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# Religiosity as a Predictor of Worry During Stressful Periods of Uncertainty

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Although robust evidence has identified benefits of religiosity for coping with adversity, no study to date has explored religious faith in the context of awaiting uncertain news. Results across 12 studies (total  $N = 4,106$ ) revealed no benefits of religiosity for reducing worry in lab and real-world waiting periods. In fact, religious individuals consistently reported greater worry than less religious participants. Two in-depth examinations of religiosity confirmed the relatively weak but consistent positive association between religiosity and worry across a number of validated measures of facets of religiosity (i.e., extrinsic and intrinsic, intrapersonal and interpersonal commitment, and attitudes toward God as comforting or angry).

*Keywords:* religiosity, worry, uncertainty, waiting

Imagine you have just finished an interview for the job of a lifetime, returned from the hospital after an important medical test, or completed an exam that has the potential to make or break your career. You are unsure of how you performed, what the test result will be, or whether you passed the exam. As you travel home, you might find yourself dwelling on your responses to the interviewer's questions, the lab technician's expression when she looked at your preliminary test results, or the answer to question #3 on the exam, but you have no way of altering your performance or hurrying forward the moment when your outcome is revealed.

For many people, this lack of control and uncertainty regarding the future can be highly anxiety provoking (Sweeny & Andrews, 2014). Unfortunately, the experience of awaiting uncertain news is a ubiquitous and often unpleasant part of everyday life, as people constantly confront and deal with an inability to predict one's future with confidence. Unlike coping with bad news, which often presents opportunities for active efforts to mitigate the consequences of an undesirable outcome, coping with uncertainty requires people to juggle prospects of hope with fears of disaster. This lack of control and insight into one's likely future can be as difficult, if not more so, than confronting an unpleasant outcome (Sweeny & Falkenstein, 2015).

Due to the stressful nature of waiting, researchers have begun to seek a better understanding of how people cope with this uncertainty and lack of control. These efforts have revealed that people vary significantly in their approaches to coping with the wait for uncertain news depending on the features of their personality and life circumstances (Sweeny & Andrews, 2014; Sweeny et al., 2016).

However, these inquiries have neglected a key feature of many people's lives that conveys a sense of guidance, meaning, comfort, and control during stressful life events—namely, religious faith and commitment (e.g., Pargament et al., 1988, 1990, 2000). Many people experience religion as a beacon of hope in times of crisis and a useful tool for guiding contemplation of circumstances beyond one's control, cultivating personal growth (e.g., Pargament et al., 1990). Therefore, the goal of the present investigation was to examine links between religiosity and worry in the context of uncertain waiting periods.

## The Role of Religion in Stressful Moments

Religion is an important facet of people's daily lives and experiences, serving as a source of guidance, support, and hope, and functioning at multiple levels when coping with a stressful experience. In fact, up to 85% of Americans engage in religious prayer on a weekly basis, with more than half praying daily (National Opinion Research Center [NORC], 2014; Pew Forum on Religion and Public Life, 2014). Religion provides a framework within which people can draw significance from personal experiences, garner a sense of control and comfort within an uncertain world, find intimacy with both the divine and like-minded people, and engage in self-transformation (e.g., Pargament et al., 2000). In times of adversity, people may turn to religion for direction, relying on their "God-given resources" to cope (e.g., prayer; Pargament, 2002, p. 171) or seeking collaboration with God to resolve the problem. These efforts might take the form of prayer or meditation, which can provide opportunities for emotional expression and reappraisal through interaction with a higher power (Sharp, 2010). Moreover, religion plays an important role in emotion regulation, serving as an element of the process itself (e.g., confession and prayer) or steering people toward productive coping behaviors (e.g., seeking social support) and away from maladaptive ones (e.g., substance abuse; see McCullough & Willoughby, 2009; Pargament et al., 1990; Vishkin et al., 2014).

