

Varieties of Gratitude: Identifying Patterns of Emotional Responses to Positive Experiences Attributed to God, Karma, and Human Benefactors

Cindel J. M. White¹, Kathryn A. Johnson², Behnam Mirbozorgi¹, and Graziela Farias Martelli¹

¹ Department of Psychology, York University

² Department of Psychology, Arizona State University

Good fortune can be attributed to many sources, including other people, personal efforts, and various theistic and nontheistic supernatural forces (e.g., God, karma). Four studies (total $N = 4,579$) of religiously diverse samples from the United States and the United Kingdom investigated the distinct emotional reactions to recalled positive experiences attributed to natural and supernatural benefactors. We found that the hallmarks of interpersonal gratitude (e.g., thankfulness, admiration, indebtedness) were reported when believers attributed their good fortune to a personal, benevolent God. However, a distinct emotional profile arose when participants attributed good fortune to the process of karmic payback, which was associated with relatively less gratitude but with higher scores for feelings of pride and deservingness. These results were partially explained by participants' attributions of positive experiences to an external agent (e.g., God) versus a universal law or internal factors as in the case of karma. We conclude that diverse spiritual beliefs influence causal attributions for good fortune, which, in turn, predict distinct emotional responses.

Keywords: God, karma, gratitude, pride, attributions

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Many people believe in universal forces and supernatural entities that bring blessings, boons, and good fortune into their lives. Sometimes these blessings are viewed as unforeseen and gratuitous benefits bestowed by a loving God. At other times, good fortune may be seen as the reward for one's good deeds dispensed through cosmic forces such as karma. As a result, people may experience distinct positive emotions depending on the perceived source of their good fortune, even in mundane experiences in daily life. For example, gratitude and indebtedness are prototypically felt when benefits are given by someone or something outside of oneself, whereas pride is common when good experiences come about through one's efforts, skills, and virtues (Campos et al., 2013; Emmons et al., 2019; Lambert et al., 2009; Tong & Jia, 2017; Tracy & Robins, 2007). In four studies of religiously diverse samples, we investigated how patterns of positive emotions might vary depending on the perceived source of one's good fortune and whether this variability can be explained by internal versus external attributions—specifically, attributions of positive experiences to God, karma, or human benefactors.

People make external and internal attributions when explaining life's circumstances (Jones & Nisbett, 1987; Rotter, 1966; Weiner, 1986). External attributions explain a person's outcomes through factors outside of themselves and often outside of their control, such as their life circumstances, other people's actions, the force of social institutions, and accidental events. In contrast, internal attributions focus on the characteristics of the beneficiary, such as their past actions, skills, intentions, and character traits. In any given situation, the precise cause of an event may be ambiguous and multifaceted. Still, there are reliable differences in psychological responses depending on whether observers attribute an event to internal or external causes. Several studies of self-reported emotional experiences in daily life show that distinct positive emotions are associated with particular patterns of motivations, cognitive appraisals, and interpretations of why and how a good event occurred (Campos et al., 2013; Tong, 2015; Tong & Jia, 2017; Weidman & Tracy, 2020; Yih et al., 2020). We first review evidence that distinct positive emotions—especially gratitude and pride—arise from different attributions for mundane positive events.

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Cindel J. M. White  <https://orcid.org/0000-0001-6050-2449>

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Correspondence concerning this article should be addressed to Cindel J. M. White, Department of Psychology, York University, 4700 Keele Street, Toronto, ON M3J 1P3, Canada. Email: cjmwhite@yorku.ca

Then, in the present research, we test whether these same patterns of attributions and emotions explain responses to benefits attributed to diverse natural and supernatural forces and benefactors. We specifically test the hypothesis that positive experiences attributed to a personified, benevolent God are the most likely to elicit feelings of gratitude. In contrast, positive experiences perceived as karmic rewards for one's actions are less likely to elicit gratitude and more likely to elicit feelings of pride and deservingness.

Varieties of Positive Emotions

Gratitude is prototypically defined as a response to a person who voluntarily gives a benefit, especially if that benefit comes at some cost to themselves and is given to intentionally increase the recipient's well-being (Emmons et al., 2019; Lambert et al., 2009; Tsang, 2006). Gratitude then often motivates reciprocal prosocial behavior toward the benefactor (and toward others) and can bind the receiver and benefactor in a mutually beneficial social relationship (Algoe, 2012; Gordon et al., 2012; Ma et al., 2017). Thus, gratitude is inherently a social emotion, yet there are open questions about whether gratitude is also elicited when good fortune lacks a clear agentic benefactor. For example, people can report feeling thankful for having a loving family, narrowly escaping an accident, or simply being alive. However, these feelings may be psychologically and conceptually distinct from feelings of gratitude directed toward an agent (Emmons et al., 2019; Lambert et al., 2009; Roberts, 2014; Rusk et al., 2016).

Empirical studies confirm that gratitude is strongest when human benefactors give benefits with good intentions (MacKenzie et al., 2014; Weinstein et al., 2010; Wood et al., 2008) and when others have contributed to one's good fortune (Tong, 2015; Tong & Jia, 2017; Yih et al., 2020). The implication is that gratitude will be strongest when people attribute their good fortune to benevolent agents, regardless of whether these benefactors are natural (i.e., human) or supernatural (i.e., personified deities). Additional other-directed emotions may include feelings of indebtedness (Oishi et al., 2019; Peng et al., 2018; Tsang, 2006) and admiration.

A different pattern of positive emotions arises when good experiences are attributed to oneself. For example, pride is prototypically elicited by accomplishments that come about through one's efforts, special skills, or talents (Tracy & Robins, 2007; Williams & DeSteno, 2008), even in everyday positive experiences (Campos et al., 2013; Tong, 2015; Tong & Jia, 2017; Yih et al., 2020). It follows that pride may also be elicited when good fortune is thought to be a reward for past good deeds through karmic merit or a divine reward for virtuous behavior.

