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RESEARCH ARTICLE

Resilience and Spirituality as Moderators between Several Concerns and Psychological Distress during the COVID-19 Pandemic

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ABSTRACT

The COVID-19 pandemic has led to psychological stress caused by several threats such as concerns for health, economic problems, and several others. This study aims at exploring if inner resilience and belief in spiritual support may moderate the relationship between the concerns, on one side, and distress and the attitudes towards anti-COVID-19 vaccines, on the other side. We conducted a study involving 235 participants through an online survey from March to April 2021 in Italy, immediately after the last lockdown that took place in March 2021. Several scales were used to measure various difficulties and concerns, resilience, beliefs about spiritual support, conspiracy beliefs about COVID-19, psychological distress, and acceptance of the anti-COVID-19 vaccines. We found that resilience moderates the relationship between several concerns and psychological distress during the COVID-19 pandemic, especially among the participants who have strong beliefs in spiritual support.

Introduction

In March 2020, the World Health Organization (WHO) classified COVID-19 as a pandemic and warned that it could become one of the deadliest in history. The WHO counted more than 643 million confirmed cases of COVID-19 and about 6.7 million deaths reported globally up to the end of 2022¹⁻². The Covid-19 pandemic has brought about significant challenges and emotive distress in all societies³⁻⁴, which varied from one country to another according to cultural, political, psychosocial, and individual factors. Moreover, due to their conspiracy belief or other factors, a certain percentage of the population was reluctant to get the anti-COVID vaccines.⁵⁻⁶ However, some protective psychological factors were underinvestigated in people's reactions to these global challenges.

This study aimed at exploring the role of resilience and the perception of spiritual support in emotive reactions and acceptance of anti-COVID vaccines immediately after the second COVID-19 lockdown in Italy, the EU country that was hit hardest by the pandemic in 2020. More specifically, we investigated if these two psychological factors would moderate the relationship between various Covid-19 related concerns, on one side, and emotive distress and attitudes toward anti-COVID-19 vaccines, on the other side. In the following parts, we will first summarize the impact of stressors in general and during the pandemic time. Next, we will describe the studies on the two psychological factors of our interest, resilience and perceived spiritual support.

The types and impact of stressors in general and during the COVID-19 pandemic

Many scholars in the context of vulnerability-stress models suggested that stressful life events and chronic stress, combined with pre-existing vulnerability factors, can lead to psychological problems such as anxiety, distress, or depression⁷⁻⁸, especially when the intensity and duration of a stressor exceed the individual's (perceived) resources⁹.

During the COVID-19 pandemic, researchers have attempted to classify the aspects of the related stressors¹⁰⁻¹². These aspects included, but were not limited to: a) the uncertainty about the consequences and end of the pandemic; b) the systemic impact of the pandemic on several facets of society (e.g., the economy, trade, entertainment industry, health system, schools, etc.); c) the need to cope with multidimensional threats and stressful events (e.g., the risk and consequences of infection, health problems, family

conflict, unemployment, economic problems, loneliness); d) daily habits and lifestyle were disturbed and modified by pandemic (e.g., lockdowns, school closures, social distancing, restrictions in social life, wearing a face mask); and e) the restricted or blocked accessibility to support system and protective factors (e.g., friends and relatives, participation in sports, entertainment, and social events, etc.).

Within the past two years, several studies around the world have confirmed that the COVID-19 pandemic has caused anxiety, worry, distress, helplessness, and depression¹²⁻³⁹ to some individuals appearing more vulnerable than others^{12,40-41}. In regard to this, scholars emphasized the importance of studying risk and protective factors and suggested several of them³. For example, among the risk factors, it emerged as very important to consider pre- and intra-pandemic physical and mental disorders, since they may predispose to further illness^{10-11,20,42-46}. Some studies found that young people especially in the transitional age group (16–25 years) developed higher distress^{26,29,46-47} and that the effects of the fear of COVID-19 on anxiety and stress were higher on women compared to men^{26,48-50}. In addition, several longitudinal studies indicated that working in the health sector, but also unemployment, low education, and low income were associated with increased mental distress and worry^{29,47,50}. Lack of outdoor space⁴⁵, residing in urban areas⁵¹, and rising sedentary behaviour are environmental factors that appear to lead to poorer mental health⁵². Furthermore, social risk factors include being alone, having fewer friends and supporters, feeling lonely^{51,53}, and limited relationships with family and friends⁵⁴.

On the other hand, the literature also spots light on the protective factors that may mitigate the relationships between stress, mental diseases, and vulnerability, such as some psychological characteristics⁵⁵⁻⁵⁷. For example, resilience has emerged as an important protective factor⁵⁸⁻⁶¹, and so has spirituality⁶¹. Despite the surging research on their beneficial influences on psychological adaptation, the extent to which such potential factors interacted with Covid-19-related distress has largely remained unexplored. It is also interesting to explore their interaction with the public attitudes toward one of the main solutions against the pandemic globally: anti-COVID vaccines⁵⁻⁶. The previous studies found contradictory results. For example, Kimhi and collaborators found a significant negative correlation between the level of religiosity and resilience (individual and societal) and vaccine

acceptance⁶².—On the contrary, another study suggested that resilience is an essential personal asset that helps individuals to navigate the stressors during COVID-19 and achieve more positive changes⁶³. In front of these contradictions, we wanted to explore further the relationships between resilience, spirituality, pandemic-related distress and anti-COVID vaccine acceptance.

Resilience and psychological health during COVID-19

Trait resilience refers to a psychological ability and coping attitude that enable individuals to successfully deal with normal situations in life, as well as an ability to recover from negative circumstances involving adversity, stress, and trauma⁶⁴⁻⁶⁸. As pointed out by the Resilience Research Centre⁶⁸, “resilience is both the capacity of individuals to navigate their way to psychological, social, cultural and physical resources that sustain their wellbeing and their capacity individually and collectively to negotiate for these resources to be provided in culturally meaningful ways”. Resilience refers to the attitudes, knowledge, skills, resources, and circumstances that enable us to withstand stress and adapt to changes. Usually, resilience goes beyond one’s resources, as it can depend on the interaction between individual, family, social, cultural, economic, religious, political, and contextual factors.

Resilience can be analysed at individual⁶⁹, community⁷⁰⁻⁷¹, and national levels⁷²⁻⁷⁴. At the national level, resilience refers to the extent to which countries are prepared to deal with major social and economic crises. At the community level, resilience refers to how well the communities are equipped to overcome social and economic stressors. For example, during the COVID-19 pandemic, communities that had good quality public services and well-developed social networks were able to cope better with difficulties. At the individual level, some people may be predisposed to be more resilient. In addition, in supporting social circumstances, people can develop resilient attitudes and effective coping skills that help them to deal with external stressors.

The well-established literature has associated inner resilience: (a) positively with a quick recovery from distressful events with better well-being, life satisfaction, and positive affects^{66-67,75-77}, and (b) negatively with vulnerability, anxiety, depression, social dysfunction and psychological problems^{66-67,77,78-79}. During the COVID-19 pandemic⁸⁰⁻⁸², several studies found

that psychological resilience is a key factor in mental health⁸³⁻⁹⁰. However, few researchers have explored how resilience might interact with another potential protector: spirituality, against Covid-19 related distress. This study aimed at investigating this association and its moderation in relation to the outcome, as well as the attitude toward anti-COVID vaccines. We expected that people who perceived themselves as resilient will experience less distress in adversities during the pandemic, especially if they are convinced about spiritual support.

Spiritual support

The research found that victims of disasters may turn toward intrapersonal resources such as religion and/or spirituality to cope or to find meanings⁹¹⁻⁹⁵. Although the terms religion and spirituality are often used interchangeably in the literature⁹⁶⁻⁹⁹, recent attempts have been made to distinguish between these two constructs¹⁰⁰. Spirituality is generally conceptualized as a “personal, intrinsic phenomenon,” and a sense of belonging to and interconnectedness with a transcendental higher power or entity that provides a source of comfort and existential meaning as one of the explanatory framework or belief systems that provides individuals with answers to the big questions in life¹⁰¹⁻¹⁰², whereas religion could be considered as social feelings and beliefs^{100,103}.

Many studies have shown that spirituality and religiosity can function as a source of strength in facing challenging and difficult situations¹⁰⁴⁻¹⁰⁹. For example, cognitive and emotional spirituality has been associated with lower anxiety, post-traumatic stress and depression^{96-97,110-114}. Others have identified the positive effects of spirituality and religiousness on the ability of individuals to cope with diseases, enhance their quality of life and overcome psychological distresses that, in turn, contribute to optimal well-being¹¹⁵⁻¹¹⁶. During COVID-19-, a few studies showed the protection of spirituality against anxiety symptoms and psychological distress¹¹⁷⁻¹¹⁸.

Some studies found a positive relationship between spirituality as an important predictor of anti-vaccination attitudes and low faith in science, particularly in WEIRD (Western, Educated, Industrialized, Rich and Democratic) nations¹¹⁹⁻¹²¹.

This study aimed at investigating the role of one particular aspect of spirituality, perceived spiritual support, in this under-investigated area⁹²⁻⁹³. The consciousness-based measure of this concept was to reflect an existential relation with spiritual forces, designed to be meaningful across

diverse cultures. Such a profound *intrapersonal* relatedness was postulated as crucial as *interpersonal relatedness*^{93,122-123} for both individual and collective well-being¹²⁴. Its positive function in adaptation and adjustment was evident, as does perceived social support, following other types of disasters that imposed existential crises, as did the pandemic^{122, 125-126}. We were interested in the evidence of its similar role in Covid-19 induced distress under the circumstance of various pandemic-related concerns.

Based on the literature, we anticipated a similar effect of perceived spiritual support against Covid-19 induced distress. Due to the lack of similar studies, however, we were uncertain about its role in attitudes toward anti-COVID vaccines. For example, pro-vaccine attitudes might have been enhanced by the extent to which people are concerned about the risk of being infected by COVID-19 and the economic difficulties during the pandemic. However, belief in being supported by a higher power or existential relationship in adversities might help ease some concerns and distress, which could, in return, contribute to an opposite attitude.

Thus, it appears important to investigate the effect of spirituality on both psychological stress and vaccine-related attitude. In addition, we think that it would be interesting to evaluate the role of spiritual support in conjuncture with resilience; specifically, how both would interact in the relationship of various concerns (i.e., the risk of infection and economic difficulties) to COVID-19-induced distress and attitudes toward anti-COVID-19 vaccine.

