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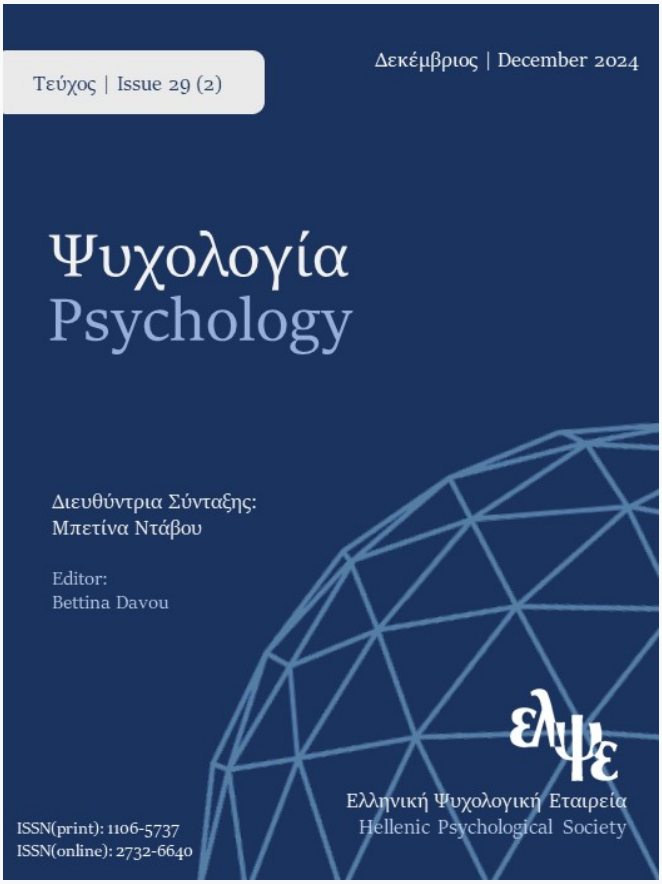

Immunity, self-regulation, and COVID-related distress two years following the outburst of the pandemic

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ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Immunity, self-regulation, and COVID-related distress two years following the outburst of the pandemic

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KEYWORDS

Pandemic
COVID-19
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ABSTRACT

The present study aimed to assess pandemic-related psychological distress in Greek adults two years after the pandemic's onset and examine its relationship with COVID-related immunity and self-regulation factors. Three indicators of COVID-related distress were measured: COVID anxiety, COVID-related perceived stress, and perceived changes in emotional quality of life. Out of the 520 participants, who completed the questionnaire online (358 females; mean age=38.33 years, SD=14.78), almost half reported some decline in emotional quality of life, but less than 5% experienced high pandemic-related stress or severe COVID-related anxiety. Interestingly, some participants reported improvement in emotional quality of life. Infection, vaccination, and most COVID-related illness representations were not significantly associated with distress indicators. However, coping behaviours showed a strong correlation with COVID-related distress. The study indicates that, two years following of the pandemic, distress is more closely linked to individuals' overall experiences and coping strategies rather than the risk of infection or fear of consequences. These findings emphasize the importance of addressing individuals' coping mechanisms and broader psychosocial impact when designing interventions to effectively manage pandemic-related distress. Future mental health support and interventions should focus on promoting adaptive coping strategies and considering the entire experience of the pandemic to alleviate psychological distress.

Introduction

The SARS-CoV-2 pandemic is a multidimensional and prolonged stressful condition that affects the lives of many people (Fluharty & Fancourt, 2021). Thus, it is not surprising that many studies across the world indicate a pandemic-related mental health crisis characterised by elevated levels of psychological symptoms (Shamblaw et al., 2021, for a review). Also, several studies have tried to identify the socio-demographic and personal/psychological significant correlates of mental health and quality of life during the pandemic. Most of these studies were conducted during the first year of this health crisis (i.e., 2020 to early 2021). Given that the COVID-19 pandemic has turned out to be a prolonged event it is crucial to study human responses throughout its duration, rather than only in the initial stages. This comprehensive examination can offer valuable insight into how people adapt to and manage such rare situations, which may be beneficial for handling similar conditions in the future. Therefore, this study aimed to examine the pandemic-related psychological distress of Greek adults and its association with certain immunity-related (i.e., vaccination and infection) and self-regulation factors (namely, representations about the infection and coping behaviours) during the later phases of the pandemic

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(i.e., two years following its outburst). The present study took place just before and during the beginning of the omicron variant spreading in Greece (December 2021; https://eody.gov.gr/en/COVID-19/).

The pandemic and psychological distress

In summarising existing studies, Gavin et al. (2021) concluded that the pandemic was a seismic event with a major impact on public health. Anxiety and depression symptoms and related difficulties (like insomnia) have been reported by 20-40% of the general population in countries from all over the world (e.g., Li et al., 2021; Pashazadeh Kan et al., 2021). Robinson et al. (2022) in a systematic review and meta-analysis of 65 longitudinal cohort studies examining changes in mental health among the same individuals before and during the pandemic in 2020, found a rather small increase in overall symptoms, which significantly declined over time. The increases in depression symptoms, however, tended to be larger and remained significantly elevated. Still, most relevant studies and reviews refer to the first year of the pandemic.

A common research finding is that the effect of the pandemic on mental health is greater in certain population cohorts. Females, minorities, persons living alone or with limited social support, persons with a chronic illness, unemployed, or with low income, tended to report more difficulties (Pashazadeh Kan et al., 2021). Regarding age, most but not all studies have found that younger age is a risk factor for higher levels of distress and lower quality of life (e.g., Candeias et al., 2021).

Concerning the Greek general population, about 30-40% reported at least some psychological symptoms during the first wave of the pandemic (e.g., Karaivazoglou et al., 2021; Nikopoulou et al., 2022). Also, Kalaitzaki et al. (2021) found that higher levels of post-traumatic stress symptoms were reported during the second major pandemic wave (autumn/winter 2020-21) in comparison to the first wave (winter/spring 2020). Females and older adults reported more symptoms (e.g., Nikopoulou et al., 2022).