In the present research, we also investigated the extent to which people report having felt various other positive emotions during good experiences, including awe, surprise, hope, amusement, and contentment. We aimed to explore the possible range of positive emotional responses when one's good fortune was attributed to supernatural forces or entities. For example, prior theorizing has discussed the positive emotional response toward nonobvious, intangible benefactors (Tsang et al., 2022) as generalized gratitude (Lambert et al., 2009), transpersonal gratitude (Hlava et al., 2014; Steindl-Rast, 2004), or cosmic gratitude (Roberts, 2014). It has been suggested that these feelings may overlap with awe and other transcendent emotions (Hlava & Elfers, 2014), gladness, or relief (McCullough & Tsang, 2004), which have antecedents and

consequences distinct from interpersonal gratitude (Rusk et al., 2016). Therefore, we also assessed awe and other self-transcendent positive emotions (Keltner & Haidt, 2003; Stellar et al., 2017; Valdesolo & Graham, 2014).

Mental Representations of God and Karma

Good fortune and positive experiences can be attributed to a variety of supernatural beings and forces that have diverse characteristics, intentions, capabilities, and powers (Exline et al., 2023; Johnson et al., 2019; White & Norenzayan, 2022) and are, therefore, likely to elicit different patterns of positive emotional responses. Supernatural attributions can be an especially fruitful context in which to test theories about the antecedents of emotional responses because while human benefactors all possess similar underlying capacities, supernatural entities vary much more widely. For example, the importance of a benefactor's mental capacities for gratitude may be underestimated in studies of interpersonal gratitude, because all human benefactors possess mental agency, whereas only certain supernatural beings do. However, past studies have not systematically investigated how different supernatural beliefs elicit a variety of emotional responses, with existing research typically focused on a single supernatural being or type of emotion (e.g., focused on gratitude toward God and rarely studying karma if at all).

Many people view God as a powerful, loving, supernatural agent who controls life's outcomes (Johnson et al., 2013, 2015), and good fortune can be attributed to God's grace regardless of one's deservingness (especially in Protestant Christian denominations, Bufford et al., 2017; Emmons et al., 2017). In addition, many people believe that God rewards good, faithful, or hardworking devotees (Purzycki et al., 2022; White & Norenzayan, 2022). In either case, God can be viewed as an external benevolent agent who provides benefits. We predicted that feelings of gratitude, thankfulness, indebtedness, and admiration are likely responses when good fortune is attributed to a personified God—perhaps especially in cases of undeserved grace. Although gratitude toward God is empirically distinct from interpersonal gratitude (e.g., Aghababaei & Tabik, 2013; Emmons & Kneezel, 2005; Krause, 2006; Krause & Hayward, 2015; Krause et al., 2015; Nelson et al., 2023; Roberts, 2014; Rosmarin et al., 2011; Wilt & Exline, 2022), many of the precursors of gratitude to God are likely to overlap with the predictors of interpersonal gratitude. For example, Krause et al. (2015) found that those with more benevolent views of God reported greater feelings of gratitude to God, in the same way that greater gratitude is felt to more benevolent human benefactors.

In contrast, many people believe in a higher power that can be described as impersonal, abstract, distant, or mystically entwined with the cosmos or natural world (e.g., the universe or ultimate reality; Johnson et al., 2023). A higher power may be perceived as lacking the mental capacities, agency, and benevolent intentions of a human benefactor or personified God. People may also believe in karma, a supernatural force that ensures morally contingent causality across time, such that a person's good or bad actions determine future experiences (White, Norenzayan, et al., 2019; White & Norenzayan, 2019). Karma may or may not be thought of as an external being with an independent agency. Many theological doctrines and individual believers describe the law of karma as a process that is internal to an individual without requiring the intervention of gods or human agents. Although several religious

traditions also claim that devotion to certain powerful deities can release people from the karmic fruits of their actions (Fuller, 2004), personal responsibility is generally an important feature of karmic causality, and believers do not typically describe karma as a personlike being with independent mental characteristics like those possessed by gods (Bronkhorst, 2011; White et al., 2021; White & Norenzayan, 2022). Due to the importance of internally motivated actions in shaping karmic outcomes, we predicted that self-focused emotions, such as pride, are more likely to be experienced when positive experiences or good fortune are attributed to karma. In contrast, other-focused emotions, such as gratitude, are less likely when events are caused by karma or abstract higher powers. Table 1 summarizes this pattern of hypothesized associations between traits, attributions, and emotions, for positive experiences attributed to gods or human agents compared to karma.

Overview of Studies

In four studies, including religiously diverse samples from the United States and the United Kingdom, we investigated how patterns of emotional responses to positive events vary depending on how these events are attributed to different supernatural entities and forces.¹ Participants recalled a positive life experience and then reported their emotions, attributions, and general beliefs about supernatural entities and forces. We also experimentally manipulated the instructions to focus participants' attention on specific sources of benefits, including whether the benefits were derived from the actions of (a) a personified God (either due to God's grace or deserved as rewards), (b) a higher power, (c) karmic rewards (either from karma as a personified agent or as an impersonal principle), or (d) interpersonal (i.e., human) benefactors.

We predicted that, when people view a particular entity as the main source of their benefits, the perceived traits of the benefactor would influence the types of attributions that people make for the cause of their good experience, and these attributions make certain emotional responses more likely. Specifically, when people attribute their positive experiences to external, benevolent, agentic beings (e.g., personal God, personified views of karma, human benefactors), this focus on external agents will elicit the strongest feelings of gratitude and indebtedness. Additionally, the off-loading of responsibility for positive life events to an agentic being would correspond with a reduction in internal attributions and, therefore, might mitigate the tendency to feel pride or deservingness.

In contrast, gratitude-like feelings would be substantially reduced when the source of benefits was impersonal (e.g., a higher power) or attributed merely to karmic cause-and-effect. Instead, we expected that feelings of pride and deservingness for good fortune would be most strongly elicited by experiences attributed to karma due to believers' focus on internal factors and personal responsibility for karmically caused experiences. It was unclear whether people would experience pride and deservingness for positive experiences attributed to an abstract higher power.

