on social networks also triggers panic and that can lead to extreme behaviors such as suicide

(Ahmed et al., 2020). Correct and adequate information on the effects of coronavirus will lead not only to limiting the transmission rate, but also to lowering the level of anxiety among people (Shiina et al., 2020). The state of emergency was a special measure instituted in conditions of serious dangers that called into question the safety of citizens. In case of pandemic, the state of emergency revolved around quarantine measures. Isolation and quarantine measures largely generate various adverse reactions, including anxiety, insomnia, overuse of coping mechanisms, or physiological reactions, regardless of gender or age (Loades et al., 2020).

There are a number of studies on people's reactions to anti-COVID-19 measures in different parts of the world, especially in China. It was observed that the travel ban did not have as great an effect on stopping the spread of the virus as social distancing had (op. cit., 2020). The fact that we cannot choose with whom or under which conditions to spend our time determines the accumulation of mental pressure which, if not managed properly, can evolve unfavorably towards other mental illnesses. Depending on one's personality, conditions of life and quality of relations, the response to the deprivation of the right to freedom of movement can have as effects the onset of anxiety disorders and depression in dynamic people, who were used to running, to be active and involved in many activities (Jungmann & Witthoft, 2020) In the case of sedentary people there is a risk that the experience clusters into phobias, various eating disorders, or even psychotic episodes. In both cases, obsessive-compulsive behaviors such as frequent hand washing, excessive disinfection, are frequently associated with anxiety or phobias of illness (Kumar & Somani, 2020). Obsessive-compulsive disorder (OCD) manifests itself by ruminating negative thoughts. In order to obtain a temporary pause from obsessive thoughts, those affected compulsively manifest certain repetitive behaviors. Fear of not becoming infected and preventive measures are predisposing and favorable factors for the onset of OCD symptoms, in the context in which for fear of not becoming infected, some people wash their hands excessively, heavily use disinfectants and continuously live under the pressure of infection risk. Measures that impose certain rules of hygiene and prevention increase the obsessive-compulsive mechanism through more drastic rules and measures, that go beyond the need of the moment, the concerned persons suffering outcomes such as the development of contact dermatitis, or worse, experiencing episodes of panic attacks (op. cit., 2020).

Recent studies show that people are more prone to experience higher levels of depressive symptoms during the COVID-19 pandemic, correlated with the fear of the economic consequences of lockdown (Schmitz et al., 2020). Also, there have been noted considerable changes in anxiety, sleeping disorders, distress and even PTSD incidence (Casagrande et al., 2020). All these variables are negatively affected by the pandemic and the quarantine measures taken by the authorities.

At social relationships level there are behavioral changes in terms of social rejection, the refusal to touch a person or even the repulsion to be touched by a person. Regarding marital or domestic relationships, quarrels arise between partners, caused by acting out current tensions, alcohol, drugs or substances abuse that may result in various forms of violence. Even the sexual dynamics within the couple's relationship can be affected (Schiavi et al., 2020).

In March 2020, the Romanian Government enforced a state of emergency to limit viral transmission and to minimize social contact with people potentially infected by COVID-19. Thus, the Romanian population complied to a 2 months period of restrictions, social distancing, working from home, online school and a mandatory lockdown. People were allowed to go out only for a few, objective reasons, only by means of written statement that showed where they were going, the purpose of the trip and the distance between their domicile and the destination point. As we mentioned, within countries where the lockdown was implemented earlier this year, such rules changed individuals' lifestyle and also affected their anxiety, depression, distress levels and social relationships. The present study aims to analyze the way in which the COVID-19 pandemic, together with the quarantine and isolation measures, influenced certain psychological mechanisms within the Romanian population. As we can see above, there is clear evidence of how the pandemic has affected other populations psychologically. We intend to observe how this pandemic has left its mark on the Romanian population as well.

II. Objectives and hypotheses

Research objectives:

O1: To carry out an analysis on the level of anxiety, stress and depression in the context of the COVID-19 pandemic.