Pertinent to the current investigation, no research to date has examined the role of religion in worry during stressful waiting periods, and yet, it has clear relevance to these acute moments of uncertainty due to its role in providing comfort during challenging times for many people (e.g., Vishkin et al., 2014). Thus, people with stronger religious faith and commitment may worry less while they wait, confident that any

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outcome is “God’s will” or that “everything happens for a reason.” In fact, a number of studies have found that intrinsic religiosity (i.e., deeply integrating religion into one’s daily life; Allport & Ross, 1967) uniquely buffers anxiety (see Shreve-Neiger & Edelstein, 2004 for a review). Surprisingly, however, other studies find that religious people are more anxious, particularly when they use religion for social connections or status (i.e., extrinsic religiosity) instead of pursuing religion as a guiding principle for one’s life (see Shreve-Neiger & Edelstein, 2004). Thus, religious people may worry *more* while they wait, particularly if their reasons for being religious are largely extrinsic. We test these competing possibilities in the current investigation.

## Overview and Hypotheses

Despite the abundance of evidence suggesting numerous benefits of religion for coping during times of stress and crisis, the present investigation will be the first to explore the implications of religiosity when grappling with worry during acute moments of uncertainty. Our investigation proceeded in two steps. First, we present synthesized results from 10 studies (Studies 1a–1j) conducted in our lab, each of which included a simple measure of religiosity. These studies provide a highly powered, cross-context synthesis of links between religiosity (broadly defined) and worry, thus providing considerable breadth to the investigation. Second, we conducted two well-powered, well-controlled studies in the lab that included an array of measures assessing facets of religiosity. The aim of these studies was to pair depth with the breadth provided by the initial 10 studies.

Our investigation was largely exploratory, given the novelty of our endeavor, and our primary aim was simply to provide initial evidence for associative (not explanatory) links between religiosity and worry. As noted in the previous section, we tested competing hypotheses, with some evidence pointing to a buffering effect of religion on worry and other evidence pointing to an exacerbating effect.

## Studies 1a–1j

### Participants

The nature and size of our samples varied considerably across studies. Sample sizes for each study are shown in Table 1 (left side).

**Table 1**

*Studies 1a–1j Multiple Regression Analyses Predicting Worry From Religiosity*

	Context	<i>N</i>	Worry
Study 1a	Field study; Bar exam result	132	.02 [–.13, .18]
Study 1b	Field study; Academic job market	140	.02 [–.13, .17]
Study 1c	Field study; Presidential election	748	.12** [.01, .17]
Study 1d	Field study; Midterm election	376	.03 [–.07, .13]
Study 1e	Lab study; IQ score	89	.24* [.03, .45]
Study 1f	Lab study; IQ score	330	.04 [–.07, .15]
Study 1g	Lab study; Social feedback	399	.04 [–.06, .13]
Study 1h	Lab study; Attractiveness feedback	167	–.03 [–.18, .12]
Study 1i	Lab study; Attractiveness feedback	579	.07 [–.01, .15]
Study 1j	Lab study; Attractiveness feedback	412	–.02 [–.11, .07]
Mini meta-analyses			.05 [.02, .09] <i>N</i> = 3,372
Mini meta-analyses without dispositional optimism as a covariate			.02 [–.02, .05] <i>N</i> = 3,372

*Note.* All analyses control for dispositional optimism. 95% confidence intervals are in brackets below each estimate. Meta-analytic effects are weighted standardized betas.

+ *p* < .10. \* *p* < .05. \*\* *p* < .01.

Participants in Study 1a were law school graduates taking the bar exam in California. Participants in Study 1b were PhD students or recent PhD graduates on the academic job market. Participants in Studies 1c–1d were U.S. citizens of voting age and eligibility. Participants in Studies 1e–1j were undergraduate students in a psychology subject pool at a large, highly diverse institution in southern California.

## Procedures

The 10 studies presented here examined experiences across a set of waiting periods varying in domain (professional, academic, political, and social), context (field and lab), and sample (recent law graduates, U.S. voters, and graduate and undergraduate students). We present brief descriptions of the methodology of each study, given that all studies included features not pertinent to the current investigation. Full procedural details and materials for all studies can be found on the Open Science Framework (links available in each study description; see files called “Full materials” in all cases). All studies were reviewed and approved by the Institutional Review Board (IRB) at the first author’s institution.