We tested these general patterns of associations between the source of benefits, benefactor traits, internal versus external attributions, and emotions, in Studies 1, 2, and 4. In Study 3, we use natural language processing of participants' positive experience descriptions to test whether these patterns may be due in part to participants attributing different types of positive experiences to God and karma, such that types of events more outside of human control (e.g., recovery from

serious illness, avoidance of accidents) are attributed more to God, whereas events more within human control (e.g., receiving help from other people) are attributed to karma, and whether these different types of experiences encourage different types of emotions.

However, we predicted that people may also experience different emotional reactions to the same type of event, depending on whether they attribute the event to God or karma because explanations involving God invoke an external agent who is deemed to be causing the event. In contrast, explanations involving karma draw more attention to the role of internal factors in causing the event. In Study 4, we test this possibility by experimentally manipulating whether attributions to God and karma were made before or after recalling the focal positive event.

In sum, we expected to find that different patterns of cognitive appraisals regarding positive events would elicit distinct positive emotions. That is, internal attributions versus attributions of an event to an external agent can shape emotional responses. These findings shed light on whether secular theories of emotion can also be applied to understand positive experiences that are perceived as supernatural, a widespread and personally important phenomenon in people's lives around the world. Thus, our findings expand our knowledge of how cultural beliefs about God and karma might predict psychological processes and emotional responses.

Study 1: Emotions Experienced When God Versus Karma Is the Source of a Positive Experience

The first study assessed the profile of positive emotions elicited by positive experiences deemed to be caused by God or karma, and how this outcome is related to mental representations of the differing supernatural benefactors. There is variability in how believers describe the features of God (Johnson et al., 2019) and karma (White & Norenzayan, 2022); therefore, we attempted to experimentally manipulate whether believers were thinking of God and karma as an external agent versus an impersonal system of rewards due to internal factors using a 2 × 2 design.

Participants prescreened for belief in karma were randomly assigned to instructions that either described karma as a personal being who sees and chooses to reward one's good deeds (i.e., an external agent) or as an impersonal cosmic force that results in good outcomes following good deeds (i.e., a nonagentic process based on internal factors). Likewise, we manipulated whether God was described as having a plan and choosing to bless believers (i.e., an external agent) or whether God provides blessings as rewards for one's good deeds (i.e., based on internal factors). We assessed which attributions participants made for each event, how these attributions predict emotional responses, and whether variation in attributions

¹ We also conducted a pilot study as a preliminary investigation of the relationships between views of four entities—God, karma, the universe, and charitable organizations—and the tendency to feel gratitude and awe toward them. The full results, reported in the [Supplemental Materials](#), provided correlational evidence supporting our hypotheses that (a) God, more than karma, is viewed as high in agency and benevolence; (b) more gratitude is typically felt toward God than toward karma; (c) for each target, views that the benefactor has mental capacities predicts greater feelings of gratitude; and (d) the greater gratitude felt toward God than karma is partly explained by differences in the benefactor's mental capacities. We test these associations more systematically and experimentally in the present set of studies.

Table 1

Summary of Theorized Relationships Between the Traits, Attributions, and Emotions Elicited by Positive Experiences Attributed to God, Karma, or Humans

Prototypical source of benefit	Trait of benefactor	Attribution for benefit	Emotion
• God • Humans	• Mind (e.g., agency, intentions) • Benevolence (e.g., compassionate, merciful)	• Attributions to an external agent: Someone or something outside of yourself	• Gratitude • Thankfulness • Indebtedness
• Karma	• Does not require a mind or benevolence	• Internal attributions: Personal responsibility • Universal law	• Pride • Deservingness

Note. We did not have a clear hypothesis regarding traits, attributions, and emotions elicited by positive experiences attributed to a higher power.

across conditions explains the predicted distinct pattern of positive emotional responses in each condition.

Method

All study methods were approved by the Behavioural Research Ethics Board at the University of British Columbia, No. H15-03085.

Transparency and Openness

We preregistered all methods and data analysis plans on the Open Science Framework prior to data collection and uploaded all data and analysis code after completing the study (<https://osf.io/5qbks/>; C. White, 2023). We report how we determined our sample size, all data exclusions (if any), all manipulations, and all measures in all studies. Data for all studies were analyzed using R Version 4.3.2 (R Core Team, 2023).

Participants

A power analysis revealed we would need to recruit 300 participants for each of the four focal conditions 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., $r = .19$). Our goal was to collect data from 1,200 religious or spiritual individuals living in the United States using the Prolific platform.

We were only interested in people's real experiences of benefits received from either karma or God. Therefore, participants were prescreened for religious or spiritual-but-not-religious affiliation. Participants who reported within the survey that they do not believe in God and also do not believe in karma were assigned to complete a separate block of questions describing situations of interpersonal gratitude ($n = 165$; these data are excluded from all analyses below; we provide an interpersonal gratitude comparison condition in Study 2). We also excluded participants from the final sample if they failed an English-language comprehension check or attention check ($n = 32$), and we recruited new participants to replace exclusions.

The final sample consisted of 1,418 participants, including 50% women, 49% men, 1% nonbinary; aged between 18 and 79 years ($M = 37$, $SD = 13$); 70% White, 15% Black, 5% Hispanic, 3% Asian, 7% multiple or other; 36% Catholic Christian, 37% other Christian, 10% spiritual-but-not-religious, 4% Agnostic, Atheist, or nonreligious, and 13% other religious affiliation.

Materials

Prescreen. Participants first completed a series of demographic questions, with embedded items assessing participants' level of belief in God (or gods) and belief in karma (1 = *not at all* to 7 = *very much*). Participants who only believed in karma (i.e., scores at or above 4) but not God (i.e., scores at 4 or below) were randomly assigned between the two karma conditions; participants who only believed in God but not karma were randomly assigned between the two God conditions; and participants who believed in both karma and God were randomly assigned across the four karma/God conditions.²

Positive Experience Prompt. Participants wrote a few sentences recalling a positive experience from anytime in their life, including what happened during the experience and how they felt about it. These positive experiences were prompted by one of four framing conditions aimed at manipulating whether participants focused on God versus karma and whether the positive experience was God's reward for their good deeds (i.e., an internally caused benefit; $n = 312$), the result of God's grace (i.e., an external benefit; $n = 307$), a karmic reward (i.e., an internally caused benefit; $n = 308$), or a reward from karma as a personified benevolent agent (i.e., an external benefit; $n = 326$). Each prompt manipulated descriptions of the target benefactors and the focal reason for the benefit, as shown in Table 2. Specifically, (a) the *impersonal karma condition* described good deeds as karmic merit, (b) the *personal karma condition* described karma as remembering and rewarding good deeds, (c) *God's grace* was described as the source of good experiences, or (d) good experiences were the *rewards from God* for one's good deeds.

