



Article

Gratitude to God: Brief Prompts Do Not Increase It, Wording of Questions Matters, and Belief in a Loving, Powerful, Gift-Giving God Remains Central

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Abstract: When good things happen, what thoughts elicit gratitude to God (GTG)? Building on work highlighting divine attributions and appraisals, we examined whether consciously priming people to think about God would increase subsequent reports of GTG. U.S. adult participants ($N = 553$) completed an online survey asking them to describe a positive event from the past month. They were then randomly assigned to one of six conditions, five of which brought up beliefs about God or the idea that God might work indirectly through natural events. Contrary to preregistered predictions, there were no statistically significant differences between conditions on an open-ended or a Likert measure of GTG. Yet GTG reports differed dramatically between the open-ended question (only 20% of participants reported GTG) and a Likert item (81% of participants, and 93% of those who believed in God, endorsed some GTG). The most endorsed response on the 5-point Likert scale was 5, indicating that most people reported feeling extremely grateful to God. These results suggest that the methods used to assess GTG could have a major impact on conclusions about GTG prevalence. Yet, regardless of assessment method, and directly replicating earlier finding, several factors emerged as consistent GTG predictors: religiousness, belief in a loving, powerful, and generous God with positive intentions, attributing the positive event to God, feeling loved in response, and framing the event as a gift from God.

Keywords: God; gratitude; supernatural attribution; religion; spirituality; gift; divine attributions; religious attributions; religious appraisals; measurement; religious belief



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1. Introduction

Many people who believe in God feel grateful to God in response to positive events in their lives (e.g., Knabb et al. 2021; Tsang et al. 2021; Wilt and Exline 2022). Studies have shown that gratitude to God (GTG) is associated with positive personality traits such as honesty/humility, agreeableness, and conscientiousness (Aghababaei et al. 2018), and the kindred concept of transcendent indebtedness to God has also been linked with reports of greater empathy, awe, humility, and prosocial behavior (Nelson et al. 2022). GTG also relates to many indicators of good mental health, such as lower levels of anxiety and depression (Aghababaei and Tabik 2013; Krause et al. 2014) and greater well-being (e.g., Aghababaei et al. 2018; Knabb et al. 2021; Nelson et al. 2022; Rosmarin et al. 2011; Sadoughi and Hesampour 2020; Watkins et al. 2019) and hope (Krause et al. 2015). Some studies also suggest positive connections between GTG and physical health (Aghababaei and Tabik 2013; Krause et al. 2014, 2015, 2017).

GTG has shown consistent positive connections with religiousness (e.g., Aghababaei et al. 2018; Wilt and Exline 2022; Kaplan 2012; Krause and Hayward 2015; Nelson et al. 2022; Rosmarin et al. 2011; Watkins et al. 2019) and shows many correlates with indicators of healthy religion or spirituality. For example, GTG may reflect a healthy sense of indebtedness to God (Nelson et al. 2022), one linked with perceptions of a secure attachment to God (Nelson et al. 2022; Watkins et al. 2019), spiritual transcendence (Watkins et al. 2019),

and tendencies to draw close to God in times of distress (Wilt and Exline 2022). GTG has also been linked with increases in religious well-being over time (Watkins et al. 2022).

1.1. Setting the Stage for Gratitude to God (GTG): Some Potential Cognitive Predictors

Given the many positive correlates and potential benefits of GTG, it is valuable to consider factors that might help to set the stage for GTG. Once people focus their attention on some benefit they have received, they may consider what caused this benefit, beginning an attributional search to identify possible causes. Some people will think of God as a possible source of the benefit, either spontaneously or through some type of external prompt—pathways that we will consider in this study. If the idea of God causing the benefit seems plausible to them, fitting well with their supernatural operating rules (cf. Exline et al. 2021) about God's qualities and typical actions, they may attribute the event, at least partly, to God. Based on this attribution, they may experience GTG, a feeling that may be enhanced if they see the positive event as a gift that has been freely given by God and are willing and able to receive this gift (Exline and Wilt 2022).

1.2. Beliefs, Attributions and Appraisals Linked with GTG: Results from a Prior Study

In another article (Exline and Wilt 2022), we presented results from a preregistered, cross-sectional study of GTG among U.S. adults, using correlations and path models. We asked people to recall a positive event from the past month and to answer a series of questions about the event, as well as background questions focused on religion and God-related beliefs. Results confirmed that people did report more GTG to the extent that they saw God as a powerful and loving gift-giver, one who could plausibly cause positive events in people's lives. As expected, people reported more GTG if they clearly saw God as a cause of the event and saw the event as a gift from God. Those who saw the event as a gift also reported more GTG if they reported both the desire and the ability to receive this gift.

Most of our key analyses from the earlier paper (Exline and Wilt 2022) focused on a direct, God-focused Likert item to assess GTG. Thus we were directly prompting participants to consider God as a possible benefactor for a positive event. However, we also had some analyses focused on an open-ended question: Which participants "brought God to mind", spontaneously listing God as a target of gratitude, before we mentioned God in any of our questions or prompts?

In the previous study (Exline and Wilt 2022), the survey page before the Likert GTG item included an open-ended question: "To whom, or to what, do you feel grateful when you think about this positive event?" About 16% of participants, and 18% of those who believed in God, listed God on this open-ended item. We also included another secondary set of correlational analyses focused on this variable. Correlations with this open-ended GTG variable paralleled those for the Likert GTG measure (though they were smaller in magnitude, which made sense given that this was a dichotomous variable). Relative to others, people who spontaneously listed God as a target of gratitude were more religious, believed more strongly in a God who they saw as a loving and powerful gift-giver, saw themselves as more frequent recipients of divine gifts, gave God more credit for causing the positive event they had described, and were more likely to frame the event as a gift from God.