We have considered also as control variables two additional factors: conspiracy beliefs and perceived social support.

Several studies have confirmed that social support provided by family members, relatives, friends, neighbours, or co-workers is a crucial resource that is associated with greater resilience to stress and that, as such, has played important role in reducing the negative impact of COVID-19 on mental health¹²⁷⁻¹²⁸. We hypothesize that perceived social support from family members and friends may be an important resource in coping with difficulties during this pandemic.

Since the beginning of the pandemic, a large number of conspiracy theories about COVID-19 has been spreading around the world¹²⁹. Conspiracy theories are defined as causal theories that attribute events to the intentional activities of certain groups¹³⁰. Evidence showed that belief in conspiracy theories is negatively associated with compliance to

governmental rules during the pandemic¹³¹⁻¹³³ and the intentions to get the anti-COVID-19 vaccine¹³⁴⁻¹³⁷.

Methods

Participants

The study enrolled 235 participants of Italian nationality (of which 177 were female, 66.8%). Most of the participants (68.5%) completed high school, 6.8% have an undergraduate degree, 11.9% graduate degree, and 5.1% post-graduate degree. A high percentage of the participants (48.9%) were students.

Procedure

A cross-sectional study was conducted in Italy during and immediately after the second lockdown in Italy, between March and April 2021. The survey was presented as an online research project, designed to investigate the psychological impacts of the COVID-19 pandemic. The link was distributed through some students and social media (Facebook, Instagram, WhatsApp) in the whole Italy, but most of the participants (76.3%) are residents in central Italy, where Rome is located. The questionnaire was uploaded on Google Forms, and it took approximately 20 minutes to complete contingent on a signed informed consent. The response rate was 93%, and the participants who did not respond to all the scales ($n = 23$) were omitted from the analyses. The study was approved by the Ethics Committee of the Department of Social and Developmental Psychology, Sapienza – University of Rome (Prot. 468).

Measures

Dependent Variables

Scale of Distress (13 emotional positive and negative states, e.g., calm, frightened, concerned, anxious, distressed, tense): The participants were asked to rate how they have been feeling lately on a 5-point scale (1 = never; 5 = always/usually). The Principal Axis Factoring produced a single dimension that explains 44.01% of the variance. An index of distress was calculated, and higher scores indicate higher levels of distress. Cronbach's α is .89.

Attitudes toward anti-COVID-19 vaccine: The participants were asked to rate on a 5-point scale concerning their level of agreement with two questions: (1) I have done/I plan to do one of the anti-COVID-19 vaccines; and (2) I am afraid of the anti-COVID-19 vaccines. An index of acceptance of the anti-COVID vaccine was

calculated by summing the responses to these two items, after having reversed the scores for the second item.

Independent Variables

Concern about the possibility to get infected by the Coronavirus: We considered two items: (1) the participants were asked to estimate how many people got the Coronavirus in their district on a 5-point scale (1 = neither one; 5 = a large number of people); and (2) the participants were asked to indicate on a 5-point scale (1 = not at all to 5 = extremely) the level of concern about the possibility to get the Coronavirus. We calculated an average between these two variables. Higher values indicate higher concern about the Coronavirus.

We also asked the participants to indicate the approximate number of people in Italy who got the Coronavirus until that moment, and the number of people who were positive at that moment in the country and in their place of living. Most ordinary people did not have precise information about statistics and made some distorted estimations; consequently, the information with this error was not considered in analyses.

Self-evaluation of the personal economic difficulties: We asked the participants to rate on 5-point scale the following two aspects: (1) In the last year I have been worrying about my economic situation; and (2) Do you worry about your

economic situation in this period? (1=not at all, 5=very much). An average sum was calculated.

Potential Moderators

The Brief Resilience Scale¹³⁸ (BRS): The participants estimated on a Likert scale of 5 points the level at which they agreed with the affirmations (1 = completely disagree; 5 = completely agree). The items of BRS included: (1) I tend to bounce back quickly after hard times; (2) I have a hard time making it through stressful events (r); (3) It does not take me long to recover from a stressful event; (4) It is hard for me to snap back when something bad happens (r); (5) I usually come through difficult times with little trouble; and (6) I tend to take a long time to get over set-backs in my life (r). A score was created by summing the averaged items, and higher results indicate a higher level of resilience. Cronbach's Alpha is .85.

Perceived Spiritual Support Scale^{93,126}(PSSS-S2): We used the six-item short-form of the original scale¹²⁶ as, newly validated in a U.S. disaster study⁹³. Both English and Italian versions were presented in Table 1. Because it was the first time that the PSSS appeared in the Italian language, two researchers translated and double-checked the Italian version. The Principal Axis Factoring was produced to support a single dimension that explains 84.16% of the variance. An index was calculated, and higher scores indicate higher levels of perceived spiritual support. Cronbach's α is .97.

Table 1. Italian vs. English versions of Perceived Spiritual Support Scale

Perceived Spiritual Support Scale (English)	Perceived Spiritual Support Scale (Italian)
Please indicate how much you agree or disagree with each statement using the scale below. (Note, you may replace the term God with the entity in your spiritual or religious faith or belief, such as the divine, a higher power, eternity, the supreme being, Buddha, nature, the spirit, the Mother Earth, the life force, or the ancestor, etc. (Please specify). There are no right or wrong answers. Responses are scored on a 4-point Likert scale: 1 - Strongly Disagree; 2 - disagree; 3 - agree; 4 - strongly agree	Per favore, indica quanto sei d'accordo o in disaccordo con ciascuna affermazione utilizzando la scala sottostante. (Nota, puoi sostituire il termine Dio con l'entità nella tua fede o credenza spirituale o religiosa, come il divino, un potere superiore, l'eternità, l'essere supremo, Buddha, la natura, lo spirito, la Madre Terra, la forza vitale, o l'antenato, ecc. (Per favore specifica). Non ci sono risposte giuste o sbagliate. Le risposte sono valutate su una scala Likert a 4 punti: 1 - Totalmente in disaccordo; 2 - In disaccordo; 3 - d'accordo; 4 - Totalmente d'accordo
1. I have an inner resource from my spiritual relationship with God that helps me face difficulties.	1. La connessione spirituale con Dio è una mia risorsa interiore e mi aiuta ad affrontare le difficoltà.
2. I experience the love and caring of God on a regular basis.	2. Sento costantemente l'amore e la protezione di Dio.
3. I often sense a secure unification with God at my heart.	3. Sento nel cuore un sentimento di unione sicura con Dio.
4. I have received spiritual support from my religious or spiritual leader/group.	4. Ho ricevuto supporto spirituale dalla mia guida/comunità religiosa.
5. My religious or spiritual faith has helped me cope during the time of difficulty.	5. La mia religione o fede spirituale mi ha aiutato a far fronte ai momenti difficili.
6. My religious or spiritual faith has provided me with comfort in uncertainty.	6. La mia religione o fede spirituale mi ha dato conforto nell'incertezza.

Control Variables

Social Support Scale (4 items): we asked the participants to rate how confident they are that they would receive emotional support from family members and friends (partner/children, parents, relatives, and friends) and from neighbours and colleagues on a Likert type scale of 5 points (1 – not at all sure; 5 – completely sure). We created two indexes of social support: (1) social support from family and friends; and (2) social support from others. The Cronbach Alphas are .74 and .58 respectively.

Conspiracy Beliefs About COVID-19: This scale is composed of 11 items developed for the purposes of this research. The Principal Axis Factoring was performed to estimate the factorial structure. We used Kaiser's criterion of 1, and a scree plot to determine the likely number of factors. A mono-factorial structure that explained 57.27% of the variance emerged from the analysis. An index was calculated, with higher scores indicating a higher level of conspiracy beliefs (Cronbach's α was 0.93).

Demographics: the participants indicated their age, gender (157= women and 78= men), and level of education.

Statistical Analyses

SPSS 25 software was employed to perform all analyses. First, the assumption of normality of the variables was evaluated to satisfy the request for distributions in all groups with respect to skew and kurtosis (< 2 and 9). Then, a power analysis (Gpower 3; 21) indicated that

using $p < 0.05$ as a threshold probability to reject the null hypothesis, and the expected correlations ($r = 0.15$), this sample size of 235 would cover 95% of power which would require a minimum sample size of 74. Secondly, bivariate correlations and multiple linear regression analyses were conducted to estimate the relationship between independent and dependent variables. Finally, we used simple slope analyses in SPSS to demonstrate interactions among variables of major interest.

Results

Correlations

As shown in Table 2, distress was correlated negatively with resilience ($r = -.61$), perceived spiritual support ($r = -.21$), perceived social support from friends ($r = -.32$), age ($r = -.54$; higher for younger participants), and level of education ($r = -.25$), and positively with economic difficulties ($r = .37$), concern about the possibility to get the Coronavirus ($r = .22$), and gender ($r = .17$).

As expected, the index of acceptance of the anti-COVID-19 vaccine was correlated negatively with the conspiracy attitudes ($r = -.45$). Resilience was associated positively with the perceived social support from family ($r = .24$) and friends ($r = .37$), with age ($r = .42$; higher for older participants), and with the level of education ($r = .25$), and negatively with distress and economic difficulties ($r = -.18$). Perceived spiritual support was correlated positively with age ($r = .36$).

Table 2. Correlations between the variables

	1)	2)	3)	4)	5)	6)	7)	8)	9)	10)	11)
1) Distress	-										
2) Vaccine	.09	-									
3) Resilience	-.61**	.05	-								
4) Spiritual support	-.21**	-.10	.04	-							
5) Concern COVID	.22**	.13	-.11	.08	-						
6) Economic diff.	.37**	-.01	-.18*	.07	.03	-					
7) Conspiracy	-.11	-.45**	.06	.17	-.03	-.05	-				
8) Family support	-.11	.03	.24**	.02	.03	.04	.04	-			
9) Soc. support	-.32**	-.11	.37**	.08	-.06	-.04	.11	.27**	-		
10) Age	-.54**	-.10	.42**	.36**	-.04	-.13	.19**	-.07	.36**	-	
11) Gender	.17**	.07	-.12	.10	.24**	.04	-.04	.06	.12	-.01	-
12) Level of education	-.25**	.11	.25**	.01	-.15	-.02	-.18*	.02	.35**	.31**	-.01

Regression analyses

To examine the relationships between the perception of main concerns in times of COVID-19 and our dependent variables, as well as the role of resilience and spiritual support in moderating this relationship, we conducted two Multiple

Regression Analyses using SPSS software. In the first analysis, we considered the level of distress as a criterion variable. We included as predictors the concern about the possibility to be infected by the Coronavirus, resilience, spiritual support, economic difficulties, and the interaction between them. We

also included some socio-demographic variables (age, gender, level of education), the perception of social support, and the conspiracy beliefs about COVID-19 as covariates. All the variables were standardized before entering the analysis.

