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EFFECT OF COPING STRATEGIES ON ACUTE STRESS DURING THE COVID–19 PANDEMIC IN GREECE

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Abstract

Background: The psychological impact of quarantine, due to the SARS COVID-19 outbreak, was examined with a specific focus on the relationship between 7 coping strategies: (i) active coping, (ii) positive reframing, (iii) acceptance, (iv) use of emotional support, (v) religion, (vi) substance use and (vii) self-blame and acute stress. This study aimed to identify specifically which of those coping strategies could increase or decrease acute stress levels.

Method and Material: The data collection took place during the lockdown and was performed using online surveys. The finale sample size reached up to 1154 Greek adults (age M= 40.51). Two adapted and translated scales were used to measure the variables of interest, including: Brief-COPE questionnaire as well as Acute Stress Disorder Scale (ASDS).

Results: "Active coping", "acceptance", "positive reframing" and "emotional support", four of the coping strategies examined, that were found to be significantly associated with stress reduction. Meanwhile, "religion", "self-blame" and "substance use" were not associated with stress reduction.

Conclusions: This study initially provides an insight of acute stress and effective coping strategies associated with the quarantine period during the COVID – 19 pandemic in Greece. The outcome of this study equip support for the expected inflation of the mental health issues stemmed from the unusual stressors, and urge clinicians, mental health providers, and public agencies to assemble, in an attempt to make possible the widespread implementation of more effective and beneficial coping strategies.

Keywords: COVID-19, Greece, pandemic, coping strategies, acute stress.

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INTRODUCTION

According to World Health Organization's[1] (WHO) report, Severe Acute Respiratory Syndrome Coronavirus 2 (SARS- CoV-2), or most widely referred to as Coronavirus (COVID-19) is an infectious, communicable disease caused by a recently detected virus. COVID-19 causes respiratory infection (quite similar to the common flu). Individuals affected by the virus experience fever, coughing and trouble breathing in more extreme cases. The latest prevention guidelines given by WHO[1] include regular hand washing while keeping them away from the face and avoiding physical or close contact with possible or identified patients.

In December 2019, COVID-19 emerged as a pneumonia outbreak in Wuhan, China. Over a period of a few weeks thousands of deaths and over 100.000 of cases were confirmed worldwide[2]. Reproductive numbers reporting COVID-19 transmissions have been assessed at 4.08. Such estimates declare that by average, each case of COVID-19 will cause 4 new ones[3]. This novel, and potentially fatal illness of unidentified origin has no treatment and can cause significant fear, anxiety, and trauma [4]. As of January 30, 2020, WHO classified the outbreak of COVID-19 as an 'international public health emergency' and by the 11th of March 2020 COVID-19 was declared a pandemic.[1]

On February 26, 2020 Greece became part of the list of countries officially confirming the first diagnosed case of COVID-19. Lockdown measures by the 'Ministry of Health' were enforced 2 weeks later in order to control the pandemic outbreak. For the vast majority of the population a 'Stay Home' quarantine was mandatory, as well as a 14-day quarantine of all close contacts of symptomatic cases.[1] According to the report from the 'Center for Disease Control', quarantine has been defined as a process of restricting healthy individuals who have been possibly exposed to a transmittable virus during its communicability phase, as a prevention strategy against its spreading.[5] Quarantine duration depends on the virus's incubation time.

Most of the reviewed empirical evidence reported negative psychological impact, including acute stress disorder, confusion, and anger. Stressors related to longer quarantine duration included, post-traumatic stress syndrome (PTSD), infection fears, frustration, boredom, inadequate information, financial loss, and stigma, thus influencing life satisfaction.[6-7]

Research has demonstrated that an outbreak of an unparalleled virus can create acute stress to the general public regardless of region, profession and age.[8] With such an increased degree of unpredictability, distancing, and social isolation, COVID-19 interferes with major coping mechanisms, and calls on novel ways of viewing, and adopting to crises.[9] COVID-19 is experienced as a continuing "cardiac stress test" on global substructure, and regime, augmenting each of our morphological and functional vulnerability, mainly that of acute stress.[10]