O2: To explore the level of optimism during the state of emergency with perspective in the near and far future.

O3: To perform an analysis of how creativity was affected by the pandemic.

Research hypotheses:

1. We assume that there are statistically significant differences in depression levels, during the COVID-19 pandemic, when comparing individuals aged 19 to 39 years and persons aged 40 to 65 years.

2. We assume that there are statistically significant differences in anxiety levels, during the COVID-19 pandemic, between persons aged 19 to 39 years and those aged 40 to 65 years.

3. We assume that there are statistically significant differences in stress levels, during the COVID-19 pandemic, between individuals aged 19 to 39 years and those aged 40 to 65 years.

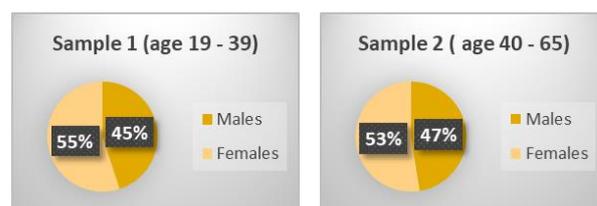
4. We assume that there are statistically significant differences in optimism levels, during the COVID-19 pandemic, between people aged 19 to 39 years and those aged 40 to 65 years.

5. We assume that there are statistically significant differences regarding creativity during the COVID-19 pandemic, between persons aged 19 to 39 years and individuals aged 40 to 65 years.

III. Methods

Participants and procedure

The sample consisted in 80 participants divided into 2 groups: the first group included 40 young adults aged between 19-39 years and the other group consisted of 40 adults aged between 40-65 years. The 19-39 years old group included 18 men and 22 women, from urban areas, having graduated from secondary to higher education, coming from various socio-cultural backgrounds. The 40-65 years old group included 19 men and 21 women, from urban areas, having graduated secondary to higher education, also from various socio-cultural backgrounds. In the context of measures to prevent infection with COVID-19 virus, we resorted to the administration of instruments (questionnaires) online. The distribution of the demographics within the two samples are shown in the graphics below:



The distribution of the demographics within the two samples

The participants voluntarily enrolled in the study, based on an invitation sent online through various social networking websites and the test was nonrandomized. The participants were informed about the purpose of the research and were asked to answer the items as honestly as possible, in order to highlight the feelings and thoughts they had between March 11, 2020 and May 15, 2020, covering the enforced state of emergency period. In order to ensure a favorable climate, the participants were asked to make sure that they were in a comfortable space, without noise or interruptions, before delivering the questionnaires, being offered recognition and validation for their usefulness and responsibility for the answers provided, that would be the basis for processing some conclusions regarding the research hypotheses. The questionnaires were administered during May and June 2020, with a break of several days in between, to avoid boredom and overworking of the subjects. The participants were informed from the beginning that they would receive a series of questionnaires over several days and were asked to maintain the continuity in answers, or on the contrary, to inform the surveyor in the event that, for various reasons, they could no longer be part of the research. The questionnaires were sent to them using Google forms. The inclusion criteria were that the participants be in the two age categories mentioned above and be Romanian.

Design

This study is a non-experimental one, with explanatory design, because we aimed to explain how the COVID-19 pandemic influences certain psychological constructs, by age categories. Also, data collection was performed in a single stage. The COVID-19 pandemic is the independent variable, while anxiety, depression, stress, creativity and optimism are the dependent variables.