The first regression model on distress accounted for 63% of the variance ($F(17,233) = 21.66, p < .001$). Significant positive predictors were concerns about the possibility to be infected by the Coronavirus ($\beta = .17, t = 3.85, p < .001$) and estimated economic difficulties showed a positive effect ($\beta = .28, t = 6.09, p < .001$). Negative predictors included both resilience ($\beta = -.36, t = -7.09, p < .001$), spiritual support ($\beta = -.17, t = -3.43, p < .001$), as expected. In addition,

the two-way interaction (concern about the possibility to be infected by the Coronavirus x spiritual support) ($\beta = -.10, t = -2.31, p < .02$), and triple interaction (concern about the possibility to get infected by the Coronavirus x resilience x spiritual support) ($\beta = -.15, t = -3.23, p < .001$) were both significant. Furthermore, a triple interaction (estimated economic difficulties x resilience x spiritual support) also showed a negative impact on distress ($\beta = -.15, t = -3.16, p < .002$). As for the covariates, age had a negative effect ($\beta = -.29, t = -6.00, p < .001$), indicating that older participants were less distressed than younger participants.

Table 3. Results of Multiple Regression Analysis for Distress as criterion variable

	β	t	p
Resilience	-.36	-7.09	.001
Spiritual support	-.17	-3.43	.001
Concern about COVID-19	.17	3.85	.001
Economic difficulties	.28	6.09	.001
Conspiracy	.01	0.17	n.s.
Perceived family social support	-.01	-0.14	n.s.
Perceived social support from friends	-.05	-0.96	n.s.
Age	-.29	-6.00	.001
Gender	.08	1.82	n.s.
Level of education	.01	0.12	n.s.
Concern about COVID-19 x Resilience	.02	0.38	n.s.
Concern about COVID-19 x Spiritual support	-.10	-2.31	.02
Resilience x Spiritual support	.06	1.29	n.s.
Concern about COVID-19 x Resilience x Spiritual support	-.15	-3.23	.001
Economic difficulties x Resilience	.07	1.53	n.s.
Economic difficulties x Spiritual support	.01	0.17	n.s.
Economic difficulties x Resilience x Spiritual support	-.15	-3.16	.002

Interactions

We conducted simple slope analysis¹³⁹⁻¹⁴⁰ using SPSS to analyse the effects of triple interactions. For the first interaction between concern about the possibility to get infected by the Coronavirus x resilience x spiritual support on distress, it emerged that the participants who were concerned about the possibility to get the Coronavirus had a lower level of distress when they perceived themselves as highly resilient and as having higher spiritual support (*gradient of simple slope*: $-.56, t = -2.96, p = .003$). On the

other side, participants who were concerned about the possibility to get the Coronavirus had a higher level of distress when they perceived themselves as highly resilient and also as less considering spiritual support (*gradient of simple slope*: $.36, t = 4.32, p < .001$). Similarly, the participants concerned about getting Coronavirus had a higher level of distress when they perceived themselves as low resilient and as more considering spiritual support (*gradient of simple slope*: $.60, t = 2.37, p = .02$). Slope difference tests are displayed in Figure 1.

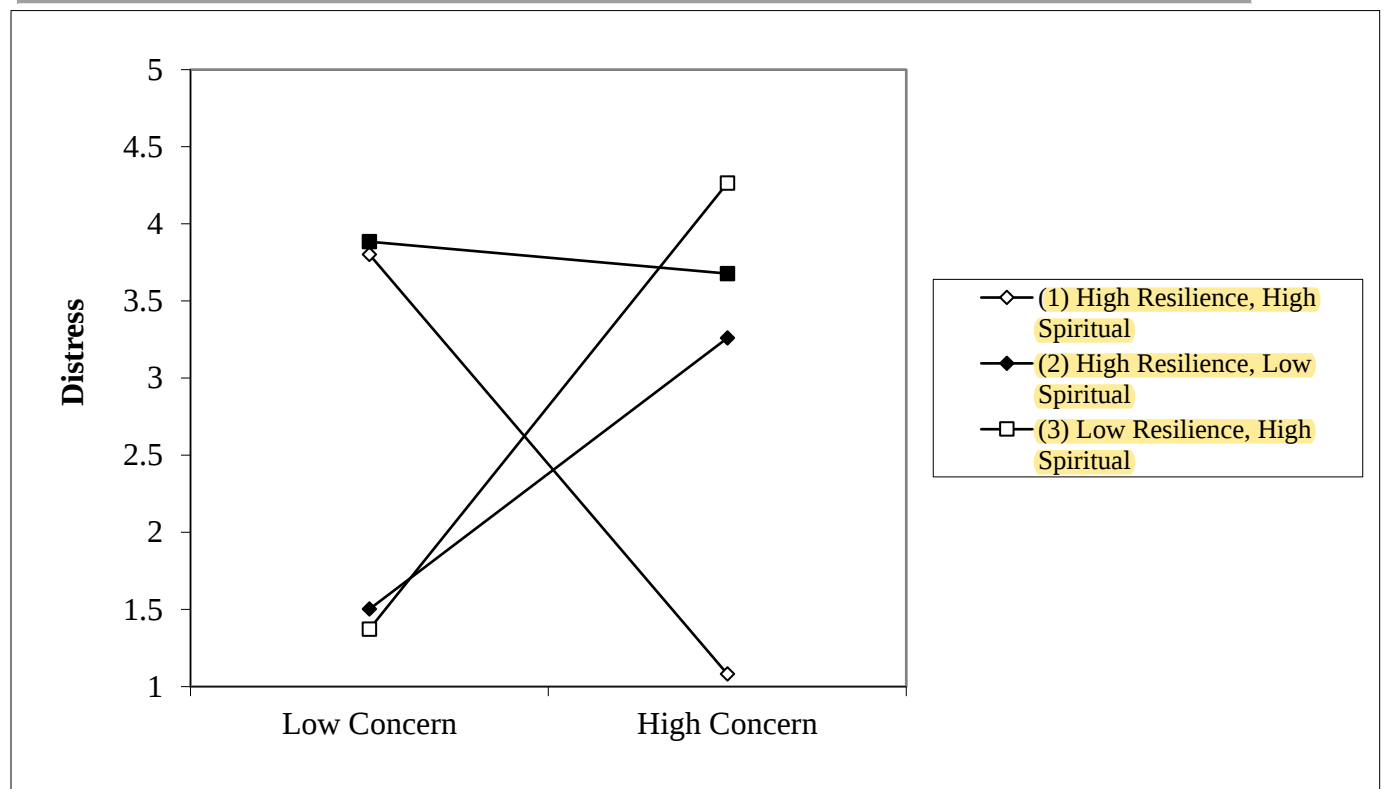


Figure 1. Three-way interaction of Concern about the possibility to get infected by the Coronavirus, resilience, and spiritual support on Distress

Pair of slopes	Slope difference	t-value	p-value	95% Confidence interval
(1) and (2)	-0.92	-4.00	0.00	[-1.38, -0.47]
(1) and (3)	-1.16	-2.93	0.00	[-1.93, -0.38]
(1) and (4)	-0.52	-2.62	0.01	[-0.91, -0.13]
(2) and (3)	-0.23	-0.91	0.36	[-0.74, 0.27]
(2) and (4)	0.41	2.62	0.01	[0.10, 0.71]
(3) and (4)	0.64	2.17	0.03	[0.06, 1.22]

We again conducted simple slope analysis¹³⁹⁻¹⁴⁰ using SPSS to analyse the effects of the second triple interaction (estimated economic difficulties x resilience x spiritual support) for distress. We found that the participants with serious economic difficulties have the lowest level of distress when they perceived themselves as highly resilient and as having considerable spiritual support (gradient of simple slope: $-.40$, $t = -2.36$, $p = .02$). On the other side, the participants with serious economic difficulties have the highest

level of distress when they perceived themselves as highly resilient and as having low spiritual support (gradient of simple slope: $.52$, $t = 6.04$, $p < .001$). Similarly, the participants with serious economic difficulties have a high level of distress when they perceived themselves as being less resilient and as having considerable spiritual support (gradient of simple slope: $.57$, $t = 1.97$, $p = .050$). Slope difference tests are displayed in Figure 2.

