UDK: 159.913:616.98-057.875 Originalni naučni rad https://doi.org/10.19090/pp.20.4.427-447

# Ognen Spasovski<sup>1</sup> Nikolina Kenig

Department of Psychology, Faculty of Philosophy, University of SS. Cyril and Methodius in Skopje

# PSYCHOLOGICAL WELL-BEING IN STUDENTS DURING SELF-ISOLATION DUE TO THE COVID-19 PANDEMIC

The COVID-19 pandemic resulted in lock-down measures being imposed by the government of North Macedonia. Conditions of self-isolation have direct effects on mental health. We researched the possible protective factors of psychological well-being. A total of 510 college students from the biggest university in the country (70% females,  $M_{\text{age}}$  = 21.12 years, SD = 1.58) responded to a structured online questionnaire, one month after the country's lock down. Multiple linear regression analysis was performed on hypothesized protective factors of well-being. Results showed that significant predictors of the psychological well-being in conditions of isolation are: perceived social support during self-isolation, self-engagement in physical exercises, perception of being adequately informed about the virus and the ways of protection, and the tendency to hold conspiracy explanations about the virus and pandemic. Perception of medical and restriction of movement measures, together with self-engagement in reading /watching movies, were not significant predictors. In the face of the expected further difficulties with the pandemic, policy creators and the scientific community should develop well-thought out strategies, tailored to different groups, in order to provide appropriate support to people to cope with pandemic, to adequately communicate the necessary medical and restriction measures and all important information about the virus and pandemic. especially in order to manage with the complex role of the conspiracy theories which could undermine confidence in the health system.

1 Correspondence author email: ognen@fzf.ukim.edu.mk

Primljeno: 12. 07. 2020. Primljena korekcija: 28. 10. 2020. Prihvaćeno za štampu: 11. 11. 2020. **Keywords**: conspiracy theories, COVID-19, protective factors, psychological well-being, self-isolation

### Introduction

In December 2019, a novel virus (SARS-CoV-2) was identified in China and soon spread across the world. In order to prevent further spread of the disease, most of the governments-imposed lock-down measures of different scopes. The situation in North Macedonia did not significantly differ. In order to reduce contact between people, and thus prevent further spread of the disease, most of the governments, aside from hygiene-related recommendations, based their approaches on securing social distancing between people, especially for populations under higher risk. This approach was mostly based on imposing lock-down measures of different scopes. The situation in North Macedonia did not significantly differ, either in imposed measures, or in figures about infected and fatal cases (per capita). National crisis authorities announced lock-down measures on March 11, which lasted until mid-June, closing educational institutions at all levels, as well as non-essential industries, imposing a curfew of variable length, and making a strict demand for self-isolation.

Such prolonged self-isolation is a severe change, which frustrates and disrupts many people's needs and daily routines. Drawing on experiences from previous pandemics, Brooks et al. (2020, p.1), in January 2020, emphasized the importance of studying the impact of quarantine on mental health, predicting the potential risk of increases in "posttraumatic stress symptoms, confusion, and anger". Studies on general population samples, soon confirmed that the spread of the coronavirus and quarantining had negative psychological impacts globally, from China (Qiu et al., 2020; Wang et al., 2020; Zhang & Ma, 2020), to Italy (Rossi et al., 2020) and Croatia (Lauri Korajlija & Jokic-Begic, 2020). Nevertheless, findings about the psychological effects of self-isolation on the college students' population are not coherent. Studies on college samples reported that pandemic has low to medium effects on psychological well-being and mental health. While Li et al. (2020) reported significant increase in anxiety and depression symptoms in college students in China, Cao et al. (2020) on another college student sample in China found that only 0.9% had severe anxiety symptoms, 2.7% had moderate anxiety and 21.3% experienced mild anxiety. Liang et al. (2020) found that the rate of psychological help-seeking was low, with college students in poor psychological condition seeking psychological counselling more. Elmer et al. (2020) conducted a longitudinal study on college sample in Switzerland, investigating the mental health of the participants before and after the pandemic. The authors found that students' levels of stress, anxiety, loneliness, and depressive symptoms got worse, compared to measures before the crisis. In the United States Kecojevic et al. (2020) found that students experienced increased levels of anxiety, depression and academic difficulties, while Son et al. (2020) found that lock-down measures and self-isolation restrictive measures have moderate negative impact on students' mental health. In Ethiopian college students' sample, Aylie et al. (2020) found moderate rates of depression, anxiety, and stress of 21.2%, 27.7%, and 32.5%, respectively - as a result of the pandemic. Sundarasen et al. (2020) conducted a study on Malaysian college sample and reported that 20.4%, 6.6%, and 2.8% of participants respectively - experienced minimal to moderate, significant, and extreme levels of anxiety.