Distress and pandemic-related representations and coping behaviours

Two self-regulation-related factors have systematically been related to psychological distress during the pandemic: illness (i.e., COVID-related) representations and coping behaviours. Illness representations refer to the cognitive perceptions (e.g., regarding causes and consequences) and emotional reactions that persons develop to understand and cope with a health threat (Leventhal et al., 2016). Concerning COVID-19, pandemic-related perceptions were related to distress in several studies (e.g., Haywood & Mason, 2023; Kozina et al., 2022; Zhang, 2023). Typically, a more negative representation of the health threat (for example, as a less controllable, more dangerous, or fearsome condition) predicts worse physical and psychological well-being (Hagger et al., 2017). Indeed, there is evidence that COVID-related representations of low personal control over the situation and severe consequences, greater fear and concern, and higher perceived threat are associated with worse well-being (e.g., Hubbard et al., 2021; Neto et al., 2021).

Several coping behaviours related to COVID and the measures taken to control it (e.g., lockdowns) have also been associated with psychological distress. Using problem-solving/approach or positive reappraisal behaviours is typically related to better adaptation and well-being (Folkman, 1997). Indeed, an inspection of cross-sectional and prospective studies in different countries and populations (e.g., adults, college students) reveals a stable relationship pattern. Problem-solving-oriented, engagement, and acceptance/positive reappraisal behaviours, as well as social support, were related to lower levels of distress and better quality of life during the pandemic, whereas avoidant behaviours or denial were related to worse well-being (e.g., Li et al., 2022; Shamblaw et al., 2021; Zsido et al., 2022). A recent metanalysis of international surveys from Asia, Europe, and the Americas demonstrated the same pattern of associations (Kirby et al., 2022).

Finally, there is some evidence that COVID-related perceptions and distress were related to the uptake of vaccination (e.g., Myerson et al., 2022; Yuan et al., 2024). Furthermore, vaccination was somewhat likely to enhance psychological well-being, but this seemed to depend upon individuals' beliefs regarding vaccine efficacy

and other personal factors (e.g., Sasaki et al., 2022; Tan et al., 2023). Hence, more research is warranted to elucidate this matter.

The present study

The first COVID-19 case in Greece was reported on February 26, 2020, and the first general lockdown took place on March 23rd. The gradual lifting of this lockdown started on May 4, 2020. A second general strict lockdown took place on November 7, 2020, during the second wave of the pandemic, and lasted until March 2021, but local lockdowns were enforced at large parts of the country, due to the local pandemic conditions, until the end of April 2021 (https://COVID19.gov.gr/). The public vaccination program against the coronavirus started in January 2021. At the time of this study (November 2021 to January 2022), the country was dealing with the fourth wave of the pandemic, the vast majority of the population had already been vaccinated, while the first Omicron variant infections were reported on early December 2021 (https://COVID19.gov.gr/; https://www.data.gov.gr/datasets/mdg_emvolio/). At that time, there were no lockdown measures in effect, but precautions such as wearing face masks in public places or maintaining distances in crowded areas were still enforced. Additional information regarding the pandemic's progression (e.g., the transmissibility of the omicron variant, number of new infections, hospitalisations, vaccination progress, etc.) was also considered. Information about the protective measures implemented at that time can be found in two government reports, with one specifically covering early November 2021, which marks the beginning of our study, https://COVID19.gov.gr/74i-ekthesi-proodou-paratiritiriou/, and one referring to late January 2022 (end of the study), https://COVID19.gov.gr/86i-ekthesi-proodou-paratiritiriou/.

The first aim of the present study was to examine the levels of pandemic-related psychological distress in Greek adults after the completion of almost two years following the pandemic outburst. Three indicators of COVID-related distress were used: COVID anxiety-specific symptoms, COVID-related perceived stress, and perceived changes in emotional quality of life. The second and main aim of the study was to examine the relation of these distress indices to pandemic-related immunity (i.e., having been infected by the coronavirus; having been vaccinated) and self-regulation factors (i.e., COVID-related representations and coping behaviours).

Given that the pandemic is a multidimensional and prolonged stressful situation (Gavin et al., 2021), our first hypothesis was that elevated levels of COVID-related distress would also be reported two years following the outburst of the pandemic. Even though the initial shock of the pandemic's onset and the drastic measures to control it had subsided, and anti-coronavirus vaccines became available, many people might still experience significant distress levels due to the persistent health threat and the accompanying challenges, such as economic hardship and social restrictions. In addition, based on theory (Folkman, 1997; Leventhal et al., 2016) and previous research (e.g., Hubbard et al., 2021; Kirby et al., 2022; Li et al., 2022; Neto et al., 2021), we expected (2nd hypothesis) the more 'positive' COVID representations (e.g., as a more controllable or less fearful condition) as well as the approach/problem-solving oriented coping behaviours, to be associated with lower levels of distress.

Moreover, we expected that the vaccinated participants would report lower levels of distress, as a result of feeling safer against the health threat (3rd hypothesis). It was a question, however, whether having been infected already by the coronavirus is related to more (due, for example, to the negative impact of the infection on well-being) or less distress (as a result, for example, of the feeling that the consequences of the problem are now in the "past"). Hence, we aimed to also examine this association.

Method

Participants and sampling procedure

The study was conducted online. An online survey portal was developed and potential participants were invited to complete the form with the link shared on social media platforms (Facebook and X/Twitter) and through local

announcements (e.g., in university communities and local news sites). Inclusion criteria included being an adult, living in Greece, understanding the study protocol, and providing informed consent. There were no incentives for participation in the study. The study was approved by the Ethic Committees of the University of Crete (No 144/04.11.2021) and of the Faculty of Nursing, National & Kapodistrian University of Athens (No 380/19.11.2021)

The study took place from November 2021 to January 2022. An a priori examination, using G*Power (Faul et al., 2007), revealed that for a statistical power of .95 at an alpha level equal to 1% and a medium effect size (e.g., f^2=0.15), and with regard to the most complex statistical analyses performed, a sample of at least 350 participants was needed. After removing incomplete forms, 520 individuals (162 males; 358 females) participated in the study. Their mean age was 38.33 years (SD=14.78; range=18-75). Of them, 14.8% had finished the mandatory 9-year education, 12.3% were university students, and 72.9% were holders of a higher education degree. Also, 71.2% were living with their family or partner. About one-third (31.3%) reported a high income, whereas the remainder reported a low to medium income. In addition, 19% reported a chronic disease (e.g., diabetes, cardiovascular disease); 9.2% reported that had been infected by the coronavirus; 52.3% reported that a very close person/family member was infected; 90.6% reported that they had received at least one dose of the available anti-coronavirus vaccines.

