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Unique cognitive and emotional profiles of interpersonal gratitude and spiritual gratitude

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ABSTRACT

Gratitude is a prototypical emotional response when life's blessings come from the intentional goodwill of other people, but many also attribute good experiences to the intervention of God, gods, a Higher Power, or other benevolent spiritual forces. This study investigated the differences between how United States participants ($N = 610$) experience interpersonal gratitude and spiritual gratitude. Compared to interpersonal gratitude, spiritual gratitude experiences were less often attributed to human action, more often attributed to supernatural beings and circumstances beyond human control, and elicited significantly less feelings of gratitude, indebtedness, and admiration, but greater awe. Participants reported the highest feelings of gratitude when they also believed in a personal God with a benevolent mind. These findings demonstrate the importance of perceiving benevolent agency in evoking feelings of gratitude, whereas experiences that are attributed to more abstract, less personified, or less external entities elicit a different profile of positive emotional responses.

Positive experiences come in many forms and elicit a range of positive emotions (Weidman & Tracy, 2020), with the specific profile of positive emotions dependent upon perceptions of how and why the good experience occurred. When people view positive experiences as a gift from a benevolent benefactor, common emotional responses include thankfulness for the benefit received and gratitude and indebtedness towards the benefactor (Campos et al., 2013; Emmons et al., 2019; Lambert et al., 2009; Tong & Jia, 2017). Feelings of gratitude then motivate future prosocial behavior that can bind the receiver and benefactor into mutually-beneficial social relationships (Algoe, 2012; Gordon et al., 2012). This pattern of gratitude is prototypical when humans give gifts and assistance to one another, but for many people the scope of gratitude expands beyond human relationships. Many people also feel thankful for events that are not completely under any human's control, such as recovery from an illness, surviving an accident, experiencing a healthy pregnancy, meeting a romantic partner, or witnessing the beauty of the natural environment. In these cases, people often attribute their positive experiences to gods, higher powers, or scared laws of the universe that operate outside the mundane constraints of human action. The present study investigated how these experiences of spiritual gratitude differ in their content, emotional profile, and causal attributions from experiences of interpersonal gratitude.

In models of gratitude within human relationships, gratitude is often conceptualized as the response *to* a benefactor, on the part of the beneficiary, *for* a benefit received. This *to-for* model has been the standard in research on gratitude such that Emmons et al. (2019) define gratitude as 'the pleasant response of thankfulness to an outside agent after recognizing benefits received' (p. 317). Lambert et al. (2009) refer to this type of gratitude as *benefit triggered*, and the degree of gratefulness often depends upon the beneficiary's perception of the intentions and benevolence of the benefactor, as well as the perceived value of the benefit (Emmons et al., 2019). Several empirical studies of recalled life events have found associations between patterns of attributions and distinct positive emotions, with gratitude consistently associated with the perception that another person caused a benefit to oneself (Campos et al., 2013; Tong, 2015; Tong & Jia, 2017; Yih et al., 2019). Experimental studies also demonstrate that people feel more gratitude when human benefactors provide a benefit with good intentions (MacKenzie et al., 2014; Weinstein et al., 2010; Wood et al., 2008).

These findings raise the question of whether people feel gratitude even when a benevolent, agentic benefactor is absent. One possibility is that people do feel gratitude in many situations that lack human benefactors because they attribute the good experience to

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non-human benefactors, such as being gift from a personal, loving God (McCullough & Tsang, 2004). Many theists view God as a benevolent, personified being (Johnson et al., 2013, 2015) who gives abundant gifts to his people (e.g. Matthew 7:11). Religious people regularly report feeling grateful to God, an individual difference that is empirically distinct from general gratitude toward human benefactors (Aghababaei & Tabik, 2013; Emmons & Kneezel, 2005; Krause, 2006; Krause & Hayward, 2015; Nelson et al., 2022; Rosmarin et al., 2011; Wilt & Exline, 2022). The representation of God as a benevolent benefactor fits well within the *to-for* model of interpersonal gratitude: Insofar as many believers view God as a person, these experiences of gratitude to God may have much the same psychological structure as more mundane interpersonal gratitude (Roberts, 2014). For example, just as more benevolent human benefactors elicit greater gratitude, those with more benevolent views of God also report greater gratitude to God (Krause et al., 2015).

However, many other responses to good fortune fall outside the scope of interpersonal gratitude or gratitude towards a personal God. Even theists – who agree with the doctrinal positions of God's agency (omnipotence), intentionality (omniscience) and benevolence – show substantial variation in the extent to which they attribute the cause of every life event to God (Degelman & Lynn, 1995). For example, one theist may thank God as the causal agent for finding an ideal parking spot, scoring a winning touchdown, or recovering from a serious illness, but another theist may be grateful *for* a positive event without acknowledgement that God was the causal agent and without experiencing interpersonal gratitude. Many other people do not believe in gods, or they hold views of gods and other supernatural forces that are abstract, impersonal, non-benevolent, or characterized by other traits that make them very different from the benevolent agents that are typical targets of gratitude. What do people feel when they attribute good experiences to these spiritual entities?

