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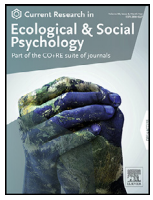

Religiousness in the first year of COVID-19: A systematic review of empirical research☆

Adam B. David*, Crystal L. Park*, Sayaka Awao, Solmary Vega, Madison S. Zuckerman, Tyler F. White, David Hanna

Department of Psychological Sciences, University of Connecticut, 406 Babbidge Rd., Storrs, CT 06269, United States

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ABSTRACT

The COVID-19 pandemic emerged suddenly in early 2020, posing a serious health threat and creating tremendous stress and distress across the world. Religion has been shown to play important and varied roles in previous disasters and health crises, but its roles in the pandemic have yet to be outlined. We aimed to summarize the research conducted on religion and COVID-19 in the first year of the pandemic with a systematic review of studies that specifically involved individual-level religiousness and COVID-19. Searches were conducted in PubMed, Scopus, CINAHL, and PsycINFO covering a one-year period from the first published mention of the novel coronavirus (Jan. 5, 2020) through January 4, 2021. We included articles about COVID-19 that were peer-reviewed and empirical, measured and reported results on religion on an individual level, and were available in English. Our search produced 137 empirical articles that met the inclusion criteria. In the course of sorting studies by their primary focus, eight categories of empirical findings emerged: general distress and wellbeing (53 articles), COVID-19-specific stress (24 articles), beliefs in science, conspiracies, and misinformation (15 articles), COVID-19 public health behaviors (12 articles), perceived risk of COVID-19 (10 articles), perceived growth or positive changes taking place during the pandemic (nine articles), health behaviors (three articles), and consumer behavior (three articles). Findings indicated that religiousness was associated with both unique benefits and challenges and played a significant role in the pandemic. Religiousness was associated with a broad range of outcomes across geographical regions and populations during the first year of COVID-19. It was a commonly reported coping mechanism with varying levels of favorable associations with mental health and COVID-19-related behaviors.

The sudden emergence of SARS-CoV-2 in late 2019 initiated a pandemic that forced abrupt changes in all spheres of social lives and behavior, and information about the pandemic and guidance for minimizing risk were confusing and frequently changing. In addition to causing physical devastation, the virus has had deleterious effects on many individuals' mental health (Rossi et al., 2020; Wang et al., 2021).

When facing high-magnitude stressful situations, a resource commonly drawn upon by people across the world is religiousness; religiousness is associated with many aspects of responding to and recovering from catastrophic events, major health concerns, epidemics, and other severe stressors (Aten et al., 2019; Park & Slattery, 2021, 2021; Schuster et al., 2001; Tham, 2005). Religiousness can influence the extent to which individuals find a disaster stressful and can offer paths for coping with distressing emotions. For example, following the 2001 terrorist attacks, 90% of Americans reported turning to religion in response, second only to talking with other people (Schuster et al., 2001). In a sample of survivors of the 2005 Pakistani earthquake, being "religious-minded" independently related to lower posttraumatic stress disorder (PTSD) symptoms (Ali et al., 2012), suggesting salutary effects of a religious life. However, not all studies demonstrate a relationship between religiousness and adjustment. For example, in a sample of college students in areas of the US affected by Hurricanes Katrina and Rita in 2005, religiousness was unrelated to PTSD symptoms (Pecchioni et al. 2011).

As a resource, religiousness provides specific coping strategies– actions relating to God or a higher power for the purpose of dealing with stressful experiences. In addition, religiousness may involve affiliation and belonging within a religious community, beliefs and values, or a general religious orientation (Fetzer Institute/National Institute on Aging Working Group., 1999).

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* Corresponding authors.
E-mail addresses: adam.david@uconn.edu (A.B. David), crystal.park@uconn.edu (C.L. Park), sawao@umd.edu (S. Awao), solmary.vega@uconn.edu (S. Vega), madison.zuckerman@uconn.edu (M.S. Zuckerman), tyler.white@uconn.edu (T.F. White), david.2.hanna@uconn.edu (D. Hanna).

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Religious coping is commonly reported following highly stressful events (Davis et al., 2019; Marks et al., 2009) and has long been a common approach to understanding and responding to calamities in various cultures around the world (Gaillard & Texier, 2010). Furthermore, religious coping appears to be the primary mechanism through which religiousness influences post-disaster mental health and adjustment (Wadsworth et al., 2009).

Positive religious coping–attempting to gain comfort, intimacy, and closeness with God–is generally associated with fewer symptoms of psychological distress and greater reports of psychological growth after traumatic events, although effects are somewhat inconsistent (Pargament et al., 2011). On the other hand, *negative religious coping*–reappraising the event as punishment from God and questioning God's power–consistently relates to higher levels of distress and poorer adjustment (Pargament et al., 2011).

Some studies have demonstrated favorable relations between religious coping and adjustment during highly stressful experiences. For example, in studies of survivors of the 1993 Midwest (US) Flood (Smith et al., 2000) and Hurricane Katrina (Henslee et al., 2015), positive religious coping was associated with better psychological adjustment and functioning while negative religious coping was associated with greater distress and poorer functioning.