Measures

Psychological distress. COVID-related perceived stress, symptoms of COVID-related anxiety, and perceived changes in emotional quality of life were used as indices of psychological distress related to the pandemic. COVID-related perceived stress was assessed with the Perceived Stress Scale (Cohen et al., 1983), as adapted for the pandemic by Campo-Arias et al. (2020). It consists of 10 items (e.g., I have been upset that things related to the epidemic are out of my control). Participants were asked to reply using a Likert-type scale ranging from 0 (*never*) to 4 (*always*), based on their experience over the past few weeks. Higher total scores correspond to more COVID-related stress (Cronbach a = .83). The scale was translated to Greek and back-translated to English by two independent bi-lingual psychologists.

The symptoms of COVID-related anxiety were assessed with the Greek version of the Coronavirus Anxiety Scale, a self-report mental health screener of dysfunctional anxiety associated with the pandemic (Lee, 2020; https://sites.google.com/cnu.edu/coronavirusanxietyproject/home). It consists of five items (e.g., I felt dizzy, lightheaded, or faint, when I read or listened to news about the coronavirus) rated on a Likert-type scale (0=*not at all*; 1=*less than a day or two*; 2=*several days*; 3=*more than 7 days*; 4=*nearly every day*), based on the respondent's experience over the past two weeks. Higher total scores correspond to more frequent symptoms of anxiety (Cronbach a = .89).

Finally, perceived changes in emotional quality of life were assessed with a set of questions developed for this study. Respondents were asked to evaluate the degree to which their condition had changed during the last few weeks due to the pandemic and in comparison to their respective conditions before the pandemic. A Likert-type scale was used ranging from 1=*much worse than before the pandemic*, to 7=*much better than before the pandemic* (scores above point 3 corresponded to improved quality of life, whereas points below point 3 to worsened quality of life). Four items evaluated perceived changes in the emotional quality of life (shifts in mental 'fatigue', changes in anxiety levels in general, changes in emotion such as sadness, and feelings of tension; Cronbach a = .82).

COVID-19 representations. To assess representations concerning COVID-19, we used the Brief Illness Perception Questionnaire (Broadbent et al., 2006), which assesses illness-related representations. The questionnaire employed a single-item approach to assess each type of representation and was adapted to the pandemic. In particular, participants were asked to reply to the following questions, referring to their experience over the past few weeks, using a Likert-type scale ranging from 1 (*not at all*) to 10 (*very much/very well*): "how much do you

think the life of those infected by the coronavirus is affected" (consequences); "how long do you think an infection by the coronavirus and its consequences last" (timeline); "how much control do you feel one has over the coronavirus infection, e.g., do something to get over the disease easier" (personal control); "how much do you think existing treatments can help the infected patients" (treatment control); "how severe do you think the symptoms of the COVID-19 are for those infected" (symptoms severity; identity); "how concerned are you about the possibility of getting infected (or reinfected) by the coronavirus" (worry); "how well do you feel you understand coronavirus and COVID-19" (coherence); "how much does the possibility of getting infected (or reinfected) by the coronavirus affects you emotionally?" (emotional representations). Furthermore, participants were asked about their perception of the probability of getting infected (or reinfected) by the coronavirus (1=highly unlikely, to 5=very likely).

COVID-related coping. The Ways of Coping scale (Folkman et al., 1986), as adapted in Greek (Karademas, 1998), was used to assess the ways of coping with the pandemic. Participants were asked to indicate the extent to which they used each coping behaviour during the past few weeks, in order to deal with the general difficulties and the worry caused by the pandemic, on a Likert-type scale from 0 (*not used*) to 3 (*used a great deal*). An exploratory factor analysis (Kaiser-Meyer-Olkin Test = .83; Bartlett's test of Sphericity $p < .001$) using maximum likelihood extraction with a varimax rotation revealed five factors (as indicated by the eigenvalues and the scree plot) which explained 58.66% of the total variance. These factors are (a) positive attitude, which is a combination of planful problem-solving and positive reappraisal behaviours (11 items, e.g., rediscovered what is important in life; changed something so things would turn out all right; Cronbach $a = .84$); (b) seeking social support (7 items, e.g., talked to someone about how I was feeling; Cronbach $a = .81$); (c) a "wait and see" approach (7 items, e.g., I waited to see what will happen – things will get better with time; Cronbach $a = .72$); (d) wishful thinking (5 items, e.g., I daydream or imagine a better time or place than the one I am in; Cronbach $a = .73$); (e) religious coping (3 items, e.g., I prayed; Cronbach $a = .80$).

Socio-demographic and pandemic-related variables. The following sociodemographic variables were assessed: gender, age, education level (non-higher vs. higher education), marital status (married vs. non-married), personal status (living with family/partner vs. alone), having children or not, employment (employed vs. non-employed/retired), income (very low/low vs. average/high). The immunity-related variables included personal infection by the coronavirus (yes vs. no), infection of a very close person/family member (yes vs. no; used to indirectly assess exposure to the virus), and being vaccinated against COVID-19 (yes vs. no). Participants were also asked about the presence of any chronic illness.

Statistical analyses

Descriptive statistics were used to examine the levels of COVID-related psychological distress. A series of MANOVAs, with COVID-related perceived stress and perceived changes in emotional quality of life as the dependent variables, and the socio-demographic and the immunity-related variables as the independent variables, were performed so as to identify the potential impact of the latter on the first. Also, a series of hierarchical regression analyses were performed to examine the relation of the immunity-related variables, representations, and coping behaviours to COVID-related perceived stress and perceived changes in quality of life, after controlling for sociodemographic variables. Finally, chi-square tests were used to examine the association of the pandemic anxiety symptoms (none or very few vs. some symptoms; please see, below, the findings about the pandemic-related anxiety symptoms) with the sociodemographic and immunity-related variables. A logistic regression was performed to examine the potential impact of all pandemic-related factors on pandemic-related anxiety symptoms, after controlling for the sociodemographic variables. A significance level of .01 was employed for all analyses.