Instruments

In order to capture the symptoms of depression and anxiety, we used the "Millon Clinical Multiaxial" Inventory (MCMI) (Craig, 1993), from which we extracted the two scales, Depression and Anxiety. Subsequently, to test the results and associate them with the pandemic context, we applied "The Fear of COVID-19 Scale" (FCV-19S) (Ahorsu et al., 2020), as well as a semi-structured interview, "Anxiety Scale for COVID-19", with items that reveal the psychological impact of the COVID-19 pandemic on the human psyche. The interview was developed for

the present study and included 20 items with four answer options: "Insignificant", "Moderate", "Moderate to unbearable", "Unbearable" and aimed at capturing in a qualitative way the respondents' perception of the pandemic situation, and the level of anxiety and stress accumulated in the pandemic context of COVID-19. Each item was scored according to their selection, so the answers with "Insignificant" were scored with 1 point, "Moderate" with 2 points, "Moderate to unbearable" with 3 points, and the answer "Unbearable" with 4 points. By summing, a minimum score of $20/20 = 1$ and a maximum score of $80/20 = 4$ was obtained, where 1 represented a minimum level of anxiety/ stress, and 4 represented a high score of anxiety/ stress.

Some samples of items are provided below:

"How did you feel about the spread of COVID-19?"

"How did you feel about the social distancing measures?"

"How did you feel about being banned from leaving your home without justification?"

From the perspective of measuring the impact of the pandemic on creativity, we used the Creativity Questionnaire with summative scale and reverse items – Creativity (HPI: Intellectance), Hogan Personality Inventory (HPI) (Hogan, 1992, retrieved from www.researchcentral.ro), in order to measure the level of creativity among the two samples, from the perspective of creative thinking, as a coping mechanism against the negative effects of the pandemic on the human psyche.

The COPE questionnaire on stress management, the COPE Scale – developed by Carver, Scheier and Weintraub (1989), is another tool by which we measured the two research samples' ability to cope with stressful situations. As a result of obtaining high scores on the depression and anxiety variables, as well as poor coping to stress among the young adults sample (19-39 years), we applied a new qualitative semi-structured interview, also developed for this research paper, which we named "The Optimism Scale", with specific items to capture the perceptual attitude of subjects resulting in the level of optimism in the COVID-19 pandemic context. The interview included 10 items numbered from 1 to 10, with 5 answer options on a Likert scale "1 = Strong disagreement", "2 = Disagree", "3 = Neither agree, nor disagree", "4 = Agreement", "5 = Strong agreement". The questions did not involve right or wrong, "good" or "bad" answers and did not have a high degree of difficulty.

As examples of items there are:

“Do you consider life expectancy has dropped?”

“Do you consider that humanity will soon recover from a severe economic crisis?”

“Do you appreciate that the level of education of children will decrease during the pandemic?”

“Do you appreciate that people will be psychologically affected by this pandemic?”

IV. Results

In order to test the research hypotheses, the collected data were statistically processed using the SPSS program. We used the independent samples t test and the Pearson correlation test. The statistical analysis reported the following statistical indices: at a significance threshold of less than .005, df 78 (compact samples, only 2 participants being eliminated), it shows that there are statistically significant differences between the two samples in terms of the level of affective and cognitive mechanisms which were affected by COVID-19 pandemic, but also indicates strong correlations, both positive and negative, between the associated variables, as it follows:

Anxiety: The t test shows that there are statistically significant differences regarding the level of anxiety between the two samples of the research. Young adults scored higher than adults on this variable on the MCMI questionnaire. This result is completed by a statistically significant result obtained following the analysis of the answers to the Fear of COVID-19 questionnaire, but also to the semi-structured interview.

Depression: The t test indicates that there are statistically significant differences regarding the level of depression between the two samples of the research. Thus, young adults scored higher than adults.

Stress: The t test shows that there are statistically significant differences regarding the stress level between the two research groups. Young adults scored lower than adults on the coping to stress scale.

Creativity: The t test reveals statistically significant differences regarding the level of creativity between the two samples of the research. Young adults scored higher than adults.