Whereas negative effects of self-isolation on psychological well-being are already well documented, research on factors that could protect and contribute to well-being is scarce. Knowing that well-being influences health (Diener et al., 2017) and contributes to the boosting of the immune system, makes exploring the predictors of well-being during the pandemic even more important.

### Psychological Well-Being during Self-Isolation

The conceptualization of well-being has a long history. Aristotle considered flourishing as the ultimate goal of human existence (Robinson, 1989). Flourishing is understood as the relative absence of experiences of suffering in life, and the relative presence of positive ones (Seligman & Csikszentmihalyi, 2000). In recent years, Seligman's theory of well-being (2011; 2018) has enriched the field, encompassing fundamental elements of life that people pursue and value for their own sake. The five components of psychological well-being in his theory are: positive emotional experiences (P), engagement (E), positive relationships (R), meaning (M), and competent achievement (A). Positive Emotion refers to the affective component or feeling well, Engagement denotes the deep psychological involvement in a valuable activities, Relationships component deals with the perception of quantity and quality of social connections, Meaning reflects to personal sense of significance in regards to own life and, finally, Accomplishment refers to success, as self-evaluated, in reaching both external and internal goals.

Lock-down measures and self-isolation due to COVID-19 pandemic may pose severe challenges and obstacles to the fulfilment of these components of well-being. In a study that Main et al. (2011) conducted on college students during the SARS outbreak in 2003, they found that participants' psychological well-being was influenced by several factors: their perception on how well they are informed about the pandemic; how they perceive and react on governmental measures of restriction of movement; and, how they perceive and react on medical protocols (for prevention of disease spread). They concluded that proactive behaviour toward these measures, as well as the adequate social support during self-isolation - served as adaptive factors in coping with SARS-related stressors and contribute to psychological well-being. Lyubomirsky et al. (2005) and Ryan and Deci (2017) have provided empirical evidence that intentional, deliberate engagement in personally meaningful activities contribute to sustainable psychological well-being, and such activities could be behavioral (e.g., sports), volitional (e.g., striving to achieve a personal goal) or cognitive

(e.g., reading, studying). Furthermore, based on data from previous epidemics, Brooks et al. (2020) concluded that information is crucial for the people during the self-isolation. People need to be adequately informed about the virus and pandemic, and how to be protected. In a situation like COVID-19 pandemic, media are overflown by various information about the origin of the virus and about the spread of the disease, with overproduction of conspiracy explanations. People variously process and handle with that enormous quantity of information, with some of them believing more in official authorities' statements, and some tend to accept and believe conspiratorial explanations (Groh, 1987). Considering these aspects, the focus of our interest in this study were several cognitive and behavioural factors related to conditions in self-isolation due to pandemic, which could affect fulfilment of the components of psychological well-being. Those factors are: the perceived social support during selfisolation; perception of governmental measures for restriction of movement, as well as the medical measures - as beneficial; self-engagement in physical exercises and reading or watching movies; perception of being adequately informed about the virus and ways of protection, and what explanations about the virus and pandemic people accept and develop as their personal beliefs.

To have appropriate social support and fulfilled basic need for relatedness is beneficial to someone's psychological well-being, what is documented in various cultures (Church et al., 2013; Reis et al., 2000; Seligman, 2011), as well as on Macedonian college students (Spasovski, 2013). Perception of receiving adequate social support could specifically mitigate the negative influence of anxiety in a crisis like the COVID-19 pandemic (Cao et al., 2020). Son et al. (2020) on USA students sample found that lack of social interaction and social support during the self-isolation due to COVID-19 pandemic is related to decrease in well-being. Similar findings reported Elmer et al. (2020) in a longitudinal study on Swiss sample of undergraduates.

Reynolds et al. (2008) pointed out that lock-down measures frustrate people's needs and daily routines, while Brooks et al. (2020) noted that most of the adverse effects in quarantine come from the restriction of liberties. Consequently, if people perceived lock-down restrictions and protocols as beneficial for their safety and health, it could lead them to comply with the measures. Such a reaction is expected to be related to lower levels of distress, it could provide meaningful explanation when facing the restrictions in daily routines, and could finally contribute to a sense of overall well-being (Deci & Ryan, 2000; Seligman, 2011). In a study conducted in US on a college students in self-isolation due to the COVID-19 pandemic, Kecojevic et al. (2020) found that complying with the medical measures, as well as with the measures for social distancing - as prevention from infection - was positively related to participants' well-being. In our study, we are focused on the possible relationship between the perceiving the measures as beneficial and psychological well-being. We differentiate two types of measures: the medical measures meaning complying with the recommendations coming from medical/health authorities for frequent hands washing, sanitizing and disinfecting surfaces; and, measures imposed by the government for restriction of movement, social distancing and self-isolation.

