



The effects of COVID-19 on wellbeing and resilience among Muslims in Turkey

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ABSTRACT

This cross-sectional exploratory study surveys the general perceived adverse effects of COVID-19 on people's wellbeing (including obsessive-compulsive disorder symptoms (OCDS)) and the level of resilience shown against it, with specific reference to the role of religiosity and optimism. Data were collected in an online survey from 247 non-randomly selected participants in Turkey, aged 12–64. The questionnaire included a demographic form, a battery of COVID-19 scales, the Brief Obsessive-Compulsive Scale, a short-form Optimism Scale, and the Ok-Religious Attitude Scale. The results indicate that COVID-19 significantly and negatively influenced several aspects of people's lives, including finance, mood, life perspective, physical health, spirituality, and state of mental health. Furthermore, resilience, family solidarity, religiosity, and optimism played a positive role in overcoming the negative effects. Nonetheless, women, less religious people, pessimists, and anxiety-prone individuals, including people with OCDS symptoms, reported that they felt less resilient against the perceived adverse effects of COVID-19.

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Introduction

COVID-19, as a global pandemic, has had a considerable impact on the lives of billions of people, causing a high level of distress since it first appeared in China in December 2019 and spread rapidly across the world. This distress is related to, but is not limited to, fear of death, uncertainty, a sense of emergency, anxiety, helplessness, loneliness, isolation, coping with stress, avoiding contagion, and financial hardship. According to the World Health Organisation (WHO, 2020), as of 17 January 2023, over 671,763,422 people worldwide were infected, with over 6,732,685 deaths. Such a magnitude of fatality, combined with extensive warnings from the media concerning strict measures to be taken, can have severe psychological effects and implications on the wellbeing of laypeople in general, and on vulnerable or less resilient people in particular, such as people with anxiety disorders and obsessive-compulsive symptoms (OCDS). In contrast, some other people might have displayed higher strength and resilience levels against it. Therefore, it is

important to determine the influences of the pandemic and psychological mechanisms used by people when coping with its adverse effects.

Let us locate the problem in Turkey, following which we may work on the effects of COVID-19 over people's wellbeing and mental health which appeared as soon as the pandemic spread across the world. Studies in Turkey have steadily been multiplying. Compared to theoretical studies, empirical research is relatively limited and thus, the topic requires further research and even replication studies. To update and refine these mostly duplicate results, and upon our reviewer's advice, we repeated the search more succinctly. A simple search for the period of 2020–2022 on international databases (Scopus, Art and Humanities Citation Index, Science Citation Index, Social Sciences Citation Index) and on local databases for the combined keywords "covid and psychology and effects and resilience and relig* and Turkey" produced 95 research results in peer-reviewed journals¹, a book, two research reports, and two theses. Titles included such themes as resilience, hopelessness, happiness, prevention, control, impact, and stress, amongst others.

Reflecting upon early-period database search results and possible others, we decided to construct items to measure the following aspects of the pandemic: (a) How serious or challenging COVID-19 was perceived to be, (b) what its overall negative impacts on different aspects of life and on wellbeing (including OCDS) are, (c) how it is coped with, using religious attributions, and (d) whether religiosity and optimism have an impact in coping with these emerging stresses. Finally, we aimed to predict negative effects of COVID-19, the OCDS, and resilience using the variables above.

Accordingly, our analysis of the results of the newly-constructed COVID-19-related items allowed us to combine the variables under two umbrella concepts covering the above-mentioned four dimensions: (1) The perceived negative effect of the pandemic on several indicators of wellbeing, including its perceived severity, its general effect, effect on family discord, loss of faith and OCDS and (2) the resilience of individuals dealing with COVID-19, that is, how people cope with such stresses by displaying higher levels of resilience, family solidarity, mortality awareness, using religiosity, religious attributions, and optimism. This study explores these concepts and dimensions through seven hypotheses, elaborated below, which were formulated after the initial database search. We discuss the umbrella concepts with respect to their place in the existing literature.

Effects of COVID-19 on wellbeing

The negative effects of COVID-19 on wellbeing were examined in five dimensions: (a) perceived seriousness, (b) general negative effects, (c) family discord during lockdown, (d) loss of faith, and (e) OCDS. In the following, we elaborate on these dimensions in some detail, interspersed with three hypotheses at relevant points:

(a) *Perceived Seriousness of COVID-19*: One of the ways to measure the effect of COVID-19 is to assess how *serious* and challenging it is perceived to be by the participants. It should be pointed out, first, that during extreme events, "it is not so much the event per se that affects wellbeing, but more so the psychological processing of the event" (Tuason et al., 2021, p. 4). People differ in terms of showing reactions towards the pandemic and its seriousness. According to the contents of the items of Fear of Coronavirus Scale (Martínez-Lorca et al., 2020), for instance, people feel uncomfortable to think about the pandemic, their hands may become clammy, they may be afraid of losing their partner, feel nervous

or anxious, or suffer from insomnia, a racing heart or palpitations. People also develop reactions such as anger, grief, sadness, and fear (cited in Martínez-Lorca et al., 2020). The perceived seriousness can also be detected in certain protective measures people take to avoid the pandemic.

In terms of related variables, Bish and Michie (2010) report in their systematic review that the elderly, educated women and non-white people were more likely to observe protective behaviour recommendations (cited in Khosravi, 2020) during past pandemics. In addition, calmer and more tolerant people perceived the pandemic as a less challenging threat and needed a lesser sense of control against it. However, people whose family members got infected perceived it as more threatening were less tolerant of related matters, and needed a greater sense of control over their lives during the pandemic (Pervichko et al., 2020).

HYPOTHESIS 1-SERIOUSNESS: It is hypothesised that people who take the pandemic as a more serious challenge (because of higher anxiety) are more affected by the negative impacts of the pandemic and feel less resilient against it.

(b) *General Negative Effects of COVID-19 on Wellbeing:* APA defines wellbeing as the “state of happiness and contentment, with low levels of distress, overall good physical and mental health and outlook, or good quality of life” (APA Dictionary of Psychology, n.d.). Although there is no consensus on what determines wellbeing, it entails the presence of positive emotions and moods, the absence of negative emotions, satisfaction with life, a sense of fulfilment, positive functioning, physical wellbeing (physical health and vitality), positive relationships, access to basic resources (e.g., employment, shelter, and income), and a sense of purpose and meaning.

Wellbeing-related variables in this study were determined as a result of factor analysis of the constructed items. They emerged, for instance, as the object of “effect of COVID-19”. The items of the variable COVID-19 General Negative Effect Scale measured the perceived effects of the pandemic on subjective financial situation, state of mental health, mood, change in perspectives regarding matters of life and death matters and regarding other people, physical health condition, and finally, spirituality. Accordingly, apart from pre-decided variables of OCDS, optimism, and religiosity, the following wellbeing-related variables emerged from the results of analyses: family solidarity/discord, loss of faith, resilience, mortality awareness, and religious attributions.

