

General and COVID19-specific emotional stress: Religious practice as a potential coping strategy

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ABSTRACT

Using Spanish microdata from the *Survey on mental health during the COVID-19 pandemic* conducted in February 2021 by the Centre for Sociological Research (CIS), this paper aims at identifying individual factors associated with an increased risk of mental or emotional distress arising from two different sources: a general pattern of depression or anxiety and distress specifically associated with the pandemic as measured by fears and worries about one's own or others' lives and job and income insecurity due to the COVID-19 health crisis. We explore gender differences in both types of mental distress as well as the role of individual religiosity, measured as religious beliefs and behaviours, as a potential coping strategy. In both general and COVID-specific mental distress, our results provide evidence of gender differences in the risk of suffering these conditions, with a higher incidence among women. We also find that religious beliefs and practice seem to have served as a coping strategy that has allowed females to narrow the gender gap, particularly for practising Catholics. The evidence is stronger for mental distress associated with anxiety or depression. However, it is still present, albeit to a lesser extent, for suffering caused by pandemic-related mental stressors. Our results suggest that religious practices and beliefs might play a key role in alleviating additional distress symptoms caused by emergency situations such as those suffered during the COVID-19 pandemic.

1. Introduction

The coronavirus disease 2019 (COVID-19) caused both a global health crisis and major global economic and financial recession without precedent that have affected and may continue to affect individuals' lives in several important dimensions. One of these dimensions is mental health and its gendered component. There is an emerging but prolific literature which indicates that the devastation the pandemic left in its wake (millions of deaths, economic strife, and unprecedented curbs on social interaction) has had a marked effect on people's mental health, and that women have been affected to a greater extent than men (Adams-Prassl et al., 2020; Ausín et al., 2021; Beland et al., 2020; González-Sanguino et al., 2020; Moreira et al., 2021; Zamarro and

Prados, 2021; among others). But apart from these increased symptoms of mental distress that occurred along with stay-at-home orders, campus closures, and social distancing measures, the overall mental health consequences of the pandemic are still unfolding three years after the initial outbreak.

This paper attempts to empirically investigate to what extent the pandemic has damaged the mental and emotional conditions of people in Spain; a country hit early and hard by the pandemic and with the strictest confinement measures,¹ and where 22% of the population reported suffering from at least one mental health condition during 2020.² Besides the wide variety of mental health problems that populations in developed economies experience nowadays, emergency situations, such as the one suffered during the pandemic that posed a threat to either a

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¹ From March 15, 2020 through early May, Spain remained under the strictest nationwide lockdowns in Europe, which expired at midnight on June 20, 2020. In October of that same year, the Spanish Government again imposed a state of emergency across the country and ordered a national curfew, which ended May 9, 2021.

² Mental health illness prevalence in Europe 2020 by country | Statista <https://www.statista.com/statistics/1196047/mental-health-illness-prevalence-in-europe-by-country/>

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person's health, security, property, or environment, are likely to cause additional emotional distress symptoms. In fact, this global pandemic has forced people to cope with situations never before imagined and struggle with their mental health as a result. Investigating whether coping strategies that serve to alleviate "traditional" mental distress problems have also helped to reduce the negative emotional responses experienced because of stressors related to the pandemic is of key importance for the design of the best programmes and practical tools for preparedness and response in similar situations. We focus our attention on gender differences in mental or emotional distress in a general context and in the exceptional situation stemming from the pandemic, and on whether such differences vary across different socioeconomic groups.

The interest of the paper is threefold. First, monitoring and oversight of population mental health during crises such as the one caused by the COVID-19 pandemic is an immediate priority. The pandemic and the subsequent economic crisis have led to a growing burden of mental ill-health, with emerging evidence of higher rates of stress, anxiety, and depression. As highlighted in the OECD report "Tackling the mental health impact of the COVID-19 crisis: An integrated, whole-of-society response", during 2020, the risk factors for poor mental health, such as financial insecurity, unemployment, or fear increased, while protective factors, such as social connections, employment and educational engagement, access to physical exercise, and access to health services decreased. This has led to a significant and unprecedented worsening of population mental health. Without effective treatment and support, mental health problems may limit a person's ability to fully function at work or school, cope with daily life and, at its worst, lead to suicide (OECD/EU, 2018). Thus, effective and integrated actions, prevention efforts, and psychosocial support targeted at groups at major risk should be a priority for public health authorities. This is precisely one of the purposes of the WHO/Europe's new Pan-European Mental Health Coalition, – one of the pillars of the WHO's European Programme of Work 2020–2025 (EPW) – "United Action for Better Health in Europe", in order to ensure that mental health stays visible and at the top of the policy agenda after COVID-19.

Second, it is of vital importance to shed more light on gender differences in mental health with a view to promoting gender equality; one of the EU's fundamental values that plays a key role in a country's sustainable development, economic growth, prosperity, and overall quality of life (European Commission, 2015). Despite being a fundamental aspect of the European Pillar of Social Rights, in the EU, inequalities in mental healthcare remain between women and men. For instance, data from the 2014 European Health Interview Survey confirm a substantial gender gap in self-reported chronic depression, with more than one in twelve women (8.8%) indicating they experience chronic depression, compared with one in nineteen men (5.3%) (OECD/EU, 2018). To the extent that such gender differences in health are not only biological but also strongly shaped by the interaction of economic, political, and cultural factors, further research on these factors is needed for targeted interventions.

Third, for the design of effective actions to alleviate mental health problems, it is crucial to identify which coping strategies might have helped to reduce the negative psychological effects of the pandemic. Coping strategies are specific cognitive and behavioural abilities used by individuals who are under stress to match their internal and external needs to their individual resources (Lazarus and Folkman, 1984). In this paper, we analyse religious beliefs and practices as potential coping strategies that might have helped individuals manage not only the traditional symptoms of mental distress but also stressors specifically related to the COVID-19 pandemic. To the extent that religious individuals might have more emotional support, a more positive outlook, and greater hope and motivation to recover, religion – which is free and accessible to everyone – might have served as an advantageous tool to reduce the mental burden of the stressors caused by the pandemic.

Finally, we should mention that mental health problems, including

depression and anxiety, are highly prevalent and a major burden in many EU countries. In 2016, more than one in six people across EU countries (17.3%) had a mental health problem, that is, nearly 84 million people. The most common mental disorder across EU countries is anxiety disorder, with an estimated 25 million people (or 5.4% of the population) living with anxiety disorders, followed by depressive disorders, which affect over 21 million people (4.5% of the population). The total costs of mental health problems for EU economies are huge, including costs for health care systems to costs in terms of social security benefits as well as negative labour market impacts in terms of reduced employment and productivity. According to OECD/EU (2018), the total costs of mental ill-health were estimated at over 600 billion euros per year – more than 4% of the GDP – across the EU28.³ The pandemic aggravated the mental health status of the population by causing fear, isolation, insecurity, the loss of stable income and the loss of loved ones. The prevalence of anxiety and depression in early 2020 was double or more the level observed in previous years in several countries (OECD, 2021). Around the pandemic peaks, population mental health worsened. In the first half of 2022, depression symptoms were lower than during the peaks of 2020 and 2021, but remained higher than before the pandemic (OECD/European Union, 2022). Given the need for mental health programmes that promote mental health and provide psychosocial support, the economic costs of mental health are expected to substantially increase in subsequent years (WHO, 2021).

This paper thus attempts to contribute to the emerging literature documenting the impact of the pandemic on mental health (Di Tella et al., 2020; Kazmi et al., 2020; Sandín et al., 2020; among others) and its gender differences (Adams-Prassl et al., 2020; Ausín et al., 2021; Beland et al., 2020; González-Sanguino et al., 2020; Moreira et al., 2021; Zamarro and Prados, 2021; among others). An important novelty of our study is that it is based on a rich dataset that allows to identify indicators of mental/emotional distress (fears, concerns, etc.) that can be directly attributed to the pandemic, besides those suffered during the pandemic, but not necessarily as a consequence of it. We also contribute to the literature examining the association between religious involvement and mental distress (Koenig, 2015; Keefe et al., 2016; Weber and Pargament, 2014; among others). To the best of our knowledge the papers that examine the role of religion as a potential coping strategy that might have relieved emotional stress around the COVID-19 pandemic are almost inexistent. The few exceptions we found are for Italy (Molteni et al., 2020), China (Babore et al., 2020), Taiwan (Chang et al., 2021) and UK (Akay, 2022). An important contribution of our paper is that we address potential endogeneity issues surrounding the association between religiosity and mental distress. In particular, we account for both potential confounding bias whereby religion is at least partly picking up the effect of some *omitted variables* (personality) and *reverse causality*, whereby causation runs in the other direction – that is, from mental health to religiosity.

Finally, we also contribute to the large literature documenting gender gaps in mental health (Caroli and Weber-Baghdiguian, 2016; Marchand et al., 2016; Read and Gorman, 2011; Stevenson and Wolfers, 2009; Churchill et al., 2020; among others). In line with previous studies, our results underline the need to pay greater attention to gender to prevent and alleviate the psychological consequences of the pandemic. But we also provide evidence of heterogeneity in gender differences in mental health, which suggests the necessity to consider heterogeneous social needs and social engagement in the production of mental well-being across genders, but also the necessity of concerted actions from a broader perspective that considers the full spectrum of

³ A large part of these costs is due to the lower employment rates and productivity of people with mental health problems (1.6% of GDP or EUR 240 billion) and greater spending on social security programmes (1.2% of GDP or EUR 170 billion), with the rest being direct spending on health care (1.3% of GDP or EUR 190 billion).

disorders. Our findings provide evidence that religious practice and beliefs might serve as coping strategies that have narrowed the gender gap in mental health, particularly among practising Catholics. This role of religion is found for both traditional mental distress symptoms (depression or anxiety) and for those specifically associated with the pandemic (fears or concerns about the consequences of COVID-19 on one's own or others' lives, i.e., death, illness, and job and income insecurity), with the evidence being stronger for the former.

The paper is organized as follows. Section 2 is divided into two subsections. First, we review the recent literature on the impact of the COVID-19 pandemic on mental health, as well as the large literature providing evidence of gender differences in mental health. In the second part of this section, we overview the main papers in the literature about the association between religion and mental health. Section 3 describes the dataset used in this paper: the *Spanish Survey on mental health during the COVID-19 pandemic*, conducted by the CIS (Centre for Sociological Research) in February 2021. We also provide in this section, the description of our outcome of interest (mental health distress), the main demographic and socioeconomic variables considered as potential determinants of mental health distress and a descriptive analysis of such variables. Special attention is given to descriptive statistics on religious variables – beliefs and practice – and the gender differences in this respect. Section 4 contains the econometric strategy. First, we analyse the impact of religion beliefs – being practising Catholic – on the probability of reporting mental distress in the form of a wide variety of symptoms. Second, we estimate the impact of the intensity of religious practice on such probability. In both cases, we account for the potential endogeneity of the religion variable in the mental health equation. The main results are explained in Section 5. In particular, we provide evidence of gender gap differences in the risk of suffering both general and COVID-specific mental distress, with a higher incidence among women. Moreover, religious beliefs and practices are found to have served as a coping strategy that has allowed to shorten this gender gap. Finally, Section 6 concludes.

