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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 vaccines⁵⁻⁶. 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 (Prof. 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.

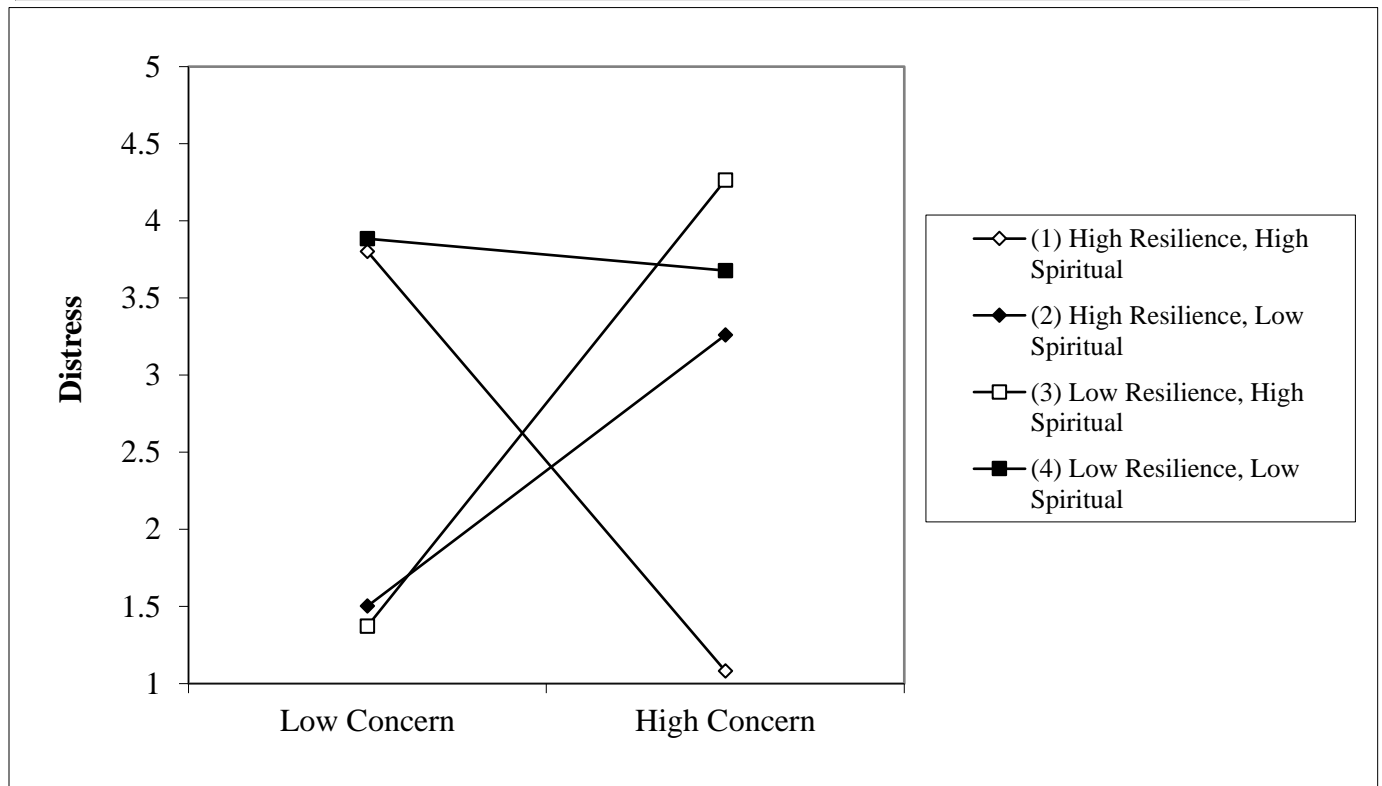


Figure 1. Three-way interaction of Concern about the possibility to get infected by the Coronavirus, resilience, and spiritual support on Distress

| 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.