Participants then described "What, specifically, happened during this experience of [karmic merit/karma rewarding you/God

² Because the assignment to God and karma conditions depended on participants' level of belief, the conditions do not contain true random assignment but may also partially reflect differences between God believers and karma believers. To replicate our results in a truly randomized sample, we repeated the key analyses with the subset of participants who reported belief in *both* God and karma ($n = 239/619$ in the God conditions and $n = 353/634$ in the karma conditions). These analyses, available in the [Supplemental Materials](#), replicate the key effects from the whole sample, that is, thinking about events caused by God elicited greater gratitude and indebtedness and thinking about karma elicited greater pride and deservingness (although effects do not always remain statistically significant due in part to the reduced sample size). We also replicated the finding that karma (vs. God) is associated with more internal attributions or universal law attributions, and God (vs. karma) is associated with more attributions to an external agent. This suggests that the effects reported below are not reducible to general differences between karma believers and God believers, but rather reflect the features of belief about God versus karma.

Table 2*Prompt Conditions in Study 1 That Manipulate Both the Source of Benefits (God vs. Karma) and the View of Each Source*

Benefactor	View of benefactor	
	External/Personal	Internal/Impersonal
Karma	Personal karma: "Karma remembers how people behave and gives people the good outcomes that they deserve" and asked participants to "think of good things in your life that you have received as karma has rewarded you for your good deeds."	Impersonal karma: Karma as something that "will eventually generate the good outcomes that people deserve" and asked participants to "think of good things in your life that you have received because of the karmic merit created by your good deeds."
God	God's grace: "Good outcomes unfold according to God's plan, and blessings are created by God's grace and provision in our lives" and asked participants to "think of good things in your life that you have received through God's grace and provision in your life."	Rewards from God: "Even if an action doesn't have immediate rewards, God remembers how people behave and gives people the rewards that they have earned" and asked participants to "think of good things in your life that you have received as a reward from God for your good deeds."

rewarding you/God's grace and provision in your life?]" and "How did you feel at the time of this experience?" However, preliminary analyses revealed only small, inconsistent, or nonsignificant differences in perceived traits, attributions, and emotions between the two karma conditions, or between the two God conditions. Therefore, we collapsed the two karma and collapsed the two God conditions and focused on comparing differences between perceptions of karma (i.e., combined personal and impersonal prompts) versus God (i.e., combined grace and reward prompts). The full results across all conditions are available in the [Supplemental Materials](#).

Emotional Responses. Participants next rated a list of specific emotions they may have felt during their positive experience (1 = *not at all* to 7 = *very much*). Items were drawn from a comprehensive list of positive emotions (Weidman & Tracy, 2020). We conducted exploratory factor analyses to investigate how these items clustered into different types of emotional responses ([Supplemental Materials](#)). The analyses below focus on the composite scores, which include clusters of items assessing gratitude (five items, $\alpha = .83$; e.g., "I felt appreciative toward someone or something"), indebtedness (four items, $\alpha = .76$; e.g., "I thought that I owed favors to someone or something"), admiration (three items, $\alpha = .69$; e.g., "I had a great deal of respect toward someone or something"), pride (three items, $\alpha = .83$; e.g., "I felt accomplished"), deservingness (seven items, $\alpha = .89$; e.g., "I felt that I had earned this positive outcome"), awe/transcendence (eight items, $\alpha = .90$; e.g., "I felt that life had new meaning"), surprise (three items, $\alpha = .79$; e.g., "I felt astonished that I would have this positive experience"), amusement (three items, $\alpha = .83$; e.g., "I was entertained"), and general positivity (12 items, e.g., hope, enthusiasm, interest, and contentment; $\alpha = .89$).

Attributions of the Experience. Participants responded to a set of questions aimed at assessing the extent to which the positive event was attributed to external versus internal factors (1 = *not at all* to 5 = *completely*). A factor analysis indicated that the items clustered into three groups 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?" $\alpha = .70$), attributions to a *universal law*

("How likely is it that some law of the universe or nature brought about this experience?"), and attributions to an *external agent* ("How responsible was someone or something other than yourself for having brought about this experience?" "Did you feel that someone or something other than yourself was controlling what was happening in this situation?" and "Did you feel that circumstances beyond any human's control were controlling what was happening in this situation?" $\alpha = .77$).

Characteristics of God and Karma. Participants completed the 28-item Limitless, Authoritarian, Mystical, Benevolent, and Ineffable inventory (Johnson et al., 2019) as well as eight additional items that assess the extent to which God/karma possesses mental capacities and agency (e.g., "God [Karma] makes plans," "God [Karma] rewards people for proper behavior"). Participants assigned to the God conditions described God's mental capacity and attributes, and participants in the karma conditions completed the same items referring, instead, to karma. The respective items were combined into composite scores indexing the extent to which participants view God (karma) as having a mind ($\alpha = .86$ [.87]), being benevolent ($\alpha = .88$ [.84]), limitless ($\alpha = .84$ [.85]), mystical ($\alpha = .80$ [.75]), authoritarian ($\alpha = .84$ [.80]), ineffable ($\alpha = .81$ [.81]), and not real ($\alpha = .74$ [.77]).