1.3. The Present Study: Aims, Design and Key Hypotheses

The follow-up project described here served two main purposes: First, we wanted to do a direct replication of the key correlational findings from the earlier study. Specifically, we wanted to examine whether key findings from the original study—links between GTG and variables related to religiousness, God beliefs, divine attributions, and gift appraisals—would replicate in a new (but similar) sample. Given the novelty of this area of research, along with the large number of variables in the earlier study, we reasoned that this type of direct replication, in and of itself, would be valuable.

Second, we wanted to see whether certain experimental prompts—conscious primes designed to “bring God to mind”—would lead to greater reports of GTG. We reasoned that since belief in God’s existence, attributions to God, and beliefs about God’s supernatural operating rules were all connected to GTG, it might be possible to increase GTG reports by presenting questions that would serve as reminders of these themes.

What would be the value in such an experiment? We reasoned that if simply prompting people to answer brief, God-related and attribution-related questions would be enough to increase subsequent reports of GTG, such a finding could have important implications. In practical terms, knowing that certain prompts or questions could increase GTG might be helpful when designing interventions to facilitate GTG. For example, if we found that a particular type of prompt (e.g., thinking about God’s ability to work indirectly through natural events) led to more GTG, this knowledge might lead clinicians to include this prompt or topic as part of a GTG intervention.

However, learning that these primes could affect subsequent GTG reports might raise methodological concerns as well: When researchers “bring God to mind” through survey questions, might they inadvertently introduce bias by making people think about God when they would not have done so otherwise? If we were to learn that simply mentioning God in a prior question would increase subsequent reports of GTG, it might suggest the importance of not presenting other God-related questions before asking about GTG, to avoid inflating reports of GTG.

Our experimental manipulation involved randomly assigning people to one of six conditions. They are listed below, in what we expected to be increasing order of influence on GTG.

- (1) **Control:** List thoughts and feelings about the event.
- (2) **Open-ended causes:** List possible causes of the event.
- (3) **Belief in God:** Rate belief in God.
- (4) **Grid of possible causes:** Rate belief in various causes of the event, including God.
- (5) **God’s indirect influence:** Rate agreement with idea that God can affect people’s lives in indirect ways.
- (6) **Base rates:** After reading that many people believe that God can affect people’s lives in indirect ways, rate agreement with this idea.

In short, we reasoned that questions that focused more directly on God, and on God’s ability to work indirectly through natural events, would be more effective in priming people to see God as a cause of the positive event, prompting more GTG.

We registered these hypotheses on the Open Science Framework (Exline and Wilt 2021), before data collection, along with other preregistered hypotheses from the original study (Exline and Wilt 2022), which we tested here as part of a direct replication. Links follow:

Main project: <https://osf.io/n9k3c/> (accessed on 13 November 2021)

Priming hypotheses: <https://osf.io/vrsx2> (accessed on 12 December 2021)

Replication hypotheses: <https://osf.io/qnueh> (accessed on 23 November 2021)

Due to length and space constraints, we do not report every variable from the other article in this article. Instead, to keep the scope manageable, we are including only the key predictor variables—the ones used in the path models of the earlier paper—in this report.

2. Method

2.1. Participants and Procedure

The study was approved by the Case Western Reserve University IRB (#(2021-1253: Gratitude to God: Multi-Situation Study for CloudResearch)). Many hypotheses and the survey were preregistered on the Open Science Framework (Exline and Wilt 2021) using the links listed in the prior section. We administered a 20-min Qualtrics survey through CloudResearch (Chandler et al. 2019), a company that contracts with other companies to recruit survey participants. Data were gathered between 15 December and 26 December 2021. A total of 917 people clicked on the survey. Of these, 84 did not consent, 49 failed

two attention checks early in the survey, and 124 said that they could not recall a positive event from the past month. All of these participants were exited from the survey. Of the 660 survey completers, we dropped data from 54 for typing nonsensical text into text fields, 43 for not identifying a specific positive event, and 10 for rushed responding, leaving 553 for the final sample.

2.2. Sample Demographics

The mean age was 43.5 years ($SD = 16.2$), with ages ranging from 18 to 95. Religious affiliations were predominantly Christian (64% total: unspecified Christian (26%), conservative or evangelical Protestant (16%), Catholic (16%), mainline or liberal Protestant (3%), unspecified Protestant (3%), Orthodox Christian (0.7%)) or nonreligious (26% total: no religion (15%), spiritual but not religious (3%), atheist (4%), agnostic (5%)), with the remainder identifying as Jewish (1.5%), Muslim (3%), Hindu (0.5%), Buddhist (0.5%), unsure (0.7%), and other (3%). Gender identities included cisgender male (35%), cisgender female (63%), with three participants identifying as transgender women and three endorsing other gender identities. Racial/ethnic identities included African American/Black (14%), American Indian/Native American/Alaska Native (3%), Asian/Pacific Islander (3%), Latino/Hispanic (8%), White/Caucasian/European American (77%), Middle Eastern (1%) and other (0.5%) (percentages exceed 100% because participants selected multiple categories where appropriate.) Marital statuses included married (35%), single (34%), divorced (11%), living with partner (12%), widowed (5%), and separated (2%). Sexual orientations included heterosexual (85%), bisexual (7%), homosexual (gay or lesbian) (6%), asexual (1.5%), and other (1.5%). Highest education levels completed included grammar/elementary school (1%), high school or equivalent (26%), some college (24%), vocational/technical school/community college (15%), four-year college (18%), master's degree (12%), doctoral degree (3%), and other (1%). Employment statuses included employed for wages (45%), self-employed (9%), unemployed (9%), homemaker (8%), retired (16%), student (5%), unable to work (8%), military (0.4%), and other (0.4%).