2. Review of literature

2.1. Gender differences in mental health distress and the COVID-19 pandemic

To the extent that the COVID-19 pandemic has produced an enormous impact on how people socialise, communicate, work, or consume, it is likely to have altered psychosocial circumstances that may have negatively affected people's mental health. Thus, the pandemic may have exacerbated existing mental disorders and created new ones, putting mental health in the spotlight of the social and political debate. In this regard, many papers have provided evidence of a considerable rise in adult mental disorders during the COVID-19 lockdown (Ausín et al., 2021; González-Sanguino et al., 2020; Di Tella et al., 2020; Kazmi et al., 2020; Sandín et al., 2020; among others). This psychological impact of quarantine was wide-ranging, as suggested by the review of Brooks et al. (2020), going from general psychological symptoms to emotional disturbance, depression, stress, low mood, irritability, insomnia and post-traumatic stress, among others. The risk of being infected by COVID-19 through personal contact, the disruption of a normal life as a result of the lockdown scenario, and stay-at-home orders that contributed to feelings of loneliness have been pinpointed as the main driving forces of the increased psychological distress during the strict confinement period.⁴ Moreover, evidence suggests that the effects on mental well-being caused by the COVID-19 pandemic have been felt unequally, and have been noticeably borne by women (Adams-Prassl

et al., 2020; Ausín et al., 2021; Beland et al., 2020; González-Sanguino et al., 2020; Moreira et al., 2021; Zammaro and Prados, 2021; among others).

Beyond stresses inherent in the illness itself and the mass home-confinement measures (including stay-at-home orders, quarantine, and isolation), several factors related to the COVID-19 outbreak might have driven the increase in mental health problems and gender inequalities in this respect. First, closures of schools and daycare centers during the lockdown increased childcare needs, and the ability to outsource childcare through informal channels (e.g. grandparents) was greatly reduced. Thus, mothers and fathers were together confronted with the immediate necessity of simultaneously fulfill both work and childcare. Although men have increased their housework contributions, and even more so their childcare time, during the last decades, these still failed to match those of women. With women still doing most of unpaid work and care in most of the EU countries (García-Mainar et al., 2011; Chesley, 2017; Manzo and Minello, 2020), it is likely that they took on a greater share of the new responsibilities at home and saw a bigger absolute increase in the time spent on childcare and housework. Consequently, women might have been and continue to be at risk of paying a higher price during the COVID-19 crisis than men due to the enormous physical and mental workload they must have taken on (Wenham et al., 2020). Second, in times of crisis and social isolation, the risk of domestic abuse increases (Usher et al., 2020). In this respect some papers have already provided evidence on the impact of the pandemic on domestic violence (Beland et al., 2020). Finally, with the sharp decline in economic activity and employment due to COVID, many employees have experienced job insecurity and have been troubled about their finances, which might have impacted mental health as it happened in previous economic recessions (Frasquilho et al., 2016). In this respect, some papers have found that job insecurity due to the pandemic was associated with psychological well-being through financial stress (Sarwar et al., 2021). The most restrictive lockdown measures adopted in Spain, together with its employment conditions and its economic specialization – with female-dominated sectors strongly hit by the confinement – might have increased the deleterious health effect of the increased job insecurity suffered by working women, especially mothers.

Research has consistently reported gender differences in mental health, with women being more likely to experience higher lifetime prevalence of depressive mood and anxiety disorders than men (Boyd et al., 2015; Wittchen et al., 2011; among many others). As stated by the WHO/Europe “Gender is one of the critical determinants of mental health. It determines the power and control men and women have over the socioeconomic determinants of their mental health and lives, their social position, status and treatment in society”.

Biological, psychosocial, and artefact explanations have been proposed to explain these observed gender differences in these common mental disorders (see Wilhelm and Parker, 1994; Piccinelli and Wilkinson, 2000; and Kendler et al., 2002 for a review). Differences in help-seeking behaviour and symptom-reporting patterns (Kessler, 1998), recall bias (Wilhelm and Parker, 1994), or even gender biased case finding measurements (Salokangas et al., 2002) have been suggested, among others, as potential *artefactual factors* that might explain the female preponderance in several mental disorders. However, the evidence is somehow mixed in this regard (Hunt et al., 2003). On the one hand, some studies highlight the potentially larger incidence of under-reporting by males as a potential explanation for the larger observed prevalence of mental distress among females (Brody and Hall, 2000; Conway, 2000). By contrast, however, the prevalence of suicide, the most extreme manifestation of mental distress, is much larger for males

⁴ There is evidence suggesting that social isolation and loneliness are strongly associated with anxiety, depression, self-harm, and suicide attempts across the lifespan (Elovainio et al., 2017; Matthews et al., 2019; among others).

than for females.⁵ Differences based on *biological factors* refer to differences in brain structure and functioning between men and women that make women more likely to suffer depressive disorders (Kornstein, 1997). In this respect, there is evidence suggesting that depression is strongly linked to earlier ages of onset and higher sensitivity to the effects of adverse life events among women (Piccinelli and Wilkinson, 2000). Biological factors have also been found to contribute to how women and men express mood and anxiety disorders differently (Parker and Brotchie, 2010). As regards *psychosocial factors*, several explanations for gender differences in mental health have been suggested. Some studies point to the stronger differentiation of sex roles as the main driving force of gender differences in depression and anxiety disorders (Bekker and van Mens-Verhulst, 2007), while others argue that women are subject to more upsetting stressful life events or chronic difficulties (Nazroo et al., 1997) and have low social support (Agrawal et al., 2002).

All this would suggest the immediate need for an empirical investigation to evaluate the impact of the pandemic on a broad range of psychological disorders. Moreover, for the design of policy interventions aimed at supporting families, it is also important to recognise coping strategies that best mitigate symptoms of these psychological problems. In the next section we review the literature focusing on religious beliefs and attitudes that have been shown to serve as pervasive and potentially effective coping mechanisms for persons with mental health conditions.

2.2. Religion and mental health: an association

Religion acts as an important philosophical orientation that influences how people understand the world and comprehend reality and suffering (Pargament, 1997). The idea of a “religion-health” nexus (Ellison and Levin, 1998) has gained traction in the last decades due to a number of empirical studies that have provided evidence of an overwhelming positive association between religiosity and numerous measures of emotional well-being, including mental health. In general, studies have found that religious beliefs and practices are related to better stress coping and less depression, suicide, anxiety, and substance abuse, as well as faster recovery from depressive episodes or greater well-being, among other outcomes (see Koenig et al., 2012; and Koenig, 2015 for recent reviews). More recently, Garssen et al. (2020) conducted a meta-analysis to determine the longitudinal positive effect of religion on mental health where they measured mental health in terms of life satisfaction, well-being, and quality of life.

A set of potential psychological mechanisms have been postulated to underlie this *salutary* causal effect of religion. First, religion grants individuals valuable coping skills that enable them to make sense of suffering, help them to neutralise negative emotions, and give them control over overwhelming situations such as the recent COVID-19 pandemic (Koenig, 2015). Second, religion tends to prescribe healthy lifestyle practices (rest, mindfulness, moderation), provides individual social support (due to the sense of belonging and being cared for by their group), and helps adherents to develop cognitive frameworks that assist them in overcoming life’s difficulties (Behere et al., 2013). Third, religion reinforces adherents’ internal locus of control, which allows them to react to adverse situations in a more positive way. Moreover, religious beliefs and religious practices, such as meditation, can alleviate damaging attitudes, reduce stress and anxiety, increase sense of control, enhance feelings of security, or boost self-confidence (Behere et al., 2013).

Empirical evidence on the association between religion and mental health during the COVID-19 pandemic is scarce and mixed. Molteni

et al. (2020) found that people personally close to the effects of COVID-19 in Italy turned toward religion as a coping strategy. Similarly, Chang et al. (2021) found a positive effect of religiosity on psychological well-being in Taiwan. In the same line, the work of Akay (2022) showed that the intensity of the religious practice, measured as the frequency of praying, reduced mental health problems derived from the pandemic in the UK. By contrast, for the case of China, Babore et al. (2020) found no association between religiousness and perceived stress in healthcare professionals during the COVID-19 pandemic. This paper attempts to contribute to this emerging literature by determining whether religious coping has served and might continue to serve as an advantageous tool for recovery from mental distress related to anxiety or depression suffered during the COVID-19 pandemic as well as mental distress directly caused by the pandemic, while shedding light on the potential coping role of religion in similar distressing situations that might occur in the future.

However, when analysing the relationship between religion and mental health, reverse causality becomes a contestable matter. Religious beliefs and involvement may either be a maker or a result of potentially better mental health. On the one hand, religion may be a life-enhancing factor granting valuable coping skills that help adherents to counter damaging tendencies brought about by life’s difficulties and better manage obstacles that have a negative impact on mental health. On the other hand, the presence of emotional problems may either increase the use of religiosity (Baetz et al., 2006), which could translate into higher religious involvement and an increase in the frequency of religious activities, or it may induce individuals to stop attending religious services, thus decreasing religious engagement (Ingersoll-Dayton et al., 2002). A natural extension to address this concern would be to rely on dynamic panel models to control for mental health-state dependence and initial health. This would allow us to consider repeated measurements of both mental distress and religiosity, so that the effects of the former on the latter and the other way around could both be assessed (VanderWeele et al., 2016). Unfortunately, this avenue is not accessible to us as our analysis is based on cross-sectional data. An alternative attempt would be an instrumental variables approach, which is what we do in this paper. Some previous works have relied on this econometric strategy to analyse the causation between religiosity and some mental disorders like depression (Deny, 2011).

In relation to this, potential endogeneity surrounding the association between religious beliefs and mental distress can be seen as an omitted variable bias problem. Some attempts have been made in the literature to use longitudinal data to account for unobserved heterogeneity and provide a more focused approach to the causal effects of various religious aspects on mental well-being (Lim and Putnam, 2010; Kortt et al., 2015). Again, the lack of longitudinal data precludes us from controlling unobservable factors that affect this association. However, we are able to partially overcome this problem, as will be explained in the next sections.

3. Dataset and main variables

3.1. Spanish mental health survey

The dataset we use in this paper comes from the *Spanish Survey on mental health during the COVID-19 pandemic*, conducted by the CIS (Centre for Sociological Research) in February 2021. This is the first representative survey on the mental health of the Spanish population conducted during the pandemic with a sample of 3083 interviews (people of both sexes aged eighteen years old or more) carried out in 2021 from February 19th to 25th. The sampling points include 1080 municipalities and 50 provinces. The questionnaires were applied by

⁵ According to the WHO, in 2019 the suicide rate was 1.8 times higher among males (almost 3 times higher in high-income countries). However, these figures must be taken with caution: females show a disproportionately higher rate of suicide attempts than males (*gender paradox of suicidal behaviour*; see Freeman et al., 2017).

Table 1

Incidence of mental and emotional distress (%).