Psychological well-being could be also influenced by the way how people occupy their time during self-isolation. Lyubomirsky et al. (2005) and Ryan and Deci (2017) have shown that intentional, deliberate engagement in physical exercising and reading could contribute to sustainable psychological well-being. Lades et al. (2020) provided similar results on an Irish sample of general population during the COVID-19 pandemic.

During every crisis in the society, like pandemic is, people face with uncertainty and unanswered questions (Groh, 1987). In their review on psychological effects of quarantining due to epidemics on well-being, Brooks et al. (2020) point out that information is a key factor for people. The deficit of quality and reliable information about important situations produces stress and a lack of clarity, which leads people to fear the worst (Desclaux et al., 2017; Reavley et al., 2011). Therefore, a personal sense of being adequately informed about the crisis reduces stress, and provides meaning about the actual circumstances, which ultimately contributes to well-being (Seligman, 2011).

Every pandemic produces the fear of being infected and creates anxiety due to the ensuing uncertainty about the future. For many people it is difficult to find acceptable answers, especially in a situation which is complex and hard to understand. Countless theories about the origin of the SARS-CoV-2 virus and the reasons how it spreads were generated, especially on social media. Grzesiak-Feldman (2013) pointed out that high-anxiety situations increase conspiracy thinking, making people more prone to blame some individuals, group(s) or institution(s). A conspiracy theory is defined as the conviction that a group of actors meets in secret with the purpose of attaining some malevolent goal (Bale, 2007). Conspiracies are involved in almost every significant event in society (Groh, 1987; Moscovici, 1987). It is often reported in the scientific literature that conspiracy beliefs have harmful consequences for social life, such as decreasing engagement with politics and influencing people's health and environmental decisions (Douglas et al., 2015), as well as influencing their attitudes, intentions, and behaviors (Douglas & Sutton, 2018). They may provoke political polarizations among people and science denialism, and may lower intention to remain in the workplace (Jolley et al., 2020). In another study, Chen et al. (2020) reported that social workers who believe in COVID-19 conspiracies show lower levels of mental health. Acceptance of conspiracy theories is also related to a belief in the world as a dangerous place or as a competitive jungle (Lantian et al., 2020).

Considering such negative consequences of conspiracy beliefs, it is intriguing why they exist in high proportions among the people? According to Douglas and Sutton (2015), almost half of the American citizens believe in some conspiracy theory. Searching for an answer, many authors have investigated some possible beneficial aspects of conspiracy beliefs (for detailed review see: Bale

2007; Goertzel 1994; Leman 2007; van Prooijen, 2018). Van Prooijen and van Vugt (2018) suggested that conspiracy beliefs have roots in evolution. They may be a by-product of several psychological adaptations: to recognize patterns, as in COVID-related events; or, to detect agency (like the belief that some organizations, firms or institutions intentionally spread the virus in order to reap profits from the sale of vaccines, or even to inject nano-chips in human bodies). Alternatively, the inclination toward conspiracy beliefs is seen as an evolved adaptive mechanism of the human coalitional mind, serving to alert our ancestors to the possibility that other people were making malevolent coalitions against them, and consequently urge them to appropriately prepare for defence. It could be concluded, that contrary to the interpretation that holding conspiracy beliefs is pathological (Hofstadter, 1966), such beliefs are in fact omnipresent both in modern and traditional societies (West & Sanders, 2003), and that a great part of the human population believes such explanations because they provide simple answers for otherwise unanswered questions, and an enemy to blame for the problem (Goertzel 1994). Conspiracy beliefs help people to explain anxiety-inducing events, and thus allows them to retain a sense of safety and predictability (Bale 2007; Leman 2007). Built on these assumptions, we were focused on potential relation between believing in COVID-19-related conspiracy explanations and well-being during the pandemic.

### **Study Aims**

Differently to the majority of studies focused on the negative factors of self-isolation on mental health, the aim of this original empirical study was to examine factors that contribute to psychological well-being under the conditions created by the lock-down measures and self-isolation due to the COVID-19 pandemic. On the basis of previous research findings, it is justified to expect that the perception of adequate social support during self-isolation, perception of governmental medical measures and measures for restriction of movement as beneficial, self-engagement in physical exercises and reading or watching video contents; perception of being adequately informed about the virus and ways of protection, and tendency to hold conspiracy explanations about the SARS-CoV-2 virus and pandemic, contribute to psychological well-being in students.