However, using religious coping in response to a highly stressful experiences is not always beneficial. One study found that within two years of the 2004 Asian tsunami, survivors' use of religious practices to cope had a strong, positive association with anxiety and PTSD diagnoses (Hollifield et al., 2008). Meanwhile, in a sample of survivors of the 2005 Pakistani earthquake, positive religious coping was unrelated to PTSD (Ahmad et al., 2010). Likewise, two studies of displaced Hurricane Katrina survivors showed that positive religious coping was unrelated to PTSD or depressive symptoms, while negative religious coping was related positively to distress (Park et al., 2019; Wadsworth et al., 2009). These inconsistent findings from research on religious coping with highly stressful experience parallels those in the broader literature: positive religious coping is sometimes associated with better functioning, but findings are inconsistent, while negative religious coping consistently and strongly relates to lower levels of mental health and adjustment (e.g., Pargament et al., 2011).

In addition to religious coping, other aspects of religiousness such as religious social support and general religiousness have been related to adjustment in the context of many highly stressful situations (e.g., Abu-Ras & Abu-Bader, 2009; Ironson et al., 2002). For example, survivors of the 2009 L'Aquila (Italy) Earthquake who reported being high in religiosity had the lowest levels of PTSD symptomatology (Stratta et al., 2013).

Evidence gathered in the context of other highly stressful experiences suggests that aspects of religiousness may relate to adjustment and well-being in the face of the pandemic as well. In addition, given the unique circumstances of the pandemic, including the intermingling of religion, politics, and safety behaviors (Chatterji et al., 2021; Greer et al., 2020), religiousness may relate to other important aspects of the pandemic. For example, religiousness can lead some individuals to be less adherent, or even resistant, to medical advice (see Sun, Deng, & Qi, 2018, for a review). Thus, it is worth examining whether religiousness generally served as a facilitator or a barrier to safety measures and other responses to the pandemic.

Based on prior literature, we hypothesized that religiousness likely played myriad roles in people's approaches to the pandemic and management of its resultant stress. Therefore, we aimed to examine empirical research on this question published within the first year following the emergence of COVID-19. Given the unprecedented nature of this pandemic in modern times, as well as the quick implementation of studies by the international research community, a robust body of international studies was available to help illuminate the impact of religiousness on early global responses to a shared disaster.

Methods

We followed the guidelines set forth by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA; prisma-statement.org) and registered our review on Prospero (Identifier CRD42021235938). Four electronic databases were searched: PubMed, Scopus, CINAHL, and PsycINFO. We searched for articles with keywords that included *COVID-19* or *coronavirus* and *coping* or any word beginning with "relig," which we accomplished by using the search term *relig**. The search query used in all four databases included "coronavirus or COVID-19" and "coping or relig*." We included "coping" in the search because, while some studies used a coping measure that included a religious coping subscale, many of them could not be found when searching solely for "relig*". For PsycINFO and CINAHL, the search was limited to peer-reviewed articles only. No other limits were applied to the search. Studies were included if they were peer-reviewed and examined religion and COVID-19, written in English, empirical, and published between January 5th, 2020 (the first mention of what would become COVID-19 by the WHO published online; https://www.who.int/csr/don/05-january-2020-pneumonia-of-unkown-cause-china/en/) and January 4th, 2021. Studies were not limited to participants from any particular population. Papers were excluded if they were letters, editorials, commentaries/comments, viewpoints, personal stories/reflections, reviews, opinions, or perspectives. Articles that did not have abstracts were also included for full-text review.

Excel was used to manage the search. After one reviewer removed duplicates, 2,329 articles remained for abstract screening. One reviewer independently assessed each abstract to determine if the article met inclusion criteria for full-text review. Articles were removed at the abstract level if they were not empirical, were not about COVID-19, or did not measure religion or coping. Further, studies that did not collect data from individual participants (e.g., focused on geographic-level data as a measure of religiousness) were also excluded. After screening abstracts, 638 studies remained for full-text review. Full text of potentially eligible studies was compiled and reviewed by one reviewer. Articles were excluded after full-text review if they were not empirical, not about COVID-19, or not available in English, if they did not examine religion at all, or if religion was not part of the results. Protocol papers, studies that did not collect data from individual participants (e.g., country-level, community level) were also excluded. Further, one letter and one case study were identified at full-text level and were also excluded. For articles that met criteria, the first reviewer extracted sample size, sample characteristics, measure(s) of religion, and results. Finally, articles that met full-text extraction by one reviewer were then reviewed by a second reviewer following the same exclusion criteria. If the second reviewer agreed that the article met inclusion criteria, the information extracted was double-checked. All discrepancies were discussed as a group in order to reach consensus.

Study eligibility and selection

As shown in Fig. 1, the search returned 3,831 articles. Following duplicate removal and the addition of one hand-searched record, 2,329 citations remained for abstract review. Of these, 638 met inclusion criteria for a full text review. One-hundred-thirty-seven articles met criteria for inclusion in this review. Reasons for exclusion included irrelevance (not studying religion or COVID-19), not being empirical or written in English, not reporting results on religion, not measuring religion at an individual level (e.g., measuring religion at a geographic level), not being peer-reviewed (e.g., letter to editor), or having an inappropriate study format (e.g., protocol or case study) (see Fig. 1).