The literature reports that COVID-19 has already affected the subjective state of happiness and contentment, general state of physical and mental health, outlook, or the quality of life, in addition to creating certain levels of distress. It has had a detrimental impact on mental health, social life (loss of relatives, conflicts in close relationships), economic deprivation, and existential anxiety. Negative effects of COVID-19 on mental health and wellbeing were observed in terms of increased stress, loneliness due to social isolation, fear of contagion, questioning the meaning of life, and decreased happiness and psychological wellbeing (Appel et al., 2020). Moreover, during the pandemic period, it was observed that the sense of responsibility decreased, satisfaction levels deteriorated, and maladaptive attributions increased, particularly among lower-functioning couples (Williamson, 2020).

(c) *Effects on Family Discord:* It has been argued that confinement to home for a lengthened period during the lockdown may have caused conflicts among family members. According to Tam et al. (2021), in these circumstances, the high-pressure environment of confinement may make already-existing problems worse or perhaps create new ones.

(d) *Effects on Increase/Loss of Faith in Religiosity*: With regard to spirituality, around 90% of people in the United States accepted that their life and religious habits had changed due to the pandemic (Pew, 2020a). The Pew Survey (2020b) further showed that 47% of the sample stated that their faith had not changed much, a quarter of participants said their faith had grown, and only 2% shared that it weakened during the pandemic. Interestingly, it was found that people's attendance at religious services (in person or virtual religious participation) became more robust (46%) compared to the pre-COVID-19 period. Additionally, there was a significant increase across the world in faith-related searches on Google during this period, especially searches pertaining to terms such as God, Allah, Muhammad, Quran, Bible, and Jesus, and to a lesser extent, Buddha, Vishnu, and Shiva (Bentzen, 2021). This effect on spirituality means that people turn to religions as a source of security in challenging situations.

However, even though natural disasters make people more religious, it is assumed that negative events may also trigger some other people to develop doubts and negative attitudes to religion or even lead them to leave their religion, particularly among those who use negative religious coping mechanisms (Hebert et al., 2009). The life-altering event of a person or their loved ones contracting the coronavirus amidst the pandemic could result in them losing either their optimism or their hope in the mercy of God, or both.

HYPOTHESIS 2-EFFECTS OF COVID-19. Therefore, in the light of the above observations, it is hypothesised that COVID-19 will have a perceived negative effect on the following wellbeing indicators: (i) general wellbeing (i.e., financial conditions, state of mood, mental health, the perspective of life-death issues), (ii) family discord, and (iii) loss of faith.

(e) *Effects on Mental Health and OCDS*: Shortly after the COVID-19 outbreak, the pandemic's effect on mental health was actively reported. The outbreak caused enormous stress for people and exacerbated negative emotional and behavioural conditions such as general stress, disease-related suffering, anxiety, worry, depression, panic, psychological distress, post-traumatic stress, feelings of loneliness, pessimism, nervousness, sleep problems, aggression, substance abuse, interpersonal sensitivity, phobic anxiety, and psychoticism (Abba-Aji et al., 2020; Fardin, 2020; Li et al., 2020; Machado et al., 2020; Wang et al., 2020; Xu et al., 2020). In a similar situation in the past, people at immediate risk of the SARS disease had also reported a higher level of depression, anxiety, and chronic stress than people who were deemed to be at a lower risk (McAlonan et al., 2007). In contrast, people exposed to volatile employment situations, such as income reduction or increased workloads, felt higher anxiety and dissatisfaction.

Like various infectious diseases, COVID-19 likely causes distress in people with OCDS and other mental health symptoms (Fineberg et al., 2020; Tucci et al., 2017). OCDS might worsen, especially with respect to dimensions of contamination, aggression, and hoarding behaviour (Silva et al., 2021). The rates of OCDS in the early period of the pandemic were significantly higher compared to the previous rates reported for the general population (Abba-Aji et al., 2020; Davide et al., 2020). It was found that more than 70% of participants ($N = 1060$) reported higher scores for OCDS, interpersonal sensitivity, phobic anxiety, and psychoticism compared to previous times (Tian et al., 2020). On the other hand, a separate study conducted amongst adolescents in Turkey revealed that the fear of COVID-19 has had a significant positive effect on OCD (Seçer & Ulaş, 2021).

Warnings and recommended applications by health authorities in the media concerning the measures to be taken so as to avoid the risk of COVID-19 and protection from it

may trigger side effects on particularly vulnerable people, such as those with OCD (Banerjee, 2020; Hafi et al., 2020). These include typical applications and strong recommendations regarding frequent and proper handwashing steps (in a ritual form), observing social distance, using masks and disinfectants, and avoiding transmission through touching surfaces. The increased anxiety levels caused by such repetitive behaviours may create justifications and excuses for over-cleanliness and confirm their non-rational assumptions, which altogether accelerates the level of obsession and compulsion in these people (Mak et al., 2009). Subsequently, they feel overwhelmed by the burden of these extra rituals of cleaning and decontamination.

People with OCDS in normal conditions avoid contamination with extra effort, experience worries about whether they may harm others, apply washing rituals, have pathological doubts, check compulsions and magical thoughts, and display hoarding behaviours. COVID-19 is likely to trigger these symptoms (Pozza et al., 2020; Saha & Mondal, 2020). This effect was present, especially in terms of obsession with contamination, the compulsion of handwashing, and hoarding disorder (French & Lyne, 2020; Kumar & Somani, 2020). Additionally, Goyal et al. (2020) cautioned about the possibility of suicidal tendencies in OCD patients.

Due to space limitations, other mental health variables such as depression or anxiety were not focused on; only OCD was selected in this study as the representative variable for mental health. The reason for selecting OCD was that it is closely connected to generalised anxiety and said to be most closely correlated to contamination, the primary method of protecting oneself against the pandemic (Bejerot et al., 2014).

Therefore, it is hypothesised that people with higher OCDS are influenced more by the negative impacts of COVID-19 than people with lower or no OCDS.

HYPOTHESIS 3-EFFECTS OF THE COVID-19 ON OCDS. Therefore, in the light of the above observations it is hypothesised that people with more OCDS will be adversely affected by perceived negative effects of the COVID-19 and will be less resilient (or become more vulnerable) against its effects.

Resilience against COVID-19

Let us now turn to the second umbrella concept, resilience or coping strategies of people dealing with COVID-19. This concept was examined in five dimensions: (a) resilience or coping per se, (b) family solidarity, (c) mortality awareness, (d) religion as a source of resilience, and (e) optimism as a source of resilience. We discuss these dimensions in some detail, interspersed with the remaining four hypotheses at relevant points:

(a) *Resilience*: When faced with stressful life events or crises, people use various behavioural and cognitive *coping* and resilience *strategies* (Rubio et al., 2016). Resilience is defined as “the process of effectively negotiating, adapting to, or managing significant sources of stress or trauma” (Windle, 2011, p. 1). Similarly, APA defines resilience as the act of successfully adjusting to tough and demanding life events, particularly through mental, emotional, and behavioural flexibility and adaptability to external and internal demands (APA Dictionary of Psychology, n.d.). This is accomplished through (i) the ways in which individuals view and engage with the world, (ii) the availability and quality of social resources, and (iii) specific coping strategies. Therefore, resilience is not simply “bouncing back” to the prior state of functioning but a matter of positive

adaptation (Wright & Masten, 2005) and incorporating trauma or diversity, past or present, into personal and collective narratives (Vande Kemp, 2016). Hardiness, a similar concept to resilience, is when one does not get negatively affected by stress. Resilience could be mediated through perceptions of events (Khan et al., 2020; Li et al., 2020), personality traits, and applications. This strength of resilience was emphasised by *identity resilience*, a term that was derived from Identity Process Theory (Breakwell, 2015) which centres on the methods individuals employ to deal with potential threats. Identity resilience is said to be achieved by having a high level of self-esteem, self-efficacy, and continuity (Breakwell & Jaspal, 2021).