One possibility is that people feel a different profile of positive emotions when they do not perceive external agency, compared to when they attribute a good experience to a benevolent agent. Several prior theoretical and empirical studies have distinguished prototypical instances of interpersonal gratitude (to a specific benefactor, for the benefit), from feelings of gratefulness that a benefit exists (without attributions to a specific beneficent agent, Rusk et al., 2016), a feeling that has been variously discussed as generalized gratitude (Lambert et al., 2009), transpersonal gratitude (Hlava et al., 2014; Steindl-Rast, 2004), cosmic gratitude (Roberts, 2014) and gratitude to intangible benefactors (Tsang et al., 2021).

Preliminary empirical evidence suggests that people can feel gratitude towards something larger or beyond the self, including nature or a divine presence, but that this feeling is distinct from the gratitude directed towards a specific benefactor and may instead overlap with feelings of awe and other self-expansive transcendent feelings (Hlava & Elfers, 2014). However, there has yet to be a rigorous empirical investigation of how any why emotional responses differ when directed towards human benefactors and non-human benefactors, and whether these responses depend on which non-human being people thank for the event (if any).

In the present study, we assessed the cognitive appraisals of and emotional responses to experiences of spiritual gratitude differ from the appraisals and emotions elicited by interpersonal gratitude. Participants described either an experience of tremendous gratefulness to another person or an experience of tremendous gratefulness to God or a Higher Power, and then reported the extent to which they felt a variety of positive emotions, whether they attributed the event to internal and external factors, and their view of God's characteristics. Second, we tested whether variation in emotional responses was associated with participants' attributions for why the event occurred. We specifically predicted that feelings of gratitude would be strongest when benefits were perceived to come from an external agent with a benevolent mind, resulting in stronger gratitude on average in the case of interpersonal benefits than spiritual benefits, and stronger gratitude when the spiritual benefactor is viewed as a benevolent agent that exists outside of oneself (i.e. a personal God) rather than as an abstract, distant, impersonal, or internal spiritual force.

Methods

Before data collection all materials, methods, and analysis plans were registered on the Open Science Framework (https://osf.io/5dyhg/). All data and analysis code is also available on the Open Science Framework. All methods were approved by the Behavioural Research Ethics Board at the University of British Columbia (#H15–03085).

Participants

Participants residing in the United States were recruited from Prolific, in return for a small monetary payment. We aimed to recruit a final sample size of at least 300 participants per condition, in order to detect small-to-medium effects with 90% power in between-condition (e.g. $d = 0.27$) and within-condition

comparisons (e.g. $d = 0.19$), and correlations between variables within each condition (e.g. $r = .19$). Participants were excluded if the failed an English-language comprehension question or attention check question within the survey, and new participants were recruited to replace any excluded based on this criteria. The final dataset consisted of 610 attentive participants (Interpersonal condition $n = 302$, Spiritual condition $n = 308$), including 56% women, 41% men, 3% non-binary or prefer not to list gender; aged between 18–79 years ($M = 36$ years); 73% White, 9% Black, 6% Hispanic/Latino, 5% East Asian, 7% multiple or other ethnicities; 18% Catholic Christian, 20% other Christian, 18% Agnostic, 14% Atheist, 12% non-religious, 12% spiritual-but-not-religious, 6% other religious denomination.

Materials

Good experience prompt

Participants wrote a few sentences describing a good event in their lives, including what happened during this good experience and how they felt about it. These good experiences were prompted by one of two framing conditions, randomly assigned, that elicit (a) experiences of spiritual gratitude or (b) experience of interpersonal gratitude. Experiences of **interpersonal gratitude** were defined as 'experiences that you would consider to be an experience of tremendous gratefulness to another person after experiencing a very positive event in your life, or escape from what could have been a very negative event in your life … An experience of interpersonal gratitude may be in close relationships with friends or family members, or it might have involved an acquaintance, a stranger, or even someone you have never met in person'. In contrast, experiences of **spiritual gratitude** were defined as 'experiences that you would consider to be an experience of tremendous gratefulness to God, a Higher Power, or whatever you think of as Sacred or Spiritual after experiencing a very positive event in your life, or escape from what could have been a very negative event in your life … An experience of spiritual gratitude may be of the religious variety, it may have to do with what you consider to be sacred, it may be in response to something in nature, it may result from relationship with other people, or many other things'. According to each prompt, participants described, 'What, specifically, happened during this experience of spiritual [interpersonal] gratitude?' and 'How did you feel at the time of the experience?'

Emotional responses

After describing a good past experience, participants reported the emotions that they felt during this experience, on 5-point scale ranging from *not at all* to *very much*. Items were drawn from a comprehensive list of many positive emotions (Weidman & Tracy, 2020), and exploratory factor analyses were conducted to investigate how these clustered into different types of emotional responses (see Supplementary Materials). Analyses below focus on results of composite scores including clusters of items assessing gratitude (6 items, e.g. 'I felt gratitude', 'I felt appreciative toward someone or something'; $\alpha = .90$), indebtedness (3 items, e.g. 'I thought I owed favors to someone or something'; $\alpha = .77$), admiration (3 items, e.g. 'I had a great deal of respect toward someone or something'; $\alpha = .75$), pride (3 items, e.g. 'I felt successful'; $\alpha = .85$), deservingness (7 items, e.g. 'I felt that justice had been served', 'I felt that I had earned this positive outcome'; $\alpha = .90$), awe (5 items, e.g. 'I felt wonder'; $\alpha = .86$), surprise (4 items, e.g. 'I felt astonished that I would have this positive experience'; $\alpha = .76$), transcendence (3 items, e.g. 'I felt that I had been personally transformed'; $\alpha = .76$), amusement (3 items, e.g. 'I was entertained'; $\alpha = .84$), and other positive feelings (12 items, including hope, enthusiasm, interest, and contentment, $\alpha = .90$). Participants also reported their dispositional tendency to experience gratitude (McCullough et al., 2002, e.g. 'If I had to list everything that I felt grateful for, it would be a very long list', $\alpha = .86$)