In order to face environmental stress, individuals may utilize a variety of methods in order to preserve their health and wellness. The 'transactional model of stress' introduced by Lazarus,[11] interprets the reasons individuals experience identical stressors in a different way. Coping is an outcome of the stressor-appraisal procedure, which comes before the occurrence of stress. The adeptness of stressful events should not be associated with the manifestation of stress.[12-13] Research has indicated that the majority of people will manage to cope with stress by adopting specific coping behaviors. These behaviors incorporate problem focused coping which incorporates instrumental support seeking, problem solving and positive reappraisal, as well as emotion-focused coping which incorporates self-control, emotional support and escapism.[14]

Empirical evidence also suggests that during a time of a pandemic crisis, requesting social support is a frequent strategy to cope successfully with stress.[15] Also, a variety of different strategies have been indicated to be effective during epidemiological crises. Individuals with a history of alcohol drinking were found to be less capable of regulating unpleasant emotions and especially psychological distress. Drug use was linked to unsuccessful stress regulation and major mental and physical implications.[16]

Furthermore, recent evidence indicate that active coping is associated with upraised life satisfaction and stress reduction; while avoidant coping strategies such as substance use, were correlated with ineffective stress management.[17] Substance use,

religion and self-blame, were associated with advanced levels of stress related to COVID-19 and its unsuccessful management. Meanwhile, active coping and use of emotional support were negatively correlated with stress.[18] Individuals with increased alcohol consumption rates, after the COVID-19 outbreak reposted unsuccessful stress regulation and mental health implications.[19] Also, a study by Pagnini and colleagues,[20] researched the social implications, and the mental health threats introduced by the COVID-19 outbreak on college students. Their results found that problem solving strategies were most frequently used to effectively cope with pandemic distress. In particular, positive reframing is considered to assist on disassociating from negative emotions and increase overall wellness, as indicated in previous studies[21]. Previous research also identified use of emotional support, as an efficient coping strategy during, and after the quarantine period, which assisted in decreasing stress.[22]

However, existing literature demonstrates several controversial findings. Recent evidence suggests that religion is a successful coping strategy against severe stress experienced during a pandemic crisis. The sociocultural characteristics of the sample can affect that variable and therefore provide controversial evidence[23]. Other scientific evidence indicates that self–blame and drug misuse were utilized as maladaptive coping strategies during the SARS outbreak, and the current COVID-19 pandemic.[24-25]

As we can conclude from the findings demonstrated above, it is of major importance to explore the relationship between coping strategies and stress in an attempt to provide psychological support for individuals during such unprecedented epidemiological crises.

In the current study, the biopsychosocial impact of the law enforced staying home quarantine due to the COVID-19 pandemic in Greece was investigated. We researched acute stress during quarantine and the coping strategies utilized as buffers against the severity of the new circumstances.

METHODOLOGY

Participants and Sample

For the present study certain eligibility criteria for participation were set including age, participants had to be adults older than 18, and living in Greece during the COVID-19 lockdown. The sampling method was convenient, and the process of data collection was conducted through online surveys delivered through social media and emails. The process of snowball was embraced and the total number of participant's riches up to 1,159 participants. The mean age of participants was calculated in M= 40.51 (± 12.8), while 75.6% were females and only 24.2% males.

Design

The design of this research intented to investigate the effect of coping strategies on acute stress levels. To achieve that, 7 one-way ANOVAs were conducted, each testing the effectiveness of a single coping strategy on acute stress. The seven types of coping strategies tested in this study include: (i) active coping, (ii) positive reframing, (iii) acceptance, (iv) use of emotional support, (v) religion, (vi) substance use and (vii) self-blame. Active coping, positive reframing and acceptance are classified as '*intrinsic management*', use of emotional support and religion as '*extrinsic management*' and substance use and self-blame are categorized as '*self-harm management*'. Post- hoc tests were also performed to identify which level of recruitment is associated with lower stress levels and therefore whether a coping strategy is reducing or increasing acute stress levels. The four levels were labeled based on the scale used in the survey and included: 'very low-level' (1), 'low- level' (2), 'moderate- level' (3) and 'high- level' (4).