In contrast, coping is defined by APA dictionary the application of cognitive and behavioural techniques to deal with situational demands that are deemed to be beyond one's capacity or to lessen the bad feelings and conflict brought on by stress (APA Dictionary of Psychology, n.d.). Accordingly, coping behaviour, therefore, refers to a distinctive and frequently instinctive action or collection of activities used to deal with stressful or frightening events. These acts can be either beneficial (i.e., adaptive), such as making time to meditate or exercise, or negative (i.e., maladaptive, avoidant). The coping actions include having a sense of control by taking due measures, avoidance, keeping a positive attitude, and seeking social support.

From the definitions above, it follows that coping forms one of the essential components of the broader term resilience. Resilience has internal sources (such as dispositional optimism and adaptive coping behaviours) as well as external ones (such as social support networks or affiliation to a group for solidarity) (Young, 2016).

Empirical studies show that high resilience is connected to lower levels of COVID-19 related worries (Barzilay et al., 2020). In addition, Breakwell and Jaspal (2021) showed that identity resilience, has a negative correlation with fear of COVID-19 and perceived own risk of the same. Tuason et al. (2021) argued that coping skills have a huge impact on alleviating the stress of the pandemic. People with better physical health, paid jobs, who live with a partner, perform daily exercises, and avoid alienation reported low dissatisfaction and anxiety (De Pedraza et al., 2020). In contrast, people with low incomes showed higher levels of emotional reactions such as anger, fear, and challenges regarding the measures taken towards solving the pandemic problem (Khosravi, 2020). In addition, public worry and compliance with measures taken were dictated by the values people hold. People who hold such conservative values as security and tradition are more likely to put preventive measures into practice seriously than people with autonomy and stimulation values (e.g., self-direction and hedonism).

Finally, in line with the findings that income is related to anxiety and stress (Pervichko et al., 2020), economic welfare, including job security or stability, has a positive link to feeling resilient against the effects of COVID-19.

HYPOTHESIS 4-RESILIENCE. It is hypothesised that higher COVID-19 resilience will be negatively associated with the adverse effects of COVID-19.

(b) *Family Solidarity:* While being confined together during the lockdown due to pandemic could have negative effects among family members, it may allow other families to develop stronger bonds and closer intimate relationships. Strong family ties may help people to have positive feelings. People in committed relationships showed lower stress levels during times of social isolation and greater attention to physical distance (Shacham et al., 2020), which, in normal conditions, often led to heightened depression

and stress levels (Duan & Zhu, 2020). Social support reduced the psychological effects of COVID-19 among healthcare workers (Abbas et al., 2021). The literature shows that social support, psychological flexibility, and coping are influential in alleviating the burden of stress caused by the pandemic (Tindle et al., 2022). It was found that participants are more likely to be able to handle the psychological effects of the pandemic if their families have balanced degrees of cohesion and flexibility (Tam et al., 2021).

(c) *Mortality Awareness*: The other variable related to resilience is *mortality awareness*. It is defined as “a mindset in which one fully accepts one’s own finiteness” (Spitzenstätter & Schnell, 2022, p. 1219). It could be taken as an indicator of death anxiety (James et al., 2007; Pandya & Kathuria, 2021) or acceptance of the reality of death, which could trigger relief and motivation to spend more time with family members. People usually react to the idea of mortality by turning to culturally shared worldviews and values, and trying to increase their own self-esteem, which in turn, serve as buffers to decrease existential anxiety. Mortality awareness may induce anxiety, stress, and paralysis (Spitzenstätter & Schnell, 2022) which may challenge an individual’s global meaning system (e.g., central beliefs and goals). However, it may also activate growth-oriented motivations and self-regulatory processes as well as lead to a reevaluation of and even changes in personal life orientations and values (Park, 2010; cited in Spitzenstätter & Schnell, 2022). A negative link was reported between death anxiety and death acceptance. Spitzenstätter and Schnell (2022) found that with more acceptance of their own mortality brought on by mortality awareness, participants’ fear of dying gradually decreased.

HYPOTHESIS 5-FAMILY SOLIDARITY AND MORTALITY AWARENESS. It is hypothesised that people who improved their family bonds during the lockdown and developed mortality awareness were less influenced by the perceived general negative effects of COVID-19 and showed higher resilience against it.

(d) *Religion as a Source of Resilience*: Religion could be a resource of resilience in two ways when faced with life-threatening challenges – merely being religions and using religious attributions to explain the catastrophe.

(i) *Religiosity*: It is well established that religious interpretations of the pandemic may provide conceptual tools for coping and a sense of safety (Ross, 2007), particularly in religious populations; and a broader frame of reference for believers (Spilka et al., 1985). Additionally, it provides a conceptual repertoire for believers to explain the pandemic, in coping with its stresses, and in facilitating feelings of control, prediction, and self-esteem (e.g., personal faith, prayer, rituals, etc.) (Spilka et al., 1985). It is known that religion enhances one’s purpose in life (Ok et al., 2023), and a notion of an omnipresent god provides a secure base and haven of safety for its believers during times of stress or threat (e.g., frightening/alarming life events; sickness, injury; fatigue; loss, or separation) (Granqvist & Kirkpatrick, 2016; Kirkpatrick, 2004).

Spirituality demonstrates significant benefits towards psychological wellbeing whilst loneliness shows a negative link to it. The reason being that religiosity forms a source of social solidarity, hope, inner strength, and can be a coping mechanism through a positive relationship with God. Finally, religiosity also positively correlates with resilience (Fradelos et al., 2018).

(ii) *Religious Attributions*: Religious traditions provide people with a comprehensive meaning and a belief system to help them understand, interpret, or explain chaotic events. These are done especially when their meaning system, personal control, and

self-esteem seem to be challenged. The chosen attributions, among others, are the best ones in alleviating or removing the challenges in these areas (Spilka et al., 1985). In that sense, systems of religions, in theory, provide a variety of integrated and comprehensive meaning, enhancing explanations of events such as God, salvation, faith, prayer, and rituals. There are very few studies connecting religious attributions with resilience. However, considering that religiosity has a positive link with resilience, mediated by the sense of hope (Krok et al., 2021), religious attribution can be regarded as a type of faith-based coping mechanism for the pandemic.

More specifically religions provide a conceptual tool for its members to explain challenging events. The religious explanations of the pandemic in religious terms were named as religious attribution (Spilka et al., 1985). The reason being, that according to the attribution theory, religious people may explain the pandemic by attributing it to the intentions/reasons, of a believed god. They do so to make the event and the subsequent chaos somewhat meaningful, to have a sense of control over it (by increasing the probability of positive outcomes and avoiding the negative ones), and to protect their physical and self-concept or self-esteem (maintaining security).