Attributions for the event

Participants reported the extent to which several different factors were responsible for causing the event, on 5-point scale ranging from *not at all* to *completely*. Exploratory factor analyses indicated that these items clustered into scores referring to *internal attributions* ('Did you feel that you had influence over what was happening in the situation?' and 'How responsible did you feel for having brought about the events that led to this situation?'), attributions to *external circumstances* ('Did you feel that circumstances beyond any human's control were controlling what was happening in this situation?' and 'How likely is it that some law of the universe or of nature brought about this experience?'), and attribution to an *external person* ('How responsible was someone or something other than yourself for having brought about this experience?' and 'Did you feel that someone or something other than yourself was controlling what was happening in this situation?').

Beliefs about the attributes and nature of god

Participants completed the 28-item LAMBI inventory (Johnson et al., 2019) as well as eight additional items that assess the extent to which God possesses mental capabilities indicative of moral and non-moral agency (e.g. 'God can think', 'God makes plans', 'God rewards people for proper behavior', 'God examines people's hearts and knows their thoughts and feelings'), all using a 7-point Likert-type scale. The 5-item benevolent God subscale of the LAMBI and the eight additional mental agency items are conceptually-distinct aspects of God but the two measures were highly correlated in the present sample, $r = .83$. Therefore, to avoid problems with multicollinearity in our models, the two measures were combined into a composite score which we refer to as *benevolent mind* ($α = .97$). Other attributes of God assessed were whether God is *limitless* ($α = .96$), *authoritarian* ($α = .92$), *mystical* (e.g. God is nature, energy, and the universe, $α = .90$), *ineffable* ($α = .84$), and *not real* ($α = .91$).

Individual difference questionnaires

The larger survey also included measures of dispositional awe (Shiota et al., 2006), anthropomorphic tendencies (Waytz et al., 2010), indicators of religiosity (e.g. strength of belief in God, religious affiliation, level of religiosity, spirituality, frequency of religious attendance), demographic features (e.g. Gender, age, ethnicity, income, political orientation), and COVID-related fears.

Results

Preliminary exploration: what types of experiences did participants describe?

We first explored the types of experiences participants described using topic modeling, a form of automated natural language processing that extracts key themes from text documents based on the probability of word occurrence. We applied the Latent Dirichlet Allocation method for topic modeling using Python (Blair et al., 2020; Mutanga & Abayomi, 2022; see Supplementary Materials for further details), separately for descriptions of spiritual gratitude and descriptions of interpersonal gratitude. We then read through the key words and examined participants' full responses that used those key words for each theme that was generated by the algorithm, to extract the general themes captured by each algorithm-generated topic (full results are depicted in Supplemental Table S7 – S8).

From the interpersonal gratitude condition, we extracted eight topics (perplexity score of −7.33 and coherence score of 34.64%), which generally revolved around receiving help from a specific person (e.g. a family member) when in need (e.g. receiving assistance, money, a job, or other positive life experience, as well as help coping with negative life experiences such as advice to deal with relationship issues or support coping with a loss).

From the spiritual gratitude condition, we extracted eight topics (model perplexity score of −7.39 and coherence score of 35.00%), some of which involve receiving help from another person or person-like being (e.g. receiving assistance from a friend, Jesus, or a guardian angel), but included benefits received from other non-human sources (e.g. God, nature), other positive experiences that are less under human control (e.g. pregnancy, a safe family), as well as experiences of avoiding bad situations such as potentially-harmful accidents.

As another way of visualizing participants' descriptions, we also created word clouds to illustrate the most frequent terms used in each condition, using the *wordcloud* package in R. These results (depicted in Figure 1) show that receiving help from close others is the most frequent theme in descriptions of interpersonal gratitude, whereas experiences of spiritual gratitude included less consistent positive descriptions that often mentioned God (21% of responses in the Spiritual condition vs. 1% of responses in the Interpersonal condition) rather than help from specific humans. Descriptions of interpersonal gratitude also included more mentions of concrete events for which they received help, such as help with money, school, home, family, or jobs.

Emotions elicited by experiences of spiritual vs. interpersonal gratitude

Exploratory: open-ended descriptions of feelings

Additional word clouds were used to explore the prevalence of words describing the emotional feelings associated with spiritual and interpersonal gratitude (Figure 2). Both descriptions included central words associated with gratefulness (Interpersonal: 47% vs. Spiritual: 25% of responses), thankfulness (Interpersonal: 10% vs. Spiritual: 9%), and happiness (Interpersonal: 20% vs. Spiritual: 14%), indicating that both types of experiences elicited positive gratitude-like feelings, but differences still emerge, such as references to God being more prevalent in feelings of spiritual gratitude (9% vs. 1% in interpersonal gratitude, which more often listed concrete human benefactors, such as friends and family members).