Our investigation included four field studies and six lab studies (total *N* = 3,293). Study 1a examined the experiences of law graduates awaiting their result on the California bar exam in 2016 (<https://osf.io/mpnqt/>). Participants completed the relevant questionnaires at five points during the 4-month wait for exam results, and all measures except religiosity were completed at each time point and averaged across time points for the purpose of analyses. Study 1b examined the experiences of doctoral students on the academic job market, focusing on a survey completed in October of the relevant academic year (<https://osf.io/ek9bu/>).

Study 1c examined experiences of U.S. voters prior to the 2016 presidential election (<https://osf.io/7j3ca/>). We recruited approximately 50 unique Donald Trump supporters and 50 Hillary Clinton supporters from Amazon’s mTurk service each week for 8 weeks leading up to Election Day (each participant completed only one survey). Study 1d also examined the experiences of U.S. voters, this time just prior to the 2018 midterm elections (<https://osf.io/kt6x7/>). We recruited approximately equal numbers of mTurk participants who wanted the Democrats to take over the U.S. House of

Representatives and who wanted the Republicans to maintain control, and all participants completed a survey within 2 days before the Election Day.

Like all of the remaining studies, Study 1e was conducted in the senior author's lab with undergraduate subject pool participants. Both Study 1e (<https://osf.io/syq58/>) and 1f (<https://osf.io/mhqbw/>) examined the experiences of participants awaiting their score on what they believed to be an intelligence test. Study 1g examined participants' experiences awaiting peer evaluations from other participants with whom they had interacted earlier in the session (<https://osf.io/y2btc/>), and Studies 1h (<https://osf.io/fs4e6/>), 1i (<https://osf.io/x3bdq/>), and 1j (<https://osf.io/asjzn/>) examined participants' experiences awaiting physical attractiveness ratings from other ostensible participants around campus.

## Measures

Descriptive statistics for key measures across all studies are shown in Table 2.

### Religiosity

We assessed religiosity in all studies with a two-item measure that captured a combination of religiosity and spirituality ("How religious are you?" 1 = *not at all religious*, 7 = *very religious*; "How spiritual are you?" 1 = *not at all spiritual*, 7 = *very spiritual*; see Abel-Khalek, 2007, and Gorsuch & McFarland, 1972, for a discussion of single-item measures of religiosity and similar constructs). These items were highly intercorrelated, and thus, we combined them in all studies. A pilot study that included a modified version of the

Religious Commitment Inventory-10 (Worthington et al., 2003) adapted for use with a broad range of participants (e.g., including adolescents; Miller et al., 2013) was strongly correlated with the two-item measure used across these studies,  $r(171) = .83$ ,  $p < .0001$ , providing reassurance of the construct validity of the brief measure.

### Worry

In all studies, worry was operationalized as a combination of anxiety and repetitive, persistent thoughts about the anticipated outcome (see Sweeny & Dooley, 2017) and assessed with three items, two assessing participants' anxiety ("I feel anxious every time I think about [outcome]," "I am worried about [outcome]") and a single item measuring perseverative thinking ("I can't seem to stop thinking about [outcome]").

### Dispositional Optimism

In all analyses, we included dispositional optimism as a covariate given its relevance to the current investigation (see below; we also address results without optimism as a covariate). We assessed dispositional optimism in all studies using the 10-item Life Orientation Task-Revised (LOT-R; Scheier et al., 1994; 1 = *strongly disagree*, 7 = *strongly agree*).

## Meta-Analytic Summary of Results

All analyses for these studies were multiple regressions predicting worry from religiosity, controlling for dispositional optimism given robust links between religiosity and optimism (e.g., Dull & Skokan, 1995; Koenig, 2009) and between optimism and worry (e.g., Sweeny & Andrews, 2014). Table 2 shows the full set of associations across studies.