#### Method

## Sample and Procedure

The convenience sample was comprised of undergraduate students from four randomly selected faculties (Philosophy, Architecture, Information Technologies and Mechanical Engineering), from the biggest state university in the country. They were all contacted via their student email accounts. 510 students (31% response rate, 70% female,  $M_{\rm age}=21.12$  years, SD=1.58, age range = 18-28) volunteered to complete the survey. The vast majority of respondents (91%) declared themselves to be ethnic Macedonians, 2.7% to be ethnic Serbs, 2.5% to be ethnic Albanians and the remaining 3.8% to be of either Roma, Turkish, Vlach or Bosniak ethnic backgrounds. There were no significant variations in the isolation-related conditions of the respondents during the period of data collection. Majority of them were in isolation at their homes (96.3%), with 87.3% of them being in isolation together with their parents or other relatives, and less than 20% were in isolation for a period shorter than three weeks. According to the provided answers, none of the participants was infected by Sars-Cov-2. Also, the vast majority of them (97.4%) did not have a relative or acquaintance infected by Sars-Cov-2.

All subjects participated on a voluntarily basis, without any incentive. The informed consent for their anonymous participation was obtained by accepting the explanations on the purpose of the study and the conditions presented in an introductory text sent to their e-mail addresses. The access to the participant's e-mail addresses was approved by the relevant authorities. The collection of data took place from April  $10^{\rm th}$  -  $18^{\rm th}$ , 2020, one month after the country's complete lock down.

The research design and procedure are in accordance with the APA ethical principles for human research, recognized by the Psychological Chamber of the Republic of North Macedonia. The authors were not granted any financial support for this research. The data that support the findings of this study are openly available in figshare, at https://doi.org/10.6084/m9.figshare.12480350.v1 (Spasovski & Kenig, 2020).

#### Instruments

### Questionnaire on Well-Being Protective Factors in Isolation

The questionnaire was constructed specifically for the purpose of this study, consisting of questions on both the relevant socio-demographic and contextual characteristics (location in which they were self-isolated and with whom, and length of self-isolation) along with the variables hypothesized to be connected with different aspects of psychological well-being: 1. Explanations of the origin of the COVID-19 pandemic, 2. Perception of the official medical (PMM) and restriction of movement measures (PMM) with six items, on a scale from 1-complete disagreement to 4-complete agreement, 3. Perceived level of social support during the evaluated period of isolation (PSSI), 4. Self-evaluation of how adequately one is informed about the virus and how to protect oneself from getting infected and (PAI) 5. Self-engagement with protective meaningful activities - physical exercises (SEPE) and reading/watching movies

(video contents) (SERM). The last three variables were self-assessed on a scale ranging from 1-poor to 4-very good.

In order to determine the most frequent conspiracy theories that college students use to explain the current pandemic, prior to administering the questionnaire online, we conducted six focus-groups with 46 students in total. They were selected from the target population and separated in 6 different groups, according to study year, gender and field of study/faculty. These participants didn't take part in the collection of quantitative data. The thematic analysis of the statements provided by the participant in the focus groups identified nine different explanations that were consequently organized into two categories: 1. *Conspiracy theories* (which include the following explanations: that the virus has been deliberately spread as a means of creating an economic crisis, or for the sake of the profits of Big Pharma; that it is a consequence of installing 5-G nets; that it is a form of manipulation for the sake of either controlling, or inserting chips into people; and finally that it is a laboratory experiment that has not been well controlled), 2. Non-conspiracy explanations (that the pandemic is a result of either huge class differences, or the result of nature's ecological imbalance, a natural occurrence, probably a mutation of the SARS-CoV-2 virus or a consequence of skewed values). Thus, a dichotomous variable Explanations about the virus and pandemic (EAV) was created, with 240 (47.1%) responses classified in the first category, and 251 (49.2%) in the second one. The responses of 19 participants (3.7%) could not be classified and were omitted from the analysis.

### The PERMA-Profiler

The second part of the survey was comprised of the 23 PERMA-Profiler items (Butler & Kern, 2016), which is a self-reported multi-dimensional instrument based on Seligman's (2011) model of defining well-being. Each item is scored on a Likert-type scale from 0 (not at all) to 10 (completely), or 0 (terrible) to 10 (excellent), where higher scores indicate greater well-being and vice versa. It has 7 subscales: *Positive Emotion (P), Engagement (E), Relationships (R), Meaning (M), Accomplishment (A)*, perceived *Health (H)* and the *Negative Emotion* subscale (along with a single item for *Loneliness*). The last two subscales were not part of our research. The Overall well-being PERMA score is a mean of all PERMA items and the single item for happiness. The Cronbach alpha coefficients of internal consistency of all subscales, as well for the overall scale for the current sample are generally acceptable and are presented in Table 1.