Results

Levels of pandemic-related psychological distress

Concerning COVID-related perceived stress, 17.9% reported that they never or almost never experienced stress; 77.9% reported that they experienced stress from sometimes to fairly often, while 4.2% experienced stress often or very often. Overall, the mean level of COVID-related perceived stress was low to medium (M=1.78, SD=.74, min=0, max=3.80). Regarding perceived changes in emotional quality of life, 49.6% reported at least some worsening in their emotional quality of life (10.6% reported a great decline); 34.4% reported almost no change; 16% reported at least somewhat improved emotional quality of life (2.2% reported a marked improvement).

Regarding COVID-related anxiety symptoms, 57.9% reported no anxiety symptoms at all, whereas 22.5% reported at least one symptom for several days during the last two weeks. The remainder (19.6%) reported one or two symptoms for just a day or two. Twenty-five persons (4.8%) reported a score ≥ 9 which indicates a probably dysfunctional coronavirus-related anxiety (Lee, 2020). The most frequently reported symptoms were feelings of dizziness or lightheadedness, nausea or stomach problems, and sleep difficulties. Due to the great skewness observed in this scale, the scores were collapsed into two groups for subsequent analyses: at least one symptom for several days (22.5%) and none or very rare symptoms (77.5%).

Distress and socio-demographic variables

There were no significant differences in COVID-related perceived stress and changes in emotional quality of life across socio-demographic variables, Wilks λs<.99, Fs(2, 510)<3.30, p>.01, partial η^2s<.015. Also, age was not related to these indices of distress, Pearson rs <.12, p>.01.

Regarding the pandemic-related anxiety symptoms, significant associations with gender, chi-square=12.27, p<.001, and income (high vs. low), chi-square<12.59, p<.001, were found. Concerning gender, 26.8% of the females reported at least one symptom for several days vs. 13% of males. Concerning income, 26.9% of the lower-income participants reported at least one symptom for several days vs. 12.9% of those with high income. There was no statistically significant association with the other sociodemographic variables, chi-squares<2.80, p>.05. Age was not associated with the anxiety symptoms, F(1, 518)=1.38, p>.05.

Distress and pandemic-related factors

Personal infection by the coronavirus, infection of a close person, and vaccination were not associated with the pandemic-related perceived stress or perceived changes in emotional quality of life, Wilks λs<.99, Fs(2, 515)<2.80, p>.05, partial η^2s<.01. These pandemic-related factors were not associated with COVID-related anxiety as well, chi-squares<3.20, p>.05.

Table 1 presents the Pearson r correlations between COVID-related perceived stress, changes in emotional quality of life, and COVID-related representations and coping behaviours. Perceived stress was significantly related to certain representations and coping behaviours. Especially, to worry, emotional representations, and wishful thinking, in a positive way, and to positive attitude, in a negative way, rs>.25, p<.001. Perceived changes in emotional quality of life were more strongly related to positive attitude, r=.22, p<.001, and wishful thinking, r=-.21, p<.001.

Table 2 presents the differences in COVID-related representations and coping behaviours for patients reporting none or rare COVID-related anxiety symptoms vs. those reporting at least one symptom for several days. The latter reported higher levels of worry, emotional representations, wishful thinking, and religious coping (p<.001), as well as lower levels of personal control (p<.01).

Table 1. *Descriptive Statistics and Intercorrelations of COVID-related Perceived Stress, Changes in Emotional Quality of Life, Representations, and Coping Behaviours (N=520)*

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1. Perceived stress	1.00															
2. Emotional QoL changes	-.46**	1.00														
3. Possibility to get infected	.12*	-.11	1.00													
4. CR – consequences	.06	-.05	.19**	1.00												
5. CR – timeline	.13*	-.01	.16**	.53**	1.00											
6. CR – personal control	.02	.05	-.06	-.14*	-.11	1.00										
7. CR – treatment control	-.09	.10	-.01	.13*	.11	.19**	1.00									
8. CR – identity	.05	.04	.17**	.49**	.52**	-.18**	.17**	1.00								
9. CR – worry	.29**	-.08	.27**	.41**	.46**	-.18**	.07	.511**	1.00							
10. CR – coherence	-.09	-.01	.10	.25**	.19**	-.08	.19**	.18**	.20**	1.00						
11. CR – Emotional	.43**	-.17**	.24**	.33**	.38**	-.09	.09	.41**	.71**	.16**	1.00					
12. Positive attitude	-.25**	.22**	.07	.06	.08	.03	.15*	.16*	.07	.17**	.02	1.00				
13. Seeking social support	.12*	-.06	.04	.04	.09	.14*	.07	.06	.06	.09	.13*	.46**	1.00			
14. “Wait-and-see” approach		.01	-.09	.03	-.10	-.06	.05	-.11	-.14*	-.20**	-.18**	-.16*	.01	-.08	1.00	
15. Wishful thinking	.38**	-.21**	.11	.02	.11	.11	.02	.02	.11	.02	.19**	.12*	.20**	.25**	1.00	
16. Religious coping	.11*	-.01	.02	.05	.14*	.19**	.07	.07	.13*	-.04	.13*	.24**	.19**	.14*	.23**	1.00
Mean	1.78	3.44	3.88	8.37	7.16	4.02	5.87	7.40	6.85	7.64	6.78	1.68	1.50	1.34	1.59	.61
Standard deviation	.74	1.22	.94	1.73	1.70	2.16	1.92	1.69	2.52	1.81	2.53	.64	.70	.66	.77	.80

**Note.* QoL = quality of life; CR = COVID-related representations.

* $p < .01$, ** $p < .001$

Table 2. *Means and Standard Deviations of COVID-related Representations and Coping Behaviours for None/Rare vs. at Least One COVID-related Anxiety Symptom for Several Days (N = 520)*