Results

Description of studies

Included articles described studies conducted in all six WHO regions (https://www.who.int/countries). 34 studies were conducted in the Eu-

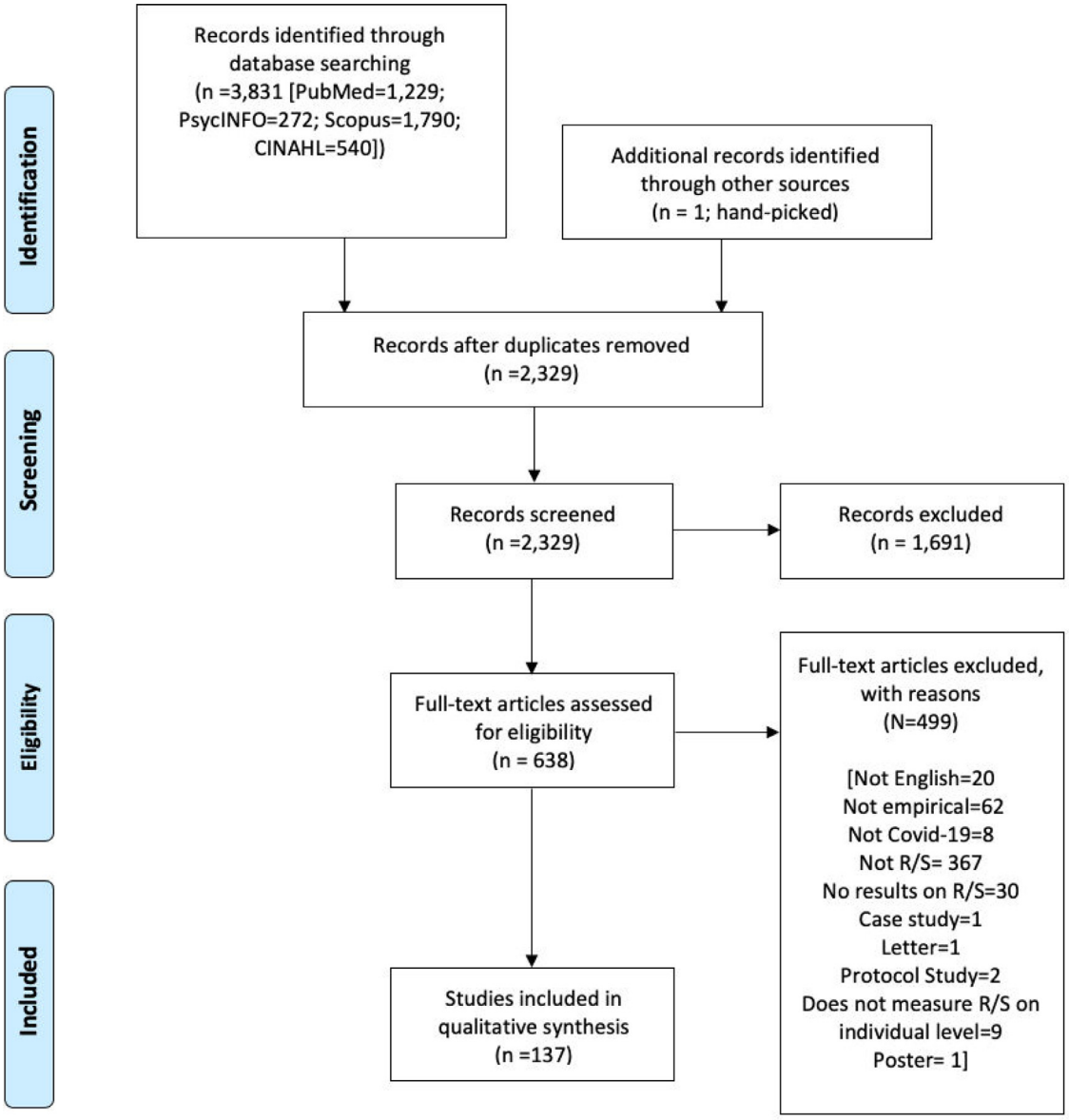

Fig. 1. Flow diagram of the systematic review and article selection process.

ropean Region in places such as Poland (6), Spain (5), and Turkey (4). 33 studies were conducted in the Region of the Americas in places such as the United States (24) and Brazil (6). 25 studies were conducted in the Eastern Mediterranean Region in places such as Pakistan (7), Iran (4), and Jordan (3). 14 studies were conducted in the South-East Asia Region, specifically in India (7), Indonesia (5), and Bangladesh (2). 14 studies were conducted in the Western Pacific Region in places such as China (6) and the Philippines (3). Four studies were conducted in the African Region, specifically in Ethiopia (3) and Nigeria (1). 13 studies were conducted in multiple regions, which also included studies that were conducted in one place while studying individuals in a different region (e.g., Lai et al., 2020).

Study participants were recruited from the community (104 articles), healthcare settings (30 articles), and hospitals (two with COVID-19 patients and one with general medical patients). Of those with community samples, six recruited students, three recruited educators, one recruited both educators and students, and one recruited employees from a specific organization; eight focused on religious groups, five focused on people with chronic conditions/disability, four on social media users, and one on the LGBTQ+ community. The rest of the community samples did not specify a particular population.