Our studies revealed considerable variability in the relationships between religiosity and worry across studies. This mixed evidence makes it difficult to draw clear conclusions about the role of religiosity in these acute and stressful moments of uncertainty. However, the finding reported in each study relies on statistical significance as the standard for noteworthy associations, which is influenced heavily by sample size (Cohen, 1992). To provide a more reliable synthesis of these associations, we conducted mini meta-analyses across studies, consistent with current recommendations (Goh et al., 2016). The result of this analysis appears in Table 2 (second-to-bottom row). We calculated standardized betas (treated like *rs* for meta-analytic calculations; see Bowman, 2012) for each association and 95% confidence intervals around each average effect, with a total sample of over 3,300 participants.

This analysis revealed that religiosity had a weak but reliable positive association with worry. The relationship was strongest in the smallest lab study (Study 1e) and a large field study prior to the 2016 U.S. presidential election (Study 1c). The association reversed (albeit near zero) in just two studies in which participants awaited feedback on their physical attractiveness (Studies 1h and 1j). We would note that the association between religiosity and worry was weaker (and the confidence interval contained zero) if we did not control for dispositional optimism. We speculate about the possible cause of this apparent suppression effect in the General Discussion.

**Table 2**  
*Descriptive Statistics for Key Variables*

	Religiosity (two items)	Worry (three items)	Dispositional optimism (six items)
	<i>M</i> ( <i>SD</i> ) <i>r</i>	<i>M</i> ( <i>SD</i> ) $\alpha$	<i>M</i> ( <i>SD</i> ) $\alpha$
Study 1a	3.44 (1.84) .65	3.97 (1.43) .94	4.68 (1.11) .83
Study 1b	3.06 (1.70) .67	4.66 (1.27) .72	4.65 (1.11) .82
Study 1c	2.98 (1.91) .70	4.21 (1.56) .86	3.41 (.99) .88
Study 1d	3.55 (2.02) .77	3.86 (1.50) .87	3.45 (.95) .89
Study 1e	3.89 (1.70) .69	2.81 (1.71) .90	3.59 (1.06) .80
Study 1f	3.77 (1.69) .66	3.02 (1.39) .85	4.52 (.99) .79
Study 1g	3.98 (1.70) .67	3.23 (1.54) .89	4.35 (1.04) .79
Study 1h	3.14 (1.48) .72	3.21 (1.73) .93	3.75 (1.01) .77
Study 1i	3.18 (1.57) .73	3.57 (1.66) .89	3.53 (.93) .77
Study 1j	3.21 (1.63) .72	3.72 (1.57) .86	3.53 (.93) .76
Study 2	3.44 (1.56) .62	3.17 (1.43) .87	4.39 (.96) .76
Study 3	3.19 (1.66) .70	3.41 (1.84) .86	3.58 (.99) .77

## Study 2

The set of studies just described provide a generalizable and highly powered picture of the role of religiosity in worry during an array of stressful waiting periods. Perhaps surprisingly, more religious participants worried somewhat more on average. These initial 10 studies provide strong evidence for associations between religiosity, broadly defined, and worry. However, this evidence is shallow due to the simplistic measure of religiosity available in those data sets. Might the positive association between religiosity and worry be driven by participants high in extrinsic religiosity, as posited earlier in the article, or another facet of religious belief or practice? The goal of Study 2 was to provide a narrower but deeper investigation of this link.

## Method

### Participants

Undergraduate students ( $N = 348$ ; 100% female;  $M_{age} = 19.48$ ; 42% Latinx, 32% Asian, 9% White, 4% Black, <1% Native Hawaiian or other Pacific Islander, 14% multiple or other) participated for partial course credit. We recruited only female participants because the topic of the study was breast cancer risk. Although men can also develop breast cancer, their risk is far lower than it is for women, and thus, we opted to include only women in the study given their presumably greater worry about breast cancer risk. Participants indicated the following religious affiliations: 31% Catholic, 22% nondenominational Christian, 7% Buddhist, 5% Hindu, 3% Muslim, 1% Protestant, <1% Jewish, 2% other, 20% none, and 8% agnostic or atheist. The study was reviewed and approved by the IRB at the first author's institution.