	None/rare symptoms	At least one symptom for several days	
	Mean (SD)	Mean (SD)	*F* (1, 518)
Possibility to get infected	3.95 (.84)	4.01 (.94)	.46
CR – consequences	8.31 (1.73)	8.61 (1.69)	2.78
CR – timeline	7.08 (1.73)	7.45 (1.53)	4.43
CR – personal control	3.89 (2.11)	4.48 (2.27)	6.86*
CR – treatment control	5.85 (1.91)	5.95 (1.96)	.26
CR – identity	7.36 (1.73)	7.53 (1.54)	.92
CR – worry	6.65 (2.55)	7.53 (2.30)	11.16**
CR – coherence	7.69 (1.78)	7.46 (1.91)	1.44
CR – emotional	6.39 (2.54)	8.13 (1.98)	46.58**
Positive attitude	1.71 (.64)	1.59 (.63)	3.55
Seeking social support	1.46 (.71)	1.63 (.64)	5.28
"Wait-and-see" approach	1.32 (.67)	1.43 (.63)	2.71
Wishful thinking	1.48 (.76)	1.98 (.66)	42.48**
Religious coping	.51 (.72)	.95 (.86)	28.90**

**Note.* CR = COVID-related representations.

* $p < .01$, ** $p < .001$

After controlling for the socio-demographic variables (in relevant hierarchical regression analyses), the factors related to COVID-related perceived stress, R^2_{change} =.39, $F(17, 493)=19.56$, $p<.001$, were emotional representations, β=.35, $t=6.84$, $p<.001$, positive attitude, β=-.36, $t=-8.32$, $p<.001$, seeking social support, β=.18, $t=4.23$, $p<.001$, and wishful thinking, β=.30, $t=7.66$, $p<.001$. The factors related to perceived changes in emotional quality of life, R^2_{change} =.16, $F(17, 493)=5.51$, $p<.001$, were again positive attitude, β=.32, $t=6.29$, $p<.001$, seeking social support, β=-.16, $t=-3.31$, $p<.01$, and wishful thinking, β=-.17, $t=-3.75$, $p<.001$. The immunity-related factors were not related to these pandemic-related stress indices.

Finally, the logistic regression performed to examine the effects of the COVID-related factors on the likelihood that participants report none/rare vs. at least one COVID-related anxiety symptom for several days, after controlling for the sociodemographic variables, was statistically significant, $\chi^2(27)=137.43$, $p<.001$; Nagelkerke R^2=36%. Higher levels of emotional representations, OR=1.62, 95% CI [1.35, 1.94], and wishful thinking, OR=1.98, 95% CI [1.35, 2.91], were linked to more symptoms, whereas higher levels of positive attitude were linked to fewer symptoms, OR=.52, 95% CI [.32, .85]. The immunity-related factors were not related to COVID-related anxiety.

Discussion

The present study aimed to examine the emotional adaptation to the COVID-19 pandemic two years following its onset and its association with immunity-related and self-regulation factors. The findings of this study seem to provide support to our first hypothesis. Findings suggest that a significant proportion of the participants continue to report moderate levels of COVID-related distress, even almost two years following the outburst of the COVID-19 pandemic. Still, it should be noted that less than 5% reported high perceived stress or severe symptoms of COVID-related anxiety, and only about 10% reported a marked decline in their emotional quality of life. In other words, although the pandemic is a major disruptive situation that continues to affect people's well-being, only for a rather small cohort of the participants, the ongoing situation seems to cause major mental difficulties. It is

crucial, however, as Gavin et al. (2021) and Robinson et al. (2022) suggested, to identify the characteristics of this cohort for preventive and intervention purposes.

At the same time, the finding that 16% reported at least some improvement in their emotional quality of life should not be overlooked. It is possible that, for some persons, the pandemic-related crisis provided the opportunity to demonstrate their resilience and personal abilities (see, for example, Matthews et al., 2022; Margolies et al., 2021). Examining the social and personal characteristics of this specific group is also important to better understand resilience and growth in a crisis.

According to the findings, female gender and lower income were related to a crucial marker of pandemic-related distress, that is anxiety symptoms. These two factors were associated with adaptation to the pandemic also in several previous studies (e.g., Pashazadeh Kan et al., 2021). This recurring finding indicates that persons with fewer personal or socioeconomic resources are at increased risk of poor adaptation. Although several processes have been identified to underlie this risk (e.g., Eisler & Hersen, 2000; Glymour et al., 2014), more research is needed to detect the potential additional (social or personal) characteristics that may cause prolonged distress in these groups of people during a pandemic.

On the other hand, age which typically is a significant sociodemographic correlate of distress (e.g., Candeias et al., 2021), was not related in our study to any of the indices of COVID-related distress. This may be because the impact of the pandemic on psychological well-being is not limited to any specific age group in the long run.

In contrast to our hypotheses, infection by the coronavirus and vaccination (i.e., the immunity-related factors; third hypothesis) and illness representations of COVID (all but emotional representations; part of the second hypothesis) were unrelated to COVID-related distress. Previous studies have shown that COVID representations are an important correlate of psychological well-being (e.g., Hubbard et al., 2021; Neto et al., 2021), while we also expected infection and vaccination to be related to the levels of distress. However, the results showed that this was not the case in this study. A possible explanation for this unexpected finding may be that, as the experience with the pandemic progresses, the main points of concern for the general population are not the possibility of getting infected or the relevant danger to health, as might have been during the earlier phases of the pandemic, but the broader consequences of the situation (e.g., its financial impact, the insecurity about the future, etc.; Fluharty & Fancourt, 2021). The finding that certain coping behaviours were the stronger and more frequent correlates of all indices of COVID-related distress seems to provide more support to this potential explanation.