To further probe differences in participants' freely generated descriptions, we also conducted

Figure 1. *Word cloud of experience descriptions for the Interpersonal Gratitude Condition (left) and Spiritual Gratitude Condition (right).* Note: We removed from these figures a few words whose prevalence was likely caused by participants reiterating that prompt instructions (including 'spiritual', 'gratitude', 'time', 'experience', 'feel', and 'felt').

Figure 2. *Word cloud of descriptions of emotions for the Interpersonal Condition (left) and Spiritual Condition (right).* Note: Words were stemmed to common roots before analysis, so that the central term 'grate' refers to terms such as 'grateful' and related words. We also removed words whose prevalence was likely due to participants repeating the task instructions in their responses (e.g. 'felt' and 'experience').

a sentiment analysis using *syuzhet* package and sentiment dictionary in R (Jockers, 2015), to measure the overall positivity of the words used to describe experiences in each condition. When analyzing descriptions of the experiences, there were no significant differences between the sentiment of words describing interpersonal gratitude experiences and spiritual gratitude experiences, with both being described as slightly positive (sentiment $m = 1.30$ vs. 1.29, respectively, $p = .95$). However, when describing the emotions felt during these experiences, interpersonal gratitude emotions were more positive (sentiment $m = 1.48$) than spiritual gratitude experiences (sentiment $m = 1.13$), $t(606) = 2.95$, $p = .003$.

Ratings of emotions experienced in each event

We next tested how emotional responses differed between conditions according to the closed-ended ratings of each feeling. This was the first preregistered research question, although instead of reporting results of a regression model comparing the two conditions (as preregistered), we instead compared responses using, first, a MANOVA across all emotion types, followed by independent-samples t-tests comparing the difference in each emotion between conditions. The mean level of emotional responses in cases of interpersonal and spiritual gratitude are displayed in Figure 3, and significance tests and effect sizes are displayed in Table 1.
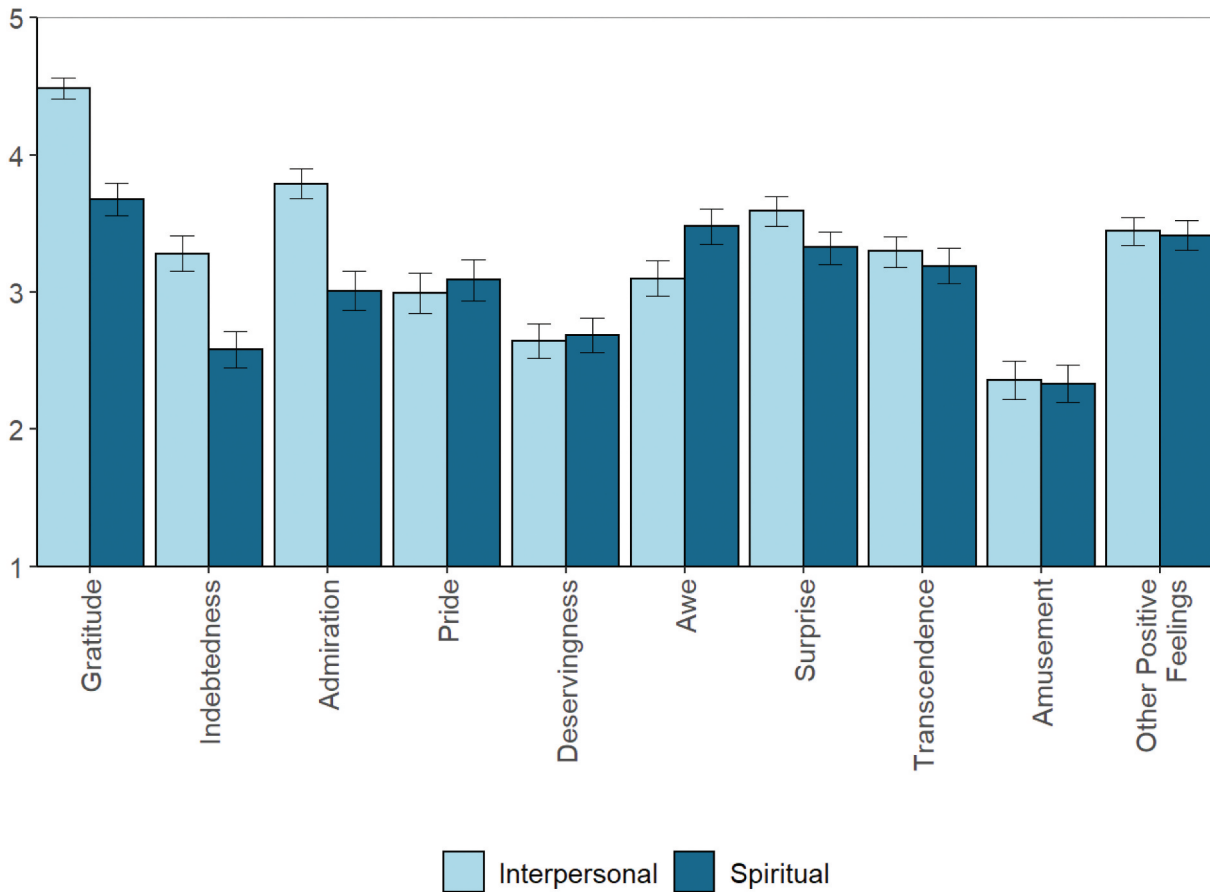
Figure 3. Mean levels of positive emotions reported in experiences of interpersonal gratitude (light blue) and spiritual gratitude (dark blue).