2.3. Measures

Unless otherwise indicated, measures were scored by averaging across items and were identical to those used in the earlier study (Exline and Wilt 2022), although some measures from the earlier study were not included in this article for the sake of brevity.

2.3.1. Positive Event Description

Participants read, "Please take a few moments to recall something positive that happened to you in the past month. Try to recall one of the most positive things that you experienced". They then wrote a brief description.

2.3.2. Measures for the Six Experimental Conditions

Participants were randomly assigned to complete one of the following six questions:

- **Control:** Participants read, "When you think back on this experience now, what thoughts or feelings come to mind?" This was followed by a text box.
- **Open-ended causes:** Participants read, "Who or what were the main causes of this event, in your opinion? (Please try to list as many possible causes as you can.)" This was followed by a text box.
- **Belief in God:** Participants read, "Below, which statement comes closest to expressing what you believe about God?" and chose one of five responses ranging from 1 (*I don't believe in God*) to 5 (*I know that God really exists, and I have no doubts about it.*)
- **Grid of possible causes:** Participants read, "When you think about this event, who or what do you think CAUSED or INFLUENCED the event?" followed by eight causes in random order, rated from 1 (*not at all*) to 5 (*extremely*). The item of interest here read, "God (or a god/godess or Higher Power)." The other items were: another person (or multiple people), an impersonal force (e.g., karma, fate, destiny, luck, or the universe),

a person who has died (e.g., a loved one who died, a saint, an ancestor), you, natural factors or circumstances, random factors, and other).

- **God's indirect influence:** Participants read, "Do you believe that God can influence people's lives in indirect ways—by affecting natural events or by working through other people, for example?" and rated responses from 1 (*no, not at all*) to 5 (*yes, strongly*).
- **Base rates:** Participants read, "According to research studies, many people believe that God can influence people's lives in indirect ways—by affecting natural events or by working through other people, for example. Do you believe this idea yourself? Please choose a response below." Responses were rated from 1 (*no, not at all*) to 5 (*yes, strongly*).

2.3.3. Gratitude Variables

The open-ended gratitude item read as follows: "To whom, or to what, do you feel grateful when you think about this positive event? Please feel free to list multiple answers. (If you don't feel grateful to anyone or anything, please type "None" in the box below.)" Participants wrote responses into a text box. We coded these responses as 1 if participants listed God and 0 if they did not list God. Next was the Likert measure of GTG: Participants read, "When you think about this event, do you feel grateful to _____?" followed by a list of randomized items rated from 1 (*not at all*) to 5 (*extremely*). One item read "God (or a god/goddess or Higher Power)." (The other items were: another person (or multiple people), an impersonal force (e.g., karma, fate, destiny, luck, or the universe), a person who has died (e.g., a loved one who has died, a saint, an ancestor), yourself, and other. There was also an attention check item embedded in the list.). The earlier article (Exline and Wilt 2022) provided preliminary evidence of validity for these measures. Furthermore, self-report measures of GTG have shown evidence of discriminant validity from general gratitude and religiousness (Park et al. 2022).

2.3.4. Basic Beliefs and Experiences Involving God

Participants read, "To what extent do you believe in the existence of God (or gods or goddesses or a Higher Power)?" and rated responses from 1 (*not at all*) to 5 (*totally*). Participants with some belief in God (as endorsed on a yes/no item) read, "To what extent do you see God as being loving?" and rated responses from 1 (*not at all*) to 5 (*extremely*).

2.3.5. Religiousness

Participants completed a religious belief salience measure adapted from Blaine and Crocker (1995), using four items rated from 1 (*strongly disagree/does not apply*) to 7 (*strongly agree*): "I allow my religious/spiritual beliefs to influence other areas of my life", "My religious/spiritual beliefs provide meaning and purpose to life", "My religious/spiritual beliefs lie behind my whole approach to life", and "Being a religious/spiritual person is important to me". They then read, "How often have you participated in each of these activities in the past week?", followed by six religious participation items (e.g., prayed or meditated; thought about religious/spiritual issues) rated from 1 (*not at all*) to 6 (*more than once per day*). These belief salience and participation items, which have been used in many prior studies (e.g., Exline et al. 2014), were standardized and averaged to assess religiousness.

2.3.6. Divine Attributions about the Positive Event

Participants read, "Do you think that God may have played a role in causing or influencing this event?" and rated responses from 1 (*no, definitely not*) to 5 (*yes, definitely*). They read, "Do you think that it's plausible (logical, reasonable, rational) to think that God may have caused or influenced this event?" and "Would seeing God as causing or influencing this event make the event seem more meaningful to you?", both with responses from 1 (*no, definitely not*) to 5 (*yes, definitely*), and "Do you want to see God as having caused or influenced this event?" with responses from 1 (*not at all*) to 5 (*totally*).

2.3.7. God-Related Appraisals (Including Gift Appraisals)

Participants read, “In this situation, do you think that God was trying to help, love, encourage, comfort, or protect you (or someone else)?” rated from 1 (*not at all*) to 5 (*totally*). They read, “Does thinking about this event make you feel loved, cherished, valued or appreciated by God?”, rated from 1 (*no, not at all*) to 5 (*yes, extremely*). They also read, “Do you see any part of this event as a gift from God?” and responded from 1 (*no, definitely not*) to 5 (*yes, definitely*).