### Procedure

Following consent procedures, participants were led to believe they would be completing a breast cancer risk assessment during the study session and would receive their breast cancer risk feedback at either the end of the session or once the study was completed in several months.<sup>1</sup> Participants then completed three questionnaires. First, participants completed a set of individual difference measures assessing demographic characteristics, facets of religiosity, and baseline emotions. Second, participants completed a breast cancer risk assessment tool used in clinical practice to estimate women's risk of developing breast cancer within the next 5 years (the GAIL breast cancer risk assessment tool; National Cancer Institute, 2018). Third, participants completed a follow-up assessment of their worry and emotions. Upon completion of the final survey, participants were fully debriefed. Full study materials are available on the Open Science Framework (<https://osf.io/asjzn/>).

### Measures

**Dispositional Optimism.** As in Study 1, participants completed the LOT-R to assess dispositional optimism.

**General Religiosity.** Participants completed the same two-item measure used in Study 1 (1 = *not at all*, 7 = *extremely*).

**Religious Orientation Scale.** Participants completed the 20-item "Age Universal" Religious Orientation Scale (Gorsuch & Venable, 1983), which includes an 11-item extrinsic religiosity subscale (e.g., "I go to church because it helps me to make friends,"

"I pray mainly to gain relief and protection"; 1 = *strongly disagree*, 5 = *strongly agree*;  $M = 2.42$ ,  $SD = .84$ ,  $\alpha = .87$ ) and a nine-item intrinsic religiosity subscale (e.g., "I enjoy reading about my religion," "My whole approach to life is based on my religion"; 1 = *strongly disagree*, 5 = *strongly agree*;  $M = 2.53$ ,  $SD = 1.17$ ,  $\alpha = .93$ ).

**Religious Commitment Inventory.** Participants completed a version of the 10-item Religious Commitment Inventory (RCI-10; Worthington, et al., 2003). The measure includes a six-item intrapersonal religiosity subscale (e.g., "I try to increase my understanding of my faith," "Religious beliefs influence all my dealings in life"; 1 = *not at all true of me*, 5 = *totally true of me*;  $M = 1.96$ ,  $SD = 1.06$ ,  $\alpha = .93$ ) and a four-item interpersonal religiosity subscale (e.g., "I enjoy spending time with others of my religious affiliation," "I am involved in my religious group"; 1 = *not at all true of me*, 5 = *totally true of me*;  $M = 1.84$ ,  $SD = 1.02$ ,  $\alpha = .88$ ).

**Attitudes Toward God.** Participants completed the nine-item Attitudes Toward God Scale (ATGS-9; Wood et al., 2010), which includes a five-item comfort subscale (e.g., "To what extent do you currently trust God(s) to protect and care for you?" "To what extent do you currently feel loved by God(s)?" 0 = *not at all*, 10 = *extremely*;  $M = 5.61$ ,  $SD = 3.80$ ,  $\alpha = .98$ ) and a four-item anger subscale (e.g., "To what extent do you currently view God(s) as unkind?" "To what extent do you currently feel abandoned by God(s)?" 0 = *not at all*, 10 = *extremely*;  $M = 1.17$ ,  $SD = 1.86$ ,  $\alpha = .87$ ).

**Worry.** Participants' worry during the wait for attractiveness feedback was assessed using three items, two assessing their anxiety ("I feel anxious every time I think about my breast cancer risk assessment," "I am worried about my breast cancer risk assessment"), and a single item measuring perseverative thinking about their risk assessment ("I can't seem to stop thinking about my breast cancer risk assessment"; 1 = *strongly disagree*, 7 = *strongly agree*).

## Results

With the exception of the anger subscale of the ATGS-9, all of the religiosity measures were strongly and positively intercorrelated (see the Open Science Framework for correlation matrix). The degree of multicollinearity was such that analyses linking particular measures of religiosity to worry while controlling for other measures of religiosity were infeasible.