Within healthcare settings, 12 articles focused on healthcare workers broadly defined (e.g., physicians, nurses, etc.), five focused on nurses, four on physicians, two on both physicians and nurses, three on medical students, two on nursing students, one on medical interns, and one on physical therapists. Some of these articles sampled more than one type of population. Sample sizes ranged from 10 to 17,865 participants.

Most articles (123 of 137) featured a quantitative or mixed methodology and a cross-sectional design (112 of 137). Data sources included online and in-person surveys, interviews, and data collected from Twitter/Weibo/Instagram. As summarized in Table 1, data included religious demographic information about denomination, single items of affiliation, validated measures of religiosity (e.g., Religious Commitment Inventory), and religious coping (e.g., RCOPE). 54 articles reported on general religiousness. These measures included the Religious Commitment Inventory (RCI; Worthington et al., 2003), the Duke University Religion Index (DUREL; Koenig & Büssing, 2010), the Intrinsic Religious Motivation Scale (Gorsuch & McPherson, 1989), the Spiritual Wellbeing Scale (Paloutzian, Bufford, & Wildman, 2012), and the Post-Critical Be-

Table 1
Types of religion and outcomes associated with religion in each study included in the systematic review.

Authors	Country	Types of Religion Measured				Outcomes Associated with Religion							
		Affiliation	General Religiousness	Religious Coping	Change in Religiousness	General Distress/ Wellbeing	COVID-19 Stress	Health	Consumer Behavior	Perceived Religious Changes/ Growth/ Positive Changes	Beliefs in Science/ Beliefs in Conspiracy Theories	Risk	COVID-19 Adherence/ Compliance/ Mobility
Abdulghani et al., 2020	Saudi Arabia			x		+							
Ademhan Tural et al., 2020	Turkey			x									
Agha, 2021	Saudi Arabia			x		-							
Agley, 2020	United States		x								-		
Ahmad et al., 2020	India	x	x			o							
Aji et al., 2020	Indonesia		x										
Akour et al., 2020	Jordan			x									
Al Ghafri et al., 2020	Oman	x			x	+	+						
H. Ali et al., 2020	United States			x									
K. Ali et al., 2020	India					+							
Alper et al., 2020	Turkey		x								-	-	
Alzoubi et al., 2020	Jordan		x								-	-	
Asmelash et al., 2020	Ethiopia		x								-		
Babore et al., 2020	Italy			x		o							
Baig et al., 2020	Saudi Arabia				x								
Banerjee & Rao, 2020	India			x									
Barua et al., 2020	Bangladesh										-		-
Bezerra et al., 2020	Brazil			x									
Bin-Nashwan & Al-Daihani, 2020	Kuwait		x										
Bin-Nashwan et al., 2020	Kuwait			x									
Boguszewski et al., 2020	Poland		x		x								
Büssing et al., 2020a	Germany			x	x	+				+			
Büssing et al., 2020b	Germany		x	x	x	o				+			
Carlos et al., 2020	Brazil		x	x									
Chen et al., 2020	China				x					o			
Chodkiewicz et al., 2020	Poland			x									
Chong et al., 2020	Hong Kong			x		o						o	o
Correia & Almeida, 2020	Portugal		x			o+							
Costantini & Mazzotti, 2020	Italy		x				-						
Counted et al., 2020	Colombia and South Africa			x		+-				+-			
Cypryańska & Nezlek, 2020	Poland			x		-							
Djupe & Burge, 2020	United States	x	x								-	+	-
Dorman-Ilan et al., 2020	Israel	x	x	x			+						
Ebrahimi et al., 2020	Iran		x			+							
Fatima et al., 2020	Nigeria and India		x	x	x								
Findyartini et al., 2020	Indonesia			x			+						
Fountoulakis et al., 2021	Greece			x	x	+o							
Frey et al., 2021	United States			x									
Fuchs et al., 2020	Poland	x				-		o					
Fuller & Huseth-Zosel, 2021	United States			x									
González-Sanguino et al., 2020b	Spain		x			+	+						
González-Sanguino et al., 2020a	Spain		x			+							
Guo et al., 2020	China			x		-							
Hawke et al., 2020	Canada			x		o	o						
Hill et al., 2020	United States		x										<>
Islam et al., 2020	Bangladesh		x								-		
Jaspal et al., 2020	United Kingdom	x					-		$			+	+
Jin et al., 2021	International		x										
Jokić-Begić et al., 2020	Croatia			x		+o							
Kandeğer et al., 2020	Turkey			x		+-							

(*continued on next page*)

Table 1 (*continued*)