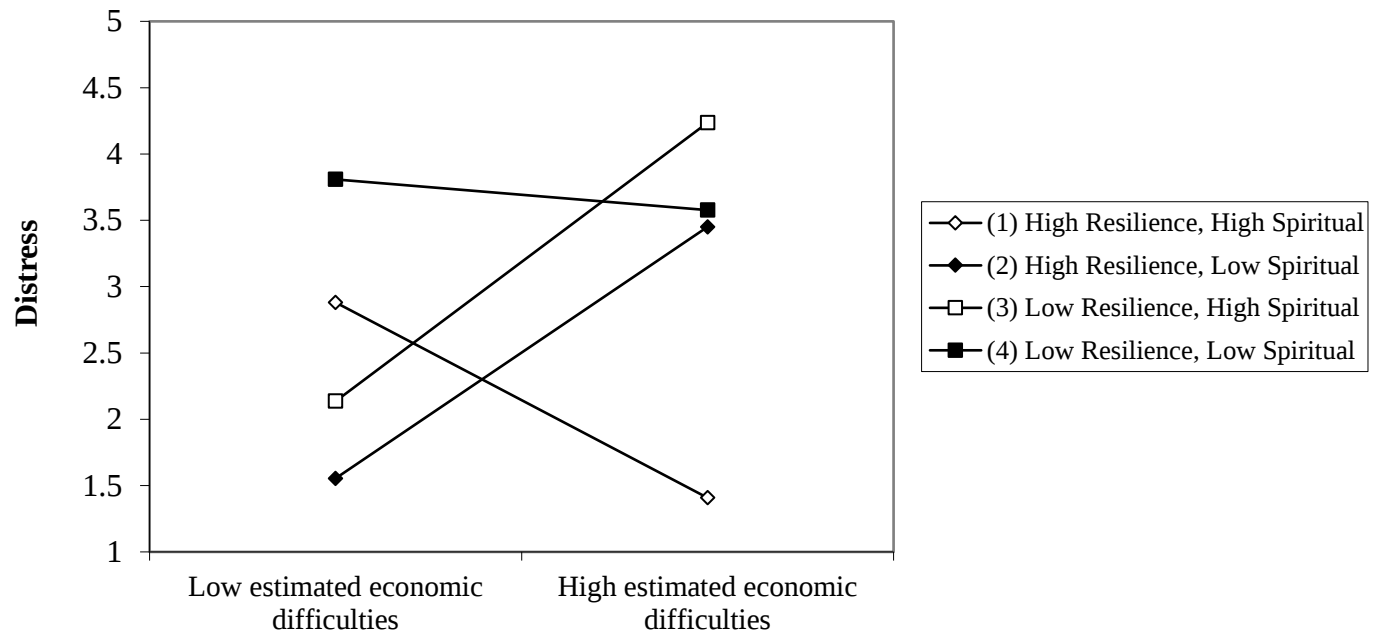


Figure 2. Three-way interactions of economic difficulties, resilience, and spiritual on Distress

Pair of slopes	Slope difference	t-value	p-value	95% Confidence interval
(1) and (2)	-0.92	-4.22	0.00	[-1.35, -0.49]
(1) and (3)	-0.98	-2.43	0.02	[-1.77, -0.19]
(1) and (4)	-0.34	-1.86	0.07	[-0.70, 0.02]
(2) and (3)	-0.06	-0.19	0.85	[-0.64, 0.53]
(2) and (4)	0.58	3.26	0.00	[0.23, 0.93]
(3) and (4)	0.64	1.92	0.06	[-0.01, 1.29]

In the last Multiple Regression Analysis, we considered the attitudes toward anti-COVID-19 vaccines as a criterion variable. The predictors were the same as in the previous regression analysis. This regression model accounted for 31% of the variance ($F(17,233) = 5.63, p < .001$). There emerged as significant predictors the concern about the possibility to get infected by the Coronavirus ($\beta = .13, t = 2.18, p < .03$), conspiracy attitudes ($\beta = -.44, t = -7.15, p < .001$), and perceived social support from friends ($\beta = -.15, t = -2.16, p < .03$). In addition, we found effects of interactions between the concern

about the possibility to get infected by the Coronavirus and resilience ($\beta = -.13, t = -2.14, p < .03$), between estimated economic difficulties and resilience ($\beta = .16, t = 2.53, p < .01$), and between estimated economic difficulties and spiritual support ($\beta = -.20, t = -3.03, p < .003$). Finally yet importantly, here also emerged an effect of triple interaction between the concern about the possibility to get infected by the Coronavirus x resilience x perceived spiritual support ($\beta = -.15, t = -2.24, p < .03$).

Table 4. Results of Multiple Regression Analysis for the attitudes toward anti-COVID-19 vaccines as criterion variable

	β	t	p
Resilience	.12	1.67	n.s.
Spiritual support	-.05	-0.68	n.s.
Concern about COVID-19	.13	2.18	.03
Economic difficulties	-.10	-1.50	n.s.
Conspiracy	-.44	-7.15	.001
Perceived family social support	.06	1.00	n.s.
Perceived social support from friends	-.15	-2.16	.03
Age	-.04	-.34	n.s.

Gender	.06	1.05	n.s.
Level of education	.08	1.20	n.s.
Concern about COVID-19 x Resilience	-.13	-2.14	.03
Concern about COVID-19 x Spiritual support	-.01	-0.03	n.s.
Resilience x Spiritual support	-.12	-1.88	n.s.
Concern about COVID-19 x Resilience x Spiritual support	-.15	-2.24	.03
Economic difficulties x Resilience	.16	2.53	.01
Economic difficulties x Spiritual support	-.20	-3.03	.003
Economic difficulties x Resilience x Spiritual support	-.09	-1.34	n.s.

Interactions

Regarding the triple interaction between the concern about the possibility to get infected by the Coronavirus x resilience x spiritual support on the attitudes toward anti-COVID-19 vaccines as a criterion variable, the simple slope analysis revealed that the participants who were concerned about the possibility to get the Coronavirus has higher positive attitudes toward anti-COVID-19 vaccines when they perceived themselves as highly resilient and as receiving less

spiritual support (*gradient of simple slope*: $-.62, t = 3.67, p < .001$). On the other side, participants concerned about the possibility to get the Coronavirus has lower positive attitudes toward anti-COVID-19 vaccines when they perceived themselves as less resilient and also as receiving less spiritual support (*gradient of simple slope*: $-.46, t = -2.42, p = .02$). Slope difference tests are displayed with Figure 3.

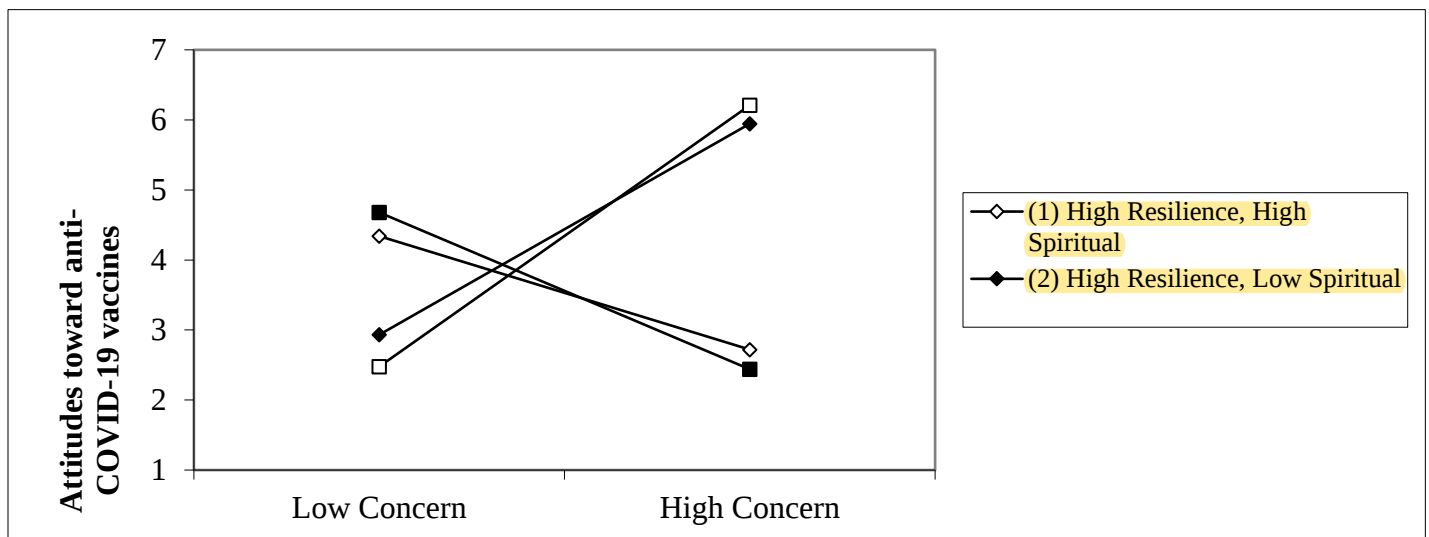


Figure 3. Three-way interaction of Concern about the possibility to get infected by the Coronavirus, resilience, and spiritual support on the attitudes toward anti-COVID-19 vaccines

Pair of slopes	Slope difference	t-value	p-value	95% Confidence interval
(1) and (2)	-0.96	-2.09	0.04	[-1.85, -0.06]
(1) and (3)	-1.10	-1.37	0.17	[-2.69, 0.48]
(1) and (4)	0.13	0.33	0.74	[-0.63, 0.89]
(2) and (3)	-0.15	-0.29	0.77	[-1.15, 0.85]
(2) and (4)	1.08	3.42	0.00	[0.46, 1.70]
(3) and (4)	1.23	2.08	0.04	[0.07, 2.39]

Discussion

Since early 2020, the COVID-19 pandemic and various containment measures have induced remarkable concerns about health and

existential issues for billions of people around the globe. The present study examined the extent to which the characteristics of resilience and spiritual support were associated with adaptive (vs.

maladaptive) outcomes during one of the COVID-19 lockdowns in Italy (March–April 2021). Supporting our anticipation, the overall findings corroborate the literature on other disasters with respect to the counteracting effect of self-believed resilience and perceived spiritual support against Covid-19 induced distress^{66-67,104-109}. However, the two factors seem to have a more complicated relationship with the attitudes toward anti-COVID-19 vaccines, which is also consistent with our expected complexity in the role of spirituality in adversity. Accordingly, this study may help advance the understanding of these not-so-straightforward protective factors, which may have certain social and behavioral implications if replicated in future prospective studies.

If the evidence from regression models is only aligned with those from studies on the two strength characteristics,^{66-67,75-79,96-97,110-118} those from the set of simple slope analyses are more novel regarding the revealed interaction effects of the two strength factors. The first two sets of analyses on both outcomes have demonstrated that self-belief in resilience and perceived spiritual support together may have a joint positive role in easing the level of distress under concerns about either infection or economic difficulties. Most interestingly, however, either strength acting alone appears not to function as well as they work together. Because distress was assessed at an individual level, resilience in this study can be viewed as a personal predisposition to believe in self capacity^{80,138,141-142}. On the other hand, perceived spiritual support reflects a deep connection or existential relationship in one's belief system, of which the power or benefit is not from within but outside, including naturalistic or supernatural forces. Accordingly, under uncontrollable circumstances such as Covid-19, their joint optimal function makes perfect sense.