Positive religious attributions predict better psychological and religious outcomes in times of catastrophes (Smith et al., 2000). For example, some of the Muslim COVID-19 patients perceived it as *gazab*, that is, anger coming from God, and others attributed the cause of the pandemic to sins committed by and disbelief of other Muslims and as a punishment for the same (Abati, 2020; Abdul Malik & Gulnaz, 2020). The implications of such perceptions for believers could be that these cognitive religious explanations may positively impact their lives in that they may remove existential uncertainty and anxiety in their minds and feel inner security (Kirkpatrick, 2004) by trusting in an omnipotent presence. However, viewing a pandemic fatalistically may also mislead believers into taking inadequate safety measures. These include lower coping measures, fewer concerns regarding recommendations and warnings, and contentment with religious practices such as prayer and spiritual healing alone, without adhering to the medically prescribed hygiene and protection practices.

It was predicted that during the COVID-19 pandemic, there would be an increase in the manifestations of religiosity and that religious coping would be widely used. Religious people may interpret the pandemic as an unavoidable divine punishment or intervention (Dein et al., 2020) and a negative religious attribution. Indeed, numerous studies have shown that religion can be highly functional in coping with stressful life events (Pargament, 1997; Pargament et al., 2005). People often attribute extraordinary events that negatively affect their lives to supernatural agents to make sense of them (Kaplan, 2010; Spilka et al., 1985). It was found that religious health providers used their religious values and beliefs to cope with pandemic difficulties (Munawar & Choudhry, 2021). One-third of the Muslim sample explained COVID-19 as a divine test, and the proportion of those who attributed COVID-19 to supernatural agents is higher than those who attributed it to natural forces (Kaplan et al., 2020).

Considering the above, it is worth examining whether Muslims explain COVID-19 by attributing it to religious causality and God in particular and by using religious resources in coping with its distress. The relationship between the pandemic and religiosity could be two-sided. As it was indicated above, when people feel stressed, their religiosity may increase as they deem religion to be a secure source to feel protected. Highly

religious people may feel less threatened by life-threatening challenges on account of the strength they get from commitment to their faith. However, it is also probable that some people may leave religion, as a result of disappointment, if they feel that religious rituals or God does not help them in overcoming difficulties.

HYPOTHESIS 6-RELIGIOSITY. It is hypothesised that people with a higher level of religiosity, and use of religious attributions, are less influenced by the perceived general negative effects of COVID-19 and show higher resilience against it.

(e) *Optimism as a Recourse of Resilience:* Optimism, which represents a positive appraisal of challenging events and implies purpose and meaning for individuals, is a well-established way of coping with difficulties in both religious and non-religious people. Whilst religious people use mainly religious ways of coping in addition to optimism, secular people may use other positive assets and meaningful activities besides it. In a particular study, some religious social workers tried to increase the level of optimism and sense of purpose of COVID-19 patients by encouraging them to perform physical exercises to decrease the adverse effects of COVID-19. They used religious and spiritual activities, yoga or meditation to a lesser degree (Shechter et al., 2020).

Research shows (Jovančević & Miličević, 2020) that people with optimism use better strategies in terms of coping with their health. They were more inclined to take protective actions in coping with COVID-19 such as using face masks, observing social distancing, and staying home during lockdown times. They were also able to stay patient during the process. Furthermore, they also showed tremendous respect for rules and measures taken by authorities. In another study (Trzebiński et al., 2020), it was found that a sense of hope positively correlated with life satisfaction and negatively correlated with stresses prompted by COVID-19.

HYPOTHESIS 7-OPTIMISM. Thus, it is hypothesised that people with a higher level of optimism are less affected by, and display higher resilience against, the negative impacts of COVID-19 than people with a lower level of religiosity.

Method

Participants

In this cross-sectional study, the sample included 247 participants (men = 74 [30%] and women = 173 [70%]) (Age range = 12–64; mean age = 31.53; sd = 10.05), which were recruited according to a mix of snowball and convenience sampling methods. After an invitation was sent via e-mail or directly sent to some social-media groups, volunteers participated in the study by filling in a survey through an internet link open to the public. Participants were overwhelmingly Muslims living in different cities of Turkey (Hackett et al., 2012).² For instance, the percentage of people who agreed moderately, mostly, or completely in their responses to the item “I feel moved when I listen to religious chanting/reciting such as *Ezan*, prayer or Qur’anic verses” was 84 percent on a five-point Likert scale in this sample.

In selecting a convenience sample, which has no fixed sample size, due attention was given to the nature of the analysis proposed. The target sample size of 250 was determined considering the nature of analyses, that is, factor analysis, correlational analysis, and multiple regression analysis. It is suggested that a multiple regression analysis

requires a sample size of $50+8K$, where K is the number of predictors (Alshibly, 2018). Accordingly, it was planned that there could be around six-seven predictor variables in the multiple regression analysis, which requires at least 106 ($=50 + 8 * 7$) participants. In contrast, the rule of thumb for factor analysis, according to some, is that at least 10 respondents are required for each item being tested. Accordingly, the factor analysis was conducted with a maximum of 20 items which requires a minimum of 200 sample size. However, as Mundfrom et al. (2005) suggest, “the number of variables may not be an appropriate index to use to determine the size of the sample” (p. 166). What they suggest instead, is that “the more variables that are measured per factor and the greater the level of communalities, the smaller the sample sizes need to be” (p. 167). Hence, with this criteria, a ratio of six items for each of the factors requires a 250 sample size, which will be labelled as good (see also Field, 2018).

Instruments

Demographic Form: The form included gender (1 = male, 2 = female) and age.

A Battery of COVID-19-ER (Effects & Resilience) Scales: As the COVID-19 pandemic is a new phenomenon and there is no theory explaining it yet, the authors intended to develop an instrument to measure various aspects of it after a period of brainstorming on possible aspects of COVID-19. At the end of a two-week reflection period, we decided to focus item construction on the following dimensions: the negative *effects of COVID-19* and *resilience* to it. The first author initially constructed an item pool consisting of 34 items covering the constructs mentioned above. The number of items was kept double of the items planned to measure the above-mentioned dimensions. In the second stage, the items were examined by the authors independently, followed by suggestions made for revisions. After reaching a consensus with the authors, the items were discussed with four students for the purpose of gaining clarity. According to exploratory factor analyses and subsequent item analyses via the inter-item reliability test (some of the items were dropped because of poor internal consistency), two groups of main variables of the Battery of COVID-19-ER Scales along with their sub-scales related to COVID-19 were confirmed (see results section for the reliability indicators): *The Effects of COVID-19*, and *Resilience against COVID-19*. (See Appendix for items).

The four sub-scales measuring the Effects of COVID-19 are as follows:

- (1) *COVID-19–Seriousness Scale:* The scale with two items aim to measure how serious, dangerous, and deadly COVID-19 is perceived by participants.
- (2) *COVID-19-General Effects Scale:* The scale includes eight items to measure the effects of COVID-19 on participants’ lives. The question was: “In what way has COVID-19 affected your life with respect to the following matters?” The eight matters refer to the following domains related to wellbeing: financial state, state of mental health, mood, view of life, belief in God, perception of life and death matters, view of other humans, and physical health (see Appendix for items). The items revealed a high level of internal consistency (see Table 1). The responses to this particular scale included five options in Likert Style: “very negative, negative, neither positive nor negative, positive, and very positive”. In order to make it easier to understand

the figures in the tables, the options were reversed. Thus, *general effects* mean “the general negative effects”.