Optimism: The t test shows that there are statistically significant differences regarding the level of optimism between the two groups. Young adults scored higher on the optimism scale than adults. All the results are shown in the table below:

Variable	Mean (19-39 sample)	Mean (40-65 sample)	p (sig 2-tailed)
Anxiety (measured with MCMI)	77.6750	56.2500	.000
Anxiety (measured with Fear of COVID-19 questionnaire)	18.5500	15.0250	.016
Anxiety (measured with Semi-structured interview)	2.4175	1.7875	.000
Depression	67.6750	38.7000	.000
Stress	2.4163	3.0668	.000
Creativity	4.2175	3.6750	.000
Optimism	3.5400	2.6750	.000

V. Discussion

As noted above, the obtained data showed statistically significant differences between the two groups, confirming that the participants categorized according to the research criteria experienced differently the effects of the COVID-19 pandemic. All the research hypothesis were confirmed. Thus, the group of young adults aged between 19-39 obtained much higher scores in the tests for depression, anxiety and stress compared to the group of adults aged between 40-65 years. Paradoxically, although they proved to be much more anxious and depressed, young people scored much better in tests measuring creativity and optimism, compared to the adults group (40-65 years), which shows that cognitive mechanisms were more stimulated in young adults than in elder persons. From a psychological point of view, these results could be explained as provided bellow.

Regarding depressive symptoms, the results complement other recent studies that suggest the influence of the pandemic on depressive changes (Bueno-Notivol et al., 2020). Although the cited authors did not make a difference by age group, this study shows that young adults have a higher prevalence of depression in general. Even if, paradoxically, during lockdown, young individuals stated that they found more activities helping them to better cope with the situation (cooking, online courses, painting or other artistic activities), it is possible that these symptoms appeared after the end of the state of emergency. The fact that the individuals no longer needed to be isolated, worrying related to economic challenges, having less life experience or even being worried for their older parents who fell into the most vulnerable category (persons over 66 years) could

be explanations for such results. However, the validation of these explanations can be done by developing other studies in this direction.

Interpretation of high levels of stress and anxiety can be explained by the same mechanisms. The phenomenon called cyberchondria (Jungmann & Witthoft, 2020), i.e. the compulsion to check the news on the Internet, can also have this significant effect on increasing the level of anxiety. Young adults are the ones who have more access and use the internet as a main source of information more than the older adults, which may explain the difference between these two age categories. Statistics show that in 2019 persons between the ages of 16 and 34 used the Internet in a proportion of 95.9%, those between the ages of 35 and 54 in a proportion of 89.5%, while those over the age of 55, in a proportion of only 59.9% (National Institute of Statistic, România, 2019). Anxiety, but also depression, generate to a certain extent the level of stress, present more in young adults (Shader, 2020). Similar studies show that older adults show low levels of stress, depression and anxiety (Gorochategi et al., 2020).

In terms of optimism and creativity, young adults have a creative, energetic base, their thinking is more flexible and they have better mental flexibility for out of the box solutions. They believe the future holds a much better potential, related either to their personal goals or to the group they belong to, and implicitly, the more optimistic they feel, the more creative they are. Even if they obtained high scores on depression and anxiety, these results reveal the ability of young adults to adapt to and even find solutions to cope, on a longer term, with the effects of the pandemic.

Research limits and future study directions

The pandemic context also created certain limits in terms of conducting and implementing the research study. The results of our research are verified only on the studied samples and not on the entire population which the subjects belong to. It is, however, one of the first specialized studies in Romania, and the conclusions of the paper could be considered a starting point in addressing effective psychosocial strategies for the mental health recovery of the population affected by the COVID-19 pandemic, in order to initiate specific studies disaggregated according to age categories, to capture conclusive data that could serve specialists as viable tools for designing specific effective psychological recovery measures.

Also, the context in which the research tools were applied (online), the lack of interaction with the

subjects, as well as the impossibility of using the method of direct observation of the subjects' behavior can be considered serious limitations, the study being based only on the results obtained in the tests, without a second verification ensured by the direct observation of the subjects' conduct, which could have provided valuable data on the accuracy of capturing the perception of the effects of the COVID-19 pandemic on the psychological mechanisms of an affective and cognitive nature.