### **Data Analytic Plan**

Descriptive statistics were calculated for all PERMA subscales, including Overall well-being and for the protective factors of well-being. Taking into account the levels of measurements of the other included variables, we used either Pearson or point-biserial correlations, in order to test the hypothesized relations between the measures we got for factors of well-being in selfisolation, and the level of psychological well-being. We than used a multiple regression analysis in order to establish a model of prediction of psychological well-being based on protective factors as predictors. The statistical analysis was performed by using the IBM SPSS Statistics (Version 17).

### Results

Table 1 contains detailed, descriptive information on the included continuous variables in the study. As seen from the reported averages, participants exhibited a strong tendency towards reporting considerably high levels on all but one measure - Self-engagement with physical activities.

Table 1 Descriptive statistics for the included continuous variables (n = 510)

					,		
	М	SD	Mdn	Min	Max	N	α
PERMA							
Positive emotion	6.38	2.05	6.67	0.00	10.00	3	.86
Engagement	7.26	1.77	7.67	0.33	10.00	3	.56
Relationships	7.26	2.11	7.67	0.00	10.00	3	.78
Meaning	6.96	2.22	7.33	0.00	10.00	3	.86
Accomplishment	6.33	1.91	6.67	0.33	10.00	3	.74
Overall Well-Being	6.85	1.64	7.12	0.94	10.00	18	.92
Perception of medical measures	3.41	0.64	3.67	1.00	4.00	3	.84
Perception of the restriction of movement measures	3.29	0.82	3.67	1.00	4.00	3	.90
Perceived social support in isolation	3.28	0.86	3.50	1.00	4.00	1	-
Perceived adequacy of being informed about the virus	3.64	0.64	4.00	1.00	4.00	1	-
Self-engagement with reading / movies	3.75	0.53	4.00	1.00	4.00	1	-
Self-engagement with physical exercises	2.70	1.03	3.00	1.00	4.00	1	-

Note. M - mean; SD - standard deviation; Mdn - Median; Min/Max - minimal and maximal score; N – number of items;  $\alpha$  – Cronbach's reliability coefficient.

Table 2 shows the relationship between the PERMA components and different variables hypothesized as being supportive factors for well-being during self-isolation. Overall well-being is significantly related to all of them except Self-engagement with reading and watching movies. The strongest correlations were those with Perceived social support and Self-engagement with physical activities.

Table 2
Correlation coefficients of PERMA components with the protective factors of well-being

	PSSI	PAI	SERM	SEPE	PMM	PRM	EAVa
N	510	510	510	510	510	510	491
Positive emotion	.32**	$.14^*$	.03	.29**	$.10^{*}$	.08	11*
Engagement	.18**	.02	00	.19**	.14**	.12**	12*
Relationships	.43**	.09*	.03	.17**	.13**	.14**	08
Meaning	.28**	.15**	.08	.29**	.12**	$.09^{*}$	13**
Accomplishment	.22**	.13*	.03	.32**	.11**	.07	10*
Happiness	$.30^{*}$	$.10^{*}$	.02	.23**	.11**	.03	07
Overall Well-Being	.37**	.15**	.04	.32**	.14**	.12*	13**

Notes. PSSI - Perceived social support during self-isolation; PAI - Perception of being adequately informed about the virus and ways of protection; SERM - Self-engagement in reading/movies; SEPE - Self-engagement in physical exercises; PMM - Perception of medical measures as beneficial; PRM - Perception of governmental restriction of movement measures as beneficial; EAV Explanations about the virus and pandemic.

<sup>a</sup>The variable was dichotomized and coded as: 0 - non-conspiracy explanations and 1 - conspiracy beliefs.

Multiple regression analysis (enter method) was applied to examine the significance of different protective factors of psychological well-being during self-isolation as predictors of overall well-being. The visual inspection of scatterplots confirmed the relationships between the predictors and outcome variables were linear. The possibilities for collinearity of predictor variables were also excluded on the basis of their mutual correlations and the values of collinearity statistics. Both the PP normal plot and the scatterplot suggest that the assumptions for performing the multiple regression analysis are satisfied. Only one case exceeds the residual standardized values of  $\pm 3.3$ .