<i>High frequency of bad feelings, depression or anxiety symptoms DURING the pandemic</i>					
		All	Female	Male	Diff.
D1	Little interest or pleasure in doing things	27.8	35.5	21.0	14.5 ***
D2	Very sad or depressed	17.8	25.6	11.0	14.5 ***
D3	Very worried about many things without being able to control it	23.8	30.4	18.0	12.4 ***
D4	Feeling lonely or isolated	15.6	20.0	11.8	8.2 ***
D5	Feeling irritable, aggressive, with anger	13.8	19.1	9.2	9.9 ***
D6	Feeling restless	21.6	29.6	14.7	14.9 ***
D7	One or more anxiety or panic attacks	14.8	21.9	8.6	13.3 ***
<i>High frequency of bad feelings, fears/concerns RELATED TO the pandemic</i>					
		All	Female	Male	Diff.
R1	Distressed because of thoughts about the coronavirus	12.5	17.2	8.3	8.9 ***
R2	Fear of dying due to coronavirus	22.5	26.7	18.9	7.8 ***
R3	Fear of a family member or loved one may dying to coronavirus	69.6	74.3	65.4	8.9 ***
R4	Fear of having an accident, illness... and have to go to the ER	42.6	49.0	37.0	12.0 ***
R5	Fear of losing income	41.5	41.7	41.4	0.3
R6	Fear of a family member or loved one losing his/her job	60.8	60.9	60.7	0.2
R7	Fear of losing your job or part of your job ^a	34.7	35.5	34.1	1.4
Number of observations		2018	947	1071	

All the variables considered are binary indicators. The last column shows the results of a difference-in-means test of the incidence of symptoms across gender.

***significant differences at the 1% level.

^a Only employees ($N = 1287$: 589 females, 698 males).

means of computer-assisted telephone interview (CATI).⁶ In particular, a random selection of fixed and mobile telephones was made with a percentage of 27.3% and 72.7%, respectively. And the selection of individuals was carried out by applying gender and age quotas. For a confidence level of 95.5%, the actual error is $\pm 1.8\%$ for the whole sample, under the assumption of simple random sampling.

It is a cross section that offers information about several mental health indicators, distinguishing between mental distress *during* the pandemic and *as a consequence* of the pandemic. It also includes some information on the existence of mental disorders and other health problems prior to the pandemic. This information is used to partially account for the potential endogeneity issues mentioned above stemming from the fact that we do not have longitudinal data to properly control for unobserved individual heterogeneity. Besides health indicators, the survey provides information about individual attitudes regarding religion and religious practices, among other interesting variables. After cleaning the sample to drop observations for which information is missing in the variables we use in the analysis, our final sample comprises 2018 individuals (947 women and 1071 men).

The dataset offers information about two different types of mental or emotional disorders: distress experienced *during* the pandemic (this does not exclude the possibility of having suffered this condition prior to the pandemic) and distress identified by the individuals *as a consequence* of the pandemic. While the former refers to traditional mental distress symptoms that have been typically studied in the mental health literature (mainly depression and anxiety), the latter is associated with specific stressors derived from the pandemic. Table 1 offers the description of each symptom and its incidence, overall and across gender. The upper panel shows the percentage of individuals suffering mental disorders associated to bad feelings, depression or anxiety symptoms during the pandemic. The questionnaire explicitly asks: “*Since the beginning of the COVID-19 pandemic and up to now, could you tell me how often you have felt...*”, then listing the symptoms D1-D7 reported in the upper panel of Table 1. The figures show the percentage of individuals who answered “*very often*” or “*quite often*”, except for D7, for which the figure shows the percentage of individuals who have suffered one or more anxiety or

panic attacks. The lower panel refers to mental distress associated to some fears or concerns in relation to the pandemic and its consequences. In this respect, the questionnaire explicitly asks: “*Could you tell me how much fear or concern you have felt about the following situations related to COVID-19?*”, then listing those reported in the lower panel, R1 to R7. The figures show the percentage of individuals who have felt these fears or concerns “*a lot*” or “*quite a lot*”.

As observed in the upper panel of Table 1, the incidence of mental distress during the pandemic ranges from 13.8% (feeling irritable, aggressive, angry) to 27.8% (having little interest or pleasure in doing

Table 2
Individual socioeconomic characteristics.

	All	Female	Male
Age (in years)	49.05	49.01	49.08
Education (%)			
Elementary	6.10	5.81	6.35
Secondary	45.69	44.35	46.87
Tertiary	48.22	49.84	46.78
Working status (%)			
Employed	63.78	62.20	65.17
Unemployed	9.76	11.93	7.84
Inactive	26.46	25.87	26.98
Political ideology (%)			
Left-winger	43.21	44.14	42.39
Center	36.52	36.85	36.23
Right-winger	20.27	19.01	21.38
Social class (Self-reported) (%)			
Lower class	6.54	6.65	6.44
Lower-middle class	25.97	23.97	27.73
Middle-middle class	60.11	62.72	57.80
Upper and upper-middle	7.38	6.65	8.03
Living arrangement (%)			
Alone	11.94	12.14	11.76
With partner and no kids	29.44	28.93	29.88
With kids (with or without a partner)	45.49	46.57	44.54
With parents	13.13	12.35	13.82
Initial health condition, prior to the pandemic (%)			
In mental health treatment	18.98	23.44	15.03
Previous chronic disease	33.30	34.74	32.03
COVID incidence (%)			
Has suffered COVID	9.32	8.34	10.18
A family member has suffered COVID	0.319	0.327	0.312

Notes: $N = 2018$. The figures represent percentages within each category, except for age.

⁶ CATI is a common mode of conducting surveys in which interviewers conduct surveys via telephone calls using a computer-assisted method, such as a software system loaded onto a computer or mobile device.

Table 3
Individual religiosity (beliefs and behaviours).

	All	Female	Male
<i>Religious beliefs (N = 2018)</i>			
Practising Catholic	17.00	19.32	14.94
Non-practising Catholic	41.08	43.29	39.12
Agnostic or atheist	41.92	37.38	45.94
<i>Frequency of attending religious services (only Catholics)</i>			
<i>Catholics, overall (N = 1172)</i>			
Never or almost never	59.98	56.32	63.73
Several times a year	18.60	19.90	17.27
At least twice a month	21.42	23.78	19.00
<i>Non-practising Catholics (N = 829)</i>			
Never or almost never	80.34	77.32	83.29
Several times a year	17.73	19.76	15.75
At least twice a month	1.93	2.93	0.95
<i>Practising Catholics (N = 343)</i>			
Never or almost never	10.79	9.29	12.50
Several times a year	20.70	20.22	21.25
At least twice a month	68.51	70.49	66.25

Note: The figures represent percentages in each category.

things). In all the indicators, the incidence is much higher for females, with the difference being statistically significant at the 1% level. This difference ranges from 8.2 percentage points (pp) for feelings of loneliness or isolation to 14.9 pp for feeling restless. As can be seen in the lower panel of Table 1, the differences in the incidence of bad feelings or concerns related to the pandemic are much larger, ranging from 12.5% of individuals being distressed because of thoughts about coronavirus to 69.6% of those who are afraid that a family member or a loved one will die due to the disease. The gender differences are less marked in this type of symptoms and are between 7.8 and 12 pp higher for females in cases of statistically significant differences. Interestingly, no gender differences were found in the last three indicators, all of which are related to job or income insecurity.

3.2. Demographic and socioeconomic factors

Table 2 offers some additional descriptive information regarding the socioeconomic characteristics of the sampled individuals. The average age is 49 years old, with no gender differences. Around half the sample has completed tertiary education, with the percentage being 3 pp higher for females. The percentage of individuals with elementary education is low, around 6% (5.81% for females and 6.35% for males). Almost two thirds of the sample are employed and, in line with the vast literature on gender differences in labour outcomes, there is a higher incidence of unemployment among females (11.93% vs. 7.84% for their male counterparts). Concerning politics, more than one third of the sample falls in the centre of the ideology scale. The percentage of left-wingers is double that of right-wingers and there are only slight differences across gender in terms of political ideology. The percentage of male right-wingers is slightly higher than the corresponding percentage among females (21.38% and 19.01%, respectively), while the opposite occurs with the left-wingers (42.39% males and 44.14% females).⁷

Regarding self-reported social class, one fourth of the individuals consider that they belong to the lower-middle class and around 60% to the middle-middle class. Some gender differences are noticeable. The percentage of females in the middle-middle class is higher than that of males (62.72% for females in contrast to 57.80% for males). However, there are more males (8.03%) than females (6.65%) in the upper and upper-middle class. In terms of household type, around 12% of individuals live alone and almost half of the individuals live with children (with or without a partner), with this percentage a bit higher for females,

around 2 pp. Individuals living with a partner and no children represent almost 30% of the sample and the remaining 13.13% corresponds to individuals living with their parents. Since our focus is on mental health in times of COVID, it is of crucial importance to consider the individual health status before the pandemic. Around 19% of the sample was in mental health treatment (psychological and/or pharmacological) before the pandemic – around 8 pp higher for females. Finally, 33.3% of the individuals have been diagnosed with some kind of chronic disease prior to the pandemic, with a slightly higher incidence for women. Regarding the incidence of COVID at the time of the survey, around 9% of the individuals had suffered COVID, being the incidence a bit lower for women than for men, and almost one third of the sample had a family who had been infected.

3.3. Religiosity: beliefs and behaviours

Some data regarding the respondents' religiosity (beliefs and behaviours) are reported in Table 3. It is noteworthy that the survey addresses this issue in a general context that attempts to identify the individual's religious life experience. Neither the questions on religious beliefs nor those on frequency of attendance to religious services refer to a specific time frame. Therefore, we do not study whether practising religion in the pandemic period alleviated emotional distress, but whether being a religious person (as measured by revealed beliefs and behaviours) helped to cope better with it. Around 58% of the sample declared themselves to be Catholic, but only 17% stated they were practising Catholics.⁸ Among females, 62.61% reported themselves to be Catholic; a figure that falls to 19.32% for those actively practising the Catholic religion. Religiosity seems to be weaker among males, with 54% stating they were Catholics and 15% practising Catholics, respectively. Agnosticism or atheism is more frequent among males, with a prevalence of 8.56 pp higher than for females (45.94% and 37.38% for males and females, respectively).

The intensity of religious practice might also play a key role in mental distress. For Catholics, the survey offers information about attendance to religious services. Even those individuals who describe themselves as non-practising Catholics attend these services with some frequency. The dataset allows us to construct a measure for the intensity of religious practice as a categorical variable with these categories: never or almost never attending Mass or other religious services, attending several times a year, and at least twice a month.

As shown in Table 3, the huge (and expected) difference between practising and non-practising Catholics is remarkable. Among the former, 68.51% attend religious services at least twice a month and only 10.79% attend never or almost never. Among the latter, the corresponding figures are 1.93% and 80.34%, respectively. There is also evidence of some interesting gender differences regarding the strength of religious practice, both among practising and non-practising Catholics, with: i) a higher percentage of attendees to Mass and other religious services at least twice a month among practising Catholic females compared to their male counterparts (70.49% for females vs. 66.25% for males), and ii) a lower percentage of sporadic attendees among non-practising Catholic females compared to their male counterparts (77.83% for females and 83.29% for males). These gender differences in religiosity and religious practices are in line with the broad literature in the social sciences that has demonstrated that females are more religious than males (Baker and Whitehead, 2016; Roth and Kroll, 2007).

⁷ On a scale from 1 (extreme left) to 10 (extreme right), 71% of the sample is in positions 1–5. We have defined “left” as corresponding to values 1–4 in the scale, “centre” is for 5 and 6 and “right” stands for values 7–10.

⁸ In the original data there were individuals who reported having religious beliefs other than Catholicism, but their observations were dropped since they only represented around 2% of the sample.