Authors	Country	Types of Religion Measured				Outcomes Associated with Religion							
		Affiliation	General Religiousness	Religious Coping	Change in Religiousness	General Distress/ Wellbeing	COVID-19 Stress	Health	Consumer Behavior	Perceived Religious Changes/ Growth/ Positive Changes	Beliefs in Science/ Beliefs in Conspiracy Theories	Risk	COVID-19 Adherence/ Compliance/ Mobility
Kar et al., 2021	International			x		o							
Kebede et al., 2020	Ethiopia		x								-	-	
Kevern et al., 2020	Brazil	x											
Kharshiing et al., 2021	India		x			+	o						
S. Kim & S. Kim, 2021	Korea	x	x			+-					+-	-	
S. C. Kim et al., 2020	United States		x	x		+							
Kowalczyk et al., 2020	Poland		x	x	x							+-	+
Kranz et al., 2020	United States		x				+-		$		-	-	
Kye & Hwang, 2020	South Korea									-			
Lai et al., 2020	Hong Kong, United Kingdom, and United States			x		-							
Lawal et al., 2020	Nigeria	x				<>							
Lee, 2020	United States			x			-						
Lee et al., 2020	United States			x			-						
Li et al., 2020	China				x								
Lucchetti et al., 2020	Brazil		x			+				+			
MacIntyre et al., 2020	International			x		+o		o		+o			
Mahamid & Bdier, 2021	Palestine	x		x		+							
Malgor et al., 2020	Brazil			x									
Martinelli et al., 2021	International		x										<>
Marzo et al., 2020	Philippines					+							
Mathias et al., 2020	India			x			+						
Megatsari et al., 2020	Indonesia	x				-							
Mekonnen et al., 2020	Ethiopia	x									<>		
Meza, 2020	Columbia	x	x	x	x					+			
Minton & Cabano, 2020	United States		x						$				
Molteni et al., 2021	Italy	x	x	x	x								
Moreira et al., 2020	Brazil	x											
Munawar & Choudhry, 2021	Pakistan			x		+	+						
Niknam et al., 2021	Iran												
Nooripour et al., 2021	Iran		x			+	+						
Noreen et al., 2020	Pakistan		x		x								
Olagoke et al., 2021	United States		x					-			-		-
Palacios-Ceña et al., 2021	Spain												
Park et al., 2020	United States			x		+	+						
Perone et al., 2020	United States			x									
Perry et al., 2020a	United States	x	x										-
Perry et al., 2020b	United States	x	x								+-<>		
Pirutinsky et al., 2020	United States	x	x	x		+-	+-						
Plohl & Musil, 2021	International		x								-		-
Prazeres et al., 2021	Portugal		x				o						
Prieto-Ursúa & Jódar, 2020	Spain		x							+			
Rababa et al., 2021	Jordan			x		+							
Rahiem, 2021	Indonesia	x	x	x									
Rajabipoor Meybodi & Mohammadi, 2021	Iran			x			+						
Rathore et al., 2020	India			x									
Raza et al., 2020	Pakistan												
Reguera-García et al., 2020	Spain			x		o		o					
Ren et al., 2020	China		x			-o							
Rettie & Daniels, 2020	United Kingdom			x		o							

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Table 1 (*continued*)

Authors	Country	Types of Religion Measured				Outcomes Associated with Religion							
		Affiliation	General Religiousness	Religious Coping	Change in Religiousness	General Distress/ Wellbeing	COVID-19 Stress	Health	Consumer Behavior	Perceived Religious Changes/ Growth/ Positive Changes	Beliefs in Science/ Beliefs in Conspiracy Theories	Risk	COVID-19 Adherence/ Compliance/ Mobility
Roberto et al., 2020	United States	x	x			+							
Rovenská, 2020	Slovakia			x									
Salman et al., 2020	Pakistan			x									
Salopek-Žiha et al., 2020	Croatia		x			o							
Sameer et al., 2020	Saudi Arabia, India, Pakistan, United Kingdom, and United States			x									
Sarea & Bin-Nashwan, 2020	Bahrain		x										
Savitsky et al., 2020	Israel	x		x		+-o							
Savitsky et al., 2021	Israel			x		o							
Sehsah et al., 2021	Egypt			x			+						
Shahid et al., 2020	Pakistan		x	x									
Sharma et al., 2020	Pakistan			x									
Shechter et al., 2020	United States			x									
Shi et al., 2020	China		x			o							
Shuwiekh et al., 2020	Egypt, Kuwait, Saudi Arabia, Jordan, Algeria, Iraq, and Palestine	x				<>	<>						
Sibley et al., 2020	New Zealand		x		x								
Singh et al., 2020	India			x									
Smothers et al., 2020	United States				x								-<>
Spitzenstätter & Schnell, 2020	Central Europe	x	x			+	o						
Su et al., 2020	China and Italy												
Talarowska et al., 2020	Poland			x		o							
Talidong & Toquero, 2020	Philippines		x	x									
Taragin-Zeller et al., 2020	Israel	x									-		-
Teksin et al., 2020	Turkey			x									
Teng-Calleja et al., 2020	Philippines			x	x								
Thomas & Barbato, 2020	United Arab Emirates			x		<>							
Ulhaq et al., 2020	Indonesia		x									<>	
Umucu & Lee, 2020	United States			x		+	-						
Voronin et al., 2020	Russia, Kyrgyzstan, and Peru			x									
X. Wang et al., 2020	United States			x									
D. Wang et al., 2020	United States and Canada			x			+						
Waselewski et al., 2020	United States			x									
Weinberger-Litman et al., 2020	United States		x			o							
Weiner et al., 2020	International			x									
Woon et al., 2020	Malaysia			x		+o	+o						
Yang, 2021	China			x		-							
Yasin, 2020	Pakistan		x				+						
Youssef et al., 2020	Egypt			x									
Zacher & Rudolph, 2021	Germany			x		+o				o			

x = included.
+ = favorably associated.
- = unfavorably associated.
o = not associated.
<> = compared group differences.
$ = more spending.

lief Scale (Hutsebaut, 1996). 24 studies reported on religious affiliation and 16 studies reported on perceived changes in religiousness during the pandemic.