Materials

Acute stress was measured with the adapted and translated, in Greek, version of 'Acute Stress Disorder Scale' (ASDS)[26]. The survey contains 28-items that measure acute stress during a time of crisis, using a likert scale from (1= "*never*" and 5= "*very much*"). Coping strategies were measured with a modified version of Brief-COPE questionnaire[27], which originally contains 28 items. For the needs of the present study seven specified items were selected to measure coping. Each item represented a spe-

cific coping strategy such as: (i) active coping, (ii) positive re-framing, (iii) acceptance, (iv) use of emotional support, (v) religion, (vi) substance use and (vii) self-blame. The survey used a 4 level likert-type scale (1= *I haven't been doing this at all*, to 4= *I've been doing this a lot*). Last, a survey was provided to collect the demographical characteristics.

Ethical Considerations

The present study obeys the guidelines of ethical practice in research provided by the British Psychological Society and was approved by the Ethics Committee of City Unity College in Athens with reference number: 2020PSYRSC-003.

RESULTS

Demographics

The demographical characteristics of the sample are demonstrated in Table 1, the total number of participants was 1,159. The mean age was calculated in M= 40.51 (±12.8) from which 75.6% were females and only 24.2% males.

One-way ANOVA

7 one-way ANOVAs were performed to examine the effect of the seven coping strategies in acute stress levels.

Active Coping

The results indicate a significant effect of active coping on acute stress $F_{(3,1154)}= 12.66$, $p <.001$. Post-hoc multiple comparisons using Bonferroni's test indicate that the mean score for the 'moderate level 'of recruitment (M= 41.40, SD= 15.89) was significantly different from the 'high level' (M= 36.43, SD= 14.73) for active coping revealing the strategy's ability to significantly reduce acute stress levels.

Positive Reframing

Positive reframing and acceptance were also identified to have a significant effect on acute stress levels $F_{(3,1154)}= 8.93$, $p <.001$ and $F_{(3,1154)}= 23.47$, $p <.001$, respectively. The same significant mean differences are spotted on positive reframing strategy (M= 40.90 SD= 15.53) and (M= 36.89 SD=14.74) respectively which represent the same effect.

Acceptance

Acceptance demonstrates significant mean differences between 'low level' (M= 44.30, SD= 17.22), 'moderate level (M= 42.46, SD= 15.54), and 'high level 'of recruitment (M= 35.52, SD= 14.09) representing the same effect (reduction).

Use of emotional support

Use of emotional support is another coping strategy to significantly effect acute stress $F_{(3,1154)} = 12.05$, $p <.001$. Multiple comparisons test detected significant mean differences between 'low level' (M= 41.51, SD= 16.21), 'moderate level (M= 40.98, SD= 15.47), and 'high level 'of recruitment (M= 37.46, SD= 14.53) which reflect the reduction of acute stress levels when the coping strategy of emotional support was recruited more commonly.

Religion

On the other hand, religion was also found to be significantly affecting acute stress levels $F_{(3,1154)}= 5.99$, $p <.001$. Multiple comparisons tests detected significant mean differences between 'very low-level' (M= 36.90 SD= 14.99) and 'high level' (M= 41.12 SD= 16.17) reflecting religion's (coping strategy) effect on increasing acute stress.

Substance Use

The same effect was observed for substance use coping strategy $F_{(3,1154)}= 36.02$, $p <.001$, in this case Bonferroni's post-hoc test showed significant mean differences between all the four levels of recruitment, 'very low-level', (M= 37.20 SD= 14.47) 'low level', (M= 44.25 SD= 17.30) 'moderate level' (M= 46.78 SD= 15.57) and 'high level' (M= 65.40 SD= 19.42) indicating that substance use strategy is increasing acute stress levels.

Self-blame

Last, self-blame has a significant effect on acute stress levels $F_{(3,1154)}= 23.09$, $p <.001$. Post hoc multiple comparisons test indicated significant mean differences between all the four levels of recruitment, 'very low-level', (M= 37.38 SD= 14.47) 'low level', (M= 46.44 SD= 17.82) 'moderate level' (M= 42.61 SD= 17.83) and 'high level' (M= 57.39 SD= 20.84), specifying that self-blame's effect on acute stress is increasing its levels.