Perhaps the most interesting finding comes from the final set of interaction analyses. Under the major concern about the possibility to get the Coronavirus, it is a combined opposite position, self-believed resilience and perceived less spiritual support are associated with positive attitudes toward the anti-COVID-19 vaccine. Conversely but not in a completely opposite position, a joint low level of both strength factors is linked with the poor attitudes toward anti-COVID-19 vaccines, which is clearly not good news for the government's policy efforts. While the latter case can be self-explanatory, why might the opposite position in the first case be related to a desirable outcome from the public's perspective? One plausible explanation for resilience lies in that

highly confident individuals in this regard may be also more pro-self-reliant and thereby are more likely to be proactive in protecting themselves in face of pandemics. As we expected, however, people who rely on their existential relationships with a higher power may be more relaxed as demonstrated in this study and existing ones. Thus, they would be more likely not to take a proactive action but to be confident in the protection from a spiritual force. In this vein, as compared to people relying either on resilience or on perceived spiritual support, our results convey the idea that a strong individual resilience combined with a strong perception of spiritual support fosters people's ability to adjust well to stressful events, especially when faced with health global challenge as Covid-19 pandemic.

In addition, emotive distress was lower in older participants. A possible explanation might be that older people suffer less from lockdown measures than younger¹⁴³⁻¹⁴⁴. The lockdown had severe consequences on the psychological health of younger people as they might have been more vulnerable to social distancing, perceived economic difficulties, isolation, life change and fear. Moreover, individuals' ability to reflect and make meaning depends on the wisdom and the ability to deal with difficulties, which increase with age. Older people may be able to reduce their health risks by staying isolated in a way that is not possible for younger one for which the socialisation and interactions with the group of peers is essential for their social growth and psychological health.

Despite the valuable information, our study also presents some limitations. First, the present study used self-report measures of which the quality is not compatible with that of professional interviews or assessments. The measures might be affected by other untested social desirability and vulnerabilities. More objective measurements of distress implemented by psychological health professionals, for example, would be desirable in future investigations. Second, an online approach had a selection bias problem because the Google form does not reach the entire Italian population and was circulated through social media platforms (WhatsApp, Facebook, Instagram). As a result, there is a possibility that members of certain populations without social media may not have been able to access this form. To deal with it, we also asked the students to send by email link to the questionnaire to some of the people they know. Finally, our results might be biased due to the use of a non-probabilistic sampling method (e.g.,

convenience sample, snowball sample). Thus, this convenience sample limits the generalisability of the finding to all Italians and beyond Italy. In addition, this sample was not nationally representative because the sample size of different regions differed considerably, and because the females and younger participants were overrepresented.

Finally, the study employed a cross-sectional design with a relatively small sample that did not allow exploration of the predictive value of strength factors on the development of adaptive and maladaptive outcomes. Future studies need to bridge these gaps by using a longitudinal design and more representative samples or other populations.

Conclusion

The study on a sample in Italy provided new evidence of the potentially protective value of self-believed resilience and perceived spiritual support in the face of Covid-19 under major existential and real concerns in Italian people. The study suggests that self-resilience might be an important protective factor that may help ease pandemic-related distress. Participants with greater resilience reported lower distress, even with higher levels of COVID-19 concerns and economic problems. Additionally, perceived spiritual support might represent a reassuring, soothing and hopeful factor that enhanced the

effectiveness of self-believed resilience in the face of stressful events.

This may have social and bio-behavioral health implications: Health providers and policymakers may mobilize these inner strengths in dealing with the different difficulties that emerge during the pandemics. However, these factors should not be treated as panaceas as a perfect solution for health protection. Clearly, more investigations with advanced design on these factors would be highly desirable to provide more sound knowledge for the collective effort on counteracting the pandemic threats to individuals, families, communities, and humanity globally.

The data supporting the conclusions of this article will be made available by the corresponding author on request, without undue reservation.

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REFERENCES

1. <https://covid19.who.int/>
2. <https://coronavirus.jhu.edu/map.html>
3. Lorant V, Smith P, Van den Broeck K, Nicaise P. Psychological distress associated with the COVID-19 pandemic and suppression measures during the first wave in Belgium. *BMC Psychiatry*. 2021;21. doi:10.1186/s12888-021-03109-1
4. Patel K, Robertson E, Kwong ASF, et al. Psychological Distress Before and During the COVID-19 Pandemic Among Adults in the United Kingdom Based on Coordinated Analyses of 11 Longitudinal Studies. *JAMA Netw Open*. 2022;5(4):e227629. doi:10.1001/jamanetworkopen.2022.7629
5. Eurobarometer. Attitudes on vaccination against COVID-19. conducted by Ipsos European Public Affairs at the request of the European Commission, Directorate-General for Directorate-General for Communication. ISBN: 978-92-76-49631-1. 2022. doi:10.2775/0254. Available online: <https://europa.eu/eurobarometer/surveys/detail/2692> (Accessed on May 15, 2022)
6. Neumann-Böhme S, Varghese N E, Sabat I, et al. Once we have it, will we use it? A European survey on willingness to be vaccinated against COVID-19. *The European Journal of Health Economics*. 2020;21(7): 977-982.
7. Hammen C, Kim EY, Eberhart NK, Brennan PA. Chronic and acute stress and the prediction of major depression in women. *Depression and Anxiety*. 2009;26(8):718-723. doi:10.1002/da.20571
8. Marin M-F, Lord C, Andrews J, et al. Chronic stress, cognitive functioning and mental health. *Neurobiology of Learning and Memory*. 2011;96(4):583-595. doi:10.1016/j.nlm.2011.02.016
9. McEwen, Bruce S, Eliot Stellar. Stress and the individual: Mechanisms leading to disease. *Archives of internal medicine*. 1993;153(18): 2093-2101. <https://doi.org/10.1001/archinte.1993.00410180039004>
10. Brakemeier EL, Wirkner J, Knaevelsrud C, Wurm S, Christiansen H, Lueken U, Schneider, S. Die COVID-19-Pandemie als Herausforderung für die psychische Gesundheit [The COVID-19 pandemic as a challenge to mental health. Findings and implications for research and practice from the perspective of clinical psychology and psychotherapy]. *Zeitschrift für Klinische Psychologie und Psychotherapie*. 2020;49: 1–31. <https://doi.org/10.1026/1616-3443/a000574>
11. Gruber J, Prinstein MJ, Clark LA, et al. Mental health and clinical psychological science in the time of COVID-19: Challenges, opportunities, and a call to action. *American Psychologist*. 2021;76(3):409-426. doi:10.1037/amp0000707
12. Vindegaard N, Benros ME. COVID-19 pandemic and mental health consequences: Systematic review of the current evidence. *Brain, Behavior, and Immunity*. 2020;89:531-542. doi:10.1016/j.bbi.2020.05.048
13. Bäuerle A, Teufel M, Musche V, et al. Increased generalized anxiety, depression and distress during the COVID-19 pandemic: a cross-sectional study in Germany. *J Public Health (Oxf)*. 2020;42(4):672-678. doi:10.1093/pubmed/fdaa106
14. Bartoszek A, Walkowiak D, Bartoszek A, Kardas G. Mental Well-Being (Depression, Loneliness, Insomnia, Daily Life Fatigue) during COVID-19 Related Home-Confinement—A Study from Poland. *International Journal of Environmental Research and Public Health*. 2020; 17(20):7417. <https://doi.org/10.3390/ijerph17207417>
15. Wang C, Pan R, Wan X, et al. A longitudinal study on the mental health of general population during the COVID-19 epidemic in China. *Brain, Behavior, and Immunity*. 2020;87:40-48. doi:10.1016/j.bbi.2020.04.028
16. Cullen W, Gulati G, Kelly B D. Mental health in the COVID-19 pandemic. *QJM: An International Journal of Medicine*. 2020; 113(5): 311–312. doi:10.1093/qjmed/hcaa110.
17. Salari, N.; Hosseini-Far, A.; Jalali, R.; Vaisi-Raygani, A.; Rasoulpoor, S.; Mohammadi, M.; Rasoulpoor, S.; Khaledi-Paveh, B. Prevalence of stress, anxiety, depression among the general population during the COVID-19 pandemic: A systematic review and meta-analysis. *Glob. Health* 2020, 16, 57, doi:10.1186/s12992-020-00589-w.
18. Torales J, O'Higgins M, Castaldelli-Maia JM, Ventriglio A. The outbreak of COVID-19 coronavirus and its impact on global mental health. *International Journal of Social Psychiatry*. 2020;66(4):317-320. doi:10.1177/0020764020915212