Other Exploratory Measures. Participants also completed measures of their overall degree of belief in karma and belief in God, as well as questions about the perceived connection between God and karma (e.g., to what extent is God responsible for enacting karma?) and to what extent karma is dependent on human actions (1 = *karma operates independently of human actions*, 7 = *karma is due to human actions*), indicators of religious commitment (e.g., religious affiliation, religiosity, spirituality, frequency of religious attendance), and COVID-19-related fears. Participants also rated their dispositional tendency to experience gratitude ($\alpha = .80$; McCullough et al., 2002; e.g., "If I had to list everything that I felt grateful for, it would be a very long list"), to experience awe ($\alpha = .83$; Shiota et al., 2006; e.g., "I feel wonder almost every day"), and to anthropomorphize technology, animals, and natural phenomena ($\alpha = .90$; Waytz et al., 2010; "To what extent does the average mountain have free will?"). These exploratory measures are not analyzed here. However, we

included religiousness and dispositional tendencies in additional regression models available in the [Supplemental Materials](#).

Results

Preliminary Analyses and Manipulation Check:

Views of God and Karma

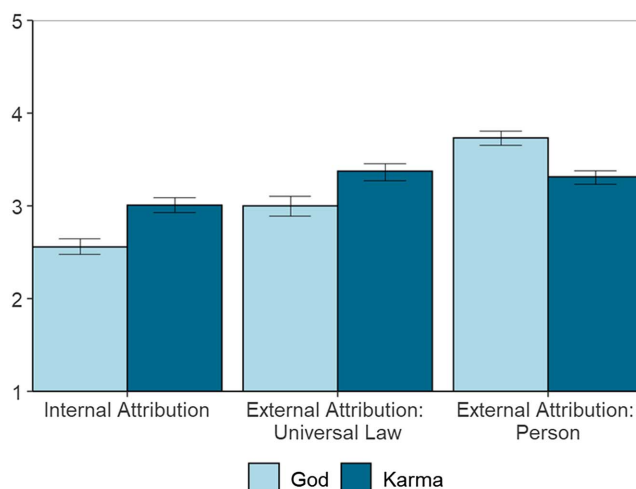
As a manipulation check, we first confirmed that there were substantial differences between views of God compared to karma. God was rated as having significantly more mental attributes, $d = 0.90$ [0.78, 1.01], $t(1,223) = 15.91$, $p < .001$, and benevolent traits, $d = 1.25$ [1.13, 1.37], $t(1,231) = 22.19$, $p < .001$, relative to karma. These results are consistent with previous research (White et al., 2021; White & Norenzayan, 2022) demonstrating that people typically think of God as a benevolent agent, whereas karma is less likely to be thought of as agentic or having mental capacity.

Attributions for Experiences

We used a multivariate analysis of variance (MANOVA) to test for the overall difference between the two God and the two karma conditions, $F(9, 3,747) = 17.06$, $p < .001$, followed by t tests to investigate effects on each type of attribution. As displayed in [Figure 1](#), benefits in the God (vs. karma) condition were attributed to an external agent, $d = 0.43$ [0.31, 0.54]. In contrast, benefits in the karma condition were attributed to internal factors, $d = -0.42$ [-0.53, -0.31] or universal laws, $d = -0.49$ [-0.40, -0.18], all $ps < .001$. Thus, attributing positive experiences to an external agent is greatest when the source is deemed to be God (i.e., an agent with a mind). In contrast, attributing positive experiences to universal laws or internal factors is greatest when the source is karma (rather than God).

Figure 1

Mean Levels of Attributions in the God (Light Blue) Versus Karma (Dark Blue) Conditions, Study 1



Note. See the online article for the color version of this figure.

Emotions Elicited by Experiences Caused by God and Karma

MANOVAs testing responses across all emotion categories revealed that there were significant differences in emotional responses to karmic versus God's benefits, $F(9, 1,242) = 24.62$, $p < .001$. The mean levels of emotional responses are displayed in [Figure 2](#), and significance tests and effect sizes are displayed in [Table 3](#). Positive experiences attributed to God elicited significantly greater feelings of gratitude and indebtedness (and awe) than did positive experiences attributed to karma. In contrast, positive experiences attributed to karma elicited greater feelings of pride and deservingness (and amusement) compared with positive experiences attributed to God.

Do Attributions and Perceived Characteristics of God and Karma Explain Variation in Emotional Responses Across Conditions?

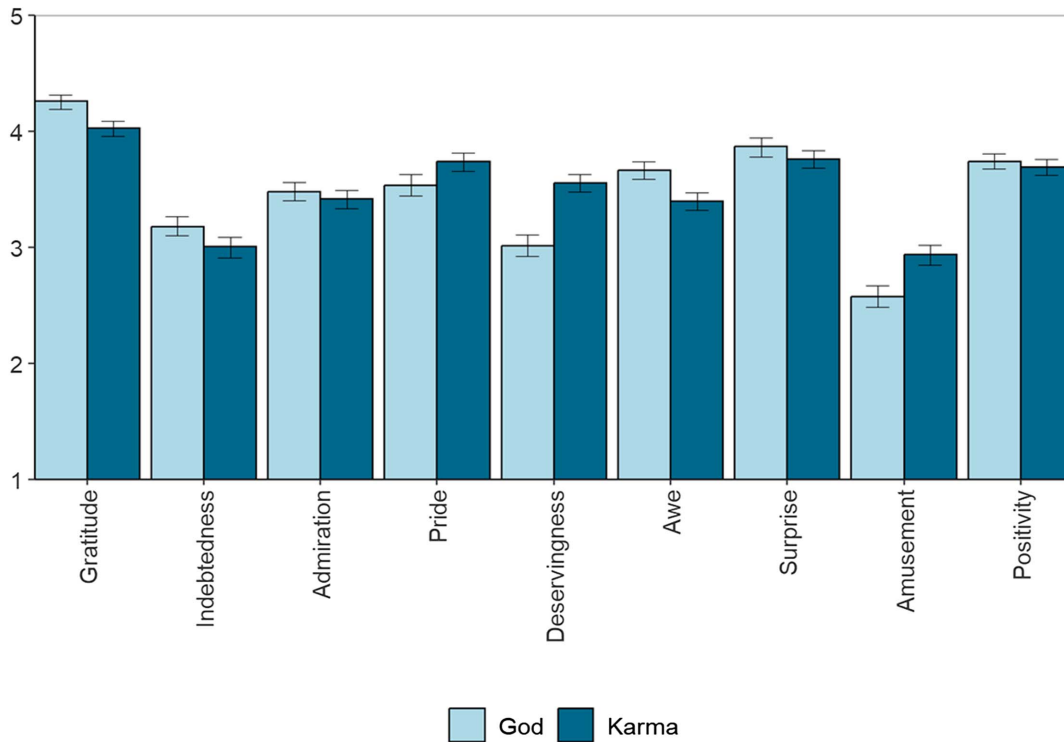
To test whether internal versus external attributions might be associated with variation in emotional responses, we first examined the bivariate correlations between the focal emotional responses (gratitude, indebtedness, pride, and deservingness), three types of attributions (internal, universal law, and external agent), and perceived characteristics of God and karma (e.g., a mind/mental capacities and benevolence; [Table 4](#)). We then conducted a series of stepwise multiple regressions³ that predicted emotional responses simultaneously from condition (God [coded 1] vs. karma [coded 0]) at Step 1. At Step 2, we entered attributions (i.e., internal, external agent, external universal law) and perceived characteristics of God and karma (i.e., mind and benevolence) to assess how strongly these variables predict each emotional response. The results of these regression models are available in [Table 5](#).