2.3.8. Questions about God’s General “Operating Rules” and Gift-Giving

Participants who believed in God read, “In your opinion, how much power does God have in terms of being able to affect people’s lives?” with responses from 1 (*no power at all*) to 5 (*total power*). They also read, “I think that God probably gives gifts to about ___% of people” and gave responses on a slider from 0 to 100. They read, “In your opinion, how often does God give gifts to people?” with responses from 1 (*never*) to 6 (*all of the time*). They also read, “How often do you think that God has given you a gift (or gifts)?” with responses from 1 (*never*) to 6 (*all of the time*).

3. Results

3.1. Descriptive Statistics, Including Divergent Reports of GTG on the Open-Ended and Likert Measures

How much GTG did participants report? As shown in Figures 1 and 2, along with Table 1, results differed dramatically based on the mode of measurement. On the open-ended question, which asked participants to list those to whom they felt grateful about the event (if anyone), 20% of participants (24% of those who later said they believed in God, 3% of those who did not) spontaneously mentioned God. (See Figure 1 and top section of Table 1.) However, on the Likert question that immediately followed on the next page of the survey, the average participant endorsed moderately high levels of GTG: As Table 1 shows, the mean score was 3.6 on a 1 to 5 scale, between “moderately” and “quite a bit.” Among those who believed in God, the mean was 4.1 out of 5. The modal response was 5, at the top of the scale, for both God believers ($n = 256$, 56% of sample) and the whole sample ($n = 259$, 47% of sample) (see Figure 2 for a visual depiction.) Only 19% of the whole sample ($n = 105$) and 7% of those who believed in God ($n = 33$) endorsed the response indicating that they did not feel grateful to God at all in response to the event. Thus, although a minority of people spontaneously reported gratitude to God, most people strongly indicated that they felt grateful to God when asked directly about it; and only a small proportion reported that they did not feel any gratitude toward God.

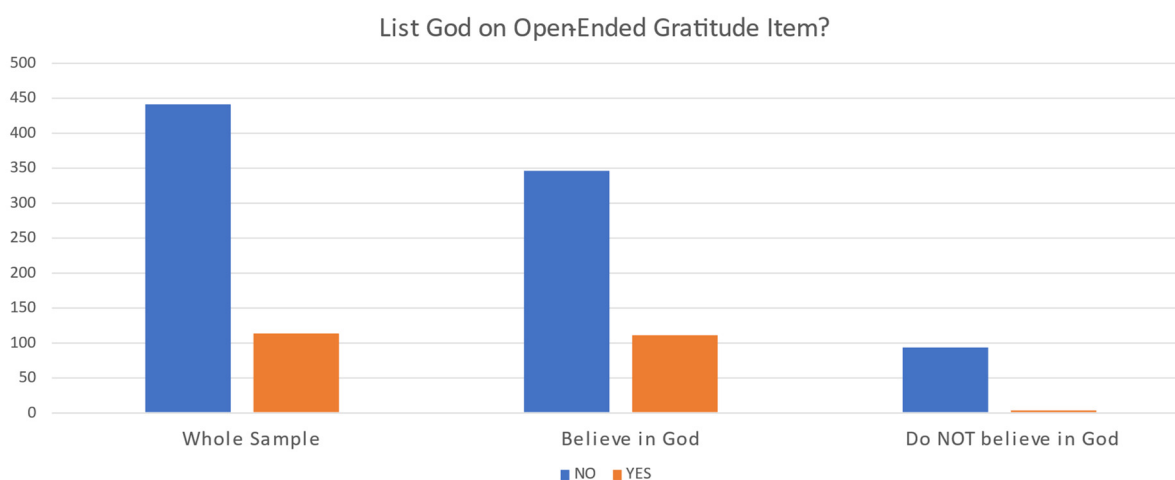


Figure 1. Open-Ended Gratitude Item: Number of Participants Who Listed God.