Table 1. Mean levels of positive emotions, Cohen's d effect sizes, and t-tests of significance for differences between conditions of interpersonal gratitude and spiritual gratitude. LL = lower limit and UL = upper limit, of bootstrapped 95% confidence interval of d.

Emotion	Interpersonal Mean	Spiritual Mean	d	LL	UL	t	p
Gratitude	4.49	3.68	0.90	0.73	1.06	11.11	<.001
Indebtedness	3.28	2.58	0.59	0.43	0.75	7.29	<.001
Admiration	3.78	3.01	0.73	0.56	0.89	9.00	<.001
Pride	2.99	3.09	−0.07	−0.23	0.08	−0.93	.355
Deservingness	2.65	2.68	−0.03	−0.19	0.13	−0.41	.684
Awe	3.10	3.48	−0.34	−0.50	−0.18	−4.17	<.001
Surprise	3.59	3.32	0.26	0.10	0.42	3.20	.001
Transcendence	3.30	3.19	0.10	−0.06	0.26	1.22	.225
Amusement	2.36	2.33	0.02	−0.14	0.18	0.28	.779
Other Positive Feelings	3.44	3.41	0.03	−0.13	0.19	0.40	.688

A MANOVA comparing conditions across all emotion categories revealed significant differences between the patterns of positive emotions for spiritual vs. interpersonal gratitude experiences, $F(10, 599) = 33.87$, $p < .001$. Despite the fact that participants in both conditions were asked to write about experiences of gratitude, experiences of interpersonal gratitude were rated as much higher in feelings of gratitude, indebtedness, and admiration, as well as slightly higher in surprise than experiences of spiritual gratitude. Experiences of spiritual gratitude were especially likely to elicit awe

compared to interpersonal gratitude experiences. Feelings of pride, deservingness, transcendence, amusement, and other positive feelings did not significantly differ between conditions.

Attributions for experiences of spiritual vs. interpersonal gratitude

A MANOVA comparing conditions across all attribution categories revealed significant differences between the pattern of attributions for spiritual vs. interpersonal
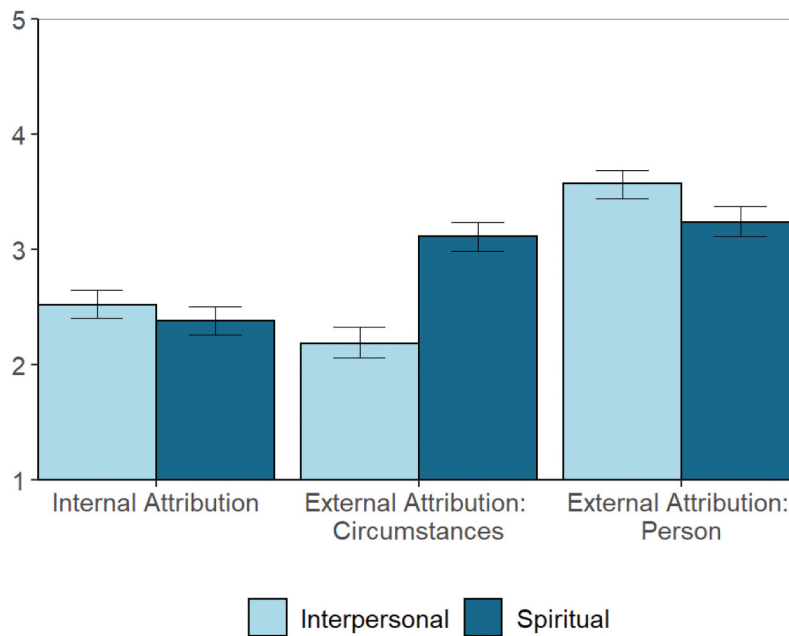
Figure 4. Mean levels of attributions for experiences of interpersonal gratitude (light blue) and spiritual gratitude (dark blue).

gratitude experiences, $F(3, 606) = 57.24$, $p < .001$. As depicted in Figure 4, experiences of interpersonal gratitude were rated as substantially lower in attributions to external circumstances, $d = -0.81$ [−0.98, −0.65], $p < .001$, but higher in attributions to an external person, $d = 0.29$ [0.13, 0.45], $p < .001$, while internal attributions did not significantly differ between conditions, $d = 0.13$ [−0.03, 0.29], $p = .113$.

Do attributions explain the variation in emotional responses across conditions?