- (3) *COVID-19–Family Discord Scale*. The scale with two items is intended to measure the negative effects of the lockdown on relations between family members.
- (4) *COVID-19–Loss of Faith Scale*. The scale with two items aims to measure whether COVID-19 affected one’s perception of religion negatively or not.

The sub-scales measuring *Resilience Against COVID-19* are as follows:

- (1) *COVID-19–Resilience Scale*: The scale with five items intended to measure participants’ feelings of strength and coping during the challenge of COVID-19. In other words, it determines the level of resistance shown by the participant to the psychological effect of COVID-19.
- (2) *COVID-19–Family Solidarity Scale*: The scale with three items aims to measure the degree of positive effect of the lockdown on strengthening family ties.
- (3) *COVID-19–Mortality Awareness Scale*: The scale with two items aims to measure the awareness on one’s life and mortality caused as a result of observations of widespread death news regarding the existential side of life, that is, life-mortality awareness. The pandemic reminds us that our life has an end. This awareness could be taken as a cure for death anxiety by accepting its reality and being submissive in the face of such a significant threat. The items suggest a level of introspection and contemplation about one’s life and priorities, and may be relevant in the context of existential or spiritual wellbeing.
- (4) *COVID-19–Religious Attribution Scale*: The scale with three items aims to measure whether the case of COVID-19 is explained by religious attributions or explanations.

All items of the variables in the *Battery of COVID-19-ER Scales* were rated on a five-point Likert scale in the Turkish language e.g., “To what extent would you agree with the following statements: 1 = do not agree (0%), 2 = agree a little (25%), 3 = moderately agree (50%), 4 = mostly agree (75%), 5 = completely agree (100%)”, except the scale of *COVID-19–General Effects*, which has already been pointed out above.

In addition to these scales from the battery, three pre-prepared scales were added to the questionnaire to check their correlations with COVID-19 scales.

- *The Brief Obsessive-Compulsive Scale (BOCS)*: The instrument is widely used internationally and is based on the Yale-Brown Obsessive-Compulsive Scale (Bejerot et al., 2014). The 13-item self-report scale is used for assessing the symptoms of OCD and for diagnosis purposes. It consists of five subscales namely, symmetry, forbidden thoughts, contamination, magical thoughts, and dysmorphic thoughts, covering 11 symptom areas: contamination/cleanliness (2 items), harming obsession (2), sexual obsession (1), checking (1), religion/magical thoughts/superstition (2), morality & justice (1), symmetry/exactness/ordering (2), just right/repeating rituals/counting (1), hoarding & saving (1), somatic obsessions (1), and self-damaging behaviours (1). Its validity and utility in clinical works have been strongly supported (Bejerot et al., 2014). In this study, it will be used for assessing symptoms. The scale items were translated and adapted into Turkish by Ok and

Gören (2018). The level of agreements with each of the items was revealed on a five-point Likert format, that is, *not at all, slightly, half the time, most, and completely*.

- *Optimism Scale*: The scale of optimism with four items was developed by Ok and Ozates (2020) and aims to measure participants' positive expectations for their future. The scale with two poles (optimism vs. pessimism) can also measure pessimism by reversing items. It revealed a high internal consistency level ($\alpha = .78$) in a Turkish sample (Ok & Ozates, 2020). Items included pointers like, "Despite difficulties in life, I see a brightness in my future" and "I have serious anxieties regarding my future." Exploratory factor analysis revealed sound construct, convergent, and discriminant validity in Ok and Ozates (2020). Example items are "I have worries regarding my future" and "Despite difficulties today, I feel that the future is promising".
- *The Ok-Religious Attitude Scale*: Religiosity, measured by eight items, was developed by Ok (2016) to measure the degree of commitment by Muslims to Islamic values. The scale has four dimensions – Cognitive, Affective, Behavioural, and God-Relational – each consisting of two items. Each item was responded to on a five-point Likert style ranging from *do not agree* to *completely agree*. The scale is known to have high construct and criterion validity derived from two different Turkish samples (Ok, 2011, 2016). Additionally, as was demonstrated in confirmatory factor analysis and numerous exploratory factor analyses, the scale met robust validity criteria, showed strong internal consistency, and showed a strong correlation with the adapted version of the Intrinsic scale (Allport & Ross, 1967) in Turkish. Example items include: "I check that I am living my life in line with religious values," and "I feel religion does more harm than good to people (-)."

Procedure

After the survey was uploaded to a web page on 12 June 2020, an invitation message was sent to potential participants on several social-media groups. The authors also sent the link to people in their social environment to participate, accompanied with the following note: "Could you please send this link to people you know that may participate?" This effort continued until the total expected number was reached. The authors' target sample was 250 to reach a satisfactory level of effect size, but the survey was closed at 247. The survey format forced participants to respond to every item before moving to the next question but with a sixth option of "no answer." Participants' responses were coded and transformed into numbers using an excel sheet and then uploaded to the statistical programme for analysis.

The statistical analysis

First, we exposed the items of the OCD Scale (i.e., BOCS) and newly constructed three COVID-19 subscales to factor analysis with varimax rotation and subsequent item analysis. After reversing negatively worded items, the alpha levels were examined. Internal consistency levels were kept as high as possible without losing the richness of the content coverage. Items that reduced alpha levels starkly were discarded. After these initial procedures, correlations were conducted to check the relation between variables. Three multiple linear regression analyses were conducted with the *enter* method to determine the best predictors of *General Negative Effects* of COVID-19, *OCDS*, and *Resilience* among the

main variables used in the present study. The predictors selected included gender, age, resilience, seriousness, general negative effects, religiosity, and optimism. The reason to choose these variables was that together, they explained the highest percentage of the target variables in the models. Considering that the sample was selected non-randomly, it is suggested that the results with a *p*-value higher than .001 should be taken with due caution.

Results

Descriptive results

The descriptive characteristics of the variables can be seen in [Table 1](#) below: It is seen that the scales used have satisfactory inter-item consistency ranging from .66 to .93. The low number of participants in the variable of *Family Discord* is due to an item on the scale which was valid only for married people. It is seen from the mean scores that participants are highly religious (*M* = 4.08) and moderately optimistic (*M* = 3.41).

Negative effects of COVID-19 and their correlates

RH1 (response to hypothesis 1): Seriousness. COVID-19 is taken rather seriously (*M* = 3.96; 68% on average) (see for percentages of item endorsements in Appendix). People who take the pandemic as a more serious challenge have not suffered, as expected, from its general negative effects. However, they spent more energy in strengthening their faith (see its negative correlation with loss of faith) and displayed more OCDS than people who take the pandemic as less serious. In terms of coping, they felt less resilient, increased stronger ties with their religion and with family members during lockdown, and showed higher mortality awareness (which could be an indicator of fear of death and helplessness) than people who took the pandemic less seriously. In this way, the first hypothesis was confirmed at least at the level of several variables.

The interconnections among COVID-19-related items can be seen in [Table 2](#). *RH2 and 3: Effect of the COVID-19 in General and on OCDS:* In terms of the perceived negative effect of the pandemic on *life in general* (as the frequency tables indicated in the Appendix), on average, it seriously and negatively affected nearly a quarter of the participants (26%).