Over half of the articles (n = 73) reported on the use of religious coping as assessed by a mix of self-report, single-item questions, content analysis, and validated religious coping measures. Most of these studies did not use validated measures. Of those that did, 14 used the Brief COPE (Carver, 1997; religion means ranged from 0.57 to 2.7), six used the COPE (Carver et al., 1989; religious support subscales ranged from 1.78 to 3.5), and two used the Brief RCOPE (Pargament et al., 1998; means ranged from 1.67 to 3.56). 16 of these articles reported means for their validated measures. For detailed results and an explanation of these scores, see Supplemental Table 2.

Associations of religion with other study variables

Religiousness and general distress and wellbeing

54 articles reported on associations between religiousness (religiosity, affiliation, or religious coping) and general distress and wellbeing. Distress and wellbeing were assessed with a variety of mental health-related measures. 19 articles found religiousness to be associated with lower levels of distress. For example, a Spanish longitudinal study of an adult community sample found that spiritual wellbeing was protective against increased depression, anxiety, and PTSD. 13 articles found religiousness unrelated to distress. For example, in a Croatian sample of physicians and nurses, religious practice was unrelated to mental health (Salopek-Žiha et al., 2020). Seven articles found religion to be related to *more* distress. In one, a study of a Chinese community sample of adults, praying more frequently elevated the risk of mental health problems such as post-traumatic stress symptoms (PTSS), depression, or insomnia (Guo et al., 2020). For the remaining 15 articles, religiousness had more complex relationships (positively, negatively, and/or unrelated) to different aspects of distress and wellbeing or between different groups. For example, a German study of an adult community sample found those who used prayer or relied on faith as a strategy to cope with stress had significantly higher perceptions of positive changes (e.g., increases in spirituality), but also that such perceived changes did not predict well-being (Büssing, Recchia, Hein, & Dienberg, 2020b). Overall, most studies found that religion was either favorably, not at all, or complexly associated with general distress and wellbeing. For an overview of all outcomes associated with religion in each study, see Table 1.

Religiousness and COVID-19-specific distress

Utilizing newly developed scales and individual items, 25 articles reported on associations between religiousness and COVID-19-specific distress. Whether religiousness (measured in terms of religiosity, affiliation, or religious coping) related favorably, unfavorably, or otherwise rested on validated measures or self-reports of the efficacy of religious coping. 12 articles found religiousness used for dealing with COVID-19 stress was favorably associated with COVID-19-specific distress (less distress). One Iranian study of an adult community sample found that spiritual wellbeing mediated the relationship between hope and resiliency and decreased stress (Nooripour et al., 2021). Five articles found religiousness to be unfavorably related to COVID-19-specific distress (more distress). For example, in an American sample of individuals who were disabled or had chronic conditions, religious coping was associated with higher COVID-19 stress despite being favorably associated with greater overall wellbeing (previous section; Umucu & Lee, 2020). Four articles found religiousness to be unrelated to COVID-19-specific distress. For example, in a Portuguese sample of healthcare professionals, religiosity was unassociated with coronavirus anxiety (Prazeres et al., 2021). Of the remaining four articles, two found religiousness to be associated with more COVID-19 distress specifically when negative religious coping was involved. Overall, aside from negative religious coping, most articles found other forms of religious coping in response to COVID-19 to be associated with less distress.

Beliefs in science and conspiracy theories

15 articles reported on religiousness associated with beliefs in science, conspiracies, and/or misconceptions about COVID-19. 12 of these articles found religiousness to be unfavorably associated with belief in science and thus associated with greater belief in misinformation. For example, a study of Turkish adults found religiosity to be positively correlated with higher belief in COVID-19 conspiracy theories (Alper, Bayrak, & Yilmaz, 2020). Four of these 12 articles found religiousness was related to lower levels of trust in science. For example, in an American adult community sample, higher religious commitment was associated with less overall trust in science (Agley, 2020). The remaining five articles presented more complex relationships. For example, in an adult community sample in Korea, more religious individuals reported having higher trust in doctors and were less likely to blame others for COVID-19, but also had stronger belief in conspiracy theories (Kim & Kim, 2021).

COVID-19-specific adherence, compliance, and mobility

12 articles reported on religion associated with COVID-19-specific public health behaviors (adherence, compliance, and mobility). Six articles found religiousness associated with poorer adherence to recommended public health behavior guidelines. For example, a study of an American adult community sample found religiosity associated with less intention to vaccinate (Olagoke, Olagoke, & Hughes, 2021). A study of an adult community sample in Hong Kong found religious coping to be unrelated to adherence (Chong et al., 2020). In another study utilizing an adult community sample in Poland, religiousness related to greater adherence due to increased fears of infection despite also being associated with greater belief in spiritual protection from COVID-19 (Kowalczyk et al., 2020). For the remaining six articles, the relationship between religiousness and adherence was related to more complicated factors such as preferred news sources, specific group membership, or gender. For instance, one study of a religious community sample in Israel found that choosing religious information sources over scientific sources was associated with lower compliance (Taragin-Zeller, Rozenblum, & Baram-Tsabari, 2020). Another article with a religiously diverse UK sample found that Muslims were in self-isolation longer than were Christians (Jaspal, Lopes, & Lopes, 2020). In a U.S. religious community sample, men were more likely than women to defy government orders to attend services (Smothers, Burge, & Djupe, 2020).