To try and explain why emotional experiences differ between conditions of spiritual and interpersonal gratitude, we first conducted multiple regression analyses predicting each emotional response from condition (dummy coded as −0.5 = Interpersonal, 0.5 = Spiritual), level of each attribution (Internal, External Circumstance, External Person, each centered and each entered as separate predictors), and the interactions between attributions and condition. Full results are depicted in Supplementary Figures S2 – S5 and Tables S9 – S13 (these tables also include robustness checks that control for participants' dispositional levels of gratitude, awe, anthropomorphizing tendencies, and belief in God).

We then used path modeling to explore whether any of the attributions mediated the relationship between condition and emotional experiences. Several of the positive emotions – awe, transcendence, surprise, amusement, and other positive emotions – were positively

associated with all attribution types, including internal attributions (bs range from 0.09–0.34), external circumstance attributions (bs = 0.14–0.37), and external person attributions (bs = 0.06–0.27; see supplementary materials for more details). However, feelings of gratitude, indebtedness and admiration, as well as feelings of pride and deservingness had more specific associations with particular types of attributions.

External attributions predict gratitude, indebtedness, and admiration

As depicted in Figure 5, attributions to an external person were consistently the strongest predictor of gratitude, $b = 0.34$ [0.28, 0.40], indebtedness, $b = 0.30$ [0.22, 0.38], and admiration, $b = 0.28$ [0.20, 0.35], ps < .001, effects that were especially strong in the spiritual gratitude condition for feelings of gratitude (condition interaction $b = 0.29$ [0.18, 0.41], $p < .001$) and indebtedness (interaction $b = 0.19$ [0.02, 0.36], $p = .025$). Attributions to an external person also partially explained why in the spiritual condition there were reduced feelings of gratitude, indirect effect $b = -0.122$, indebtedness, indirect effect $b = -0.101$, and admiration, indirect effect $b = -0.098$, ps = .001.

Attributions to external circumstances also partially explained differences between conditions, although in the opposite direction, indirect effect on gratitude, $b = 0.092$, $p = .001$, indebtedness, $b = 0.172$, $p < .001$, and admiration, $b = 0.188$, $p < .001$. That is, experiences of spiritual (vs. interpersonal) gratitude were associated with more attributions to external circumstances and
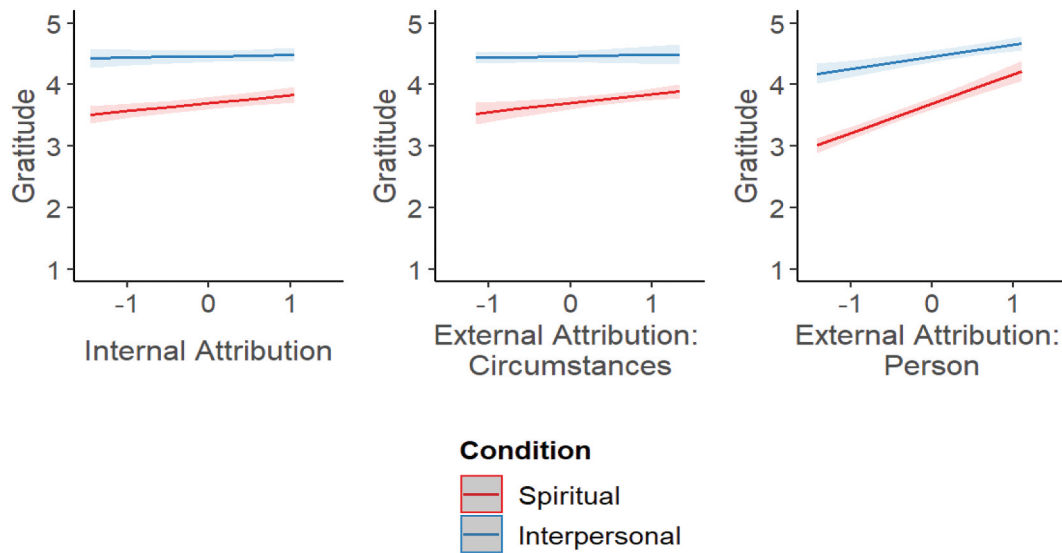
Figure 5. Association between attributions and feelings of gratitude, during experiences of spiritual gratitude and interpersonal gratitude.
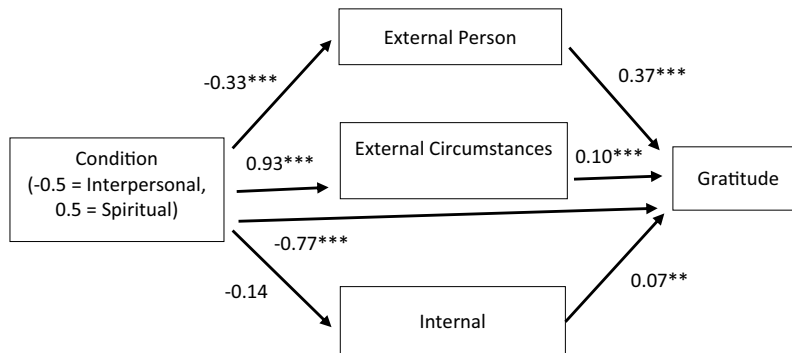

Figure 6. *Unstandardized coefficients for the indirect effects between condition and gratitude via attributions.* Note: Results of path models predicting indebtedness and admiration are available in the Supplementary Materials.

less attributions to an external person, but both external attributions to persons and circumstances predicted greater gratitude, indebtedness, and admiration relative to internal attributions. This pattern is illustrated in Figure 6.