Table 1. Descriptive results of variables.

	<i>N</i>	Alpha	Min.	Max.	Mean	SD
<i>Effects of COVID-19</i>						
Level of seriousness (2)	244	.86	1	5	3.97	.96
General negative effects (8)*	247	.85	1	4.63	2.75	.67
Effect on family discord (2)	107	.73	1	5	1.78	.96
Effect on loss of faith (2)	239	.86	1	5	1.09	.46
OCDS (15)	246	.84	1	4	2.24	.65
<i>Coping with COVID-19</i>						
Resilience (5)	247	.74	1.60	5	3.80	.74
Family solidarity (3)	238	.78	1	5	3.58	1.01
Mortality awareness (2)	243	.81	1	5	3.44	1.28
Religious attribution (3)	241	.81	1	5	2.66	1.20
Religiosity (8)	246	.93	1	5	4.08	.96
Optimism (4)	246	.82	.25	5	3.41	.96

*Numbers in brackets indicate the number of items in the scales of these variables:

Table 2. Inter-correlations among the variables of negative effects and coping with COVID-19.

	Seriousness	Negative effects	Family discord	Loss of faith	OCDS	Resilience	Family solidarity	Mortality awareness	Religious attribution	Optimism
<i>Negative effects</i>										
Seriousness of COVID-19	.09									
General negative effects	-.09	.18†								
Family discord	-.21**	-.03	.34***							
Loss of faith	.14*	.02	.29**	.20**						
OCDS										
<i>Coping with COVID-19</i>										
Resilience	-.32***	-.27***	-.28**	-.15**	-.36***					
Family solidarity	.19**	-.21**	-.30**	-.13*	.04	-.11				
Mortality awareness	.15*	-.16*	.08	.04	.19**	-.21**	.40***			
Religious attribution	.09	-.17**	.08	-.03	.14*	-.05	.05	.38***		
Optimism	-.03	-.47***	-.42***	-.14*	-.27***	.32***	.36***	.06	.08	
Religiosity	.16*	-.31***	.05	-.14*	.06	.00	.23**	.44***	.52***	.23**

*** $p < .001$; ** $p < .01$; * $p < .05$; † $p < .10$.

At least around ¼ of the participants had negatively or very negatively been influenced in terms of economy (25%), mental health (33%), overall state of mood (41%), the perspective of life (25%), perspective on life-death issue (6%), perception of people (27%), physical health condition (27%), and belief in God (4%). It is seen that the most affected issue is the *overall state of mood* (41%), followed by *mental health conditions* (33%) and the least influential matters are belief in God (4%) and perspective on life and death issues (6%).

In terms of other variables related to the impact of the pandemic, some believed that the lockdown due to COVID-19 has positively influenced the relations between family members, that is, family solidarity ($M = 3.58$; 58%), while, to some others, it harmed family relations slightly (i.e., family discord) ($M = 1.78$; 13%). COVID-19 led to the loss of faith in a small proportion of people ($M = 1.09$; 2%).

When we examine the inter-correlations between *negative effect* variables, we see that the general negative effect has a weak significant link ($p < .10$) to family discord. However, family discord has a positive relation to loss of faith. Furthermore, OCDS has positive relations with family discord and loss of faith. It seems that people *with OCDS*, in particular, did not suffer directly from the *general negative effect* of COVID-19. The results of the regression analysis indicate that when other variables are controlled, people with OCDS suffer less than people with more OCDS, which will be discussed below. However, they experienced more *family discord* and *loss of faith* during lockdown, and slightly took the pandemic as a more *serious* challenge than people with no OCDS. As a result, these patterns of relationships confirm the second and third hypotheses.

Resilience and coping with COVID-19 and their correlates

RH4, 5 and 6. Resilience, religiosity, and optimism. Most people cope with the effects of COVID-19 rather well (mean of resilience = 3.80), but despite that, on average 14.4% hardly or very hardly cope with its negative consequences. 58% showed family solidarity during the lockdown, and 55% mortality awareness, and about 33% used religious attributions, on average. More specifically, 22 participants explained the pandemic in terms of sins committed and human perversions as opposed to seeing it as a natural event.

When we examine the inter-correlations between coping-related variables, it is seen that resilience has a positive correlation with optimism and a negative link to mortality awareness. Furthermore, it has no relation with family solidarity, religious attribution, and religiosity. In contrast, increased family solidarity during the lockdown has positive correlations with mortality awareness, optimism, and religiosity. The pattern of these relationships indicates that religion (religiosity and religious attribution), family solidarity and mortality awareness are not indicators of resilience (feeling strong, unaffected, and unshaken), if resilience is not taken as careless indifference, but could be indicators of ways of coping with the aghast and devastating effect of the pandemic still with some fear and sense of horror.

What are the relationships of resilience-related variables with the variables related to the effects of COVID-19? It is seen that resilience has a negative link with all the variables related to the effect of the pandemic without exception, including seriousness, general negative effects, family discord, loss of faith, and OCDS. Optimism and family solidarity are similar to resilience with some minor exceptions that optimism has no link to seriousness and family solidarity has a positive link to seriousness and no link to OCDS. Furthermore, mortality awareness, as indicated above, has a negative link to negative general

effects but it has a positive link to seriousness and OCDS. Religiosity and religious attributions have similarities between them in that they have a negative link to negative effects of the pandemic, but also a positive link either to seriousness (religiosity) or OCDS (religious attribution).

RH5-Religiosity. However, at the subscales level, the patterns of relationship between these main variables were not always consistent, particularly religiosity-related variables, that is, mortality awareness, religious attribution, and religiosity. Besides their negative link to general negative effects, they also showed either no relation or a positive link to some of the negative effects variables such as seriousness or OCDS. Furthermore, religious people did not show more resilience against the pandemic than non-religious people, except through mortality awareness and increasing family solidarity.

The results confirmed the hypothesis overall, that resilience and resilience-related variables are negatively associated with the general negative effects of COVID-19. Furthermore, the hypothesis that people with a higher level of religiosity, in particular, are less influenced by the perceived general negative effects of COVID-19 and show higher resilience against it has only partially been confirmed. Finally, the hypothesis that people with a higher level of optimism are less affected by, and display higher resilience against the negative impacts of COVID-19 than people with a lower level of religiosity was completely confirmed.

Results Regarding Prediction: The results of the regression analysis (see Table 3) show that the general adverse effects of COVID-19 are predicted by gender (for women), lower resilience, lower religiosity, and lower optimism. Accordingly, women, less resilient,

Table 3. Predicting general negative effects of COVID-19, OCDS, and resilience.