Gratitude, $R^2 = 0.28$, $F(1251) = 80.50$, $p < .001$, was mainly predicted by attribution to an external agent, but not significantly by attributions to a universal law or internal factors. Benevolence and mental capacity were also significant predictors of gratitude. Indebtedness, $R^2 = 0.24$, $F(1251) = 66.71$, $p < .001$, was also predicted most strongly by attributions to an external agent and was

³ Our preregistered analyses included a broader set of emotion scales, and additional measures of God's/karma's characteristics, than we focus on in the main text. One series of multiple regression analyses predicted emotional responses from condition (God [coded 1] vs. karma [coded 0]) and attributions, and a separate series of analogous models predicted emotional responses from perceived characteristics of God and karma rather than attributions, including whether God/karma is perceived as limitless, mystical, or authoritarian, in addition to mental capacities and benevolence. These results, available in the [Supplemental Tables S18–S21](#), confirmed that mental capacities and benevolence were consistently associated with emotional responses, and this remained true even after accounting for other views of God and karma. Therefore, for simplicity, the analyses in the main text focus only on mental capacities and benevolence as characteristics of benefactors that might predict attributions and emotions, and we included these in a model simultaneously with measures of attributions as predictors of emotions. To check for the robustness of the results, we also include in the [Supplemental Materials](#) additional models that control for various individual trait differences that may predict supernatural beliefs and emotions (i.e., dispositional gratitude, dispositional awe, anthropomorphizing tendencies, belief in God, and religiousness). We found similar patterns of results after controlling for these individual trait differences and omit them in our regression models in the main text for a more parsimonious presentation of results.

Figure 2

Mean Levels (With 95% Confidence Intervals) of Positive Emotions Reported When Good Experiences Come From God (Light Blue) and Karma (Dark Blue), Study 1



Note. See the online article for the color version of this figure.

also predicted by internal attributions, attributions to a universal law, benevolence of the source, and mental capacity of the source, suggesting that multiple kinds of attributions may influence feelings of indebtedness. Notably, when attributions and perceptions of benevolence and mental capacity were added to the model at Step 2, the positive effects of condition on the dependent variables were reversed, an indication that these attributions, benevolence, and mental capacity explained the effects of condition on gratitude and indebtedness.

Table 3

Mean Levels of Positive Emotions, Effect Sizes, and Significance of Differences Across Four Conditions, Study 1

Emotion	God <i>M</i>	Karma <i>M</i>	Cohen's <i>d</i>	<i>d</i> LL	<i>d</i> UL	<i>t</i>	<i>p</i>
Gratitude	4.26	4.03	0.29	0.18	0.40	5.08	<.001
Indebtedness	3.18	3.00	0.16	0.05	0.27	2.86	.004
Admiration	3.48	3.42	0.06	−0.05	0.17	1.06	.290
Pride	3.54	3.74	−0.18	−0.29	−0.07	−3.23	.001
Deservingness	3.01	3.55	−0.52	−0.64	−0.41	−9.24	<.001
Awe	3.66	3.40	0.27	0.16	0.38	4.81	<.001
Surprise	3.87	3.76	0.11	−0.01	0.22	1.87	.061
Amusement	2.57	2.94	−0.30	−0.42	−0.19	−5.37	<.001
General positivity	3.74	3.70	0.05	−0.06	0.16	0.93	.351

Note. LL = lower limit; UL = upper limit, of bootstrapped 95% confidence interval of *d*.

In contrast, the emotion of pride, $R^2 = 0.20$, $F(1251) = 51.55$, $p < .001$, was predicted by being in the karma condition at Step 1. At Step 2, pride was also predicted by internal attributions, attributions to a universal law, and attributions to an external agent, as well as benevolence of the source, and mental capacity of the source. However, in contrast to gratitude, the coefficient for internal attributions was greater in magnitude for pride ($b = .30$) compared with gratitude ($b = -0.02$), which was nonsignificant. The coefficient for attributions to a universal law was also greater for pride ($b = .12$) compared with the coefficient for gratitude ($b = .01$), which, again, was nonsignificant.

Deservingness, $R^2 = 0.28$, $F(1251) = 80.50$, $p < .001$, was also predicted by being in the karma condition at Step 1. At Step 2, deservingness was predicted by internal attributions, attributions to a universal law, and mental capacity of the source. However, attributions to an external agent or a benevolent source were not significant. Again, in contrast to gratitude, the coefficient for internal attributions was greater in magnitude for deservingness ($b = .29$) compared with the nonsignificant coefficient for gratitude. The coefficient for attributions to a universal law was also greater for deservingness ($b = .22$) compared with the nonsignificant coefficient for gratitude.