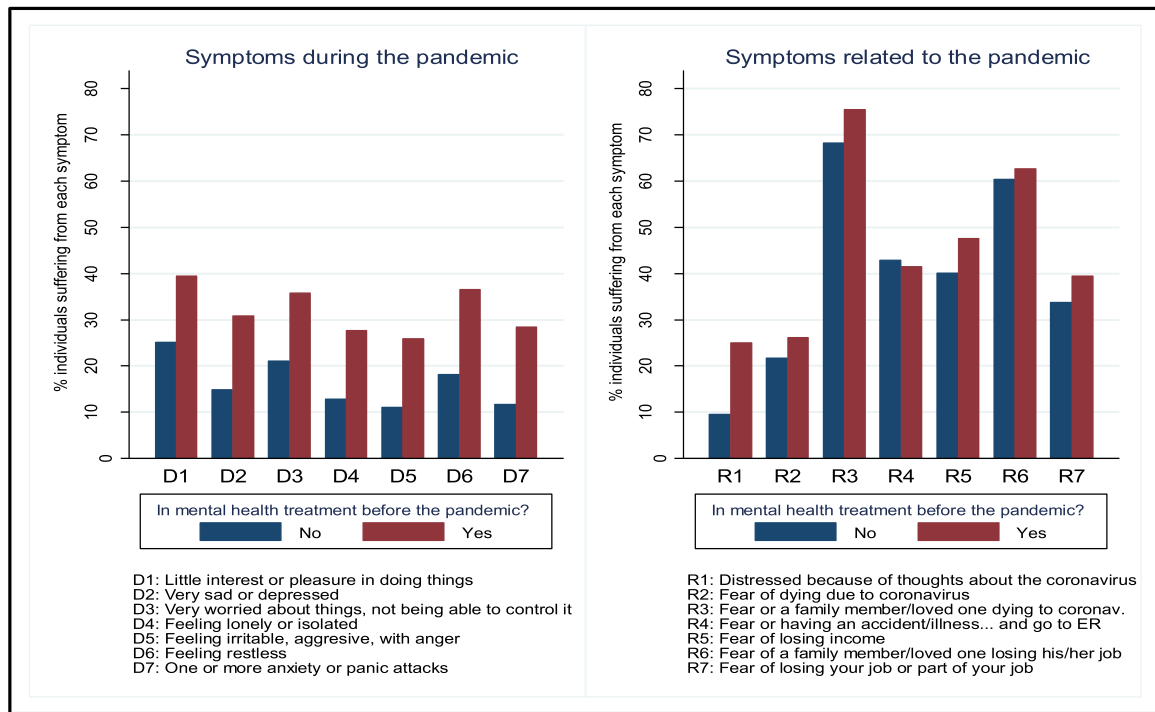


Fig. 1. Incidence of mental distress across mental health initial conditions.

4. Religion as a potential coping mechanism for mental distress

4.1. Mental distress and religious beliefs

When analysing the extent to which individual religiosity can serve as a coping strategy for mental distress, it should be taken into account that the association between mental health and religion can work in both directions. This leads us to consider the potential endogeneity of the religion variable in a mental health equation. The mental distress measures reported in Table 1 are, as mentioned above, binary indicators that take the value of 1 for those suffering the corresponding symptom, and 0 otherwise (14 symptoms). Regarding religious beliefs, we have grouped the categories “Non-practising Catholic” and “Agnostic/Atheist” into a single category. The reason is that, in terms of using religion as a potential coping strategy, it is not enough to consider yourself a Catholic, which is likely determined by the society you belong to – the “cultural Catholic” individual in the terminology used by Bruce (2018) – but also to have an active religious experience. For this reason, individual religiosity has been treated as an indicator with a value of 1 for “Practising Catholics” and 0 for the rest of the individuals, which includes “Non practising Catholics” and “Agnostic/Atheist” individuals (the proportions of the two groups in the sample are 17% and 83%, respectively).⁹

Considering the binary nature of both the mental health indicator and the religiosity measure, we estimate bivariate probit models, for $j = 1, \dots, 14$, given by:

$$y_{ij} = 1(x'_{1i}\beta_1 + \alpha_1 prC_i + u_{1i} > 0) \\ prC_i = 1(z'_{1i}\lambda_1 + v_{1i} > 0) \quad (1)$$

where y_{ij} takes the value of 1 if the individual i reports suffering symptom j , and 0 otherwise; and prC_i takes the value of 1 if he/she is a practising Catholic, and 0 otherwise. The error terms of both equations,

u_{1i} and v_{1i} , are assumed to follow a conditional bivariate normal distribution with zero mean, unit variances and correlation coefficient ρ_1 . The model is estimated by the maximum likelihood (ML) method and the set of parameters includes the vector β_1 , the vector λ_1 , the parameter α_1 and the unknown parameter of the joint distribution of the error terms, ρ_1 . Once the bivariate probit models are estimated, exogeneity tests can be performed based on the correlation coefficient of the error terms of both equations.

Let $w_{1i} = (x_{1i}, z_{1i})$ be a vector that includes, for individual i , socio-economic characteristics and other variables that will be detailed below. The partial effect of being a practising Catholic on the probability of reporting mental distress in the form of symptom j , for $j = 1, \dots, 14$, is given by the difference in conditional probabilities, $\Pr(y_{ij} = 1 | prC_i = 1, w_{1i}) - \Pr(y_{ij} = 1 | prC_i = 0, w_{1i})$. To obtain an average partial effect we compute the sample average for all the individuals. Alternatively, we can compute partial effects at specific values of the explanatory variables.

Regarding the variables in vector x_{1i} in (1), we consider $(x_{1i}^p, x_{1i}^{hc}, x_{1i}^{h1}, x_{1i}^{c1}, x_{1i}^{c2})$, where x_{1i}^p includes personal characteristics, such as gender, political ideology, social class, age, education, and working status. x_{1i}^{hc} refers to the household composition, i.e., whether the individual lives alone, with a partner, with or without children or with their parents. In x_{1i}^{h1} we consider two indicators related to the individual's initial health conditions prior to the pandemic: whether the individual had a diagnosed chronic disease and whether he/she was in pharmacological and/or psychological mental health treatment. These two variables may have strong explanatory power in suffering mental distress and allow us to partially overcome the initial conditions problem. Fig. 1 shows the incidence of mental distress according to whether individuals were pharmacologically and/or psychologically treated prior to the pandemic or not. As can be seen, there is a huge difference in the incidence of mental distress for the two groups of individuals, especially for mental distress symptoms during the pandemic. This evidence shows the importance of controlling for initial mental health conditions in models that analyse mental distress. The role of pre-existing depressive symptoms to explain mental distress around the

⁹ In the Robustness Checks Section we also consider the estimation of a model that considers “Non practising Catholic” and “Agnostic/Atheist” separately.

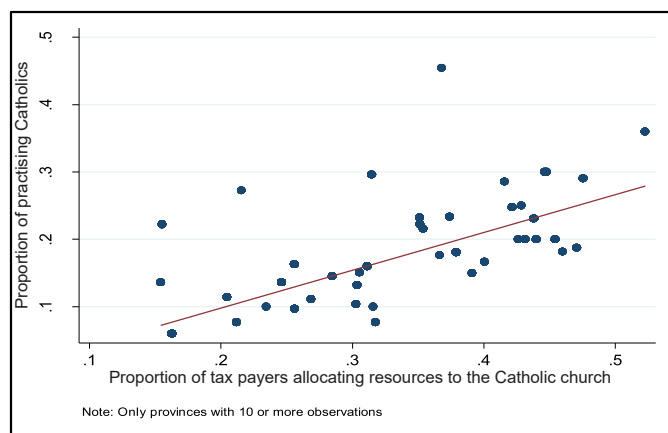


Fig. 2. Individual religiosity and penetration of religion at the province level.

COVID-19 pandemic has been analysed by [Holingue et al. \(2020\)](#) in the US, among others.

The vector x_{1i}^r includes regional dummies according to the European Union NUTS 1 level classification.¹⁰ The relationship between regional characteristics (mainly regional differences in income equality) and mental disorders has been established, for example, by [Weich et al. \(2001\)](#) for the UK. Finally, we include in x_{1i}^r some additional controls specific to the COVID-19 pandemic (whether the individual or a family member has had COVID or whether he/she is a health professional). Moreover, in order to account for mental health initial conditions (as a way to partly control for unobserved heterogeneity) in a more flexible way, we have included the following interaction terms: (i) the interaction between gender and initial health conditions, including mental health; (ii) the interaction between initial mental health conditions and religious beliefs. In addition, we have also included the interaction of the gender indicator with social class and household type.

Regarding the religiosity equation in (1), we consider the following vector $z_{1i} = (z_{1i}^p, tax_{prov})$, where z_{1i}^p includes personal characteristics also included in x_{1i} : gender, age and political ideology.¹¹ We have also included regional dummies according to NUTS 1. Although the nonlinearity of the model allows identifying the parameters of interest without considering exclusion restrictions ([Wooldridge, 2010](#)), in order to strengthen the identification, we have considered the geographical variation of the penetration of religion at the province level. We include this variable as a proxy for the religious context the individual lives in, to account for the potential endogeneity of religion in the mental distress equations. The religious social context is a relevant explanatory variable in the equation for individual religiosity that does not directly affect individual mental distress. The association between individual religious beliefs and the social context the individual lives in has been studied by [Cornwall \(1987\)](#), among others. More recently, the work of [Siegers \(2019\)](#) reviews studies analysing how the religious context moderates individual religiosity and its effect on different outcomes, such as attitudes on abortion, homosexuality, etc. The religious context is measured in this paper through information on income tax payments at the province level (tax_{prov}), more specifically, the percentage of taxpayers who decide to allocate public resources to the Catholic Church. When taxpayers complete their income tax statements in Spain, they can

decide whether to allocate 0.7% of the amount to be paid to the Catholic Church and an additional 0.7% to social goals. They may choose one, both or none of them. We have obtained data on the percentage of taxpayers that chose to allocate resources to the Catholic Church in each of the 51 Spanish provinces. This percentage varies from 15% to 52% (data referred to 2020).¹² Fig. 2 shows, for each province, the proportion of individuals that describe themselves as practising Catholics in our sample and the proportion of taxpayers who allocate 0.7% of their income tax payment to the Catholic Church. As can be seen, a positive correlation seems to be present between the individual practice of the Catholic religion and its penetration at the province level (correlation coefficient 0.68).

Regarding the exogeneity of this instrument, two comments are worth mentioning. First, one could think that the individual decision to allocate a fraction of income tax to fund the Catholic Church could affect mental or emotional distress through several channels other than individual religiosity, where income is the most important one. If such a decision on tax allocation were to entail a decline in an individual's disposable income, this could lead to a worsening of mental distress.¹³ However, taxpayers' decision does not affect their income since it does not alter the taxes to be paid, but only how the taxes are used. If a taxpayer decides to allocate zero euros to the Catholic Church and/or to social goals, 0.7% (or 1.4%) of his/her total tax payment not allocated to these aims does not go into his/her pocket. Second, the instrument provides regional variation in the religious context the individual lives in. The use of regional (or other geographic aggregation) variables to instrument individual decisions can be found in a wide variety of contexts. [Gruber \(2005\)](#) addresses the issue of the potential endogeneity of religion on different outcomes by using as an instrument a measure of religion market density, which is defined as the share of the population living in an area that belongs to the individual's own religion. In the context of the relationship between religion and mental health, this approach is also used by [Mellor and Freeborn \(2011\)](#), among others. See [Iyer \(2016\)](#) for a review of the attempts to account for the endogeneity of religion in equations for different outcomes. In our case, religion market density is the share of taxpayers involved in funding the Catholic Church in each area defined at the province level.