Attributions to internal factors or to external circumstances were much weaker predictions of gratitude, indebtedness, and admiration (*b*s range from 0.01 to 0.21 across model specifications). Internal attributions did not significantly explain condition differences in these responses.

Internal attributions predict pride and deservingness
As depicted in Figure 7, internal attributions were the strongest predictors of pride, $b = 0.48$ [0.39, 0.56], and deservingness, $b = 0.43$ [0.36, 0.50], although there were also positive (but weaker) associations between attributions to external circumstances and feelings of pride, $b = 0.27$ [0.18, 0.35] and deservingness, $b = 0.24$ [0.16, 0.31],

ps < .001, as well as between attributions to an external person and pride, $b = 0.13$ [0.04, 0.21], $p = .004$, and deservingness, $b = 0.11$ [0.04, 0.19], $p = .002$. None of these relationships were significantly moderated by condition, nor did pride or deservingness significantly differ between conditions, therefore we did not test further for indirect effects.

Do views of God predict emotional responses during spiritual gratitude experiences?

As another test of why emotions may vary between experiences, we examined, in the spiritual gratitude condition only, whether representations of God predict different emotional responses to situations of spiritual gratitude. Although God was not necessarily mentioned or perceived by participants as the object of spiritual gratitude, participants in the Spiritual Gratitude condition were substantially more likely to mention God (21%)
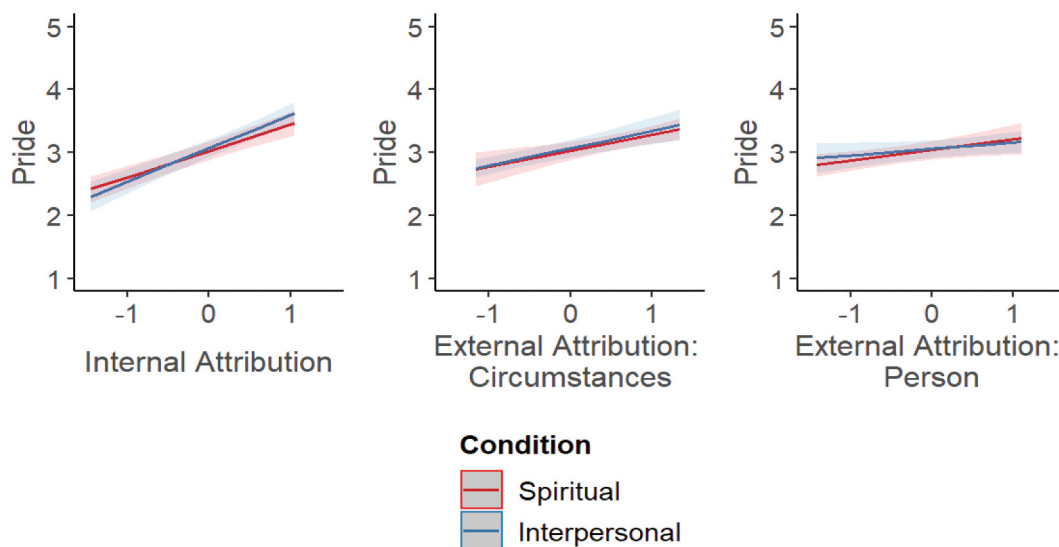
Figure 7. Association between attributions and feelings of pride, during experiences of spiritual gratitude and interpersonal gratitude.

than were participants in the Interpersonal Gratitude condition (<2%). We therefore conducted multiple regressions predicting each emotional response from views of God as having a benevolent mind, and as being limitless, mystical, authoritarian, and ineffable. Full results are depicted in Supplementary Tables S14 – S17.

The view that God has benevolent, agentic, mentalistic traits was a consistent unique positive predictor of all positive emotions, including gratitude $b = 0.22$ [0.13, 0.32], indebtedness $b = 0.37$ [0.26, 0.48], admiration $b = 0.25$ [0.14, 0.36], pride $b = 0.16$ [0.04, 0.29], deservingness $b = 0.26$ [0.15, 0.36], awe $b = 0.18$ [0.07, 0.28], surprise $b = 0.23$ [0.13, 0.33], transcendence $b = 0.23$ [0.12, 0.34], amusement $b = 0.20$ [0.08, 0.32], other positive feelings $b = 0.15$ [0.06, 0.24], $ps < .012$. Representations of God as a more mystical force was also consistently, although more weakly, associated with positive emotions, including gratitude $b = 0.09$ [0.01, 0.18], indebtedness $b = 0.15$ [0.04, 0.25], admiration $b = 0.17$ [0.07, 0.28], pride $b = 0.22$ [0.10, 0.35], deservingness $b = 0.23$ [0.13, 0.33], transcendence $b = 0.17$ [0.06, 0.28], amusement $b = 0.12$ [0.01, 0.24], other positive feelings $b = 0.14$ [0.05, 0.23], $ps < .036$. Representations of God as limitless, authoritarian, or ineffable were non-significant or inconsistent predictors across each set of emotional responses. These results suggest that representations of God as an intentional, benevolent being are likely to be associated with stronger feelings like gratitude, indebtedness, admiration, and surprise following experiences of spiritual gratitude relative to experiences of interpersonal gratitude. However, lack of belief in a personified,

benevolent God was associated with reduced gratitude-like feelings.