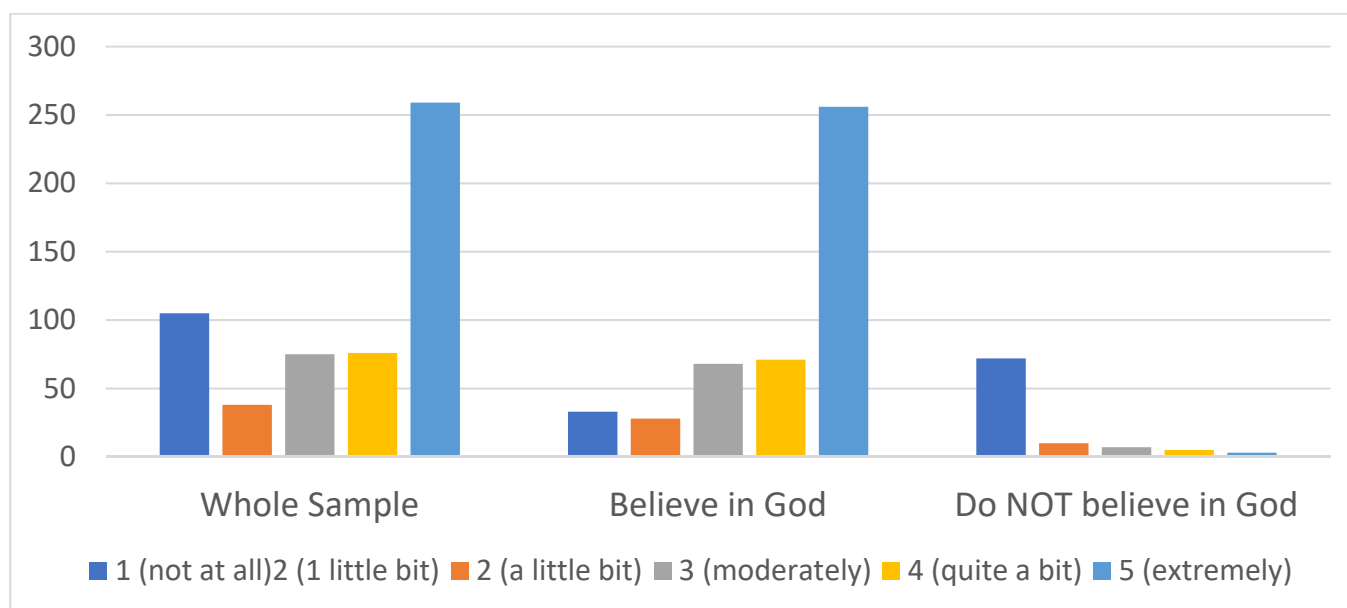


Figure 2. Likert Item on Gratitude to God: Number of Participants Endorsing Each Response.

Table 1. Descriptive Statistics for Key Variables.

Variable	N	Range	M (SD) (α)
Gratitude variables (GTG = Gratitude to God)			
List God on open-ended gratitude item? (0 = no, 1 = yes)	553	0 to 1	0.20 (0.4) (–)
List God on open-ended gratitude item? (God believers only)	456	0 to 1	0.24 (0.4) (–)
List God on open-ended gratitude item? (God nonbelievers only)	97	0 to 1	0.03 (0.2) (–)
Likert GTG measure (whole sample)	553	1 to 5	3.6 (1.6) (–)
Likert GTG measure (God believers only)	456	1 to 5	4.1 (1.3) (–)
Likert GTG measure (God nonbelievers only)	97	1 to 5	1.5 (1.0) (–)
Attribution-focused variables			
God caused or influenced event	456	1 to 5	4.0 (1.2) (–)
Plausible to see God as cause	456	1 to 5	3.9 (1.2) (–)
Want to see God as cause	456	1 to 5	3.7 (1.4) (–)
Seeing God involved makes it more meaningful	456	1 to 5	3.9 (1.3) (–)
Situation-specific appraisals			
God has power to cause this type of event	456	1 to 5	4.3 (1.0) (–)
God has positive intentions	456	1 to 5	4.0 (1.2) (–)
Feel loved, cherished	456	1 to 5	3.9 (1.3) (–)
Gift from God	456	1 to 5	4.2 (1.1) (–)
God’s “operating rules”			
God has power to affect people’s lives	456	1 to 5	4.3 (1.0) (–)
God gives gifts to people often	456	1 to 6	4.8 (1.4) (–)
God gives gifts to many people	456	0 to 100	82.0 (25.1) (–)
God has given you gifts often	456	1 to 6	4.5 (1.4) (–)

Table 1. Cont.

Variable	N	Range	M (SD) (α)
Background variables			
Religiousness (index)	553	−1.6 to 1.8	0.0 (0.9) (0.79)
Religious belief salience	553	1 to 7	5.0 (2.0) (0.96)
Religious participation	553	1 to 6	2.8 (1.4) (0.91)
Belief that God exists (Likert)	553	1 to 5	3.9 (1.3) (−)
Belief in God (no = 0, yes = 1)	553	0 to 1	0.8 (0.4) (−)
God seen as loving	455	1 to 5	4.4 (0.9) (−)
Likert variables from experimental priming conditions			
God caused positive event (grid item)	98	1 to 5	3.3 (1.7) (−)
Belief in God (modified GSS item)	89	1 to 5	4.1 (1.4) (−)
Believe God can influence people’s lives indirectly	97	1 to 5	3.7 (1.6) (−)
Agree with base rate info: God can have indirect influence	90	1 to 5	3.7 (1.5) (−)

Skews were modest, with magnitudes less than 1.5 for the GTG Likert and open-ended variables for the whole sample and for God believers. Within the full sample, the Likert GTG item had a skew of only 0.66. Skews were higher for nonbelievers (2.0 on the Likert item and 5.5 on the open-ended item), as would be expected given that the items focused specifically on God. Given that skews for believers and the whole sample were not extreme, we did not attempt data transformations for non-normality in our remaining analyses, which focused only on these two groups.

Table 1 shows that, on average, participants in this sample were moderate in terms of religiousness but held high levels of belief in God. Those who did believe in God tended to see God as loving, powerful, and quite generous in terms of giving gifts often, to many people, including themselves. On average, they endorsed moderately high levels of divine attributions for the positive events that they described and were also quite likely to endorse the idea that these positive events were gifts from God.

3.2. Effects of the Experimental Manipulation

Contrary to our preregistered predictions, there were no statistically significant differences between the six priming conditions in terms of effects on subsequent reports of GTG, either on the open-ended item (using Chi-square tests; see Table 2) or the Likert item (using ANOVA with Bonferroni-corrected comparisons; see Table 3). Regardless of whether we considered the whole sample or only those who believed in God, it was clear that simply reminding people to think of causes for the event, prompting them to think about God, or even raising the idea of God as a possible cause of the event did not have significant effects on subsequent reports of GTG on either measure. Notably, the omnibus effect sizes (partial Ω^2) for these analyses were trivially small: 0.008 for the whole sample and 0.004 for those who believed in God.