<sup>\*</sup> *p* < .05. \*\* *p* < .01

Table 3 Summary of enter method multiple regression analyses for protective factors in isolation predicting the overall wellbeing

	В	SE	β	t	р
Perceived social support during self-isolation	.64	.08	.34	8.32	.001
Perception of governmental medical measures as beneficial	.10	.12	.04	0.79	.43
Perception of governmental measures for restriction of movement as beneficial	.06	.10	.03	0.59	.56
Self-engagement in physical exercises	.43	.06	.27	6.89	.001
Self-engagement in reading/movies	.03	.12	.01	0.21	.83
Perception of being adequately informed about the virus and ways of protection	.42	.10	.16	4.12	.001
Explanations about the virus and pandemic <sup>a</sup>	36	.13	11	-2.84	.001

Note. <sup>a</sup>The variable is dichotomized and coded as: 1 - conspiracy beliefs about the virus and pandemic, 2 - non-conspiracy beliefs about the virus and pandemic.

According to the obtained results (Table 3), the tested model is significant  $(R^2 = .28, F(7, 490) = 26.34, p < .01)$ , accounting for 27.6% of the variance in overall wellbeing. Three of the seven included variables do not significantly contribute to the model. The perception of both medical and restriction of movement measures, together with self-engagement in reading /movies did not made significant contributions to the prediction of the overall wellbeing. The analysis suggests that four of the hypothesized protective factors positively predict the overall well-being: perceived social support during selfisolation, self-engagement in physical exercises perception of being adequately informed about the virus and the ways of protection, and the tendency to hold conspiracy explanations about the virus and pandemic.

#### Discussion

People cope differently with the fear, stress and constraints that come along with the COVID-19 pandemic and self-isolation. We found that studentsparticipants in our study reported levels of all aspects of well-being according to PERMA model similar to the most frequently reported means for overall well-being in various samples, in times when there were no global threats like the current pandemic (Butler & Kern, 2016).

Results from the regression analysis showed that perceived social support during self-isolation, self-engagement in physical exercises, perception of being adequately informed about the virus and the ways of protection, and the tendency to hold conspiracy explanations about the virus and pandemic significantly predict the psychological well-being in conditions of self-isolation. Perception of medical and restriction of movement measures, together with self-engagement in reading /watching movies (video content), have no significant contribution. The finding about the role of perceived social support is in accordance with the literature before the pandemic crisis (Church et al., 2013; Seligman, 2011), but also with the findings from studies conducted during the COVID-19 pandemic - on samples in self-isolation (Elmer et al., 2020; Son et al, 2020). The majority of the participants in our study were self-isolated at home with their family or relatives, what may serve as a buffer against the negative influences that the pandemic-induced anxiety created (Cao et al., 2020). In sum, the results confirm and emphasize how important the social support is in times of crisis. Another significant contributor to psychological well-being was engagement in physical activities, or exercising. Our results supported the idea that, especially in times of uncertainty, occupying time with meaningful actions, like physical activities, reduced anxiety and contributed to better emotional well-being (Lades et al. 2020; Lyubomirsky et al., 2005; Ryan & Deci, 2017). Unexpectedly, engagement in reading or watching movies and video contents was not significant predictor of well-being, with a possible reason in the fact that the vast majority of respondents were regularly engaged in such activities, which resulted in little to no significant variations between them.

Intriguingly, perception of medical measures and measures for restrictions of movement as beneficial were not significant contributors of well-being in the prediction model, what is not in accordance with the recent study conducted on students' sample in self-isolation due to COVID-19-pandemic (Kecojevic et al., 2020) which show that complying with the medical measures, as well as with the measures for social distancing - as prevention from infection - was positively related to participants' well-being. Given that such measures frustrate many daily routines, it could be assumed that they were not communicate in an effective way in order our participants to perceive them significantly beneficial. Considering that the sample in this study had significant proportion of participants who believed in some conspiracy explanation(s) about the SARS-CoV-2 virus and pandemic, another possible explanation for these results is that they perceive the measures as unjustified, especially when they produce many constrains to their daily routines.

Speaking about communication, our findings supported the assumption that information plays an important role in coping with the adversity of the pandemic, and that people's well-being in quarantine depends on their understanding of the situation (Brooks et al., 2020). Perception of being adequately informed about the virus and how to protect from infection was shown as significant contributor to psychological well-being. The highest correlation was found for the *meaning* component of well-being, which supports the assumption that the feeling of being adequately informed about the crisis helps

one better adapt to the current circumstances and reduces the uncertainty and stress.