Another important concern is the cross-sectional nature of our data, which prevents us from controlling for individual unobserved heterogeneity as an additional source of potential bias. Nonetheless, this heterogeneity is at least partly controlled for by including information about the individual's initial health condition in the model. In the robustness checks section we analyse, with a different but comparable dataset, to what extent including or not individual heterogeneity through, for instance, personality traits, makes a difference in the estimation results of the mental health equations.

4.2. Mental distress and the intensity of religious practice

To investigate to what extent the intensity of religious practice has an impact on the probability of suffering mental distress, we adopt the following econometric strategy. The sample of interest comprises both practising and non-practising Catholics, since both groups report church attendance to a certain extent. Regarding attendance to religious services, the observed outcome is ordered using three categories: 1 (low frequency), which corresponds to never or almost never attending Mass or other religious services; 2 (medium frequency), which refers to sporadic but more regular attendance (several times a year); and 3 (high frequency), which includes attendance to religious services at least twice

¹⁰ This classification distinguishes seven Spanish regions: Northwest, North-east, Madrid, Centre, East, South and Canary Islands. Given the low number of observations from the Canary Islands (3.67% of the sample), we have included them in the South category.

¹¹ Alternative specifications including additional characteristics such as education, social class, and household type did not yield statistically significant results.

¹² Data on the proportion of taxpayers that decide to allocate resources to the Catholic Church have been obtained from the transparency portal of the Episcopal Conference. Data are offered at the province level.

¹³ There is abundant evidence on the association between economic conditions and mental health (e.g. [Clark, 2018](#)).

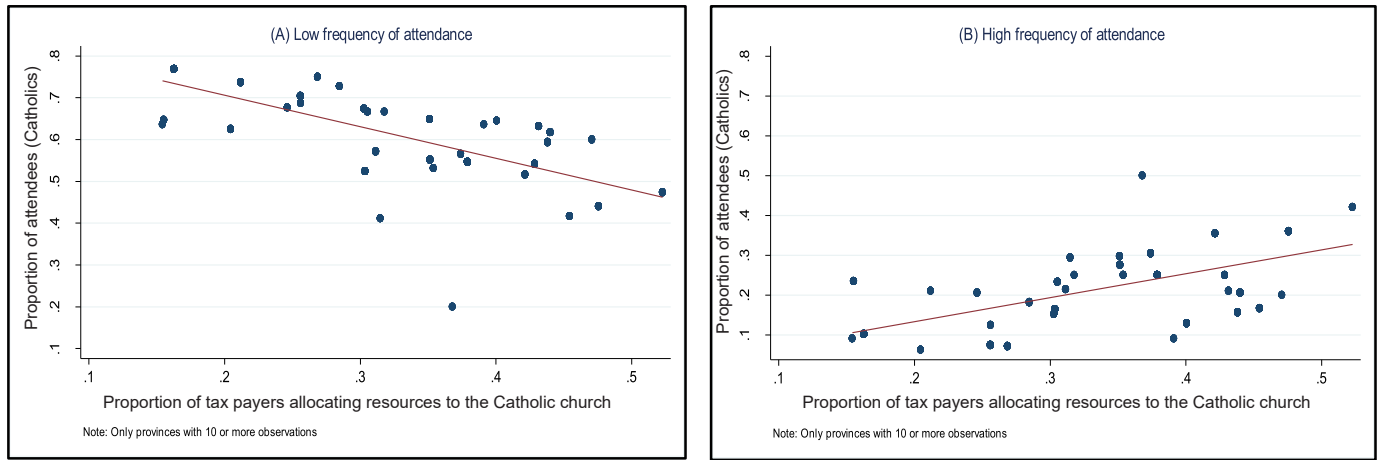


Fig. 3. Individual frequency of attendance to religious services and penetration of religion at the province level.

Table 4
Probability of mental distress symptoms *during* the pandemic (estimated average partial effects).

	D1 Little interest in doing things	D2 Very sad or depressed	D3 Very worried, not being able to control it	D4 Feeling lonely, isolated	D5 Feeling Irritable, aggressive, with anger	D6 Feeling restless	D7 Anxiety or panic attacks
Religious beliefs (Ref: Agnost/Atheist/Non pract. Cath.)							
Practising Catholic	0.009 (0.025)	0.032 (0.026)	0.040 (0.030)	0.027 (0.021)	0.011 (0.028)	0.013 (0.026)	0.018 (0.019)
Gender differences (fem. vs. males)							
Overall	0.136 *** (0.018)	0.132 *** (0.018)	0.111 *** (0.014)	0.065 *** (0.015)	0.091 *** (0.010)	0.130 *** (0.013)	0.119 *** (0.016)
Agnost./Atheist/Non-pract. Cath.	0.141 *** (0.023)	0.140 *** (0.017)	0.116 *** (0.015)	0.075 *** (0.017)	0.095 *** (0.011)	0.145 *** (0.015)	0.128 *** (0.018)
Practising Catholics	0.107 ** (0.047)	0.087 * (0.045)	0.081 (0.054)	0.010 (0.039)	0.075 * (0.039)	0.046 (0.043)	0.061 (0.042)
Pre-pandemic health status							
In mental health treatment	0.099 *** (0.022)	0.101 *** (0.020)	0.110 *** (0.026)	0.096 *** (0.020)	0.119 *** (0.021)	0.140 *** (0.028)	0.130 *** (0.032)
Previous chronic disease	0.058 * (0.031)	0.057 *** (0.017)	0.026 (0.020)	0.064 *** (0.013)	0.007 (0.014)	0.025 (0.017)	0.022 (0.014)
<i>p</i> -value (Joint significance test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>p</i> -value (H_0 : Exogeneity)	0.874	0.320	0.302	0.320	0.935	0.715	0.952

Notes: N = 2018. ML estimation of univariate probit models. Standard errors in parentheses clustered at the province level computed through the Delta method. P-value of exogeneity tests in the estimation of bivariate probit models reported. Regional dummies included.

Full set of results can be found in Table 4S (Section S.1) in the Supplementary Material.

a month. Since the intensity of religious practice can be endogenous in the mental health equations, we estimate probit models with endogenous ordered variables for $j = 1, \dots, 14$:

$$y_{ij} = 1(x_{2i}\beta_2 + \alpha_m mfr_i + \alpha_h hfr_i + u_{2i} > 0) \quad (2)$$

$$I_i = \begin{cases} 1 & \text{if } z'_{2i}\lambda_2 + v_{2i} \leq \mu_1 \\ 2 & \text{if } \mu_1 < z'_{2i}\lambda_2 + v_{2i} \leq \mu_2 \\ 3 & \text{if } z'_{2i}\lambda_2 + v_{2i} > \mu_2 \end{cases}$$

The variables mfr_i and hfr_i are defined as follows: $mfr_i = 1(I_i = 2)$ and $hfr_i = 1(I_i = 3)$, i.e., they are binary indicators representing medium frequency and high frequency, respectively, in religious practice. Low frequency is the reference category. The error terms u_{2i} and v_{2i} are assumed to follow a conditional bivariate normal distribution with zero mean, unit variances, and correlation coefficient ρ_2 . The model is estimated by ML and the parameters to be estimated are the vector β_2 , the vector λ_2 , the parameters α_m and α_h , the thresholds μ_1 and μ_2 , and the correlation parameter from the joint distribution of the error terms, ρ_2 . For individual i , the partial effect on the probability of reporting

symptom j , for $j = 1, \dots, 14$, if attending religious services very often with respect to attending never or almost never is given by $\Pr(y_{ij} = 1 | mfr_i = 0, hfr_i = 1, w_{2i}) - \Pr(y_{ij} = 1 | mfr_i = 0, hfr_i = 0, w_{2i})$, where $w_{2i} = (x_{2i}, z_{2i})$. To determine the average partial effect, we can obtain the sample average of this expression. Alternatively, we can compute partial effects at specific values of the variables. With respect to the explanatory variables in x_{2i} , we consider the same vector as in x_{1i} in (1), also including interaction terms of the gender indicator with the frequency binary indicators mfr_i and hfr_i and with the indicators of social class and household type. In addition, and in order to account for initial conditions we include interactions between gender, initial health conditions prior to the pandemic, including mental health, and the frequency binary indicators as regards religious practice.

Regarding the equation of the intensity of religious practice in (2), we consider the vector $z_{2i} = (z_{2i}^p, tax_{prov})$, where z_{2i}^p includes the personal characteristics of gender, age, political ideology and the indicator of being a practising Catholic. As in the previous subsection, we include the additional variable tax_{prov} as an instrument to account for the potential endogeneity of the religion variables in the mental distress equations,

Table 5Probability of mental distress symptoms *related to the pandemic* (estimated average partial effects).

	R1 Distressed because of thoughts about coronav.	R2 Fear of dying from coronav.	R3 Fear of a family member or loved one dying from coronav.	R4 Fear of having accident, illness... and have to go to ER	R5 Fear of losing income	R6 Fear of a family member or loved one losing his or her job	R7 Fear of losing your job or part of your job ^a
Religious beliefs (Ref: Agnost/Atheist/ Non pract. Cath.)							
Practising Catholic	0.038 (0.025)	0.049 ** (0.025)	0.043 (0.028)	0.013 (0.032)	0.033 (0.024)	0.049 (0.036)	0.060 (0.041)
Gender differences (fem. vs. males)							
Overall	0.081 *** (0.011)	0.071 *** (0.017)	0.086 *** (0.018)	0.125 *** (0.019)	-0.006 (0.018)	-0.001 (0.024)	0.029 (0.024)
Agnost./Atheist/Non-pract. Cath.	0.078 *** (0.011)	0.076 *** (0.020)	0.100 *** (0.018)	0.125 *** (0.023)	-0.002 (0.023)	0.004 (0.026)	0.034 (0.025)
Practising Catholics	0.090 ** (0.037)	0.056 (0.039)	0.017 (0.054)	0.122 ** (0.048)	-0.023 (0.053)	-0.025 (0.049)	0.003 (0.064)
Pre-pandemic health status							
In mental health treatment	0.111 *** (0.026)	0.030 (0.022)	0.046 ** (0.023)	-0.028 (0.025)	0.058 ** (0.029)	0.015 (0.031)	0.047 (0.035)
Previous chronic disease	-0.001 (0.021)	0.035 ** (0.018)	0.055 *** (0.020)	0.027 (0.022)	0.012 (0.027)	0.017 (0.021)	-0.017 (0.034)
<i>p</i> -value (Joint significance test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>p</i> -value (H_0 : Exogeneity)	0.872	0.203	0.172	0.749	0.748	0.481	0.312

Notes: N = 2018. ML estimation of univariate probit models Standard errors in parentheses clustered at the province level computed through the Delta method. P-value of exogeneity tests in the estimation of bivariate probit models reported. Regional dummies included.