Table 3 shows the results of multiple regression analyses predicting worry and waiting experiences from individual measures of religiosity, with and without controlling for dispositional optimism. The findings were generally consistent with Study 1. Worry

<sup>1</sup> The study included a manipulation of feedback expectations, such that participants were randomly assigned to believe either that they would be receiving feedback immediately at the end of the session or no direct feedback. This manipulation was not pertinent to the goals of this article given that all participants faced acute uncertainty, and the results remain substantively the same (albeit weaker, given half the sample size) when only considering those who anticipated imminent feedback. Participants were also assigned to one of three conditions that prompted them to reflect on the value (or lack thereof) of worry, a manipulation irrelevant to the current investigation. Full manipulation prompts are available on the Open Science Framework (<https://osf.io/asjzn/>). Neither of these manipulations interacted with any measure of religiosity to predict worry.

**Table 3**  
*Study 2 Multiple Regression Analyses Predicting Worry From Religiosity Measures*

Religiosity measure	Worry (controlling for optimism)	Worry (not controlling for optimism)
General religiosity	.12* [.01, .23]	.10 <sup>+</sup> [−.006, .21]
Extrinsic religiosity	.11* [.001, .22]	.09 <sup>+</sup> [−.02, .20]
Intrinsic religiosity	.06 [−.05, .18]	.04 [−.07, .15]
Intrapersonal religious commitment	.10 <sup>+</sup> [−.01, .21]	.08 [−.03, .19]
Interpersonal religious commitment	.06 [−.05, .17]	.05 [−.06, .16]
God(s) as comforting	.12* [.005, .23]	.09 [−.02, .20]
God(s) as angry	.004 [−.11, .11]	.01 [−.09, .12]

Note. 95% confidence intervals are in brackets below each estimate.

\*\* $p < .01$ . \* $p < .05$ . + $p < .10$ .

was positively associated with all measures of religiosity, albeit not statistically significantly in all cases. Removing dispositional optimism from the models, the associations generally weakened, with the exception of the relationship between worry and attitudes toward God as angry (which strengthened slightly).

### Study 3

The findings from Study 2 replicated and extended those from our mini meta-analysis in Study 1. We conducted an additional study with a different uncertainty paradigm in an effort to conceptually replicate the findings from Study 2 across the same array of religiosity measures.

### Method

#### Participants

Undergraduate students ( $N = 386$ ; 71% female;  $M_{\text{age}} = 19.81$ ; 43% Asian, 30% Latinx, 13% White, 3% Black, <1% Native Hawaiian or other Pacific Islander, 10% multiple or other) participated for partial course credit. Participants indicated the following religious affiliations: 21% Catholic, 19% nondenominational Christian, 8% Buddhist, 6% Muslim, 3% Hindu, 2% Protestant, 3% other, 30% none, and 9% agnostic or atheist. The study was reviewed and approved by the IRB at the first author's institution.

#### Procedure

The procedure for Study 2 was very similar to the procedure used in Studies 1h–1j. Participants came to the lab for a study ostensibly examining judgments of physical attractiveness. Following an initial questionnaire, the researcher took a digital photo of the participant, which the participant believed would be uploaded to a website where five other “participants” in various locations across campus could view and evaluate it. Participants then completed ratings of five photos, supposedly of their fellow participants. The ratings assessed various characteristics of the person in the photo, including physical attractiveness, interestingness, and intelligence. Participants then completed a final questionnaire while they awaited the ratings of their photo from these fellow participants.<sup>2</sup> In actuality, no other participants were part of the study, and no one rated the participants' photos (the photo was deleted off the camera as soon as the participant began the final questionnaire). Participants were fully debriefed. Full study materials are available on the Open Science Framework (<https://osf.io/fumvx/>).