Table 2. Effects of Experimental Condition on Spontaneous Mentions of GTG (Open-Ended Item).

Condition	Full Sample		God Believers Only	
	<i>n</i>	How Many Mentioned God? <i>n</i> (%)	<i>n</i>	How Many Mentioned God? <i>n</i> (%)
Base Rates	90	21 (23.3%)	78	19 (24.%)
God’s Indirect Influence	97	22 (22.7%)	81	22 (27.2%)
Grid of Possible Causes	98	19 (19.4%)	78	19 (24.4%)
Belief in God	89	19 (21.3%)	71	19 (26.8%)
Open-Ended Causes	90	15 (16.7%)	71	15 (21.1%)
Control (Thoughts & Feelings)	89	17 (19.1%)	77	16 (20.8%)
Total	553	113 (20.4%)	456	110 (24.1%)
		$\chi^2 (5, N = 553) = 1.76,$ $p = 0.88$	$\chi^2 (5, N = 456) = 1.50,$ $p = 0.91$	

Table 3. Effects of Experimental Condition on Gratitude to God (Likert Item).

Condition	Full Sample		God Believers Only	
	<i>N</i>	<i>M</i> (<i>SD</i>)	<i>N</i>	<i>M</i> (<i>SD</i>)
Base Rates	90	3.7 (1.5) ^a	78	4.0 (1.2) ^b
God’s Indirect Influence	97	3.7 (1.6) ^a	81	4.1 (1.4) ^b
Grid of Possible Causes	98	3.4 (1.6) ^a	78	4.0 (1.3) ^b
Belief in God	89	3.6 (1.6) ^a	71	4.2 (1.2) ^b
Open-Ended Causes	90	3.4 (1.6) ^a	71	4.0 (1.2) ^b
Control (Thoughts & Feelings)	89	3.8 (1.5) ^a	77	4.2 (1.3) ^b
		$F (5, 547) = 0.93,$ $p = 0.42, \text{partial}$ $\Omega^2 = 0.008$	$F (5, 450) = 0.34,$ $p = 0.89, \text{partial}$ $\Omega^2 = 0.004$	

Note. In each column, means with shared superscripts do not differ at $p < 0.05$ using the Bonferroni correction.

3.3. Were Participants Responding Accurately to the Questions within the Experimental Conditions?

Table 4 clarifies that the lack of significant between-group differences was not based on participants failing to respond accurately to the questions in the experimental conditions. Consistent with prior findings (Exline and Wilt 2022), participants did report more GTG (at least on the Likert measure; less consistently on the open-ended item) if they mentioned God as a cause of the event (Open-Ended Causes), if they endorsed the idea that God caused the event (Grid of Possible Causes), if they believed strongly in God (Belief in God), and if they endorsed the idea that God can influence people’s lives indirectly (God’s Indirect Influence; Base Rates). So it does not seem as though participants were failing to read or process the questions; instead, the more likely explanation is that these brief prompts were not simply powerful enough to shift GTG.

Table 4. Correlations between Within-Condition Responses and Ratings of Gratitude to God.

Likert Variables (from Priming Conditions)	Condition	<i>n</i>	List God on Open-Ended Gratitude Item (<i>r</i>)	Likert GTG Measure (<i>r</i>)
Mention God as a cause (open-ended item)	Open-Ended Causes	90	0.15	0.21 *
Belief in God	Belief in God	89	0.35 **	0.74 **
God caused positive event (Likert item in grid)	Grid of Possible Causes	98	0.35 **	0.73 **
Believe God can influence people's lives indirectly	God's Indirect Influence	97	0.33 **	0.66 **
Agree with base rate info on God's indirect influence	Base Rates	90	0.06	0.58 **

Note: * $p < 0.05$; ** $p < 0.01$.

3.4. Both Measures of GTG: Associations with Religiousness, God Beliefs, Divine Attributions and Gift Appraisals

As Table 5 shows, the results did show a solid replication of the findings from the earlier study (Exline and Wilt 2022): Participant GTG was linked closely with religiousness, seeing God as a powerful and loving gift-giver, attributing the positive event to God and feeling loved in response, and seeing the event as a gift. As in the earlier study, too, correlations with the 5-point Likert item were stronger than correlations with the dichotomous (yes/no) open-ended item on whether participants spontaneously listed God as a target of gratitude. (Although there were no significant between-group differences, we still made the conservative choice to control for experimental condition using dummy coding—that is, we made five variables, each scored 0 or 1 to represent the six conditions, and we entered these as covariates.)

Table 5. Partial Correlations between Key Study Variables and Situational GTG (Controlling for Priming Condition Using Dummy Coding).

Variable	List God on Open-Ended Gratitude Item? (0 = No, 1 = Yes) (<i>pr</i>)	Likert GTG Measure (<i>pr</i>)
Gratitude variables (GTG = Gratitude to God)		
List God on open-ended gratitude item? (0 = no, 1 = yes)	1.0	0.33 **
List God on open-ended gratitude item? (God believers only)	1.0	0.28 **
Likert GTG measure (whole sample)	0.33 **	1.0
Likert GTG measure (God believers only)	0.28 **	1.0
Attribution-focused variables		
God caused or influenced event	0.27 **	0.53 **
Plausible to see God as cause	0.24 **	0.44 **
Want to see God as cause	0.21 **	0.49 **
Seeing God involved makes it more meaningful	0.20 **	0.46 **
Situation-specific appraisals		
God has power to cause this type of event	0.23 **	0.51 **
God has positive intentions	0.24 **	0.54 **
Feel loved, cherished	0.22 **	0.52 **
Gift from God	0.25 **	0.54 **

Table 5. Cont.