The coping behaviours evaluated in this study encompassed individuals' overall personal experiences of the pandemic and were not limited to the fear of infection or its impact on health. Three coping behaviours were related to the indices of distress over and above sociodemographic variables and other COVID-related factors. Namely, a positive attitude, seeking social support, and wishful thinking. As in previous studies (e.g., Kirby et al., 2022), and per our hypothesis (part of the second one), approach behaviours (i.e., positive attitude) were related to lower levels of COVID-related distress, whereas avoidance (i.e., wishful thinking) was related to worse levels of distress. Furthermore, in accordance with previous studies (e.g., Zsido et al., 2022), social support was related to better outcomes. It seems that focusing on what one can do to cope, keeping an optimistic perspective, as well as having support from family and friends can facilitate a better adaptation to the stressful conditions that the pandemic continued to trigger (see also, Hagger et al., 2017; Folkman, 1997). At the same time, wishful thinking may reflect a personal difficulty in dealing with a major health crisis and its consequences (e.g., Hagger et al., 2017) and, therefore, be related to lower levels of COVID-related emotional well-being.

However, the study is faced with certain limitations and thus the findings should be considered in light of them. Specifically, this is a correlational study. Therefore, the direction of the relationships (e.g., between COVID-related representations or coping behaviours and perceived distress) remains unclear. In addition, sampling biases are often involved in online studies (e.g., older adults are less likely to participate). Almost two-thirds of the participants were females and this might have an impact on the results. The majority of the participants were rather well-educated and thus the findings may not be generalized to persons with other characteristics. The

assessment method for coping behaviours did not clarify which strategies were used for different aspects of the pandemic experience (e.g., lifestyle changes, financial and occupational difficulties, health threats, etc.). A more detailed approach could have provided valuable insights into the role of coping. Additionally, the 'perceived changes in emotional quality of life' scale was specifically developed for this study. Although it appears to have face validity, other forms of validity such as discriminant or predictive validity, have not yet been evaluated. Furthermore, COVID-related representations were assessed using only a single item for each. Finally, specific details about the infection and the vaccination (e.g., the severity of symptoms in the case of infection, the time elapsed since the vaccination, etc.) were not examined, although their association with the COVID-related distress levels might have been significant.

Despite these limitations, the findings of this study shed some light on the long-term process of emotional adaptation to the COVID-19 pandemic. Results show that, even two years following the outburst of the pandemic, there is still a small part of the population that continues to report high levels of specific COVID-related distress. This emotional impact of the pandemic seemed to be more strongly related to the overall experience of the situation than to the specific risk of infection and potential consequences. A shift in people's reactions towards the pandemic may have taken place: most people have probably been familiarised to some degree with the risk of infection and were likely, two years after the outburst of the pandemic, to pay more attention to the broader aspects of the condition.

Gender and income seem to be two of the factors that define the group of people who report the greatest emotional impact of the pandemic. However, more research is needed to more explicitly clarify the specific characteristics of this group. This knowledge is crucial to developing appropriate and well-targeted intervention/prevention programs that will facilitate the emotional adaptation of this population in similar situations in the future. The finding that positive attitude and social support are two factors that are linked to better emotional well-being may also be useful to build prevention/intervention programs that will more effectively support the communities during a major health crisis. With the increasing likelihood of other similar pandemics occurring in the near future (Marani et al., 2021), proper preparation to provide essential psychological help to the general population is of great importance. Towards this end, it is crucial to gain a better understanding of the long-term adaptation process within the general population and the factors influencing it, as this study aimed to explore.

References

Broadbent, E., Petrie, K.J., Main, J., & Weinman, J. (2006). The Brief Illness Perception Questionnaire. *Journal of Psychosomatic Research, 60*, 631 – 637. https://doi.org/10.1016/j.jpsychores.2005.10.020

Campo-Arias, A., Pedrozo-Cortés, M. J., & Pedrozo-Pupo, J. C. (2020). Pandemic-Related Perceived Stress Scale of COVID-19: An exploration of online psychometric performance. *Revista Colombiana de Psiquiatría (English ed.), 49*(4), 229–230. https://doi.org/10.1016/j.rcpeng.2020.05.001

Candeias, A., Galindo, E., Stueck, M., Portelada, A., & Knietzsch, J. (2021). Psychological adjustment, quality of life and well-being in a German and Portuguese adult population during COVID-19 pandemics crisis. *Frontiers in Psychology, 12*, 674660. https://doi.org/10.3389/fpsyg.2021.674660

Cohen, S., Kamarck, T., & Mermelstein, R. (1983). A global measure of perceived stress. *Journal of Health and Social Behavior, 24*(4), 385–396. https://doi.org/10.2307/2136404

Eisler, R.M., & Hersen, M. (Eds.). (2000). Handbook of gender, culture, and health. Psychology Press. https://doi.org/10.4324/9781410602244

Faul, F., Erdfelder, E., Lang, A. G., & Buchner, A. (2007). G*Power 3: a flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*(2), 175–191. https://doi.org/10.3758/bf03193146

Fluharty, M., & Fancourt, D. (2021). How have people been coping during the COVID-19 pandemic? Patterns and predictors of coping strategies amongst 26,016 UK adults. *BMC Psychology, 9*(1), 107. https://doi.org/10.1186/s40359-021-00603-9

Folkman S. (1997). Positive psychological states and coping with severe stress. *Social Science & Medicine, 45*(8), 1207–1221. https://doi.org/10.1016/s0277-9536(97)00040-3

Folkman, S., Lazarus, R. S., Dunkel-Schetter, C., DeLongis, A., & Gruen, R. J. (1986). Dynamics of a stressful encounter: cognitive appraisal, coping, and encounter outcomes. *Journal of Personality and Social Psychology, 50*(5), 992–1003. https://doi.org/10.1037//0022-3514.50.5.992

Gavin, B., Lyne, J., & McNicholas, F. (2021). The global impact on mental health almost 2 years into the COVID-19 pandemic. *Irish Journal of Psychological Medicine, 38*(4), 243–246. https://doi.org/10.1017/ipm.20221.75

Glymour, M., Avendano, M., & Kawachi, I. (2014). Socioeconomic Status and Health. In L.F. Berkman, I. Kawachi & M. Glymour (Eds.), Social epidemiology. Oxford Academic. https://doi.org/10.1093/med/9780195377903.003.0002