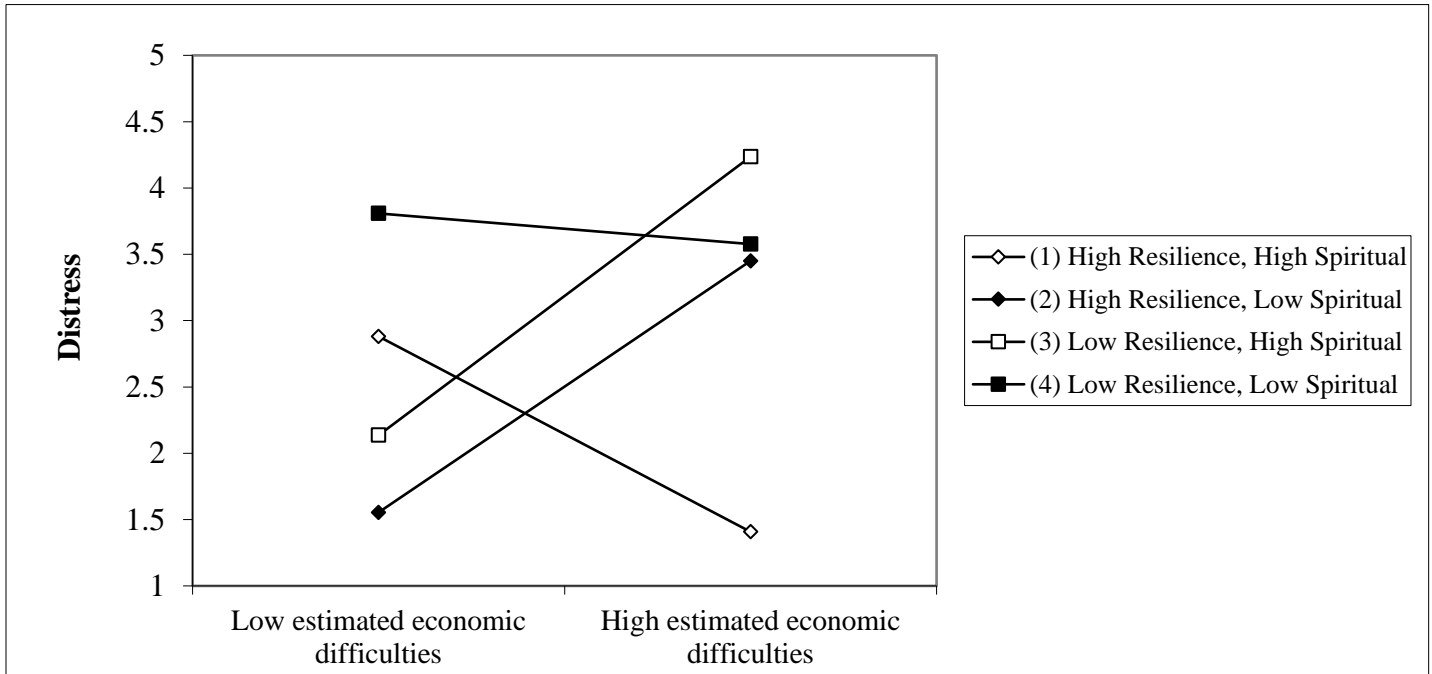


Figure 2. Three-way interactions of economic difficulties, resilience, and spiritual on Distress

| 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.

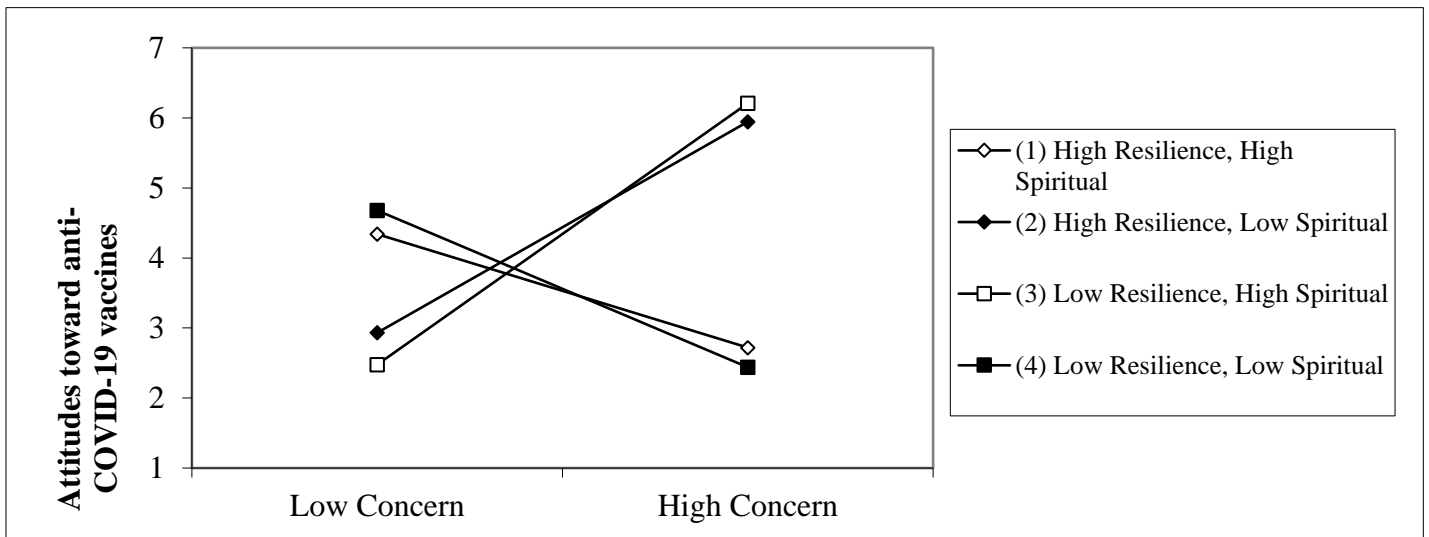


Figure 3. Three-way interaction of Concern about the possibility to get infected by the Coronavirus, resilience, and spiritual support on the attitudes toward anti-COVID-19 vaccines

| 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 over represented.

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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