Perceived risk of COVID-19

10 articles reported on religiousness associated with the perceived risk of COVID-19. Five of these articles found higher religiousness to be unfavorably associated with perceived risk of COVID-19. For example, in an Ethiopian adult community sample, 54.7% of participants believed they were “religious enough to control COVID-19” (Kebede et al., 2020, p. 6). Two articles found religiousness to be favorably associated with perceived risk of COVID-19. For example, in a U.S. religious community sample, religiosity related to higher sense of threat (Djupe & Burge, 2020), but was unrelated to perceived susceptibility in a Hong Kong community sample (Chong et al, 2020). Additionally, in an Indonesian adult community sample, certain demographics (e.g., women) within religious groups predicted greater concerns about safe worship (Ulhaq et al., 2020).

Perceived religious changes, growth, or positive changes

Ten articles reported on religion’s association with perceived growth or positive changes taking place during the pandemic. Five of these articles found religiousness was associated with positive changes. For example, in a Spanish adult community sample, spirituality and religiosity both predicted higher perceived growth. Individuals with higher perceived religiosity and spirituality also had higher scores for meaning (Prieto-Ursúa & Jódar, 2020). Two of these articles found no relationship between religion and perceived growth or positive change taking

place during the pandemic. For example, in a Chinese adult community sample, meaning in life scores attributed to religious belief during the pandemic were lower than in a 2017 sample (Chen et al., 2020). The remaining three articles found more complex relationships to perceived change. In adult community samples in Colombia and South Africa, religion was associated with higher levels of perceived growth, but more so for positive religious coping than negative religious coping (Counted et al., 2020). On the more negative end of perceived change, a South Korean adult community sample was less trusting of religious organizations than in the previous year (Kye & Hwang, 2020).

Health behaviors

Four articles reported on religion associated with health behaviors. Three found religiousness to be unrelated to health behaviors. One, a Spanish sample of a disabled community with chronic conditions, found that religious coping, while common, was unrelated to physical activity (Reguera-García et al., 2020). In another, of Polish women, found religion unrelated to frequency of sexual intercourse during the pandemic (Fuchs et al., 2020).

Consumer behavior

Three articles reported on religion associated with consumer behavior. One, of an international adult sample recruited on Amazon Mechanical Turk (MTurk), found religiosity to be associated with higher levels of stability-seeking consumption, especially in the face of fewer religious gatherings (Minton & Cabano, 2021). Another study of a U.S. adult community sample found religiosity associated with purchasing more toilet paper than usual (Kranz, Niepel, Botes, & Greiff, 2020). The other study, mentioned previously, found, in a UK adult community sample, that buying behavior differed among groups. Specifically, Christians bought more hand sanitizer than did non-religious people, while Muslims engaged in more compulsive buying than did Christians and non-religious people (Jaspal, Lopes, & Lopes, 2020).

Discussion

Our systematic review showcases the relevance of religiousness in individuals' responses to COVID-19 across the world as published early in the pandemic. This work also demonstrates great diversity in samples and methods used and research questions posed. In particular, the studies reviewed indicate that people frequently turn to religiousness to manage their distress; that their religiousness, including their religious coping, relates in complex ways to mental health during the pandemic; and that religiousness relates to a range of other COVID-19-related behaviors.

Regarding the relevance of religiousness specifically in coping with the distress wrought by COVID-19, most studies of religious coping–both qualitative and quantitative–showed moderate ("I've been doing this a little bit" or "I've been doing this a medium amount) to high levels ("I've been doing this a lot"), although the reported use varied widely across samples (see Supplemental Table 2 for detailed results from studies that used religious coping measures). These findings previous studies in varied highly stressful contexts showing that individuals often draw on their faith to manage their distress (Aten et al., 2019). Negative religious coping was also reported, but at low levels, also consistent with studies conducted with survivors of hurricanes (e.g., Park et al., 2019; Wadsworth et al., 2009), earthquakes (e.g., Stratta et al., 2013), and serious physical illnesses (Fitchett et al., 2004). The reviewed studies showed that religious coping, along with many other aspects of religiousness, often related to better mental health in the early days of the pandemic. Many studies showed that higher levels of religiousness and religious coping related to doing better, including experiencing less depression and anxiety, similar to previous research (e.g., Henslee et al., 2015). However, a fair number of studies demonstrated no relationship between religiousness and mental health (e.g., Weinberger-Litman et al., 2020; Salopek-Žiha et al., 2020; Ahmad et al., 2020) and a few even found that higher levels of religiousness related to doing worse (e.g., Fuchs et al., 2020). Such mixed findings regarding the effects of religiousness have also been reported in the broader literature on coping with highly stressful events (e.g., Burnett & Helm, 2013; Cherry et al., 2015; Krägeloh, 2011). Other aspects of religiousness were also sometimes associated with better mental health (e.g., faithfulness; Marzo et al., 2020), reflecting the potential strength and hope individuals may draw from their religiousness, as documented in the broader literature (Aten et al., 2019). Negative religious coping consistently related to poorer mental health (e.g., Lee et al., 2020; Counted et al., 2020; Pirutinsky et al., 2020), a robust finding in the broader religious coping literature (Pargament et al., 2011). Most studies found religion to be favorably associated (17), not associated (13), or having mixed associations (12) with general distress and wellbeing, with only a small number (5) reporting unfavorable associations.