19. Koscic A, Džamonjalgijatović T, Petrović N. A Cross-Cultural Study of Distress during COVID-19 Pandemic: Some Protective and Risk Factors. *International Journal of Environmental Research and Public Health*. 2021; 18(14):7261. <https://doi.org/10.3390/ijerph18147261>
20. Castellini G, Rossi E, Cassioli E, Sanfilippo G, Innocenti M, Gironi V, Silvestri C, Voller F, Ricca V. A longitudinal observation of general psychopathology before the COVID-19 outbreak and during lockdown in Italy. *Journal of Psychosomatic Research*. (2021);141: 110328. <https://doi.org/10.1016/j.jpsychores.2020.110328>
21. Deng J, Zhou F, Hou W, Silver Z, Wong C Y, Chang O, et al. The prevalence of depression, anxiety, and sleep disturbances in COVID-19 patients: a meta-analysis. *Annals of the New York Academy of Sciences*. 2020;1486(1): 90-111. doi: 10.1111/nyas.14506
22. Galea S, Merchant RM, Lurie N. The Mental Health Consequences of COVID-19 and Physical Distancing: The Need for Prevention and Early Intervention. *JAMA InternMed*. 2020;180(6):817–818. doi:10.1001/jamainternmed.2020.1562
23. Huang Y, Zhao N. Generalized anxiety disorder, depressive symptoms and sleep quality during COVID-19 outbreak in China: A web-based cross-sectional survey. *Psychiatry Research*. 2020;288. doi:10.1016/j.psychres.2020.112954
24. Hyland P, Shevlin M, McBride O, et al. Anxiety and depression in the republic of ireland during the covid-19 pandemic. *Acta Psychiatrica Scandinavica*. August 2020. doi:10.1111/acps.13219
25. Lakhan R, Agrawal A, Sharma M. Prevalence of depression, anxiety, and stress during COVID-19 pandemic. *Journal of neurosciences in rural practice*. 2020; 11(04):519-525. doi: 10.1055/s-0040-1716442
26. Niedzwiedz C L, Green M J, Benzeval M, Campbell D, Craig P, Demou E, Leyland A, Pearce A, Thomson R, Whitley E, Katikireddi S V. Mental health and health behaviours before and during the initial phase of the COVID-19 lockdown: Longitudinal analyses of the UK Household Longitudinal Study. *Journal of Epidemiology and Community Health*. 2021;75(3): 224–231. <https://doi.org/10.1136/jech-2020-215060>
27. Osofsky J D, Osofsky H J, Mamon LY. Psychological and social impact of COVID-19. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2020;12(5): 468–469. <https://doi.org/10.1037/tra0000656>
28. Pfefferbaum B, North C S. Mental Health and the Covid-19 Pandemic. *The New England Journal of Medicine*. 2020; 383(6): 510-512. doi: 10.1056/NEJMp2008017
29. Pierce M, Hope H, Ford T, et al. Mental health before and during the COVID-19 pandemic: A longitudinal probability sample survey of the UK population. *The Lancet Psychiatry*. 2020;7(10):883-892. doi:10.1016/S2215-0366(20)30308-4
30. Qiu J, Shen B, Zhao M, Wang Z, Xie B, Yifeng X. A nationwide survey of psychological distress among Chinese people in the COVID-19 epidemic: implications and policy recommendations. *General Psychiatry*. 2020;33: e1002013. doi:10.1136/gpsych-2020-100213
31. Saladino V, Algeri D, Auriemma V. The psychological and social impact of COVID-19: New perspectives of well-being. *Frontiers in Psychology*. 2020;11. doi:10.3389/fpsyg.2020.577684
32. Shevlin M, McBride O, Murphy J, et al. Anxiety, depression, traumatic stress and COVID-19-related anxiety in the UK general population during the COVID-19 pandemic. *BJPsych Open*. 2020;6. doi:10.1192/bjo.2020.109
33. Wirkner J, Christiansen H, Knaevelsrud C, et al. Mental health in times of the COVID-19 pandemic: Current knowledge and implications from a European perspective. *European Psychologist*. 2021;26(4):310-322. doi:10.1027/1016-9040/a000465
34. Yamada Y, Čepulić D B, Coll-Martín T, et al. COVIDiSTRESS Global Survey dataset on psychological and behavioural consequences of the COVID-19 outbreak. *Scientific data*. 2021;8(1): 1-23. doi.org/10.1038/s41597-020-00784-9
35. Lieberoth A, Lin S Y, Stöckli S, et al. Stress and worry in the 2020 coronavirus pandemic: Relationships to trust and compliance with preventive measures across 48 countries in the COVIDiSTRESS global survey. *Royal Society Open Science*. 2021;8(2): 200589.
36. COVIDiSTRESS Consortium. COVIDiSTRESS global survey. *Open Science Framework*. 2020. <https://doi.org/10.17605/OSF.IO/Z39US>
37. Blackburn A M, Vestergren S, & the COVIDiSTRESS II Consortium. COVIDiSTRESS

- diverse dataset on psychological and behavioural outcomes one year into the COVID-19 pandemic. *Scientific data*. 2022;9: 331. <https://doi.org/10.1038/s41597-022-01383-6>
38. Browning MHEM, Larson LR, Sharaievska I, et al. Psychological impacts from COVID-19 among university students: Risk factors across seven states in the United States. *PLoS ONE*. 2021;16(1). doi:10.1371/journal.pone.0245327
 39. Guo J, Feng X L, Wang X H, & van IJzendoorn M H. Coping with COVID-19: exposure to COVID-19 and negative impact on livelihood predict elevated mental health problems in Chinese adults. *International journal of environmental research and public health*. 2020;17(11): 3857. doi: 10.1016/j.jadohealth.2020.08.001
 40. Wang C, Pan R, Wan X, Tan Y, Xu L, Ho C S, Ho R C. Immediate psychological responses and associated factors during the initial stage of the 2019 coronavirus disease (COVID-19) epidemic among the general population in China. *International journal of environmental research and public health*. 2020;17(5): 1729. <https://doi.org/10.3390/ijerph17051729>
 41. Zhang W, Wang K, Yin L, et al. Mental health and psychosocial problems of medical health workers during the COVID-19 epidemic in China. *Psychotherapy and Psychosomatics*. 2020;89(4):242-250. doi:10.1159/000507639
 42. Bendau A, Kunas SL, Wyka S, et al. Longitudinal changes of anxiety and depressive symptoms during the COVID-19 pandemic in Germany: The role of pre-existing anxiety, depressive, and other mental disorders. *Journal of Anxiety Disorders*. 2021;79. doi:10.1016/j.janxdis.2021.102377
 43. Okely J A, Corley J, Welstead M, et al. Change in physical activity, sleep quality, and psychosocial variables during COVID-19 lockdown: Evidence from the Lothian Birth Cohort 1936. *International Journal of Environmental Research and Public Health*. 2020;18(1):210. <https://doi.org/10.3390/ijerph18010210>
 44. Pan K Y, Kok AAL, Eikelenboom M, et al. The mental health impact of the COVID-19 pandemic on people with and without depressive, anxiety, or obsessive-compulsive disorders: A longitudinal study of three Dutch case-control cohorts. *The Lancet Psychiatry*. 2021;8(2):121-129. doi:10.1016/S2215-0366(20)30491-0
 45. Ramiz L, Contrand B, Rojas Castro M Y, et al. A longitudinal study of mental health before and during COVID-19 lockdown in the French population. *Globalization and Health*. 2021;17(1): 29. <https://doi.org/10.1186/s12992-021-00682-8>
 46. Varga T V, Bu F, Dissing A S, et al. Loneliness, worries, anxiety, and precautionary behaviours in response to the COVID-19 pandemic: A longitudinal analysis of 200, 000 Western and Northern Europeans. *The Lancet Regional Health – Europe*. 2021; 2: 100020. <https://doi.org/10.1016/j.lanepe.2020.100020>
 47. Fancourt D, Steptoe A, Bu F. Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: A longitudinal observational study. *The Lancet Psychiatry*. 2021;8(2): 141–149. [https://doi.org/10.1016/S2215-0366\(20\)30482-X](https://doi.org/10.1016/S2215-0366(20)30482-X)
 48. Maslakçı A, &Sürücü L. Gender Effects on Depression, Anxiety, and Stress Regarding the Fear of COVID-19. *Trends in Psychology*. 2022; 1-13. <https://doi.org/10.1007/s43076-022-00227-x>
 49. Proto E, Quintana-Domeque C. COVID-19 and mental health deterioration by ethnicity and gender in the UK. *PLoS One*. 2021;16(1): e0244419. <https://doi.org/10.1371/journal.pone.0244419>
 50. Salfi F, D'Atri A, Tempesta D, Ferrara M. Sleeping under the waves: A longitudinal study across the contagion peaks of the COVID-19 pandemic in Italy. *Journal of Sleep Research*. 2021;30(5). doi:10.1111/jsr.13313
 51. Bu F, Steptoe A, Fancourt D. Who is lonely in lockdown? Cross-cohort analyses of predictors of loneliness before and during the COVID-19 pandemic. *Public Health*. 2020;186:31-34. doi:10.1016/j.puhe.2020.06.036
 52. Savage MJ, Hennis PJ, Magistro D, Donaldson J, Healy LC, James RM. Nine Months into the COVID-19 Pandemic: A Longitudinal Study Showing Mental Health and Movement Behaviours Are Impaired in UK Students. *International Journal of Environmental Research and Public Health*. 2021; 18(6):2930. <https://doi.org/10.3390/ijerph18062930>
 53. Groarke JM, McGlinchey E, McKenna-Plumley PE, Berry E, Graham-Wisener L, Armour C.

- Examining temporal interactions between loneliness and depressive symptoms and the mediating role of emotion regulation difficulties among UK residents during the COVID-19 lockdown: Longitudinal results from the COVID-19 psychological wellbeing study. *Journal of Affective Disorders*. 2021;285:1-9. doi:10.1016/j.jad.2021.02.033
54. Ezpeleta L, Navarro J.B, de la Osa N, et al. Life conditions during COVID-19 lockdown and mental health in Spanish adolescents. *International Journal of Environmental Research and Public Health*. 2020; 17(19): 1–13. <https://doi.org/10.3390/ijerph17197327>
 55. Bendau A, Plag J, Kunas S, et al. Longitudinal changes in anxiety and psychological distress, and associated risk and protective factors during the first three months of the COVID-19 pandemic in Germany. *Brain and Behavior*. 2021b;11(2): e01964. <https://doi.org/10.1002/brb3.1964>
 56. Janssen LHC, Kullberg M-LJ, Verkuil B, et al. Does the COVID-19 pandemic impact parents' and adolescents' well-being? An EMA-study on daily affect and parenting. *PLoS ONE*. 2020;15(10). doi:10.1371/journal.pone.0240962
 57. Elmer T, Mephram K, Stadtfeld C. Students under lockdown: Comparisons of students' social networks and mental health before and during the COVID-19 crisis in Switzerland. *PLoS ONE*. 2020;15(7). doi:10.1371/journal.pone.0236337
 58. Davidson B, Schmidt E, Mallar C, et al. Risk and resilience of well-being in caregivers of young children in response to the COVID-19 pandemic. *Translational Behavioral Medicine*. 2021;11(2):305-313. doi:10.1093/tbm/ibaa124
 59. Matiz A, Fabbro F, Paschetto A, et al. Positive impact of mindfulness meditation on mental health of female teachers during the COVID-19 outbreak in Italy. *International Journal of Environmental Research and Public Health*. 2020;17(18): 1–22. <https://doi.org/10.3390/ijerph17186450>
 60. Prime H, Wade M, Browne DT. Risk and resilience in family well-being during the COVID-19 pandemic. *American Psychologist*. 2020;75(5):631-643. doi:10.1037/amp0000660
 61. González-Sanguino C, Ausín B, Castellanos MA, Saiz J, Muñoz M. Mental health consequences of the Covid-19 outbreak in Spain A longitudinal study of the alarm situation and return to the new normality. *Progress in Neuro-Psychopharmacology & Biological Psychiatry*. 2021;107. doi:10.1016/j.pnpbp.2020.110219
 62. Kimhi S, Eshel Y, Marciano H, Adini B. Impact of societal resilience on vaccine hesitancy and uptake: Lessons learned from the Israeli experience. *International Journal of Disaster Risk Reduction*. 2022;79: 103181. doi.org/10.1016/j.ijdrr.2022.103181
 63. Li J B, Dou K, Liu Z H. Profiles of positive changes in life outcomes over the COVID-19 pandemic in Chinese adolescents: the role of resilience and mental health consequence. *Child and Adolescent Psychiatry and Mental Health*. 2022;16(1): 1-11. doi.org/10.1186/s13034-022-00451-4
 64. Luthar SS, Cicchetti D, Becker B. The construct of resilience: A critical evaluation and guidelines for future work. *Child Development*. 2000;71(3):543-562. doi:10.1111/1467-8624.00164
 65. Ong AD, Bergeman CS, Bisconti TL, Wallace KA. Psychological resilience, positive emotions, and successful adaptation to stress in later life. *Journal of Personality and Social Psychology*. 2006;91(4):730-749. doi:10.1037/0022-3514.91.4.730
 66. Yıldırım M, Arslan G. Exploring the associations between resilience, dispositional hope, preventive behaviours, subjective well-being, and psychological health among adults during early stage of COVID-19. *Current Psychology: A Journal for Diverse Perspectives on Diverse Psychological Issues*. 2022;41(8):5712-5722. doi:10.1007/s12144-020-01177-2
 67. Kimhi S, Marciano H, Eshel Y, Adini B. Resilience and demographic characteristics predicting distress during the COVID-19 crisis. *Social Science & Medicine*. 2020;265. doi:10.1016/j.socscimed.2020.113389
 68. Resilience Research Centre (undated) 'What is resilience?' available at <https://resilienceresearch.org/about-resilience/>
 69. Bonanno GA. Loss, trauma, and human resilience: Have we underestimated the human capacity to thrive after extremely aversive events? *Psychological Trauma: Theory, Research, Practice, and Policy*. 2008;S(1):101-113. doi:10.1037/1942-9681.S.1.101
 70. Bonanno GA, Romero SA, Klein SI. The temporal elements of psychological resilience: An integrative framework for the study of individuals, families, and