We note that, after accounting for views of the source and attributions, source remained a significant negative predictor of both pride and deservingness, such that much more pride and deservingness are felt for karma-caused than for God-caused events. Thus, there

Table 4*Bivariate Correlations Between Key Emotions, Attributions, and Perceived Characteristics of God and Karma, Study 1*

Variable	1	2	3	4	5	6	7	8	9
Emotions									
1. Gratitude	—	.52***	.45***	.33***	.01	.32***	.41***	.26***	.23***
2. Indebtedness	.55***	—	.30***	.30***	.13**	.39***	.48***	.35***	.32***
3. Pride	.37***	.24***	—	.69***	.29***	.31***	.25***	.26***	.21***
4. Deservingness	.21***	.23***	.63***	—	.34***	.38***	.25***	.31***	.18***
Attributions									
5. Internal	-.16***	-.05	.30***	.32***	—	.14***	-.02	.08*	.16***
6. universal law	.03	.14***	.20***	.33***	.16***	—	.53***	.35***	.26***
7. External agent	.49***	.37***	.11**	.04	-.22***	.17***	—	.38***	.31***
Characteristics									
8. Mind of God/Karma	.44***	.29***	.24***	.16***	-.19***	-.04	.39***	—	.46***
9. Benevolence of God/Karma	.54***	.28***	.23***	.10*	-.17***	-.01	.33***	.61***	—

Note. Upper diagonal represents perceived characteristics of karma, whereas lower diagonal represents perceived characteristics of God.

* $p < .05$. ** $p < .01$. *** $p < .001$.

are likely other unmeasured variables at play in eliciting pride and deservingness when positive events are attributed to karma.

Discussion

In Study 1, we found that positive experiences are associated with the positive emotions of gratitude and indebtedness when the benefactor is deemed a benevolent external agent with mental capacities. In contrast, positive experiences brought about by karma were much more likely to be attributed to internal factors or a universal law. Moreover, these internal and universal law attributions predicted pride and deservingness (not gratitude or indebtedness). Indeed, feelings of pride and deservingness are self-referential positive emotions that depend more on one's internal traits and efforts than on the benefactor's mental state. In contrast, feelings of gratitude and indebtedness are more likely to be felt when there is a benevolent external agent as the source of one's good fortune.

Study 2: Replication

Study 2 was a preregistered replication of the key findings documented in Study 1, that also tested the generalizability across different religious groups by recruiting a subsample who specifically identified as Hindu or Buddhist, and therefore may hold different views of karma than Study 1's Christian and nonreligious participants. We also assigned believers to the interpersonal benefactor condition, to allow us to compare how responses vary between supernatural and human benefactors.

Method

The study was divided into two parts: Study 2A consisted of a sample of religious and nonreligious people in the United States, and Study 2B consisted of a sample of Hindus and Buddhists in the United States and the United Kingdom. These were preregistered as separate studies to test replicability across different religious traditions, but both studies showed similar patterns of results (e.g., similar associations between key variables and failure to manipulate personal vs. impersonal views of karma in either sample); therefore, we present results below collapsed across both of these samples to

simplify the presentation of results (the separate results, as preregistered, are available in the [Supplemental Materials](#)).

Transparency and Openness

All methods and analysis plans were registered on the Open Science Framework before collecting data, and we uploaded all data and analysis code after completing the study (Study 2A: <https://osf.io/582up/>; Study 2B: <https://osf.io/hpt7e/>).

Participants

For Sample 2A, we used a Cloud Research panel of approved participants from the United States to recruit approximately 300 participants in each of the five conditions. We excluded 64 participants who failed the comprehension and attention checks (described in Study 1). We also excluded participants who did not believe in God and also did not believe in karma ($n = 758$). Using these criteria, the final sample consisted of 1,519 participants, including 61% women, 38% men, 1% nonbinary or with no gender provided; ages ranging from 18 to 83 years ($M = 42$ years, $SD = 13$); 77% White, 8% Black, 4% Hispanic/Latino, 4% East Asian, 7% multiple or other ethnicities; 22% Catholic Christian, 42% other Christian, 10% spiritual-but-not-religious, 16% Agnostic or nonreligious, and 10% other religious affiliation.

For Sample 2B, we used Prolific to recruit participants from the United States and the United Kingdom and Cloud Research to recruit U.S. participants, who identified as Hindu or Buddhist, aiming for a final sample size of approximately 300 participants per condition (600 total). However, due to the relatively small numbers of Hindus/Buddhists in these countries, which caused difficulty in recruitment, we preregistered that this survey would be available for 1 month. After excluding participants who failed an English-language comprehension check or attention check placed within the survey ($n = 36$), our final sample comprised 179 Hindus and 199 Buddhists ($N = 378$). There were 54% women, 43% men, 3% nonbinary or who preferred not to say; ages ranging from 18 to 71 years ($M = 32$ years); 30% White, 38% South Asian, 12% Southeast Asian, 11% East Asian, 9% multiple or other ethnicities; with nationalities 46% from the United States, 46% from the United Kingdom, and 8% other.

Table 5

Multiple Regressions Predicting Emotional Responses From the Source of Benefits (God = 0.5, Karma = -0.5), Perceptions of God's/Karma's Mind and Benevolence, and Attributions (Centered) for the Event, Study 1

Predictor	Gratitude		Indebtedness		Pride		Deservingness	
	<i>b</i> [95% CI]	<i>p</i>	<i>b</i> [95% CI]	<i>p</i>	<i>b</i> [95% CI]	<i>p</i>	<i>b</i> [95% CI]	<i>p</i>
Step 1								
Intercept	4.14 [4.10, 4.19]	<.001	3.09 [3.03, 3.15]	<.001	3.64 [3.58, 3.70]	<.001	3.28 [3.23, 3.34]	<.001
Source	0.23 [0.14, 0.32]	<.001	0.18 [0.06, 0.30]	.004	-0.20 [-0.32, -0.08]	.001	-0.54 [-0.66, -0.43]	<.001
Step 2								
Intercept	4.14 [4.10, 4.18]	<.001	3.09 [3.04, 3.14]	<.001	3.64 [3.58, 3.69]	<.001	3.28 [3.23, 3.33]	<.001
Source	-0.17 [-0.26, -0.07]	<.001	-0.19 [-0.32, -0.06]	.003	-0.34 [-0.47, -0.20]	<.001	-0.51 [-0.63, -0.38]	<.001
Mind	0.07 [0.03, 0.12]	.002	0.13 [0.07, 0.19]	<.001	0.17 [0.11, 0.24]	<.001	0.2 [0.14, 0.26]	<.001
Benevolence	0.15 [0.11, 0.19]	<.001	0.12 [0.06, 0.17]	<.001	0.09 [0.03, 0.15]	.003	-0.01 [-0.06, 0.04]	.68
Internal attribution	-0.02 [-0.06, 0.01]	.21	0.07 [0.02, 0.12]	.011	0.30 [0.25, 0.36]	<.001	0.29 [0.25, 0.34]	<.001
External attribution: Universal law	0.01 [-0.02, 0.05]	.37	0.09 [0.04, 0.13]	<.001	0.12 [0.07, 0.17]	<.001	0.22 [0.18, 0.26]	<.001
External attribution: Agent	0.27 [0.23, 0.32]	<.001	0.34 [0.28, 0.40]	<.001	0.08 [0.01, 0.14]	.017	0.01 [-0.05, 0.07]	.798
Observations	1,252		1,252		1,252		1,252	
R ² /R ² adjusted	0.280/0.276		0.243/0.240		0.199/0.195		0.291/0.287	