DV = General Negative Effects	B	Std. Error	Beta	t	Sig.
(Constant)	4.20	.34		12.41	.000
Gender	.30	.08	.21	3.67	.000
Age	.00	.00	-.03	-.57	.571
Seriousness	.03	.04	.04	.74	.460
Resilience	-.10	.05	-.11	-1.82	.070
Religiosity	-.19	.04	-.27	-4.64	.000
Optimism	-.26	.04	-.37	-6.27	.000
Adjusted R		.31			
DV = OCDS	B	Std. Error	Beta	t	Sig.
(Constant)	4.71	.42		11.09	.000
Gender	-.24	.08	-.17	-2.93	.004
Age	-.02	.00	-.37	-6.69	.000
General Negative Effects	-.14	.06	-.15	-2.27	.024
Seriousness	.04	.04	.05	.92	.360
Resilience	-.25	.05	-.28	-4.60	.000
Optimism	-.17	.04	-.25	-3.99	.000
Religiosity	.12	.04	.17	2.77	.006
Adjusted R		.31			
DV = Resilience	B	Std. Error	Beta	t	Sig.
(Constant)	3.77	.27		14.02	.000
Gender	-.11	.08	-.08	-1.28	.203
Age	.00	.00	-.01	-.11	.914
Seriousness	-.15	.04	-.24	-3.89	.000
Religiosity	.02	.04	.03	.45	.652
Optimism	.20	.04	.31	5.08	.000
Adjusted R		.16			

religious, and optimistic people were more negatively affected by COVID-19, than men, more resilient, religious, and optimistic people. These variables explained 31% of the general effects of COVID-19.

In addition, with regard to variables *predicting OCDS*, the regression analysis (see Table 3) shows that OCDS is predicted by *gender, age, general adverse effects, lower resilience, lower optimism, and lower religiosity*. Accordingly, people who suffered more from OCDS during the pandemic were men who were also a relatively younger segment of the sample, who felt less affected by the pandemic, who revealed lower levels of optimism (or more pessimism), and who used more religious attributions.

In addition, in terms of variables *predicting resilience*, the regression analysis shows that *resilience* was predicted negatively by *seriousness* and positively by *optimism*. Accordingly, people who felt more *resilient* against COVID-19 are those who had higher *optimism* and take COVID-19 less *seriously*. These variables explained 16% of the dependent variable.

Discussion and conclusion

This study investigated the self-reported perceived negative effects of COVID-19 on various wellbeing indicators (seriousness, family discord, loss of faith, and OCDS) and resilience felt against them by using family solidarity, mortality awareness, religious attribution, religiosity, and optimism. It was found under seven hypotheses, that people were grossly affected by the pandemic in terms of perceiving it as a highly stressful challenge (seriousness), causing family discord, loss of faith, and affecting OCDS. Furthermore, it was found that people who were affected by the pandemic felt less resilient against it if they did not have higher levels of family solidarity, optimism and, to some extent, religiosity.

More specifically, the results showed that around a quarter of the sample was seriously affected by the pandemic in various ways. Moreover, 13% of participants were barely able to resist its effects. Around 40% used religious attributions to explain the event of COVID-19.

People with more OCDS have been less affected by the pandemic, but they perceived it as more serious, used more religious explanations, felt less resilience against it, and experienced a higher level of loss of faith and family discord than people with low OCDS. In addition, people who felt more resilient to the negative impacts of COVID-19 were those who took it less seriously, had lesser levels of family discord, and less loss of faith during the lockdown process. It was also well documented that religious people felt more protected against *the pandemic's general adverse effects* and felt increased *family solidarity* and *optimism*.

The idea that religion provides religious people with a sense of control in times of catastrophe by introducing explanations regarding the negative events (Kirkpatrick, 2004; Pargament et al., 1998) seemed to be supported by the case of COVID-19, as they felt less influenced by it. However, this has got some costs for them. Such people take COVID-19 more seriously, display more OCDS, and do not feel more resilient against its effects. Their immunity to these negative effects could partially be due to their mortality awareness and religious attributions, which might have given them a higher sense of security and purpose and meaning framework.

The fact that those who take COVID-19 less seriously felt greater resilience against it shows how a sense of resilience is related to one's perception of a threat. In other

words, the extent to which people are affected by COVID-19 and their level of resilience against it is closely linked with their feelings of inner control and a sense of security, if not related to indifference. With a high level of optimism, they probably interpreted the problem as less challenging. There is a high probability that they have not experienced a challenge or a loss due to the pandemic in a close social environment, which might have allowed them to see the pandemic as less severe than it would be for people who lost close friends or members of their family (Pervichko et al., 2020).

The argument that COVID-19 is assimilated or made meaningful with available religious schemas (Abati, 2020) was confirmed. Besides, the findings that it caused psychological and non-psychological (financial or physical) distress (Krause et al., 2016; Li et al., 2020) and increased worries of people with OCDS (Abba-Aji et al., 2020; Mak et al., 2009; Seçer & Ulaş, 2021) were also confirmed in the current study. The influence of COVID-19 on people with OCDS is not direct. Contrary to the hypothesised expectation, they were less affected in general by the pandemic; however, they felt it was highly serious, showed less resilience against it, reported higher family discord as well as more loss of faith during the lockdown. Thus, having negative effects of the pandemic felt less by people with OCDS could mean that these people needed to spend extra effort to feel safe and then feel resilience when avoiding the contagion.

Finally, parallel to previous research (Abbas et al., 2021; Duan & Zhu, 2020; Trzebiński et al., 2020), people with strong family ties or social support and people who have optimistic views have been less affected by COVID-19.

There are several implications of the results of this study for the health sector. Health-care providers can help people who were diagnosed with COVID-19 in their therapeutic relationships by keeping their optimism levels high and by supporting them to use their spiritual resources, that is, prayers, and their optimistic religious explanations (regardless of their theological correctness or rationality) to help them feel protected from developing mental illnesses such as depression or high levels of anxiety. Patients can also be encouraged to develop constructive family and social ties while maintaining their social distance. The results indicate that optimistic and religious patients with COVID-19 can cooperate with health staff in the treatment methods because they interpret it not as a total disaster but as something to be coped with by taking strict measures. In contrast, less religious or secular people could be helped by facilitating to increase in the meaning of life, developing a sense of purpose, and seeking family coherence and positive relations. Furthermore, people with OCDS may need extra care in times of crisis because of their increased worries and decreased resilience, and likely deteriorated family relations.

In terms of more practical suggestions, the following points were made clear for practitioners in health care and other areas:

- COVID-19 negatively affects people's lives in some or all of the following areas: finance, mental health, overall mood, perspective of life, perception of people, and physical health. These negative events may create additional distress in patients with clinical symptoms and should be included in the assessment interview before starting treatment.
- People with OCDS may experience discord with family members and question their faith during a long lockdown period. Consequently, they may feel less resilient

(more vulnerable) to the negative effects of COVID-19. Clinically, the average level of OCD distress might have been fostered excessively by worries of contamination. Extra measures taken to be protected from COVID-19 may, in turn, have accelerated the level of obsessions and related rituals among OCD patients. Family members of OCDS sufferers can be informed about this fact, be invited to show extra tolerance, and be provided education on how to live with a family member struggling with OCD.