Hagger, M.S., Koch, S., Chatzisarantis, N.L.D., & Orbell, S. (2017). The common-sense model of self-regulation: Meta-analysis and test of a process model. *Psychological Bulletin, 143*, 1117-1154. https://doi.org/10.1037/bul0000118

Haywood, D., & Mason, O. (2023). Perception of COVID-19 threat, low self-efficacy, and external locus of control lead to psychological distress during the COVID-19 pandemic. *Psychology, Health & Medicine, 28*(8), 2381–2388. https://doi.org/10.1080/13548506.2022.2124290

Hubbard, G., den Daas, C., Johnston, M., & Dixon, D. (2021). Sociodemographic and psychological risk factors for anxiety and depression: Findings from the COVID-19 health and adherence research in Scotland on mental health (CHARIS-MH) cross-sectional survey. *International Journal of Behavioral Medicine, 28*(6), 788–800. https://doi.org/10.1007/s12529-021-09967-z

Kalaitzaki, A., Tsouvelas, G., Tamiolaki, A., & Konstantakopoulos, G. (2022). Post-traumatic stress symptoms during the first and second COVID-19 lockdown in Greece: Rates, risk, and protective factors. *International Journal of Mental Health Nursing, 31*(1), 153–166. https://doi.org/10.1111/inm.12945

Karademas, E.C. (1998). The adaptation in Greek of the Ways of Coping Scale. *Psychology, The Journal of the Hellenic Psychological Association, 5*(3), 260-273.

Karaivazoglou, K., Konstantopoulou, G., Kalogeropoulou, M., Iliou, T., Vorvolakos, T., Assimakopoulos, K., Gourzis, P., & Alexopoulos, P. (2021). Psychological distress in the Greek general population during the first COVID-19 lockdown. *BJPsych Open, 7*(2), e59. https://doi.org/10.1192/bjo.2021.17

Kirby, L. D., Qian, W., Adiguzel, Z., Afshar Jahanshahi, A., Bakracheva, M., Orejarena Ballestas, M. C., Cruz, J., Dash, A., Dias, C., Ferreira, M. J., Goosen, J. G., Kamble, S. V., Mihaylov, N. L., Pan, F., Sofia, R., Stallen, M., Tamir, M., van Dijk, W. W., Vittersø, J., & Smith, C. A. (2022). Appraisal and coping predict health and well-being during the COVID-19 pandemic: An international approach. *International Journal of Psychology/Journal International de Psychologie, 57*(1), 49–62. https://doi.org/10.1002/ijop.12770

Kozina, A., Peras, I., Veldin, M., & Pivec, T. (2022). The psychological response and perception of stress during the COVID-19 pandemic in Slovenia: Three-wave repeated cross-sectional study. *Stress and health, 38*(5), 950–960. https://doi.org/10.1002/smi.3147

Lee S. A. (2020). Coronavirus Anxiety Scale: A brief mental health screener for COVID-19 related anxiety. *Death Studies, 44*(7), 393–401. https://doi.org/10.1080/07481187.2020.1748481

Leventhal, H., Philips, L.A., & Burns, E. (2016). The Common-Sense Model of Self-regulation (CSM): a dynamic framework for understanding illness self-management. *Journal of Behavioral Medicine, 39*, 935-946. https://doi.org/10.1007/s10865-016-9782-2

Li, N., Fan, L., Wang, Y., Wang, J., & Huang, Y. (2022). Risk factors of psychological distress during the COVID-19 pandemic: The roles of coping style and emotional regulation. *Journal of Affective Disorders, 299*, 326–334. https://doi.org/10.1016/j.jad.2021.12.026

Li, Y., Wang, A., Wu, Y., Han, N., & Huang, H. (2021). Impact of the COVID-19 pandemic on the mental health of college students: A systematic review and meta-analysis. *Frontiers in Psychology, 12*, 669119. https://doi.org/10.3389/fpsyg.2021.669119

Marani, M., Katul, G. G., Pan, W. K., & Parolari, A. J. (2021). Intensity and frequency of extreme novel epidemics. *Proceedings of the National Academy of Sciences of the United States of America, 118*(35), e2105482118. https://doi.org/10.1073/pnas.2105482118

Margolies, S.O., Patidar, S.M., Chidgey, B.A., Goetzinger, A., Sanford, J.B., & Short, N.A. (2021). Growth in crisis: A mixed methods study of lessons from our patients with chronic pain during the COVID-19 pandemic. *Journal of Contextual Behavioral Science, 19*, 12-16. https://doi.org/10.1016/j.jcbs.2020.10.010

Matthews, R. A., Wayne, J. H., Smith, C., Casper, W. J., Wang, Y. R., & Streit, J. (2022). Resign or carry-on? District and principal leadership as drivers of change in teacher turnover intentions during the COVID-19 crisis: A latent growth model examination. *Journal of Occupational and Organizational Psychology*, *95*(3), 687–717. https://doi.org/10.1111/joop.12397

Myerson, J., Strube, M. J., Green, L., Hale, S., & Bernstein, B. (2022). Differential effects of psychological distress on mitigation and vaccination: A public health conundrum. *Frontiers in Psychology, 13*, 923056. https://doi.org/10.3389/fpsyg.2022.923056

Neto, D., Nunes da Silva, A., Roberto, M. S., Lubenko, J., Constantinou, M., Nicolaou, C., Lamnisos, D., Papacostas, S., Höfer, S., Presti, G., Squatrito, V., Vasiliou, V. S., McHugh, L., Monestès, J. L., Baban, A., Alvarez-Galvez, J., Paez-Blarrina, M., Montesinos, F., Valdivia-Salas, S., Ori, D., Kassianos, A. P. (2021). Illness Perceptions of COVID-19 in Europe: Predictors, impacts and temporal evolution. *Frontiers in Psychology, 12*, 640955. https://doi.org/10.3389/fpsyg.2021.640955

Nikopoulou, V. A., Gliatas, I., Blekas, A., Parlapani, E., Holeva, V., Tsipropoulou, V., Karamouzi, P., Godosidis, A., & Diakogiannis, I. (2022). Uncertainty, stress, and resilience during the COVID-19 pandemic in Greece. *The Journal of Nervous and Mental Disease, 210*(4), 249–256. https://doi.org/10.1097/NMD.0000000000001491