Variable	List God on Open-Ended Gratitude Item? (0 = No, 1 = Yes) (<i>pr</i>)	Likert GTG Measure (<i>pr</i>)
God's "operating rules"		
God has power to affect people's lives	0.22 **	0.53 **
God gives gifts to people often	0.16 **	0.42 **
God gives gifts to many	0.12 *	0.32 **
God has given you gifts often	0.16 **	0.44 **
Background variables		
Religiousness (index)	0.26 **	0.67 **
Religious belief salience	0.25 **	0.66 **
Religious participation	0.21 **	0.55 **
Belief that God exists	0.29 **	0.72 **
God seen as loving	0.17 **	0.46 **
Likert variables from experimental priming conditions		
Mention God as a cause (open-ended item)	0.15	0.21 *
God caused positive event (grid item)	0.35 **	0.73 **
Belief in God (modified GSS item)	0.35 **	0.74 **
Believe God can influence people's lives indirectly	0.33 **	0.66 **
Agree with base rate info: God can have indirect influence	0.06	0.58 **

Note. Partial correlations controlled for experimental condition using five dummy-coded variables representing the six experimental conditions. * $p < 0.05$; ** $p < 0.01$.

4. Discussion

This project was a direct replication and extension of another study (Exline and Wilt 2022) on cognitive predictors of situational gratitude to God (GTG) in response to a recent positive life event. The prior study, which focused on God-focused attributions and appraisals, suggested that GTG was more likely when people held religious, theistic worldviews that included a loving, powerful God who intervened often in the world and was a generous gift-giver. Such beliefs, in turn, predict greater odds of attributing positive events to God, framing them as divine gifts, and reporting GTG in response.

4.1. Experimental Manipulation: No GTG Differences between Conditions

A main aim of this study was to determine how malleable reports of GTG might be: Could we increase reports of GTG simply by priming participants, through individual survey questions, to reflect on God, to consider the idea of God working through natural events, or to consider God as a possible cause of the event they reported?

This experimental manipulation did not yield any significant differences between the six conditions, contrary to our preregistered hypotheses. Regardless of whether participants were reminded about God or asked to reflect on causes of the event, they reported similar levels of GTG across all six experimental conditions. These results yielded a clear conclusion: Simply prompting people to reflect on God or on event causes, at least using these single-item manipulations, was not enough to substantially change reports on GTG, on either the open-ended measure (which did not mention God) or the Likert measure of GTG.

In practical terms, the lack of significant differences between groups suggests some good news and some bad news. First, the bad news: For those who might be trying to facilitate GTG, it seems clear that simply mentioning God, or raising the idea that God can work indirectly through natural events, is not enough to substantially increase subsequent

reports of GTG. Granted, it is possible that adding an entire block of such questions or reflections, or introducing a lengthier set of material (e.g., a lecture or reading passage) might be more powerful in terms of the ability to increase GTG. However, it was clear from Tables 2 and 3 that these types of brief questions, when given singly, did not have significant effects on subsequent reports of GTG.

In methodological terms, though, it may actually be good news that brief mentions of God, or reminders how God might work in the world and influence human events, are not enough to substantially sway reports of GTG. These results might be encouraging for researchers who might be concerned that mentioning God early in a survey could inadvertently inflate reports of GTG. We had expected that, regardless of whether people actually felt more GTG in response to the prompts, they might perceive demand characteristics to think about God, which would have artificially inflated reports of GTG. Yet, we saw no evidence to support this idea. Instead, reports of GTG were similar across the six conditions.

4.2. The Method Used to Assess GTG May Affect Conclusions about GTG Prevalence

Although not the intended focus of this study, one of the most compelling findings, in our view, was that GTG reports looked very different depending on how GTG was assessed. Regardless of whether participants were prompted to think about God through the experimental manipulations, about 20% of participants—and 24% of those who believed in God—listed God as a target of gratitude on an open-ended item. Compared to those who did not list God, those who listed God were more religious, with strong beliefs in a benevolent, powerful, gift-giving God. These findings largely mirrored those from the earlier study (Exline and Wilt 2022), even though none of the participants in the earlier study saw any God prompts before answering the open-ended question about targets of gratitude. These findings suggest that the people who “brought God to mind” as a target of gratitude were those who came into the studies with strong prior beliefs in a powerful, loving, generous God who intervenes frequently in the world. This worldview, rather than a brief experimental prime, seemed to be key in terms of prompting participants to think of God as a benefactor.

Yet, even though some participants did spontaneously list God as a target of gratitude, it was still less than $\frac{1}{4}$ of the sample—even among those who believed in God. This could have happened for a variety of reasons: Some people might have been reluctant to mention God in response to a prompt in a psychological survey, for example. However, it seems likely that others simply did not think of God as a benefactor. They might have quickly thought of other people as sources of the benefit, or they could have credited themselves or situational factors and stopped the attributional process there. It might be that once a single target of gratitude is identified, most people—even strong believers in God—do not continue to reach back to consider causes that they might see as more indirect, including God. Perhaps we would have seen more mentions of God if we asked people to list as many targets of gratitude as they could think of, or a specific number of benefactors, or if we did not allow them to move to the next question until a certain period of time had elapsed for reflection. However, would forcing this type of response lead to over-reports of actual gratitude? We think that it might.