### Measures

As in Study 2, participants completed the same measures of dispositional optimism, general religiosity, extrinsic religiosity ( $M = 2.42$ ,  $SD = .85$ ,  $\alpha = .85$ ), intrinsic religiosity ( $M = 2.47$ ,  $SD = 1.16$ ,  $\alpha = .94$ ), intrapersonal religiosity ( $M = 1.90$ ,  $SD = 1.04$ ,  $\alpha = .93$ ), interpersonal religiosity ( $M = 1.83$ ,  $SD = 1.07$ ,  $\alpha = .91$ ), and attitudes toward God as comforting ( $M = 5.16$ ,  $SD = 3.91$ ,  $\alpha = .98$ ) and angry ( $M = 1.10$ ,  $SD = 1.83$ ,  $\alpha = .86$ ).

Participants' worry during the wait for attractiveness feedback was assessed using three items, two assessing their anxiety (“I feel anxious every time I think about my attractiveness ratings,” “I am worried about my attractiveness ratings”), and a single item measuring perseverative thinking about their ratings (“I can't seem to stop thinking about my attractiveness ratings”; 1 = *strongly disagree*, 7 = *strongly agree*).

### Results

As in Study 2, with the exception of the anger subscale of the ATGS-9, all of the religiosity measures were strongly and positively intercorrelated (see the Open Science Framework for correlation matrix).

Table 4 shows the results of multiple regression analyses predicting worry from individual measures of religiosity, with and without controlling for dispositional optimism. The findings were generally consistent with Studies 1 and 2. Worry was positively associated with most measures of religiosity (with nearly identical effect sizes across measures), albeit not statistically significantly in all cases. Removing dispositional optimism from the models, the associations generally weakened, with the exception of the relationship between worry and attitudes toward God as angry (which strengthened considerably).

### Cross-Study Synthesis

As a final analytical step, we reran the mini meta-analysis from Study 1 and included the general religiosity measure from Studies 2 and 3 ( $k = 12$ , total  $N = 4,106$ ). Adding these studies slightly strengthened the effect sizes and narrowed the confidence intervals:

<sup>2</sup> As in Study 2, participants were again randomly assigned to this manipulation of feedback immediacy that was irrelevant to the current investigation. This manipulation did not interact with any measure of religiosity to predict worry.

**Table 4***Study 3 Multiple Regression Analyses Predicting Worry From Religiosity Measures*

Religiosity measure	Worry (controlling for optimism)	Worry (not controlling for optimism)
General religiosity	.07 (.02) [−.03, .16]	.02 [−.08, .12]
Extrinsic religiosity	.10* (.08) [.001, .19]	.08 [−.02, .18]
Intrinsic religiosity	.10+ (.06) [−.001, .19]	.06 [−.04, .16]
Intrapersonal religious commitment	.09+ (.06) [−.01, .19]	.06 [−.05, .16]
Interpersonal religious commitment	.10* (.06) [.01, .20]	.06 [−.04, .16]
God(s) as comforting	.09+ (.02) [−.01, .19]	.02 [−.09, .12]
God(s) as angry	.10* (.15) [.001, .20]	.15** [.05, .25]

Note. confidence intervals are in brackets below each estimate.

\*\*  $p < .01$ . \*  $p < .05$ . +  $p < .10$ . 95%

controlling for optimism,  $\beta = .06$  [95% CI: .03, .09]; not controlling for optimism,  $\beta = .03$  [95% CI: −.006, .06]

### General Discussion

In 12 studies across lab-based and real-world waiting periods, we tested competing hypotheses regarding the relationship between religiosity and worry. Surprisingly, synthesizing results across 10 distinct samples (Study 1a–1j) revealed that religious participants did not worry less than their less religious counterparts, after controlling for individual differences in dispositional optimism—instead, people who were more religious consistently reported slightly (but reliably) greater worry when coping with uncertainty. Extending these results, Studies 2 and 3 included an array of well-validated measures of religiosity and found the same result: Across measures, religiosity was positively associated with worry. Although the effect sizes are small in nearly all cases, the robustness of the evidence presented here provides reassurance that the effect is nonetheless reliable and generalizable, both across contexts and across facets of religiosity.