Full set of results can be found in Table S5 (Section S.1) in the Supplementary Material.

^a Only employees (N = 1287).

following Mellor and Freeborn (2011). Fig. 3 shows evidence of a negative (positive) correlation between the individual decision to attend Mass or other religious services never or almost never (at least twice a month) and the penetration of the Catholic religion at the province level measured by the income tax variable. The correlation coefficient between both indicators is - 0.58 (0.48).

5. Estimation results

5.1. Mental distress and religious beliefs

The estimation of the bivariate probit model in Section 4.1 led us to not reject the exogeneity hypothesis in any of the 14 models estimated. Thus, we report the estimation results for the univariate probit models and also provide evidence of the results of the exogeneity tests.¹⁴ More specifically, Tables 4 and 5 contain estimated average partial effects on the probability of suffering mental distress during the pandemic (Table 4) and related to the pandemic (Table 5).¹⁵

The most important finding is that in almost all the outcomes, females display a higher probability of suffering mental distress. This occurs in all the outcomes during the pandemic and in four out of seven symptoms related to the pandemic. This finding is in line with other papers that have provided evidence of the gender gap in mental health during the COVID-19 outbreak (Adams-Prassl et al., 2020; Ausín et al., 2021; Beland et al., 2020; González-Sanguino et al., 2020; Moreira et al., 2021; Zamarro and Prados, 2021; among others). The most pronounced gender differences are observed for the following mental distress symptoms experienced during the pandemic: “little interest of doing

things”, “very sad or depressed”, and “feeling restless”, where females exhibit, other things equal, a probability of suffering them that is, respectively, 13.6, 13.2 and 13.0 pp larger than males. Regarding mental distress related to the pandemic, the most pronounced gender gap is observed in the indicator “fear of having accident, illness...and have to go to ER”, for which females display a probability of suffering it 12.5 pp higher than males. It is worth to remark the findings associated to the last three indicators considered. Other things equal, the probability of having fears related to job or income insecurity because of the pandemic, is not significantly different across gender. The literature on gender-specific consequences of job insecurity on health and well-being is not conclusive. Our results are in line with those studies that found that the strength of the association between precariousness and health is fairly similar among men and women (Green, 2011; Reichert and Tauchmann, 2017).

Being a practising Catholic does not appear to make a difference in mental distress during the pandemic once other factors have been considered. Regarding mental distress related to the pandemic, we find a significant positive coefficient only for one of the seven symptoms, *fear of dying from coronavirus*. These results suggest that religion does not serve to cope with the mental or emotional problems suffered during the pandemic or those that arose as a direct consequence of the pandemic. However, our results show evidence of heterogeneity as regards gender differences in the risk of suffering mental distress during the pandemic and related to the pandemic between practising and non-practising Catholics.¹⁶ Focusing on Table 4, it is remarkable that gender differences in mental distress during the pandemic are much smaller among practising Catholics and, actually, in most cases they are not statistically significant. However, for those who describe themselves as non-practising Catholics, or agnostics or atheists, the gender gap is remarkable, reaching around 14 pp in having *little interest or pleasure in doing things*, *feeling very sad or depressed*, and *feeling restless*. Regarding the

¹⁴ The estimation results from the bivariate probit models are available from the authors upon request.

¹⁵ In these Tables we only report average partial effects of variables of interest, mainly gender differences in mental distress and the role of religious beliefs as coping strategies, while we have relegated discussion of the role of other variables included in the estimations (social class, household type, education, age and working status) to a Supplementary Material (Table 4S and 5S in Section S.1).

¹⁶ We report in Table 4S and 5S in Section S.1 of the Supplementary Material the gender differences by either social class and household type. The corresponding comments have been also included in such Supplementary Material.

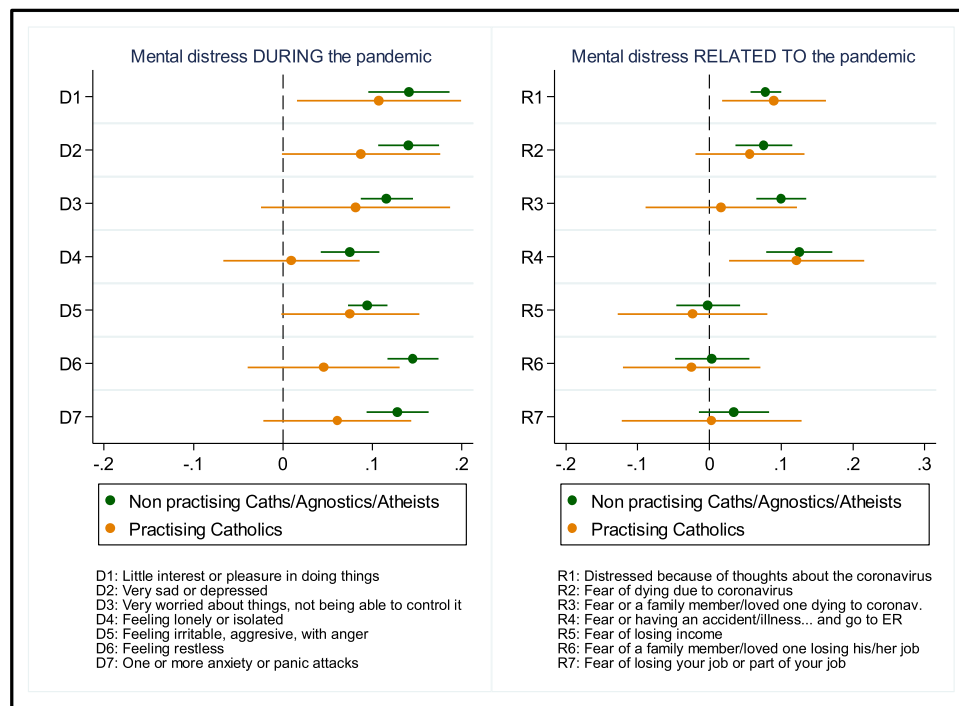


Fig. 4. Gender gap in mental distress across religious groups.

results for mental distress symptoms appeared as a result of the pandemic (Table 5), the pattern is not so clear, but we still find for several mental health outcomes that gender differences are lower or not statistically significant for practising Catholics. The role of religious beliefs on gender gaps in mental health and the differences between symptoms during or related to the pandemic are shown in Fig. 4, that summarises the main results regarding gender gap in mental health across religious groups. The most important finding regarding religious beliefs is that the gender gap in mental distress during the pandemic is significantly reduced or even disappears among the group of practising Catholics. This result suggests that religious practice could act as a coping strategy for females, helping them to reduce the risk of suffering several mental distress symptoms.

Finally, as regard the effect of initial conditions, we find that overall, being in a mental health treatment and having a previous chronic disease increase the risk of mental distress *during* the pandemic. The evidence regarding pre-mental health treatment is very clear for all the indicators, with an incidence of mental distress symptoms between 9.6 pp and 14 pp higher than for those who have not been in mental health psychological or pharmacological treatment before. When looking at mental distress symptoms *related to* the pandemic, the evidence is not so strong, but there is still some evidence of both variables increasing the risk of suffering various mental health problems.

Coping is broadly defined as the cognitive and behavioural efforts that individuals employ to manage stress (Lazarus and Folkman, 1991). Numerous coping styles have been identified, including self-distraction, active coping, denial, substance use, use of emotional support, use of informational support, and behavioural change. Religion has been included – together with positive reframing, acceptance and humour – within the group of emotion-focused coping (Nahlen Bose et al., 2015), which aim at managing the emotions associated with the stressors, rather than changing the stressors themselves.

Our findings would suggest that religious females might look for positive ways of thinking about hardship, a practice known to psychologists as “cognitive reappraisal”. Cognitive reappraisal involves reinterpreting an emotion-eliciting event to effectively change its emotional impact. Studies have shown that cognitive reappraisal

attenuates negative emotion and promotes mental health (Webb et al., 2012). Additionally, it might be the case that religious females have more positive emotions, are more resilient and have more self-efficacy. These three inter-related elements have been proved to act as moderator factors that alleviate the mental health effects of negative shocks. First, people with more positive emotions display a higher ability to improve reactions to negative stimuli, and promote resilience (Tugade et al., 2004), especially in the face of a crisis (Grant and Kinman, 2014). Second, to the extent that individuals with high levels of resilience are capable of maintaining a state of functionality despite the challenges faced (Wolmer et al., 2011), enhancing resilience may improve individual's mental well-being (Riehm et al., 2021). Finally, coping self-efficacy specifically addresses one's confidence in the ability to cope effectively when facing challenges and, together with resilience, allows one to return to pre-crisis status quickly through the implementation of coping strategies, thus improving psychological well-being. In the context of the COVID-19 pandemic there is some evidence of a positive association of positive emotions and resilience with the maintenance of mental health (Riehm et al., 2021).

Overall, the results of this Section 5.1 point to a negligible effect of religious beliefs on mental distress. Actually, for symptoms or anxiety or depression suffered during the pandemic, being a practising Catholic is associated, other things equal, with a slightly higher probability of suffering them, between 0.9 and 4.0 pp more, although non statistically significant. The results for emotional or mental distress related to the pandemic are similar, but in a range between 1.3 and 6.0 pp, again non statistically significant (except in one of the symptoms).

Regarding the gender gap in mental distress, we have seen that it is more pronounced in symptoms of anxiety or depression during the pandemic than in those that appeared as a result of the pandemic. Other things equal, the gender gap in the former varies between 6.5 and 13.6 pp, while in the latter they vary from non statistically significant (concerns about job or income insecurity) to 12.5 pp. About the role of religion, Fig. 4 above showed that the difference in the gender gaps for practising Catholics and for other groups are more evident in the case of emotional distress during the pandemic. For symptoms related to the pandemic, the gender gaps are, overall, very similar across religious groups.

Table 6Probability of mental distress symptoms *during* the pandemic (estimated average partial effects). Only Catholics.

	D1 Little interest in doing things	D2 Very sad or depressed	D3 Very worried, not being able to control it	D4 Feeling lonely, isolated	D5 Feeling irritable, aggressive, with anger	D6 Feeling restless	D7 Anxiety or panic attacks
Freq. attend. relig. serv. (Ref: low)							
Medium frequency	0.038 (0.028)	0.019 (0.025)	0.017 (0.029)	0.001 (0.021)	-0.002 (0.023)	0.048 (0.030)	0.054 ** (0.022)
High frequency	-0.016 (0.025)	-0.022 (0.020)	-0.015 (0.030)	-0.032 (0.025)	-0.014 (0.020)	-0.029 (0.030)	0.017 (0.025)
Gender differences (fem. vs. males)							
Overall	0.129 *** (0.025)	0.128 *** (0.024)	0.106 *** (0.019)	0.057 *** (0.022)	0.094 *** (0.017)	0.100 *** (0.027)	0.102 *** (0.016)
Low frequency of attendance	0.139 *** (0.037)	0.140 *** (0.026)	0.108 *** (0.027)	0.065 ** (0.033)	0.107 *** (0.027)	0.115 *** (0.034)	0.121 *** (0.019)
Medium frequency of attendance	0.151 ** (0.064)	0.101 ** (0.048)	0.112 * (0.063)	0.033 (0.048)	0.074 * (0.042)	0.057 (0.050)	0.079 (0.049)
High frequency of attendance	0.085 (0.052)	0.122 ** (0.054)	0.093 (0.066)	0.056 (0.050)	0.079 ** (0.039)	0.097 * (0.052)	0.065 (0.046)
Pre-pandemic health status							
In mental health treatment	0.101 *** (0.032)	0.128 *** (0.027)	0.154 *** (0.038)	0.100 *** (0.032)	0.123 *** (0.034)	0.149 *** (0.034)	0.150 *** (0.053)
Previous chronic disease	0.027 (0.033)	0.036 (0.028)	-0.002 (0.027)	0.046 *** (0.017)	-0.021 (0.018)	0.009 (0.024)	-0.003 (0.016)
<i>p</i> -value (Joint significance test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>p</i> -value (H_0 : Exogeneity)	0.365	0.255	0.308	0.111	0.644	0.990	0.954

Notes: N = 1169. ML estimation of univariate probit models. Standard errors in parentheses clustered at the province level and computed through the Delta method. P-value of exogeneity tests in the estimation of bivariate probit models reported. Regional dummies included.