The role of information is especially important in situation like COVID-19 pandemic - associated with uncertainty about the future. Such situations rise many questions about various aspect of the threat which people need to understand, followed by production of numerous explanations, with and without scientific support. The question how people process information and explanations during the pandemic is of high importance, because it appears that we live in a time in which we are exposed to more conspiracy theories than ever (Leman, 2007). Our findings support the assumption that believing in conspiracy theories is significant contributor to psychological well-being. One well documented argument for this assumption in the literature is that conspiracy beliefs help people to explain high-anxiety negative events and to retain a sense of safety and predictability, and that conspiracy beliefs might actually serve as a kind of protective mechanism in such tensed situations (Bale, 2007; Grzesiak-Feldman, 2013; Leman 2007). The results in our study showed that students who believed in conspiracy explanations, had higher levels of well-being compared to participants who believed that the virus outbreak is a natural occurrence or some kind of response to inequalities or overconsumption. Similar effects were also found for *meaning* as a component of well-being. These findings supported the interpretation that when people are faced with a threating situation (virus, pandemic) and with various competing explanations about them, some will be attracted by conspiracy theories which seem to provide best answer to the unknown (Goertzel 1994). "Knowing" the answer provides meaning in face of the threat of crisis event and reduction in anxiety, and further contributes to psychological well-being. The positive relation between conspiracy beliefs and subjective, psychological well-being, could be one of the possible reasons why such beliefs exist in such a large part of population, or, why they are universal and omnipresent (West & Sanders, 2003). Such results indicate the very complex role of believing in conspiracy explanations and their impact on emotional, cognitive and behavioural outcomes on individual and collective level. Although conspiracy beliefs have harmful consequences for social life, people's health and environmental decisions and harmfully influence their attitudes, intentions, and behaviors (Douglas et al., 2015; Douglas & Sutton, 2018; Jolley et al., 2020), we see that they may serve as a vent for anxiety on individual level and may contribute to psychological well-being. These results should not be understood in a way that conspiracy beliefs have to be supported, but as possible partial explanation for a mechanism which contribute for they to develop, exist and spread.

Interesting finding is that the majority of the students-participants who were identified as conspiracy-believers in our study, believed that the virus actually existed, but that it was artificially produced in some laboratory, and/or was intentionally released in order to serve some conspiracy goals. This finding could further lead to investigate whether believing that the virus is

man-made - in comparison to the believing that it doesn't exist - is followed by a belief that it is controllable and less dangerous, which is a far less fearful outcome when compared to the belief that it naturally evolved. The perception of level of dangerousness may play important role in further behaviour related to the protective measures enacted by the authorities. Believing in conspiracy explanations may easily lead to lesser respect for measures and statements issued by health authorities based on science. Bierwiaczonek et al. (2020) point out that people who reported more COVID-19 conspiracy beliefs report less social distancing. Similarly, Allington et al. (2020) presented findings that conspiracy beliefs during and related to COVID-19 pandemic inhibit health-protective behaviours, with the strongest negative effects being associated with beliefs that imply that the coronavirus may not exist, that its lethality has been exaggerated, or that its symptoms may have a non-viral cause. Anxiety during crises increases conspiracy thinking (Grzesiak-Feldman, 2013), and conspiracy theories, in turn, motivate people to prepare for collective self-defence against suspected subjects or groups (Kofta & Sedek, 2005). For example, Bird and Bogart (2005) found that people who tend to hold HIV/AIDS conspiracy beliefs are more sceptical about HIV prevention measures. Such self-defensive behaviour and energy, especially when personal liberties are constrained and frustrated, may be directed toward health authorities and develop into a form of resistance against the protective measures, and, as Jolley and Paterson (2020) show, conspiracy beliefs could even increase violent behaviour toward objects or institutions perceived to be related to the virus or pandemic.

### Limitations

These findings should be considered as initial steps towards a deeper examination of the factors that protect the psychological well-being of youth in the context of isolation due to epidemics. The fact that the sample was convenient, composed predominately of females, and had a relatively low response rate, limits the generalizability of findings. Another limitation is that we haven't baseline data in order to compare respondents' measures. It is also noteworthy that the sample was rather homogeneous, in a sense that participants' responses provided small variability – what severely limited the possibilities for data analysis.