Taken together, our studies revealed no benefit of religiosity for worry during waiting periods, despite considerable evidence linking religious commitment to comfort and emotion regulation in challenging times (e.g., Israel-Cohen et al., 2016; ter Kuile & Ehring, 2014; Vishkin et al., 2014). However, these findings are consistent with some research showing a link between religiosity and heightened anxiety, particularly among people who are high in extrinsic religiosity (i.e., using religion to gain status, social connections, etc.; Shreve-Neiger & Edelman, 2004). Consistent with these prior findings, extrinsic religiosity significantly predicted worry in Studies 2 and 3 (along with other religiosity measures), pointing to the possibility that religious participants in the first set of studies (Study 1) may have been particularly high in extrinsic religiosity.

Importantly, we do not make claims about causal relationships between religiosity and worry. It may be that being religious prompts people to worry during periods of uncertainty, but it is equally likely that worriers are particularly drawn to religion, or that some third variable ties these two characteristics together. However, our evidence compellingly argues against any significant benefit of religiosity for reducing worry during stressful waiting periods.

Of course, it remains unclear why religiosity seems to fail at comforting people in the context of stressful waiting periods. Waiting periods are somewhat unique in their toxic combination of acute uncertainty and lack of control, as noted at the outset of the article. Perhaps, religious people experience these moments as persistently aversive because they challenge the sense of security

and optimism that people otherwise draw from their religious faith, or perhaps, religious practices like prayer and attendance at services serve to keep the domain of uncertainty at the front of people's mind. Further research is clearly needed to determine the process by which religious commitment might exacerbate worry during stressful waiting periods, but our findings point to the intriguing possibility that some forms of religiosity may be a liability in such moments.

We would also note that although the pattern of findings was quite consistent across studies and measures, the effect sizes varied across the different waiting contexts in our studies. For example, in Study 3 (social/evaluative uncertainty), participants who viewed God as more angry in nature reported considerably more worry, whereas these variables were not associated in Study 2 (health uncertainty). It may be that religious beliefs and practices are more helpful, or less harmful, in some domains of uncertainty than others. Future research can systematically test moderators of the link between religiosity and worry.

The present investigation had several notable strengths. The analyses were well powered across our studies, providing confidence in the robustness of our conclusions, and the use of diverse sampling methods and both field- and lab-based studies provides confidence in the generalizability of our findings. However, our investigation had several notable limitations. First, some of the measures in Studies 2 and 3 were developed for application in monotheistic religions, which does not represent the full range of religious and spiritual beliefs. Targeted investigations that address specific religious beliefs and practices could provide a more nuanced picture of coping within particular religious traditions and communities.

Second, the key associations weakened somewhat when we removed dispositional optimism as a covariate. We would argue that controlling for this important individual difference is the optimal approach to appropriately estimating the relationship between religiosity (consistently positively associated with optimism) and worry (consistently negative associated with optimism)—but why were the associations *stronger* when controlling for this variable? One possibility is that being an optimist and being a worrier are two distinct routes by which a person might find themselves moving toward religious commitment. That is, some people may be drawn to religion because it is compatible with their generally upbeat and positive views of the world (i.e., dispositional optimists), whereas other people may be drawn to religion as a source of comfort to counteract their high levels of worry. In this speculative case, the association between religiosity and worry gets stronger after controlling for dispositional optimism because those who got to religiosity through optimism have been identified and “removed” from the association, and thus, they do not count as error.

Of course, suppression effects are notoriously unreliable, so further research is needed to understand the interplay between religiosity, dispositional optimism, and worry.

Taken together, our findings point to reliable distinctions between the experiences of those who are more or less religious as they await personally significant news. These insights reveal opportunities for targeted interventions to bolster well-being among religious people during periods of uncertainty. They also highlight the tenacity of worry during acute moments of uncertainty, which seems to be immovable (and perhaps even worsened) by even the strongest faith. Although our inquiry produced nearly as many questions as answers, it serves as an important first step in understanding the complex dynamics of religiosity during the uniquely stressful experience of awaiting news about one's professional, academic, political, or social fate.

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