Full set of results can be found in Table 6S (Section S.2) in the Supplementary Material.

Table 7Probability of mental distress symptoms *related to* the pandemic (estimated average partial effects). Only Catholics.

	R1 Distressed because of thoughts about coronav. ^(a)	R2 Fear of dying from coronav. ^(a)	R3 Fear of a family member or loved one dying from coronav.	R4 Fear of having accident, illness... and have to go to ER	R5 Fear of losing income ^(a)	R6 Fear of a family member or loved one losing his or her job	R7 Fear of losing your job or part of your job ^(b)
Freq. attend. relig. serv. (Ref: low)							
Medium frequency	0.048 * (0.025)	0.056 (0.040)	0.039 (0.035)	0.023 (0.035)	0.041 (0.048)	-0.017 (0.036)	-0.014 (0.042)
High frequency	0.026 (0.038)	0.028 (0.039)	-0.011 (0.041)	0.008 (0.045)	-0.027 (0.034)	-0.017 (0.037)	0.003 (0.053)
Gender differences (fem. vs. males)							
Overall	0.089 *** (0.017)	0.040 ** (0.020)	0.077 *** (0.030)	0.106 *** (0.026)	-0.020 (0.022)	-0.029 (0.031)	0.032 (0.041)
Low frequency of attendance	0.097 *** (0.023)	0.027 (0.027)	0.105 *** (0.033)	0.093 ** (0.038)	-0.018 (0.035)	-0.035 (0.036)	0.029 (0.047)
Medium frequency of attendance	0.034 (0.038)	0.073 (0.054)	0.015 (0.055)	0.113 * (0.062)	-0.017 (0.063)	-0.004 (0.062)	0.095 (0.098)
High frequency of attendance	0.112 ** (0.046)	0.051 (0.047)	0.053 (0.068)	0.138 ** (0.054)	-0.029 (0.081)	-0.032 (0.054)	-0.019 (0.092)
Pre-pandemic health status							
In mental health treatment	0.113 *** (0.027)	0.034 (0.038)	0.054 (0.035)	-0.027 (0.037)	0.074 ** (0.036)	0.028 (0.032)	0.083 * (0.043)
Previous chronic disease	-0.008 (0.027)	0.037 (0.022)	0.053 ** (0.024)	0.029 (0.025)	0.020 (0.033)	0.008 (0.026)	-0.052 (0.039)
<i>p</i> -value (Joint significance test)	0.000	0.000	0.000	0.000	0.000	0.000	0.000
<i>p</i> -value (H_0 : Exogeneity)	0.064	0.029	0.167	0.158	0.013	0.321	0.211

Notes: N = 1172. ^(a)ML joint estimation of probit model for mental distress and ordered probit models for the frequency of attendance to religious services. In the rest of the columns, ML estimation of univariate probit models. Standard errors in parentheses clustered at the province level and computed through the Delta method. P-value of exogeneity tests in the estimation of bivariate probit models reported. Regional dummies included.

Full set of results can be found in Table 7S (Section S.2) in the Supplementary Material.

^(b)Only employees (N = 714)

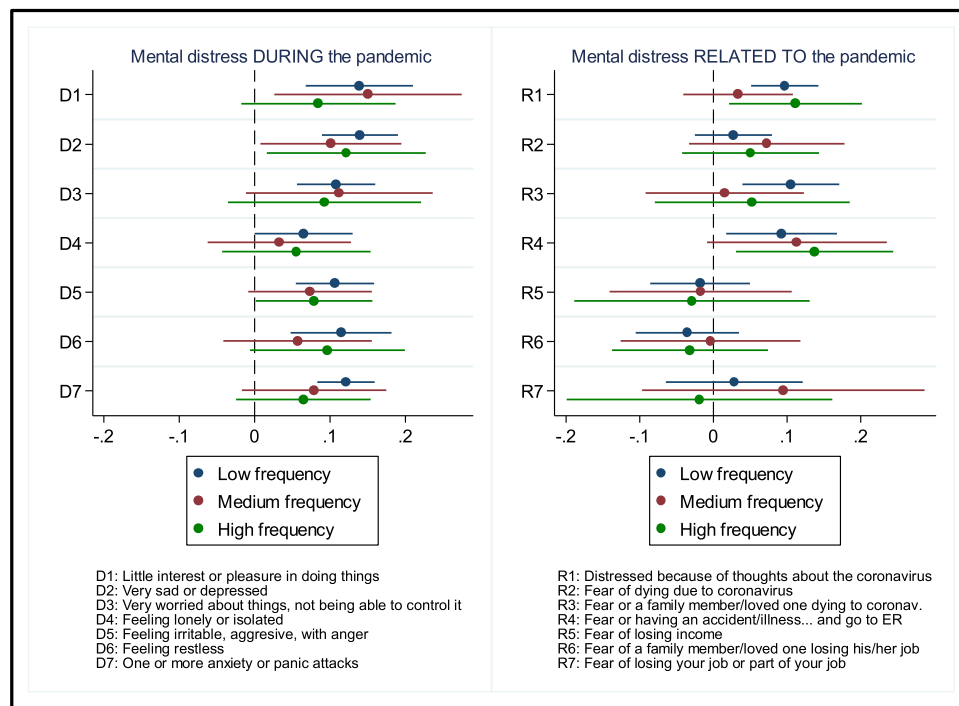


Fig. 5. Gender gap in mental distress across intensity of religious practice.

Thus, in a general context of anxiety or depression, religion might play a role in helping to cope with mental distress for some specific groups; in our case and in relative terms, Catholic women. However, this protective role of religion is much less evident when we consider specific stressors, such as those appeared as a consequence of the pandemic.

5.2. Mental distress and the intensity of religious practice

To analyse more deeply the association between mental distress and religion, we now focus on the intensity of religious practice. The dataset contains information on the frequency of attendance to religious services. As we mentioned above, this is an ordered variable, with values corresponding to low frequency of attendance (never or almost never), medium frequency (several times a year), and high frequency (at least twice a month). The information is available for Catholics, irrespective of whether they describe themselves as practising or non-practising. Table 3 provided evidence about a very different behaviour of both groups in this respect. However, even non-practising Catholics attend religious services with a medium frequency in a percentage quite similar to practising Catholics (17.7% and 20.7%, respectively). Of course, huge differences appear between both groups in the percentage of those who attend religious services with low or high frequency.

Tables 6 and 7 report the estimated average partial effects identified from the estimation of the model presented in Section 4.2.¹⁷ Table 6 refers to mental distress during the pandemic, while Table 7 shows the results for the incidence of symptoms related to the pandemic. In 3 of the 14 models considered, the test on the correlation between the error terms of the mental health equation and the frequency equation leads us to reject the hypothesis of exogeneity of the intensity of religious practice in the mental equation. This is the case for three indicators related to the pandemic (*distressed because of thoughts about coronavirus*, *fear of dying from coronavirus* and *fear of losing income*). For these cases, we report the

results (average partial effects) for the joint estimation of the probit mental distress equation and the ordered probit model for the frequency of attendance to religious activities.¹⁸ In the remaining models, where we do not find evidence of endogeneity, average partial effects from the estimation of univariate probit models for the mental distress equations are reported. We report the results of all the exogeneity tests.

The most interesting findings from Tables 6 and 7 can be summarised as follows. The overall female gap in mental distress is present in all models except in the last three models in Table 7 referring to worries related to job and income insecurity, as we saw before. Overall, once we control for other factors, it seems that the intensity of religious practices does not play a role in the probability of mental distress. In 9 of the 14 models considered, the average partial effect of attending religious services with a high frequency is negative, suggesting a lower incidence of mental distress than for those attending never or almost never, but the differences are not statistically significant. Thus, it seems that a more active religious experience does not serve as a coping strategy for mental distress. Regarding initial health conditions, the pattern observed in the previous results is also present. Being in mental health treatment prior to the COVID-19 has a clear impact on the probability of suffering mental distress during the pandemic. For example, being in mental health treatment before the pandemic is associated with a higher probability, around 15 pp more, to be *very worried and not being able to control for it*, or to *feeling restless* or to have *had anxiety or panic attacks*. The pre-pandemic health status, measured as an indicator for any diagnosed chronic disease, plays a less important role in mental distress related to the pandemic.

At the middle part of Tables 6 and 7, we report gender differences, overall and for specific groups attending to frequency of religious attendance. We find here a very interesting pattern concerning mental distress during the pandemic (Table 6). For all the outcomes considered, within Catholics who attend Mass or other religious services never or almost never (low frequency) the evidence of gender differences is very

¹⁷ In these Tables we only report gender differences in mental distress and the role of religious practices as coping strategies, and the average partial effects of initial health conditions. See Table 6S and 7S, in Section S.2 of the Supplementary material, for the full set of results regarding other variables.

¹⁸ The estimation results of the ordered probit model for the frequency of attendance to religious services, obtained from the joint estimation of the probit models and the ordered probit model in cases with evidence of endogeneity, are reported in Table A1 in the Appendix.

clear. It ranges from 6.5 pp for *feeling lonely or isolated* to 14 pp for being *very sad or depressed*. When we consider those who attend at least twice a month (high frequency) the gender differences decrease and, in most cases, disappear. Regarding medium frequency, the results are more heterogeneous. When we consider mental distress related to the pandemic (Table 7), the evidence is mixed.¹⁹ Thus, at least regarding suffering during the pandemic, it seems that not only religion but also the intensity of practising can be a coping strategy for females to reduce the gender gap in mental health.

The results in this Section 5.2 can be summarised as follows: i) there is a female penalty in mental distress, more pronounced in the case of stressors specific to the pandemic; ii) other things equal, the frequency of attendance to religious services does not play a role in the probability of suffering mental distress and thus, there is no evidence that religious practice can be a coping strategy, and iii) for those with a more active religious practice, the gender gap in mental distress is reduced or even disappears. Interestingly, this evidence is stronger for mental distress associated to anxiety or depression suffered during the pandemic and weaker for emotional stressors specific to the pandemic.

Thus, the findings are quite similar in qualitative terms for religious beliefs and religious practice and point to a quite limited role of religion as a coping strategy for mental distress in a general context and in the very specific context of the COVID-19 pandemic as well. But it seems to help Catholic women to reduce gender gaps in emotional distress, to a lesser extent if it is caused by the pandemic.