- communities. *Psychological Inquiry*. 2015;26(2):139-169. doi:10.1080/1047840X.2015.992677
71. Cacioppo JT, Reis HT, Zautra AJ. Social resilience: The value of social fitness with an application to the military. *American Psychologist*. 2011;66(1):43-51. doi:10.1037/a0021419
72. Ben-Dor G, Pedahzur A, Canetti-Nisim D, Zaidise E. The role of public opinion in Israel's national security. *American Jewish Congress: Congress Monthly*. 2002;69 (5), 13–15.
73. Kimhi S, Eshel Y. Measuring national resilience: A new short version of the scale (NR-13). *Journal of Community Psychology*. 2019;47(3):517-528. doi:10.1002/jcop.22135
74. Kimhi S. Levels of resilience: Associations among individual, community, and national resilience. *Journal of Health Psychology*. 2016;21(2):164-170. doi:10.1177/1359105314524009
75. Abolghasemi A, Varaniyab ST. Resilience and perceived stress: predictors of life satisfaction in the students of success and failure. *Procedia-Social and Behavioral Sciences*. 2010; 5:748-752.
76. Yildirim M. Mediating Role of Resilience in the Relationships Between Fear of Happiness and Affect Balance, Satisfaction With Life, and Flourishing. *Europe's Journal of Psychology*. 2019;15(2):183-198. doi:10.5964/ejop.v15i2.1640
77. Burns RA, Anstey KJ, Windsor TD. Subjective Well-Being Mediates the Effects of Resilience and Mastery on Depression and Anxiety in a Large Community Sample of Young and Middle-Aged Adults. *Australian & New Zealand Journal of Psychiatry*. 2011;45(3):240-248. doi:10.3109/00048674.2010.529604
78. McCanlies EC, Mnatsakanova A, Andrew ME, Burchfiel CM, Violanti JM. Positive psychological factors are associated with lower PTSD symptoms among police officers: Post Hurricane Katrina. *Stress and Health: Journal of the International Society for the Investigation of Stress*. 2014;30(5):405-415. doi:10.1002/smi.2615
79. Wind TR, Rijkeboer M, Andersson G, Riper H. The COVID-19 pandemic: The 'black swan' for mental health care and a turning point for e-health. *Internet Interv*. 2020;20:100317. doi:10.1016/j.invent.2020.100317
80. Stănculescu E. Fear of covid-19 in romania: Validation of the romanian version of the fear of covid-19 scale using graded response model analysis. *International Journal of Mental Health and Addiction*. January 2021. doi:10.1007/s11469-020-00428-4
81. Coulombe S, Pacheco T, Cox E, et al. Risk and resilience factors during the COVID-19 pandemic: A snapshot of the experiences of Canadian workers early on in the crisis. *Frontiers in Psychology*. 2020;11. doi:10.3389/fpsyg.2020.580702
82. Seaborn K, Henderson K, Gwizdka J, et al. A meta-review of psychological resilience during COVID-19. *npj Mental Health Research*. 2022;1(1): 1-9. <https://doi.org/10.1038/s44184-022-00005-8>
83. Chan ACY, Piehler TF, Ho GWK. Resilience and mental health during the COVID-19 pandemic: Findings from Minnesota and Hong Kong. *Journal of Affective Disorders*. 2021;295:771-780. doi:10.1016/j.jad.2021.08.144
84. Kavčič T, Avsec A, Zager Kocjan G. Psychological functioning of slovene adults during the covid-19 pandemic: Does resilience matter? *Psychiatric Quarterly*. June 2020. doi:10.1007/s11126-020-09789-4
85. Killgore WDS, Taylor EC, Cloonan SA, Dailey NS. Psychological resilience during the COVID-19 lockdown. *Psychiatry Research*. 2020;291. doi:10.1016/j.psychres.2020.113216
86. Knowles C, Shannon S, Prentice G, Breslin G. Comparing mental health of athletes and non-athletes as they emerge from a COVID-19 pandemic lockdown. *Frontiers in sports and active living*. 2021;3: 612532. doi:10.3389/fspor.2021.612532
87. Zager Kocjan G, Kavčič T, Avsec A. Resilience matters: Explaining the association between personality and psychological functioning during the COVID-19 pandemic. *International Journal of Clinical and Health Psychology*. 2021;21(1). doi:10.1016/j.ijchp.2020.08.002
88. Manchia M, Gathier AW, Yapici-Eser H, et al. The impact of the prolonged COVID-19 pandemic on stress resilience and mental health: A critical review across waves. *European Neuropsychopharmacology*. 2022;55:22-83. doi:10.1016/j.euroneuro.2021.10.864
89. Paredes MR, Apaolaza V, Fernandez-Robin C, Hartmann P, Yañez-Martínez D. The impact of the COVID-19 pandemic on subjective mental well-being: The interplay of perceived threat, future anxiety and resilience. *Personality and*

- Individual Differences*. 2021;170. doi:10.1016/j.paid.2020.110455
90. Shah S S, Memon F A, Qureshi F, et al. Mental well-being during COVID-19 pandemic: the role of fear, social isolation and psychological resilience. *Cogent Psychology*. 2022;9(1): 2006993. doi: 10.1080/23311908.2021.2006993
91. Aten JD, Smith WR, Davis EB, et al. The psychological study of religion and spirituality in a disaster context: A systematic review. *Psychological Trauma: Theory, Research, Practice, and Policy*. 2019;11(6):597-613. doi:10.1037/tra0000431
92. Ai AL, Cascio T, Santangelo LK, Evans-Campbell T. Hope, Meaning, and Growth Following the September 11, 2001, Terrorist Attacks. *Journal of Interpersonal Violence*. 2005;20(5):523-548. doi:10.1177/0886260504272896
93. Ai AL, Raney AA, Paloutzian RF. Perceived spiritual support counteracts the traumatic impact of extreme disasters: Exploration of moderators. *Psychological Trauma: Theory, Research, Practice, and Policy*. October 2021. doi:10.1037/tra0001133.supp (Supplemental)
94. Dubey N, Podder P, Pandey D. Knowledge of COVID-19 and its influence on mindfulness, cognitive emotion regulation and psychological flexibility in the indian community. *Frontiers in Psychology*. 2020;11. doi:10.3389/fpsyg.2020.589365
95. Peterson C, Seligman MEP. Character strengths before and after September 11. *Psychological Science*. 2003;14(4):381-384. doi:10.1111/1467-9280.24482
96. Hai AH, Franklin C, Park S, DiNitto DM, Aurelio N. The efficacy of spiritual/religious interventions for substance use problems: A systematic review and meta-analysis of randomized controlled trials. *Drug and Alcohol Dependence*. 2019;202:134-148. doi:10.1016/j.drugalcdep.2019.04.045
97. Gonçalves JPB, Lucchetti G, Menezes PR, Vallada H. Religious and spiritual interventions in mental health care: A systematic review and meta-analysis of randomized controlled clinical trials. *Psychological Medicine*. 2015;45(14):2937-2949. doi:10.1017/S0033291715001166
98. Koenig HG. Maintaining health and well-being by putting faith into action during the COVID-19 pandemic. *Journal of Religion and Health*. 2020;59(5):2205-2214. doi:10.1007/s10943-020-01035-2
99. Pellebon DA, Anderson SC. Understanding the life issues of spiritually-based clients. *Families in Society*. 1999;80(3):229-238. doi:10.1606/1044-3894.676
100. Carroll MM. Social work's conceptualization of spirituality. *Social Thought*. 1998;18(2):1-13.
101. Gray AJ. Resilience, spirituality and health. *Psyche enGeloof*. 2017;28(1):31-39.
102. Cascio T. Religion and spirituality: Diversity issues for the future. *Journal of Multicultural Social Work*. 1999;7(3/4): 129-145
103. Anderson DA, Worthen D. Exploring a fourth dimension: Spirituality as a resource for the couple therapist. *Journal of Marital and Family Therapy*. 1997;23(1):3-12. doi:10.1111/j.1752-0606.1997.tb00227.x
104. Pargament KI, Magyar-Russell GM, Murray-Swank NA. The sacred and the search for significance: Religion as a unique process. *Journal of Social Issues*. 2005;61(4):665-687. doi:10.1111/j.1540-4560.2005.00426.x
105. Ai AL, Huang B, Bjorck J, Appel HB. Religious attendance and major depression among Asian Americans from a national database: The mediation of social support. *Psychology of Religion and Spirituality*. 2013;5(2):78-89. doi:10.1037/a0030625
106. Chatters LM, Taylor RJ, Jackson JS, Lincoln KD. Religious coping among African Americans, Caribbean Blacks and non-Hispanic Whites. *Journal of Community Psychology*. 2008;36(3):371-386. doi:10.1002/jcop.20202
107. Ano GG, Vasconcelles EB. Religious Coping and Psychological Adjustment to Stress: A Meta-Analysis. *Journal of Clinical Psychology*. 2005;61(4):461-480. doi:10.1002/jclp.20049
108. Sinding Bentzen J. Acts of God? Religiosity and natural disasters across subnational world districts. *The Economic Journal*. 2019;129(622): 2295-2321.
109. Rosmarin DH, Leidl B. Spirituality, religion, and anxiety disorders. In: Rosmarin DH, Koenig HG, eds. *Handbook of Spirituality, Religion, and Mental Health*, 2nd Ed. Elsevier Academic Press; 2020:41-60. doi:10.1016/B978-0-12-816766-3.00003-3
110. Bovero A, Tosi C, Botto R, Opezzo M, Giono-Calvetto F, Torta R. The spirituality in end-of-life cancer patients, in relation to anxiety, depression, coping strategies and the