Pashazadeh Kan, F., Raoofi, S., Rafiei, S., Khani, S., Hosseinifard, H., Tajik, F., Raoofi, N., Ahmadi, S., Aghalou, S., Torabi, F., Dehnad, A., Rezaei, S., Hosseinipalangi, Z., & Ghashghaee, A. (2021). A systematic review of the prevalence of anxiety among the general population during the COVID-19 pandemic. *Journal of Affective Disorders, 293*, 391–398. https://doi.org/10.1016/j.jad.2021.06.073

Robinson, E., Sutin, A. R., Daly, M., & Jones, A. (2022). A systematic review and meta-analysis of longitudinal cohort studies comparing mental health before versus during the COVID-19 pandemic in 2020. *Journal of Affective Disorders, 296*, 567–576. https://doi.org/10.1016/j.jad.2021.09.098

Sasaki, N., Kuroda, R., Tsuno, K., Imamura, K., & Kawakami, N. (2022). COVID-19 vaccination did not improve employee mental health: A prospective study in an early phase of vaccination in Japan. *Neuropsychopharmacology Reports, 42*(2), 230–232. https://doi.org/10.1002/npr2.12250

Shamblaw, A. L., Rumas, R. L., & Best, M. W. (2021). Coping during the COVID-19 pandemic: Relations with mental health and quality of life. Canadian Psychology / Psychologie Canadienne, *62*(1), 92–100. https://doi.org/10.1037/cap0000263

Tan, C. M., Owuamalam, C., Sarma, V. J., & Ng, P. K. (2023). Confidence in COVID-19 vaccines moderates the association between vaccination status and mental distress. *Stress and Health, 39*(4), 744–752. https://doi.org/10.1002/smi.3216

Zhang, N. (2023). Risk perception, mental health distress, and flourishing during the COVID-19 pandemic in China: The role of positive and negative affect. *Current Psychology, 42*, 30576–30584. https://doi.org/10.1007/s12144-021-02624-4

Zsido, A. N., Arato, N., Inhof, O., Matuz-Budai, T., Stecina, D. T., & Labadi, B. (2022). Psychological well-being, risk factors, and coping strategies with social isolation and new challenges in times of adversity caused by the COVID-19 pandemic. *Acta Psychologica, 225*, 103538. https://doi.org/10.1016/j.actpsy.2022.103538

Yuan, J., Xu, Y., Wong, I. O. L., Lam, W. W. T., Ni, M. Y., Cowling, B. J., & Liao, Q. (2024). Dynamic predictors of COVID-19 vaccination uptake and their interconnections over two years in Hong Kong. *Nature Communications, 15*(1), 290. https://doi.org/10.1038/s41467-023-44650-9

ΕΜΠΕΙΡΙΚΗ ΕΡΓΑΣΙΑ | RESEARCH PAPER

Ανοσία, αυτορρύθμιση, και δυσφορία που σχετίζεται με την COVID-19 δυο χρόνια μετά το ξέσπασμα της πανδημίας

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ΛΕΞΕΙΣ ΚΛΕΙΔΙΑ

Πανδημία
COVID-19
Συναισθηματική ευεξία
Ποιότητα ζωής
Αναπαραστάσεις για COVID-19
Αντιμετώπιση της πανδημίας

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ΠΕΡΙΛΗΨΗ

Η παρούσα μελέτη αξιολόγησε την ψυχολογική δυσφορία που σχετίζεται με την πανδημία COVID-19 σε ενήλικες Έλληνες, δύο χρόνια μετά την έναρξή της, και να εξετάσει τη σχέση της με την ανοσία και παράγοντες αυτορρύθμισης. Μετρήθηκαν τρεις δείκτες δυσφορίας που σχετίζονται με την COVID: το άγχος της COVID, το αντιλαμβανόμενο στρες που σχετίζεται με την COVID και τις αντιληπτές αλλαγές στη συναισθηματική ποιότητα ζωής. Από τους 520 συμμετέχοντες που συμπλήρωσαν το ερωτηματολόγιο ψηφιακά (358 γυναίκες. Μ.Ο. ηλικίας=38.33 έτη, Τ.Α.=14.78), σχεδόν οι μισοί ανέφεραν πτώση στη συναισθηματική ποιότητα ζωής, αλλά λιγότερο από το 5% παρουσίασαν υψηλό στρες που σχετίζεται με την πανδημία ή σοβαρό άγχος που σχετίζεται με τον COVID. Είναι ενδιαφέρον ότι ορισμένοι συμμετέχοντες ανέφεραν βελτίωση στη συναισθηματική ποιότητα ζωής. Η μόλυνση, ο εμβολιασμός και οι περισσότερες αναπαραστάσεις της ασθένειας που σχετίζονται με την COVID δεν συσχετίστηκαν σημαντικά με τους δείκτες δυσφορίας. Όμως, οι συμπεριφορές αντιμετώπισης του στρες σχετίστηκαν ισχυρά με τους δείκτες δυσφορίας. Η μελέτη δείχνει ότι, δύο χρόνια μετά την έναρξη της πανδημίας, η δυσφορία συνδέεται πιο στενά με τις συνολικές εμπειρίες και τις συμπεριφορές αντιμετώπισης των ατόμων παρά με τον κίνδυνο μόλυνσης ή τον φόβο των συνεπειών. Τα ευρήματα υπογραμμίζουν την σημαντικότητα των ατομικών μηχανισμών αντιμετώπισης και του ευρύτερου ψυχοκοινωνικού αντίκτυπου κατά το σχεδιασμό παρεμβάσεων για την αποτελεσματική διαχείριση της ψυχολογικής δυσφορίας που σχετίζεται με την πανδημία. Μελλοντικές παρεμβάσεις για την ανακούφιση της ψυχολογικής δυσφορίας θα πρέπει να επικεντρώνονται στην προώθηση προσαρμοστικών συμπεριφορών αντιμετώπισης του στρες και στην εξέταση της συνολικής εμπειρίας της πανδημίας.

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