Results were strikingly different on the Likert GTG item, which asked participants to rate GTG on a 5-point scale. Here, the modal response was 5 (extremely grateful), and the mean response for those who believed in God was above 4 on the 5-point scale. Only 7% of those who believed in God (and 19% of the whole sample) endorsed the response option suggesting that they did not feel any GTG at all. These responses suggest that, although relatively few people spontaneously report GTG, most people who believe in God will endorse GTG if asked directly about it; and very people endorsed a response that would suggest *not* being grateful to God.

These findings highlight methodological challenges for researchers who might be seeking the most valid way to assess GTG. Although we certainly cannot offer any sort of

definitive answer, our data suggest that prevalence estimates for GTG could show massive variation depending on how questions are framed: Spontaneously listing God as a target of gratitude will likely lead to much lower estimates of GTG prevalence than Likert items.

What issues might surround open-ended assessment of GTG? On the one hand, these types of spontaneous reports could be very valuable, because they allow us to see which types of people naturally think about God as a benefactor and are comfortable giving an answer involving God, with no prompts to lead them in this direction. But still, there are challenges here: Some people assume that they should list a person as a benefactor and would not think of listing other entities such as God. Additionally, others might be uncomfortable listing God in a response to a survey question, even if they privately feel grateful to God.

The Likert questions offer greater precision, as responses can be assessed on multi-point scales. These items also make it clear to participants that we are interested in their thoughts about God. Likert scales may be valuable when trying to examine associations between different God-related variables (such as the divine attributions and gift appraisals of interest here). At the same time, response sets and biased responding—along with the possibility that many people might not want to appear ungrateful to God—could complicate interpretation.

In sum, our results do suggest some thorny issues around GTG assessment. Open-ended items might lead to under-reporting of GTG, whereas Likert items might lead to over-reporting—especially among strong believers in God who see GTG as a virtue. We do see some benefit in asking about GTG relatively early in surveys, and especially before participants have answered long lists of other God-focused appraisal or attribution-focused questions that might create a response set involving God. Although we cannot be sure, the fact that we randomized the GTG Likert item with those focusing on other benefactors might have actually helped to work against tendencies toward over-reporting. If we had used a single, stand-alone item to ask believers about the extent to which they felt grateful to God (without mentioning other benefactors), might desires to endorse this virtue have been even higher? This remains an empirical question. Additionally, there may be studies in which GTG variables would show larger skews than they did in this sample. When skews are relatively large (perhaps those with a magnitude of 2 or above), there may be some benefit in using transformations, such as log transformations, to reduce skew. (For a thoughtful discussion of this issue, see Šimkovic and Träuble (2019)).

4.3. Direct Replication of Key Results from Earlier Study

Despite the different conclusions one might draw about the prevalence or frequency of GTG based on the measure used, a similar picture still emerges about the types of beliefs, attributions, and appraisals that are associated with GTG. This study directly replicated key correlations from the prior study (Exline and Wilt 2022): Participants reported more GTG (on both measures, but more strongly on the Likert measure) if they were highly religious and believed strongly in God—but in a certain type of God. GTG was greatest when participants saw God as loving, having substantial power to influence people's lives, and as a generous gift-giver—giving gifts often, to many people, including themselves. Seeing this particular event as a gift, seeing God's intentions as positive, and feeling loved in responses were all appraisals linked with more GTG. GTG was also related to attributional variables involving God, replicating results from the other study: Seeing God as a plausible cause of the event, wanting to see God as a cause, believing that the event would seem more meaningful with God as a cause, and actually attributing the event to God were all closely connected with more GTG.

4.4. Limitations and Future Directions

This study was based on self-report variables, which raises the possibility of biases such as response sets or socially desirable responding. These cross-sectional, correlational data do not allow causal inferences. We also cannot make conclusions about the order

in which certain GTG-related thoughts occur, due to our use of retrospective reports. In addition, our brief priming manipulation was based on administration of a single, randomized question. It is possible that a larger set of questions, when combined, might have affected subsequent GTG reports.

Our project drew on an Internet-based sample of U.S. adults; although the sample was reasonably diverse (especially in terms of age, education and occupation), it was not a representative sample of the U.S. population. Most participants who endorsed some religious affiliation identified with some part of the Christian tradition, and results may not generalize beyond this group. In future work, it would be useful to assess GTG and its correlates in other cultures or religious belief contexts—for example, among people who do not believe in a personal God or who do not believe that God intervenes frequently in the world or in people's lives. Additionally, although our GTG item was worded in a way that included the possibility for multiple gods or goddesses or a Higher Power, we were unable to delve into any nuances of how these non-monotheistic views of God could influence GTG. For example, participants from polytheistic traditions might see certain gods as being more loving than others, and there might be interesting gender differences that could make some people see goddesses as more loving or warm than a God (or god) who is thought of as male. Some might think of a Higher Power in a personal and relational way, while others might think of a more impersonal force. Exploring these sorts of differences would be a fascinating topic for future work on GTG.

5. Conclusions

The findings of our conscious priming experiment clarified that simply reminding participants about God via survey items is not enough to increase subsequent reports of GTG. Instead, the results described here provided a direct replication of other findings (Exline and Wilt 2022) suggesting that worldviews that include a powerful, loving, gift-giving God are consistently linked with more GTG. Our findings also raise some methodological cautions about the ways in which GTG is assessed. Although priming participants with thoughts of God was not enough to influence reports of GTG, the wording of the question did have a large effect. Particularly in studies that aim to evaluate the frequency of GTG, it will be important to carefully consider the types of measures used to avoid skewing responses, as conclusions could differ greatly based on the way in which questions are framed.

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