Overall, findings regarding relations between religiousness and COVID-specific distress were perhaps slightly less equivocal than those for general mental health. For example, most studies focused on religious coping in the early days of the pandemic showed that greater reliance on faith to cope with the pandemic was associated with fewer PTSD symptoms and other COVID-specific forms of distress (e.g, Abdulghani et al., 2020; Mahamid & Bdier, 2021); however, other studies did not find salutary associations with religiousness or religious coping (e.g., Agha, 2021). Together, findings from these studies reflect the broader literature demonstrating that higher levels of religiousness, including positive religious coping, is inconsistently associated with doing better (e.g., Pargament et al., 2011). Studies also showed that negative religious coping was related to greater COVID-related distress (e.g., Lee, 2020; Lee et al., 2020), consistent with a large body of literature in disaster and other populations facing highly stressful experiences (e.g., Park et al. 2019). Most studies found religion to be favorably associated with less COVID-19 distress (10), with about equal numbers that were unfavorable (5), not related (4), and mixed (3).

Collectively, these studies suggest that, at best, religiousness demonstrates modest favorable associations with mental health and wellbeing in the midst of the pandemic. However, in many cases religiousness showed null or even unfavorable outcomes depending on factors such as geography, type of coping, and reliance on in-person practice particularly during the pandemic. Of course, most of these studies were conducted cross-sectionally, and findings may point to the greater need for coping experienced by those having more distress rather than poorer mental health resulting from coping efforts themselves (Aldwin, 2007; Aten et al., 2019). Indeed, given that none of the work relied on an experimental design, all of the findings reviewed are correlational. Thus, causality is indeterminate. For example, it may be that religious coping led to the distress outcomes reviewed or those levels of distress could have led to increased use of religious coping (Aldwin, 2007), or both levels of religious coping and distress could be due to some untested third variable (e.g., socioeconomic status). Further, because most studies reviewed were cross-sectional in nature, event temporal sequencing cannot be presumed.

In addition to mental health, researchers have examined associations between religiousness and a host of COVID-related variables, including believing in conspiracies around COVID-19, mistrusting science, believing misinformation, and adhering to safety guidelines. While findings were again mixed, religiousness was generally associated with worse outcomes on each indicator, suggesting that people higher in religiousness perceived less risk from COVID-19 and were less likely to adhere to recommendations to avoid it. Such findings are consistent with work in other domains showing that religiousness can have harmful behavioral effects following disasters (see Sun et al., 2018, for a review).

Limitations of the present review must be acknowledged. Our search did not use the related term of spirituality and its variants because we aimed to focus on religiousness per se; spirituality, especially in a global context, has many additional meanings (e.g., peacefulness, meaning in life; Peterman et al., 2002) that go beyond the scope of traditional reli-

giousness (Oman, 2013). We only reviewed articles published in the first year of COVID-19. Given the tight social restrictions and lockdowns of the first year of the pandemic, results might have been influenced by the lack of access to places of worship and resultant religious support that people would have normally received. As more research continues to be published, this topic will warrant additional reviews to see how the course of the pandemic and its long-term consequences unfold. Many of the studies included used unvalidated or homegrown measures and nearly all relied on cross-sectional research designs, a relatively weak methodology for understanding associations among constructs.

Future studies should build on the present body of work and use stronger designs, particularly longitudinal ones that can help disentangle the effects of religiousness, mental health, and wellbeing over time. In addition, studies that use validated measures should be used to assess aspects of religiousness, behaviors, and mental health that allow easier comparison across studies. Using common and validated measures, along with longitudinal assessments will allow easier integration of the literature and may resolve some of the inconsistencies of the current literature. In addition, studies might employ more mechanistic theoretical frameworks to better understand connections between religiousness and outcomes of interest, including not only mental health and wellbeing but also health behaviors and adherence to health and safety guidelines. Well-designed future research examining the myriad roles that religiousness plays throughout the COVID-19 pandemic and its aftermath may substantially advance our understanding of its complex and pervasive effects. Reviewing the first year of such scholarship provides a useful starting point for future work in the years to come.

Note : * denotes articles in the systematic review

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

CRediT authorship contribution statement

Adam B. David: Methodology, Supervision, Formal analysis, Data curation, Project administration, Visualization, Writing – original draft, Writing – review & editing. **Crystal L. Park:** Conceptualization, Methodology, Supervision, Formal analysis, Writing – original draft, Writing – review & editing. **Sayaka Awao:** Investigation, Methodology, Supervision, Data curation, Project administration, Writing – original draft, Writing – review & editing. **Solmary Vega:** Investigation, Writing – review & editing, Validation. **Madison S. Zuckerman:** Investigation, Writing – review & editing, Validation. **Tyler F. White:** Investigation, Writing – review & editing, Validation. **David Hanna:** Investigation, Writing – review & editing, Validation.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.cresp.2022.100075.

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