Post-hoc Bonferroni results regarding the mean differences be-

tween Acute Stress levels and level of (each strategy's) recruitment (high-low), are also illustrated in Table 2. ANOVA results demonstrating the effect of each coping strategy on Acute Stress are also featured in Table 3.

DISCUSSION

General Discussion

The present study investigated the biopsychosocial impact of the law enforced staying at home quarantine, due to COVID-19 pandemic, in Greece. Empirical research, focused on acute stress during isolation, and the coping strategies utilized as buffers during this pandemic. Our results indicated that significant coping styles in order to alleviate acute stress during quarantine, were active coping, acceptance, positive reframing and emotional support, although, religion, self-blame and drug use, were not found to be successful coping strategies against acute stress.

Attempting a deeper approach, active coping was found to significantly decrease stress related to COVID-19. Active coping has been identified as a successful mechanism in stress reduction in several published studies,[17-19] indicating that it maintained the higher rates is stress reduction compared to other coping strategies.

In addition, our results are in accordance with findings demonstrated by Pangini and associates,[20] which investigated the implications of the mental health issues risen by the COVID-19 outbreak. Scientists found that positive reframing was among the most common coping strategies used against negative emotions and especially stress, developed by the novel pandemic. Meanwhile the researchers underlined its perceived effectiveness in stress management. Other evidence provided by previous research, supported the argument regarding positive reframing and its effectiveness in stress regulation, negative emotions reduction and general well-being improvement.[21]

Supporting that argument, previous research declares that for the majority of individuals living in Toronto an efficient coping strategy during, and after the quarantine period was emotional support, which assisted in decreasing stress.[22] Moreover, a recent study investigating coping strategies under institutional quarantine, during the global pandemic, suggested that a coping style wildly preferred in order to face COVID-19 challenges was emotional support. Also, other preferred coping strategies were active coping, and acceptance.[2] Besides its high levels of recruitment, the study's findings are in line with the supported argue of higher effectiveness in stress regulation.

However, our results are in contrast with research by Park and colleagues,[23] which found that religion is a significant coping strategy during a pandemic crisis. A possible explanation for such outcome could be that certain groups of people are hesitant in the way religious leaders have managed the COVID-19 pandemic. Also, our results are in contrast with scientific evidence identifying that self –blame and drug misuse were utilized as maladaptive coping strategies during the SARS outbreak, and the current COVID-19 pandemic.[24-25] A possible explanation for this outcome could be that such behaviors are indicated in long term quarantine data,[24] and not during early quarantine stages which was approximately the time period our data was collected. The present study investigating coping strategies to alleviate acute stress during the COVID-19 pandemic, has a number of strengths that should be underlined. First, our study incorporated a strong methodology for assessing coping strategies against acute stress during the quarantine period in Greece. A second strength is the use of an online data collection platform which gave us the means to gather a significant number of participants, representative of the total Greek population. Granted that our study has various strengths it does not lack of limitations.

Limitations

At first, this study is structured on an online convenience sample of prevalently middle-class individuals, making our findings less likely to be generalized to people from divergent backgrounds. Greater attention should be directed in acknowledging and implementing approaches for encouraging coping strategies in order to develop resilience and decrease stress for social groups disproportionately influenced by the COVID-19 pandemic (e.g.,

ethnic and racial minorities living in Greece)

A second limitation is associated with the fact that this study incorporates exclusively self–reported data, thus making it subjective to response bias by considering participant's tendency to follow social expectations. Future research investigating coping strategies during epidemiological crises, should focus on reflecting upon more impartial measures, such as behavioural observations, and structured interviews. A third limitation of our study, is associated with the study sample, which includes only participants over the age of 18. Youngsters were excluded primarily because there are ethical considerations when children and adolescents take part in a study, and the restrictions in Greece linked to the prevision of informed consent by the parents. However, it is most definite that the pandemic will have a harmful impact on youths emotional and psychological health. It has been well documented that being exposed to traumatic events early in life is related with modifications of cognitive, emotional, and social growth, which develops impairment during adulthood. Further research needs to be conducted in order to determine coping strategies that will assist children and teenagers to endure the stressors that arise during such challenging times.