Because of this, it is possible that the participants responded desirably, being influenced by the pandemic situation at that time and perhaps even by the catastrophic news in the media. Therefore, perhaps conducting a retest a few months after the first administration could have given us even clearer results on the measured variables. However, extending the study in this direction may be a way to improve this limit. Moreover, in the study we considered only some of the variables. The literature shows that there are even more influences of the pandemic, especially in the direction of interpersonal relationships. Thus, extending the study in this direction can provide us with more complex results.

In order to improve this study, further research can be carried out, taking into account the current context outside the state of emergency that allows the face to face organization of interviews and physical observations.

On the other hand, the study can be continued and improved by studying an important new aspect, "the impact of wearing a protective mask on hearing perception". Hearing perception is a mechanism to process information, which, in the context of wearing a protective mask, may be affected, giving a false sensation of deafness, in the sense that, because of the impossibility to perform "lip reading", by which the brain decodes the message much faster, the message is decoded only on the basis of the information provided by the sound waves, which also suffer distortions from wearing the protective mask; the communication is also deprived of facial expression.

Last but not least, a future study guideline could be to develop a model of psychotherapeutic intervention regarding the self-regulation and management of maladaptive states generated by pandemics and quarantine.

VI. Conclusions

The COVID-19 pandemic has created a state of global uncertainty and has triggered a psychological crisis, as evidenced by emotional and behavioral

changes in the population. The mystery of the symptomatic manifestation and the lack of a panacea further increase the degree of uncertainty, as well as awareness of an imminent danger that the human psyche processes through alertness, depression and a high level of distress, anxious manifestations, such as the “fight, flight or freeze” stress response, effects that are perceived differently between the age groups. The present study aimed to analyze how this pandemic affected certain mental mechanisms, on the two mentioned samples of Romanian citizens.

Thus, we focused on a comparative analysis of the psychological effects of the COVID-19 pandemic and of the lockdown measures on two samples from the Romanian population, selected from two different age categories. We wanted to see if there are differences in the psychological effects of the pandemic depending on the age of the subjects. The application of questionnaires and analysis of results shows that in young adults, from the age group 19-39 years, the impact of the pandemic was more intense than for those from the age group 40-65 years.

These results are consonant with other studies (Grossman et al., 2021), which show that older adults have slightly lower levels of anxiety or depression, and also with studies that show that levels of anxiety, depression or stress are negatively affected by the pandemic (Marroquin et. al. 2020). However, the cited studies show that young adults have more dysfunctional coping mechanisms, while the results of this research reveal the opposite, namely that young adults have better coping mechanisms, their level of creativity is higher and they are more optimistic.

The study also presents important foundations for future research on this topic. The way this pandemic affects a person, mentally and socially, is not fully known. Just as little explanation has been found so far about how the virus spreads and infects, so have psychology studies tried to see how pandemic implications also affect one’s mental state. In this context, this micro-study, by extrapolating it to a larger scale of the population, and also by monitoring the psychological effects for a longer period of time, as well as by introducing several variables, can become a more appropriate model to explain the phenomenon of COVID-19.

Also, the results obtained can outline more appropriate models of psychotherapeutic intervention to help people integrate the psychological experience of the pandemic and find ways to adapt to the global situation. Even if this paper is a small-scale study, we

managed to capture some important, although limited, aspects from the perspective of the magnitude of the event and the range of subjects. As mentioned above, there are some limitations, but also a number of perfectible factors which, with adequate tackling, could bring clearer, more generalizable insights on the effects that a pandemic generates on the human psyche. However, the need to be aware and bring to light the negative effects that require an immediate approach is as vital as possible, in order to reduce the magnitude of a possible disaster created by a mental crisis. This study is a starting point for conducting other researches in order to find ways to combat the psychological crisis generated by the COVID-19 pandemic.

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