- daily spiritual experiences: A cross-sectional study. *Journal of Religion and Health*. 2019;58(6):2144-2160. doi:10.1007/s10943-019-00849
111. Johnson KS, Tulskey JA, Hays JC, et al. Which domains of spirituality are associated with anxiety and depression in patients with advanced illness? *Journal of General Internal Medicine*. 2011;26(7):751-758. doi:10.1007/s11606-011-1656-2
 112. González-Sanguino C, Ausín B, Castellanos MÁ, et al. Mental health consequences during the initial stage of the 2020 Coronavirus pandemic (COVID-19) in Spain. *Brain, Behavior, and Immunity*. 2020;87:172-176. doi:10.1016/j.bbi.2020.05.040
 113. Tolentino JC, Gjørup ALT, Mello CR, et al. Spirituality as a protective factor for chronic and acute anxiety in Brazilian healthcare workers during the COVID-19 outbreak. *PLoS ONE*. 2022;17(5). doi:10.1371/journal.pone.0267556
 114. Rias YA, Rosyad YS, Chipojola R, Wiratama BS, Safitri CI, Weng SF, Yang CY, Tsai HT. Effects of Spirituality, Knowledge, Attitudes, and Practices toward Anxiety Regarding COVID-19 among the General Population in INDONESIA: A Cross-Sectional Study. *Journal of Clinical Medicine*. 2020;9(12): 3798. doi: 10.3390/jcm9123798.
 115. Gayatri D, Efremov L, Kantelhardt EJ, Mikolajczyk R. Quality of life of cancer patients at palliative care units in developing countries: Systematic review of the published literature. *Quality of Life Research: An International Journal of Quality of Life Aspects of Treatment, Care & Rehabilitation*. 2021;30(2):315-343. doi:10.1007/s11136-020-02633-z
 116. Hall J. Spirituality at the beginning of life. *Journal of Clinical Nursing*. 2006;15: 804-810.
 117. Schuster MA, Stein BD, Jaycox LH, et al. A national survey of stress reactions after the September 11, 2001, terrorist attacks. *The New England Journal of Medicine*. 2001;345(20):1507-1512. doi:10.1056/NEJM200111153452024
 118. EsmaeiliDarmianM, Javadi SV. Study the role of spiritual health and resilience in pandemic COVID-19 on psychological vulnerability. *Journal of Fundamentals of Mental Health*. 2022;24(5), 349-354. doi: 10.22038/jfmh.2022.21014
 119. Kosarkova A, Malinakova K, van Dijk J P, Tavel P. Vaccine refusal in the czech republic is associated with being spiritual but not religiously affiliated. *Vaccines*. 2021;9(10): 1157. doi: 10.3390/vaccines9101157
 120. Lindeman M, Svedholm-Häkkinen A M, Riekkari T J. Searching for the cognitive basis of anti-vaccination attitudes. *Thinking & Reasoning*. 2022: 1-26. doi: 10.1080/13546783.2022.2046158
 121. Rutjens B T, Zarzeczna N, van der Lee R. Science rejection in Greece: Spirituality predicts vaccine scepticism and low faith in science in a Greek sample. *Public Understanding of Science*. 2022 ;31(4): 428-436. doi.org/10.1177/096366252110615
 122. Ai AL, Tice TN, Lemieux CM, Huang B. Modeling the post-9/11 meaning-laden paradox: From deep connection and deep struggle to posttraumatic stress and growth. *Archiv für Religionspsychologie / Archive for the Psychology of Religion*. 2011;33(2):173-204. doi:10.1163/157361211X575736
 123. Ryff C, Singer B. From social structure to biology. *Handbook of positive psychology*. 2002;63: 73.
 124. Ai AL, Hopp F, Tice TN, Koenig H. Existential relatedness in light of eudemonic well-being and religious coping among middle-aged and older cardiac patients. *Journal of Health Psychology*. 2013;18(3):368-382. doi:10.1177/1359105311434754
 125. Ai AL, Huang B, Bjorck J, Appel HB. Religious attendance and major depression among Asian Americans from a national database: The mediation of social support. *Psychology of Religion and Spirituality*. 2013;5(2):78-89. doi:10.1037/a0030625
 126. Ai AL, Tice TN, Peterson C, Paloutzian RF, Croney-Clark P. The Perceived Spiritual Support Scale (PSSS): Measuring support from the deep connection with diverse sacred entities. In: Ai AL, Wink P, Paloutzian RF, Harris KA, eds. *Assessing Spirituality in a Diverse World*. Springer Nature Switzerland AG; 2021:493-520. doi:10.1007/978-3-030-52140-0_20
 127. Li F, Luo S, Mu W, et al. Effects of sources of social support and resilience on the mental health of different age groups during the COVID-19 pandemic. *BMC Psychiatry*. 2021;21. doi:10.1186/s12888-020-03012-1
 128. Szkody E, Stearns M, Stanhope L, McKinney C. Stress-buffering role of social

- support during covid-19. *Family Process*. November 2020. doi:10.1111/famp.12618
129. Douglas K M. COVID-19 conspiracy theories. *Group Processes & Intergroup Relations*. 2021;24(2): 270-275. <https://doi.org/10.1177/1368430220982068>
130. Hogg, M. A., & Vaughan, G. M. *Social psychology* (5th ed). London: Prentice Hall. 2008
131. Allington, D., & Dhavan, N. (2020). The relationship between conspiracy beliefs and compliance with public health guidance with regard to COVID-19. Available online: [https://kclpure.kcl.ac.uk/portal/files/127048253/Allington and Dhavan 2020.pdf](https://kclpure.kcl.ac.uk/portal/files/127048253/Allington%20and%20Dhavan%202020.pdf)
132. Allington D, Duffy B, Wessely S, Dhavan N, Rubin J. Health-protective behaviour, social media usage and conspiracy belief during the COVID-19 public health emergency. *Psychological Medicine*. 2021;51(10):1763-1769. doi:10.1017/S003329172000224X
133. Earnshaw VA, Eaton LA, Kalichman SC, Brousseau NM, Hill EC, Fox AB. COVID-19 conspiracy beliefs, health behaviors, and policy support. *Translational Behavioral Medicine*. 2020;10(4):850-856. doi:10.1093/tbm/ibaa090
134. Bertin P, Nera K, Delouvée S. Conspiracy beliefs, rejection of vaccination, and support for hydroxychloroquine: A conceptual replication-extension in the COVID-19 pandemic context. *Frontiers in Psychology*. 2020;11. doi:10.3389/fpsyg.2020.565128
135. Malik A A, McFadden S M, Elharake J, Omer S B. Determinants of COVID-19 vaccine acceptance in the US. *Clinical Medicine*. 2020;26: 100495. <https://doi.org/10.1016/j.eclim.2020.100495>
136. Hartman T K, Marshall M, Stocks T V, et al. Different conspiracy theories have different psychological and social determinants: Comparison of three theories about the origins of the COVID-19 virus in a representative sample of the UK population. *Frontiers in Political Science*. 2021;3: 642510. doi:10.3389/fpos.2021.642510
137. Stasielowicz L. A continuous time meta-analysis of the relationship between conspiracy beliefs and individual preventive behavior during the COVID-19 pandemic. *Scientific Reports*. 2022;12(1): 1-10. doi:10.1038/s41598-022-15769-4
138. Smith BW, Dalen J, Wiggins K, Tooley E, Christopher P, Bernard J. The Brief Resilience Scale: Assessing the ability to bounce back. *International Journal of Behavioral Medicine*. 2008;15(3):194-200. doi:10.1080/10705500802222972
139. Cohen J, Cohen P, West SG, Aiken LS. *Applied Multiple Regression/Correlation Analysis for the Behavioral Sciences*, 3rd Ed. Lawrence Erlbaum Associates Publishers; 2003.
140. Dawson JF, Richter AW. Probing three-way interactions in moderated multiple regression: Development and application of a slope difference test. *Journal of Applied Psychology*. 2006;91(4):917-926. doi:10.1037/0021-9010.91.4.917
141. Davis EB, McElroy-Heltzel SE, Lemke AW, et al. Psychological and spiritual outcomes during the COVID-19 pandemic: A prospective longitudinal study of adults with chronic disease. *Health Psychology*. 2021;40(6):347-356. doi:10.1037/hea0001079.
142. Ursu A, Măirean C. Cognitive Emotion Regulation Strategies as Mediators between Resilience and Stress during COVID-19 Pandemic. *International Journal of Environmental Research and Public Health*. 2022;19(19): 12631.
143. Birditt KS, Turkelson A, Fingerman KL, Polenick CA, Oya A. Age differences in stress, life changes, and social ties during the COVID-19 pandemic: Implications for psychological well-being. *The Gerontologist*. 2021;61(2):205-216. doi:10.1093/geront/gnaa204
144. Cunningham TJ, Fields EC, Garcia SM, Kensinger EA. The relation between age and experienced stress, worry, affect, and depression during the spring 2020 phase of the COVID-19 pandemic in the United States. *Emotion*. 2021;21(8):1660-1670. doi:10.1037/emo0000982.supp (Supplemental)