- People with an optimistic perspective are less affected by COVID-19 and feel more resilient against it than pessimistic people. People in clinical practice may contribute to the healing process, especially in treating depression and other anxiety-related disorders, by increasing a sense of hope, purpose, and meaning in their clients'/patients' lives.
- Religious people are also less affected in general by COVID-19 than secular people. Many religious people explain the pandemic within their own religious framework. Irrespective of their being rational or irrational (e.g., whether they prefer mythic or diffused thinking), patients' spirituality provides them with some valuable mechanisms in expressing and coping with their life stresses and serves as a safe port. Patients' spirituality can be utilised by nurses or hospital chaplains to serve the improvement of their morale.
- People who consider COVID-19 less serious feel more resilient against it, that is, those people who take it more seriously feel less resilient against it. Hence, feeling secure against COVID-19 has got to do with the personal assessment of COVID-19 rather than the objective magnitude of the level of the event. This implies that health authorities should warn those who breach the rules of protection against the pandemic because of their irrational overconfidence or uncaring indifference. They should show fatality cases from the samples of people who normally would not expect to be affected by COVID-19, such as young people or healthy people.
- Women, younger people, less resilient people, less religious people, and less optimistic people are affected negatively by the influence of COVID-19 more than men, elderly, more resilient, more religious, and more optimistic people. Hence, the media can contribute to public morale and resilience by keeping optimism at a higher level and encouraging people to remember and upraise their virtuous values in their broadcasts. The government may take tight measures to protect the working conditions of young people.

Amongst the study's limitations are that the sample had to be selected because of the pandemic based on a mixture of convenience and snowball sampling methods and that it was conducted online to avoid contagion, with far less control over the participants' ways of responding to the survey. Another point is that although the items of the newly developed scales of COVID-19 showed satisfactory internal consistency and the scales themselves were determined as a result of construct validity via exploratory factor analyses, some of the constructs of COVID-19 scales may be missing content validity as four of the subscales used in the study included only two items. The likelihood of false positives is possible in the findings because the results were not corrected for multiple comparisons.

A final cautionary note is due to possible concerns about HARKing (hypothesising after the results are known). Although unintended, the final forms of hypotheses had to be established

after conducting the research. The reason for this was that the study was mainly exploratory in nature, with only some tacit and tentative hypotheses in mind at the beginning. When an offer was made by one of the authors on conducting research on COVID-19, we negotiated and decided on the possible dimensions of COVID-19. Then, we started constructing COVID-19 specific items to measure its different aspects. These included perceptions on its level of seriousness and its effects on a number of factors such as income, faith loss, family relations, among others, and whether individuals also coped well with its effects, or use religious attributions. As is clear, the final form of the variables, and the establishing of fixed hypotheses regarding the connections between variables, could only be done after the results of factor analyses of the newly constructed items were known.

A number of tacit hypotheses were present in the study from the very beginning. For instance, it is known that some groups (religious people, people who use religious attributions to explain events, and people with high optimism) are likely less affected negatively by the pandemic, and more likely to cope with challenging situations better. In addition, the OCD Scale was added to the study to test the hypothesis that people who suffer OCDS, particularly people with concerns about contamination, might have been affected more and may not cope as well in such conditions. In this study, the hypotheses established post-hoc were not fundamentally adjusted to suit the findings that were desired/not desired. In addition, there was no hiding of a priori expectations that were unsupported by the data and, thus, adjusted after the fact. Nor was there a deliberate intention of hypothesising after the results are revealed.

Notwithstanding the above, HARKing does not necessarily point to a weakness in the argument. As Hollenbeck and Wright (2017) have argued, HARKing is not harmful to science if it is done transparently and backed by theory. They state that THARKing (transparently hypothesising after the results are known), as opposed to secretly and manipulatively hypothesising after the results are known, is acceptable if readers are clearly informed that the hypotheses are post hoc rather than a priori.

To conclude, this exploratory work is conducted in Turkey about a number of psychosocial aspects of COVID-19. Its findings are limited to a specific period of the COVID-19 pandemic (December 2019–July 2020). We explored the wellbeing, COVID-19-related effects, and the seriousness of those effects. Additionally, we enquired into the sense of resilience some people have against pandemics with its possible connection to religiosity and optimism. The study thus laid the grounds for future studies exploring the relations between pandemics and wellbeing in Turkey. Although this was one-shot study, the newly developed *Battery of COVID-19-ER Scales*, mainly conducted with students, does need to be replicated in the future for more robust conclusions.

Note

1. This search was conducted during the review process.
2. Findings of more than one study regarding the Muslim population in Turkey revealed different results, which range from 83% to 98% (Hackett et al., 2012). Therefore, it is fair to safely estimate that Muslims consist of *around* 90% of the population of Turkey with a somewhat broad confidence interval level.

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Appendix. Items of COVID-19 Scales

EFFECTS OF COVID-19	
<i>COVID-19-Seriousness Scale</i>	
<i>To what extent do you agree with the following statements about the COVID-19 outbreak?</i>	<i>% of Mostly & Completely Agree</i>
• COVID-19 is an extremely serious and dangerous disease	73
• COVID-19 is an extremely deadly disease that must be avoided	63
<i>COVID-19-General Effects Scale</i>	
<i>To what extent has COVID-19 affected you in the following matters?</i>	<i>% Very negatively or negatively</i>
• Your financial situation	25
• The state of your mental health condition	33
• Your overall state of mood	41
• Your perspective on life	25
• Your perspective on life-death issues	6
• Your perception of people	27
• Your physical health condition	27
• Your belief in God	4
<i>COVID-19 – Family Discord Scale</i>	
<i>To what extent do you agree with the following statements? During my stay at home due to this pandemic ...</i>	<i>% of Mostly & Completely Agree</i>
• (For married people) I realised that I could not get on well with my spouse	7
• We had squabbles with family members at home, and we got nervous	18
<i>COVID-19-Loss of Faith Scale</i>	
<i>To what extent do you agree with the following statements regarding the COVID-19?</i>	<i>% of Mostly & Completely Agree</i>
• COVID-19 outbreak shook my religious beliefs	2
• COVID-19 outbreak weakened my religious beliefs	2
PROTECTION AGAINST COVID-19	
<i>COVID-19 – Resilience Scale</i>	
<i>To what extent do you agree with the following statements regarding the COVID-19?</i>	<i>% of do not agree or agree a little</i>
• I have been able to stay calm without any fear or negative affect during the COVID-19 process	26
• I can cope well with COVID-19 outbreak psychologically	8
• I have felt great anxiety during the COVID-19 process (-)	16
• COVID-19 outbreak weakened the power of my struggle with life events (-)	7
• COVID-19 outbreak increased my fear of death seriously (-)	15
<i>COVID-19 – Family Solidarity Scale</i>	
<i>To what extent do you agree with the following statements? During my stay at home due to this pandemic ...</i>	<i>% of Mostly & Completely Agree</i>
• I gained awareness regarding how valuable my family was	65
• We had joyful moments with family members at home	54
• It increased ties with the members of our family	55
<i>COVID-19 – Mortality Awareness Scale</i>	
<i>To what extent do you agree with the following statements? During my stay at home due to this pandemic ...</i>	<i>% of Mostly & Completely Agree</i>
• I noticed that we had engaged too much in worldly affairs	46
• I realised that life has an end	64
<i>COVID-19 – Religious Attribution Scale</i>	
<i>To what extent do you agree with the following statements regarding COVID-19?</i>	<i>% of Mostly & Completely Agree</i>
• The COVID-19 outbreak was caused by sins and perversions committed by people	22
• COVID-19 is a serious warning from Allah to His servants (people)	48
• COVID-19 is a completely natural disaster and has nothing to do with people's sins (-)	28