Discussion

This study investigated the psychological differences between experiences of interpersonal gratitude and spiritual gratitude, including differences in the types of events, emotional responses, and attributions for why the event occurred. Compared to experiences of interpersonal gratitude, participants were less likely to attribute spiritual gratitude experiences to human beings, more likely to attribute the event to circumstances beyond human control and to God, and these experiences of spiritual gratitude elicited less feelings of gratitude, indebtedness, and admiration, but greater awe. Additional analyses revealed the importance of participants' attributions in predicting emotional responses during experiences of spiritual gratitude: Gratitude was highest when participants attributed experiences to someone outside of themselves, and when they viewed God as benevolent and having a mind. These findings highlight how feelings like gratitude and indebtedness are typically evoked by benefits received from other people, whereas experiences attributed to more abstract, less personified, or less external entities may elicit a different profile of positive emotional responses.

These findings expand our understanding of the psychological profile of positive spiritual experiences, and how they converge with and diverge from positive experiences attributed to human benefactor.

Several studies have measured gratitude directed toward God (e.g. Aghababaei & Tabik, 2013; Krause, 2006; Krause & Hayward, 2015; Rosmarin et al., 2011) and other self-transcendent positive emotions elicited by supernatural or spiritual experiences (e.g. awe, Keltner & Haidt, 2003; Valdesolo & Graham, 2014). In the present research, we provide a comprehensive assessment of how these spiritual experiences are felt and understood differently from more mundane gratitude experienced in daily life. We found that experiences of spiritual gratitude can, like interpersonal gratitude, involve receiving assistance from other people, but that spiritual experiences also cover a broader range of life circumstances that are less attributable to human intervention (e.g. physical health, escape from accidents). We found that these experiences may not elicit strong feelings of gratitude (or other-focused emotions like indebtedness and admiration) which are prototypical when positive experiences are attributed to human benefactors. However, positive spiritual experiences may elicit stronger self-transcendent feelings of awe (see also Hlava & Elfers, 2014). However, the relationships between attributions and emotions were similar in cases of both interpersonal and spiritual experiences, indicating that similar psychological processes are at play in both situations

Prior conceptual analyses of gratitude highlight the importance of the perceived agency and intentions of the benefactor (Emmons et al., 2019; Lambert et al., 2009; Roberts, 2014; Rusk et al., 2016), with greater feelings of gratitude towards human benefactors who give freely and with benevolent intentions (MacKenzie et al., 2014; Weinstein et al., 2010; Wood et al., 2008). Our findings further demonstrate this pattern, showing that agentic, benevolent benefactors (i.e. other people, a personal God) elicited the strongest feelings of gratitude, whereas less gratitude was reported when human benefactors were absent or when non-human benefactors were perceived as lacking personal agency or benevolent personality traits. Our findings are therefore consistent with the hypothesis that religiosity can increase experiences of gratitude by encouraging belief in a benevolent agent (God) who is responsible for a wide variety of good experiences in one's life, even beyond those experiences that are under the control of human agents (Rosmarin et al., 2011). However, we also document that people report feeling grateful to spiritual benefactors that may not be personified, benevolent, or agentic, such as when blessings are attributed to more mystical and impersonal deities such as fate or the universe (Johnson et al., 2022).

In these situations, the pattern of emotional responses diverges from that experienced in response to gifts from a human benefactor or personal God.

We also found that other emotions reported during our participants' spiritual experiences mirrored patterns that were previously documented in secular contexts (Campos et al., 2013; Tong, 2015; Tong & Jia, 2017; Yih et al., 2019). For example, there was an association between feeling pride and perceptions of internal agency and self-control over the outcome. Future research may find that diverse supernatural forces elicit distinct patterns of emotional responses in part based on their distinct operating rules and patterns of attributions. For example, feelings of pride may be especially likely when outcomes are attributed to karmic rewards for one's past good deeds, due to the internal locus of control for much of karmic causality (White & Norenzayan, 2022); whereas there may be less pride when a personal God is thought to be the external causal agent. Additional unique psychological profiles may be evident when positive and negative experiences are attributed to other supernatural entities, such as luck, fate, witchcraft, the evil eye, or the intervention of spirits.

Altogether, these findings demonstrate how positive emotions vary systematically across experiences based on perceptions of how and why an event occurred, with similar processes of attribution and emotional response shared by both positive interpersonal and spiritual experiences. However, the diverse range of beliefs about supernatural benefactors means that specific feelings associated with gratitude may diverge from the specific feelings experienced towards human benefactors. Understanding spiritual gratitude also requires a more nuanced understanding of how people perceive the spiritual forces that they believe generate blessings in their lives.

Data availability

All data and analysis code for this article is available at https://osf.io/5dyhg/

Open scholarship

This article has earned the Center for Open Science badges for Open Data, Open Materials and Preregistered. The data and materials are openly accessible at https://osf.io/5dyhg/

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