## **Conclusions and Practical Implementations**

Students during the time of self-isolation due to pandemic, maintained relatively high levels of well-being. Perceived social support and self-engagement in physical exercises during self-isolation, and perception of being adequately informed about the virus and the ways of protection significantly contribute to psychological well-being. Important finding is that believing in conspiracy

explanations about the SARS-CoV-2 virus and pandemic also functioned to protect well-being, this despite the fact that such beliefs falsifies reality and, in the long run, harm's one's constructive interaction with their environment. A further important and negative consequence is that believing in conspiracies can undermine protective public policies and confidence in the health authorities. Policy creators could use study findings to improve and customise their strategies and measures in order to support psychological well-being during the pandemic which seems to last long. For instance, people will be exhausted due to complying with the measures and quarantining, and consequently their adherence to the measures will most likely decline, mainly because of the frustration of their social needs (Armitage & Nellums, 2020). All relevant authorities should develop effective strategic measures to provide meaningful tools for people to receive adequate social support, and to meaningfully and more effectively communicate information about the SARS-CoV-2 virus and protective governmental measures. A strategy for thorough screening of satisfaction of these needs among population should be developed. At a level of students, universities need to engage with students' organizations in order to accomplish these goals. Professional associations need to be involved in prevention of threats to well-being and in providing psychological assistance when and where it is needed.

When analysing the responses of students, we should consider some important factors: firstly, the percentage of youth who were infected with SARS-CoV-2 was far lower than the percentage of adults, which creates in them a false sense of safety and resilience to the SARS-CoV-2 virus. Additionally, youth maybe do not share the same concerns with adults about how lock-down measures threaten their businesses or jobs. These factors may lead young people to behave less responsibly and to lack respect for the measures imposed to prevent the spread of the pandemic; in so doing they will contribute to the transmission of the virus.

In the era of flood of information, public authorities, together with the scientific community, should work on well-advised strategies for the prevention of, and fight with, fake news and conspiracy theories. Bierwiaczonek et al. (2020) showed that people who reported more COVID-19 conspiracy beliefs report less social distancing, and they point out that conspiracy theories pose a significant threat to public health as they may reduce adherence to social distancing measures. Policy creators should place special attention on communication of information tailored to youth about the virus itself and its background. This is because what brings safety and reduces anxiety in people is most probably the logical and acceptable answer, and not conspiracy plot itself. Van Prooijen (2017) emphasized the importance of education in prevention of the negative consequences of conspiracy beliefs, while Swami et al. (2014) pointed out that analytical thinking reduces believing in conspiracy theories. In the long term, we need measures for the improvement of analytical and critical thinking in students at all levels, which will empower them to deconstruct

conspiracy explanations. This will consequently create a better understanding of science-based information and thus increase confidence levels in the health system.

Important lesson from the pandemic is that it will raise the importance of online psychological support. The pandemic will probably be a turning point in regard to the wider acceptance and implementation of online methods for psychological support, and the profession should be ready for this challenge.

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# Ognen Spasovski Nikolina Kenig

Odsek za psihologiju, Filozofski fakultet, Univerzitet "Sv. Kiril i Metodij" u Skoplju

# PSIHOLOŠKO BLAGOSTANJE KOD STUDENATA U SAMOIZOLACIJI TOKOM PANDEMIJE COVID-19

Pandemija COVID-19 rezultirala je merama zaključavanja koje je izrekla vlada Severne Makedonije, poznato je da uslovi samoizolacije imaju direktne efekte na mentalno zdravlje. Cilj ovog istraživanja bio je usmeren na ispitivanje potencijalnih zaštitne faktore psihološkog blagostanja kod studenata u samoizolaciji. Ukupno 510 studenata sa najvećeg univerziteta u zemlji (70% ženskog pola,  $M_{starost}$  = 21.12 godina, SD = 1.58) odgovorilo je na strukturirani onlajn upitnik, mesec dana nakon zaključavanja zemlje. Analiza višestruke linearne regresije izvršena je na pretpostavljenim zaštitnim faktorima blagostanja. Rezultati su pokazali da su značajni prediktori psihološkog blagostanja u uslovima izolacije: percipirana socijalna podrška tokom samoizolacije, samostalno bavljenje fizičkim aktivnostima, percepcija adekvatne informisanosti o virusu i načinima zaštite, kao i tendencija ka zastupanju teorija zavere o virusu i pandemiji. Percepcija medicinskih mera preporučenih od strane vlade, te ograničenje kretanja, zajedno sa aktivnostima čitanja/gledanja filmova, nisu bili značajni prediktori. Suočeni sa očekivanim daljim poteškoćama sa pandemijom, kreatori politike i naučna zajednica treba da razviju dobro osmišljene strategije, prilagođene različitim grupama, kako bi pružili odgovarajuću podršku ljudima da se izbore sa pandemijom i da na adekvatan način razumeju potrebne medicinske mere. restrikcije i sve važne informacije o virusu i pandemiji, u cilju smanjenja efekata teorija zavere koje bi mogle da podrivaju poverenje u zdravstveni sistem.

**Ključne reči**: COVID-19, psihološko balgostanje, samoizolacija, teorije zavere, zaštitni faktori