5.3. Robustness checks

To test the robustness of our results, we have performed several exercises.²⁰ Here we provide a summary of the main results we obtain.

First, we have considered alternative measures of religious beliefs and practice. On the one hand, in the models regarding the association between mental distress and religious beliefs (Tables 4 and 5), we considered two groups of individuals: practising Catholics and others, under the consideration that actively living the religious experience could play a more important role in mental health than just belonging to the Catholic group because of tradition or cultural reasons. To investigate this aspect more deeply, we have split the “others than practising Catholics” group into non-practising Catholics and agnostic or atheist respondents.²¹ Overall, the patterns for agnostics/atheists and non-practising Catholics are quite similar, both in sign and magnitude, which supports our decision of considering non-practising Catholics and agnostics/atheists jointly. We find, for most of the mental distress indicators, evidence of a female penalty for non-practising Catholics and agnostics/atheists, that decreases or even disappears for practising Catholics. Again, for mental distress related to job or income insecurity, there is no evidence of gender gap. Overall, the results when splitting the religious groups are very similar to those reported in Section 5.1.

On the other hand, in the models reported in Tables 6 and 7, related to the association between mental distress and the intensity of religious practice, we had considered three categories of attendance to religious services: low frequency (never or almost never), medium frequency (several times a year) and high frequency (at least twice a month). We have grouped the low and medium frequency categories, now considering a binary indicator for a strong involvement (high attendance frequency) vs. weaker involvement (less frequency). Overall, we find that the gender differences among those with a non strong involvement are

mainly driven by those attending religious services never or almost never. Again, we find no gender differences associated to the intensity of religious practice for mental distress stemmed from job or income insecurity caused by the pandemic. For the rest of the indicators, we mimic the results reported in Section 5.2, i.e., a female penalty on mental distress for individuals weakly involved in religious practice, that becomes smaller or even disappears among high frequency participants.²²

Second, we analyse indirectly to which extent individual heterogeneity can play a role in the relationship between mental distress and individual religiosity and other individual characteristics. To do so we use an additional database conducted by CIS in October 2020, a nationwide *Survey on Effects and Consequences of Coronavirus*. This database offers information on some mental distress indicators, as well as religious beliefs, political ideology, social class, household type and some additional variables. It also includes some information that allows to create indicators for the Big-5 personality traits (extraversion, agreeableness, openness, conscientiousness, neuroticism) that can be associated to time-invariant individual characteristics. We estimate models for these indicators of mental distress: *Fear of not getting your life back to the way it was before the pandemic* and *Anxiety feelings*. With this complementary database, we obtain a result in line with our previous findings in this paper: although there is a marked overall gender difference in mental distress, that difference becomes smaller or even disappears when we consider practising Catholics. It is worth noticing that, although religious sentiment is part of one's inner life, it is undeniable that attendance at religious events has a social component of sharing time, space, and common activities with others. Distinguishing whether it is really the religious activity itself or the social interaction associated with it what can have an impact on mental health is a very complicated task. Nonetheless, insofar as personality traits play an important role in the greater or lesser inclination to participate in social activities (Back et al., 2011; Geukes et al., 2019; Back, 2021) including personality traits in the set of explanatory variables may capture, at least partially, the personal inclination toward social interaction. However, the main findings with the additional database –in the same line of our findings in the previous sections– are robust to the inclusion or exclusion of personality traits indicators.²³

Third, the estimated models reported in previous sections include a quite large number of regressors. We investigate a potential bad controls issue, as described in Angrist and Pischke (2009). Our main regressors of interest are gender and religion variables. But, if religious beliefs and/or religious practice are determinants of other regressors in the models, these regressors can be seen as bad controls that should not be included in the equations to estimate. This could be the case for political ideology, social class, household type and working status. For example, a strong individual engagement with Catholicism could determine individual preferences for some living arrangements over others and even for labor participation decisions, especially for women. In fact, religion has been proved to have a close link to patterns of family formation such as family size, marriage, divorce (Mahoney, 2010). Moreover, there is also empirical evidence on how religion affects women's decisions regarding the allocation of time between home and market (Lehrer, 2008). There is also a clear connection between political conservatism and religiosity (Malka et al., 2012; among many others). To analyze the robustness of our results to these issues, we have estimated our models excluding each of these regressors individually considered, as well as different groups of them. Our main results regarding the overall gender gap in mental distress, as well as the gap across religious beliefs and frequency of attending religious services remain in terms of

¹⁹ We report in Table 6S and 7S in Section S.2 of the Supplementary Material the gender differences by either social class and household type. The corresponding comments have been also included in such Supplementary Material.

²⁰ A detailed analysis of these robustness checks is included in Section S.3 of the Supplementary Material.

²¹ The survey does not allow to split the agnostic/atheist group into two different categories.

²² See subsection S.3.2 in the Supplementary Material for detailed results on these alternative measures of religious beliefs and practice.

²³ See subsection S.3.2 in the Supplementary Material for more details on these results.

magnitude and statistical significance.²⁴

Finally, we have repeated the analysis by grouping all mental distress symptoms during the pandemic (D1-D7), on the one hand, and those related to the pandemic (R1-R7), on the other hand, into a single indicator using principal component analysis.²⁵ Although the estimated average partial effects cannot be compared in magnitude with those based on separate estimations for the different indicators, it is remarkable that our main findings still hold under the principal components approach: (i) marked female penalty in terms of mental distress, (ii) religious beliefs and practice as factors associated with a lower (even negligible in some cases) gender gap in mental distress.²⁶

6. Conclusions

The global COVID-19 pandemic has forced people to cope with situations never before imagined and struggle with increased mental distress as a result. In an international public health emergency like this one, it is important to investigate the psychological impact on populations as well as potential coping strategies to develop policies aimed at reducing these symptoms.

Psychological, social, and cultural factors are likely to be involved in our recognising and coping with traditional mental health problems. In particular, religious and spiritual involvement and community support have been shown to reinforce the capacity to cope better with mental health challenges, strengthen resilience and fellowship, and reduce isolation and loneliness. Using the *Spanish survey on mental health during the COVID-19 pandemic* conducted by the CIS in February 2021, this paper analyses mental distress and its gender component, paying special attention to specific symptoms caused by stressors related to the pandemic. Moreover, we show how these differences vary across different socioeconomic groups.

In line with the emerging literature that addresses the impact of the pandemic on the gender gap in mental health, our results provide clear evidence that females have experienced a higher risk of suffering mental distress both during and related to the pandemic. An important finding is that religious beliefs and practice seem to have served as a coping strategy that narrowed or even eliminated the gender gap in mental distress, especially regarding traditional symptoms of mental distress. Moreover, albeit to a lesser extent, religious beliefs and practices have also played a role in mitigating mental distress associated with stressors caused by this global emergency situation, particularly for practising Catholics. Regarding the intensity with which religion is practised, we found that attending Mass or other religious services quite often, at least twice a month, helps to reduce the gender gap in mental health among Catholics.

All in all, although this does not mean that religion and spirituality can replace psychological counselling and treatment, they may have a key role to play in mitigating the suffering and hopelessness of those affected by mental distress. In fact, religion and psychology are likely to share methods to alleviate mental distress. For instance, religious people look for positive ways of thinking about hardship, a practice known to psychologists as “cognitive reappraisal”. Moreover, they are likely to cope effectively with difficulties in problem solving and emotional regulation and to obtain support from their social network, a trait psychologists refer to as “coping self-efficacy”. Both strategies have been shown to reduce symptoms of anxiety and depression.

Overall, our results suggest religious beliefs and practices serve as coping strategies to alleviate mental distress specially among females. There are many possible mechanisms by which religious beliefs and practices may enhance mental health. First, it is likely that religion provides women with coping resources – for instance strongly held

beliefs that give meaning to difficult life circumstances and provide a sense of purpose – that increase the frequency of positive emotions and reduce the likelihood that stress will result in emotional disorders such as depression, anxiety disorder, substance abuse and suicide. Moreover, religious beliefs and practices might have the potential to influence the cognitive appraisal of negative life events in a way that makes females less distressing than their male counterparts. Second, insofar as religious individuals comply with specific doctrines about lifestyles or about how to behave within a social group, it is likely that they are less affected by stressful life events, such as divorces, family problems, financial burdens, and so on. In addition, religion promotes better health behaviours inasmuch it is associated with less alcohol and drug use, as well as more physical activity and exercise and better diet (Koenig, 2015). Finally, religious people use to have prosocial behaviours that lead to human support when support is needed during difficult times, such as the emergency situation caused by the pandemic.

CRedit authorship contribution statement

Maite Blázquez: Conceptualization; Writing – original draft, Visualization, Formal analysis, Methodology; Investigation, Writing – review & editing, Project administration. **Rocío Sánchez-Mangas:** Conceptualization, Writing – original draft, Visualization, Formal analysis,

Table A1

Religion practice equation estimates for mental distress models with evidence of endogeneity.

	R1 Distressed because of thoughts about coronav.	R2 Fear of dying from coronav.	R5 Fear of losing income
Female	0.223 *** (0.074)	0.221 *** (0.074)	0.224 *** (0.074)
Religious beliefs (Ref: Agnost/Atheist/ Non pract. Caths)			
Practising Catholic	2.248 *** (0.083)	2.247 *** (0.083)	2.248 *** (0.083)
Age (Ref: 18–24)			
25–34	-0.396 (0.264)	-0.389 (0.268)	-0.400 (0.263)
35–44	-0.191 (0.256)	-0.174 (0.256)	-0.184 (0.255)
45–54	-0.185 (0.207)	-0.178 (0.208)	-0.181 (0.207)
55–64	-0.172 (0.265)	-0.162 (0.266)	-0.170 (0.264)
65 or more	0.012 (0.241)	0.019 (0.242)	0.012 (0.240)
Political ideology (Ref: left-wingers)			
Center	0.191 * (0.105)	0.190 * (0.106)	0.195 * (0.105)
Right	0.333 *** (0.101)	0.335 *** (0.102)	0.342 *** (0.101)
Percentage of tax-payers allocating resources to the Catholic Church (province level)			
	1.913 *** (0.543)	2.027 *** (0.536)	1.866 *** (0.536)
$\hat{\mu}_1$	1.661 *** (0.299)	1.708 *** (0.297)	1.650 *** (0.295)
$\hat{\mu}_2$	2.678 *** (0.293)	2.727 *** (0.293)	2.666 *** (0.288)

Notes: N = 1172. Ordered dependent variable: frequency of attendance to religious services (low, medium, high). Maximum likelihood estimates from the joint estimation of univariate probit models for mental distress and ordered probit models for the frequency of attendance to religious services. Standard errors in parentheses clustered at the province level and computed through the Delta method. Regional dummies included.

²⁴ See subsection S.3.3 in the [Supplementary Material](#) for a comparison of our main results in [Sections 5.1 and 5.2](#) and these alternative specifications.

²⁵ We thank an anonymous referee for making this suggestion.

²⁶ See subsection S.3.4 in the [Supplementary Material](#) for details.

Methodology, Investigation, Software, Data curation, Software, Validation Writing – review & editing.

Data Availability

Data will be made available on request.

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Appendix

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at [doi:10.1016/j.ehb.2023.101284](https://doi.org/10.1016/j.ehb.2023.101284).

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