CONCLUSION

This study, successfully identified significant differences in coping strategies' effectiveness and supported the existing argument on specific coping strategies in reducing acute stress. Evidently, strategies of self-caring and realistic character, as active coping, positive reframing, acceptance and use of emotional support, can effectively reduce stress during a global crisis. This study, initially sheds an insight of acute stress levels and effective coping strategies associated with the quarantine period during the COVID–19 pandemic in Greece. The outcome of this study equip support for the expected inflation of the mental health issues stemmed from the unusual stressors, and urge clinicians, mental health providers, and public agencies to assemble, in an attempt to make possible the widespread implementation of efficient coping strategies. Our findings bring about possibilities which can promote psychological wellness during periods of significant distress, and help the general population recuperate from this compounding and continues crisis. We anticipate that these findings can normalize to a great extent the strain that people are experiencing and can inspire and make attempts towards successfully managing this collective trauma.

CONFLICT OF INTEREST

Nothing to declare / No conflict of interests.

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ANNEX

Table 1. Demographic Characteristics.

		n=	Percentage
Gender	Male	280	24.2 %
	Female	876	75.6 %
	N=	1,156	99.8 %
Education	School Level	399	34.4 %
	Undergraduate Degree	402	34.7 %
	Postgraduate Degree	357	30.9 %
	N=	1,158	100%
Marital Status	Married	508	43.9 %
	Not Married	650	56.1 %
	N=	1,158	100 %
Children	Yes	631	55.5 %
	No	527	45.5 %
	N=	1,158	100 %
Annual Income	≤10,000€	379	32.8 %
	>10,000€	778	67,2 %
	N=	1,157	99.9 %
Permanent Residence	Athens, Greece	934	80.7 %
	Other	224	19.3 %
	N=	1,158	100 %

Note.
N= total number of participants

Table 2. Descriptive Statistics: Differences of Acute Stress between high and low recruitment of each strategy.

Coping Strategy		n	Low Recruitment		High Recruitment	
			Mean	SD	Mean	SD
i.	Active Coping	1154	41.40	15.89	36.43	14.73
ii.	Positive Reframing	1154	40.90	15.53	36.89	14.74
iii.	Acceptance	1154	44.30	17.22	35.52	14.09
iv.	Use of Emotional Support	1154	41.51	16.21	37.46	14.53
v.	Religion	1154	36.90	14.99	41.12	16.17
vi.	Substance Use	1154	37.20	14.47	65.40	19.42
vii.	Self-blame	1154	37.38	14.47	57.39	20.84

Notes.

n = total number of participants

SD = Standard Deviation

Table 3. ANOVA results on the effect of each Coping Strategy on Acute Stress.

Outcome	Measurement		Source	SS	df	MS	F	p
Coping Strategy	i.	Active Coping	Between	8872.32	3	2957.44	12.66	< .001
			Within	269562	1154	233.58		
			Total	278434	1157			
	ii.	Positive Reframing	Between	6317.11	3	2105.70	8.93	< .001
			Within	272117	1154	235.803		
			Total	278434	1157			
	iii.	Acceptance	Between	16014.2	3	5338.08	23.47	< .001
			Within	262420	1154	227.40		
			Total	278434	1157			
	iv.	Use of Emotional Support	Between	8460.82	3	2820.27	12.05	< .001
			Within	269973	1154	233.94		
			Total	278434	1157			
	v.	Religion	Between	4274.22	3	1424.74	5.99	< .001
			Within	274160	1154	237.57		
			Total	278434	1157			
	vi.	Substance Use	Between	23841.7	3	7947.24	36.02	< .001
			Within	254592	1154	220.617		
			Total	278434	1157			
	vii.	Self-blame	Between	15772	3	5257.33	23.09	< .001
			Within	262662	1154	227.61		
			Total	278434	1157			

Notes.

SS = Sum of Squares

df = Degree of Freedom

MS= Mean of Squares

p = level of significance.