Note. Bolded *p*-values are significant at *p* < .05.

Materials and Procedure

Participants completed a survey following the same format as Study 1. They first completed a prescreen questionnaire assessing their level of belief in God and karma alongside other demographic questions. In Sample 2A, participants who scored above the midpoint in *both* belief in God and karma were randomly assigned to one of five conditions that referred to personal or impersonal karma, God, a higher power, or an interpersonal benefactor; participants who only reported belief in karma, not God, were randomly assigned to one of the personal/impersonal karma, interpersonal benefits, or higher power conditions; and participants who only reported belief in God were randomly assigned between the God, higher power, or interpersonal benefits condition (nonbelievers were disqualified from participating in the survey). In Sample 2B, participants who identified as Hindu or Buddhist were randomly assigned to one of the two karma conditions (personal or impersonal).⁴

Positive Experience Prompt. Participants were quasirandomly assigned to one of five conditions, which asked participants to recall and write about a positive experience caused by (a) impersonal karma (*n* = 486), (b) personified karma (*n* = 496), (c) God's grace (*n* = 292), (d) a higher power (*n* = 314), or (e) another human (interpersonal; *n* = 309). These prompts were adapted from Study 1 but included instructions to think about blessings caused by an abstract higher power (i.e., a less agentic, less personified view of God) rather than as God's reward. We described this higher power as "a universal force which makes people more likely to experience good outcomes. This can operate over long timescales, but even if we don't see it immediately, a Higher Power will eventually generate the good outcomes people deserve." We hypothesized that this condition would elicit experiences distinct from experiences caused by a personified God, as well as experiences caused by the specific reward-based cosmic power of karma. However, we again found very few significant differences in views of God between prompt conditions and no significant differences in views of karma, attributions, or emotions between God prompts or between karma prompts, therefore, as preregistered we collapsed across both the God and both the karma conditions in the focal analyses below (see [Supplemental Materials](#) for results across all conditions).

Emotional Responses. After writing about their positive experience, participants reported the extent to which they felt various positive emotions, which we combined into composite scores indexing feelings of thankfulness (four items, $\alpha = .87$), gratitude (four items, $\alpha = .84$), indebtedness (four items, $\alpha = .81$), pride (four items, $\alpha = .85$), deservingness (four items, $\alpha = .87$), awe/transcendence (six items, $\alpha = .89$), surprise (four items, $\alpha = .82$), amusement (three items, $\alpha = .84$), and general positivity (five items, $\alpha = .85$). These items were drawn from Study 1 but included additional items to allow a distinction between feelings of thankfulness without a specified benefactor (e.g., "I felt gratitude," "I felt very fortunate")

⁴ Because participants were not truly randomly assigned across the conditions, we repeated our main analyses in the subset of participants who reported belief in both God and karma (*n* = 222/606 in the God condition and *n* = 482/982 in the karma condition). Results replicate the key patterns in this subsample, including that thankfulness, gratitude, and indebtedness, external supernatural attributions and external agent attributions were higher for events caused by God than karma (*p* < .001), whereas deservingness and internal attributions were higher for karma than God (*p* < .05), while differences in pride were not significant (*p* = .83).

versus gratitude toward a benefactor (e.g., “I felt appreciative toward someone or something,” “I thought that someone or something who helped me should be acknowledged”).

Attributions of the Event. Participants next reported how much they felt *internal* factors influenced the positive experience they had just recalled (mean composite of “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?” $\alpha = .79$); external factors including an *external agent* (“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?” $\alpha = .73$); *universal law* (“Did you feel that some universal principle influenced what was happening in this situation?” and “How likely is it that some law of the universe or nature brought about this experience?” $\alpha = .81$); and *supernatural entity* (“Did you feel that circumstances beyond any human’s control were controlling what was happening in this situation?” and “Did you feel that some supernatural being was responsible for your good outcome?” $\alpha = .85$). All items were completed on 5-point Likert scales ranging from 1 = *not at all* to 5 = *completely*.

Characteristics of God/Karma and Individual Differences. Using measures similar to Study 1, participants reported whether God/karma possesses a mind ($\alpha = .93$) and is benevolent ($\alpha = .88$), mystical ($\alpha = .79$), authoritarian ($\alpha = .87$), and playful ($\alpha = .81$). Participants also completed measures of dispositional gratitude and beliefs about the attributes and nature of God, a higher power, and karma.

Results

Views of God and Karma

Replicating Study 1, God was ascribed much greater mental capacity, $d = 1.00$ [0.89, 1.11], $t(1,452) = 20.26$, $p < .001$, and benevolence, $d = 1.24$ [1.13, 1.35], $t(1,432) = 24.98$, $p < .001$, compared with perceptions of karma.

Attributions of Positive Experiences

We used a MANOVA followed by t tests of significance to investigate differences in attributions for events caused by God and karma (Figure 3). Replicating the findings of Study 1, there were significant differences in attributions for positive experiences deemed to be caused by God versus karma, $F(12, 4,749) = 34.49$, $p < .001$.

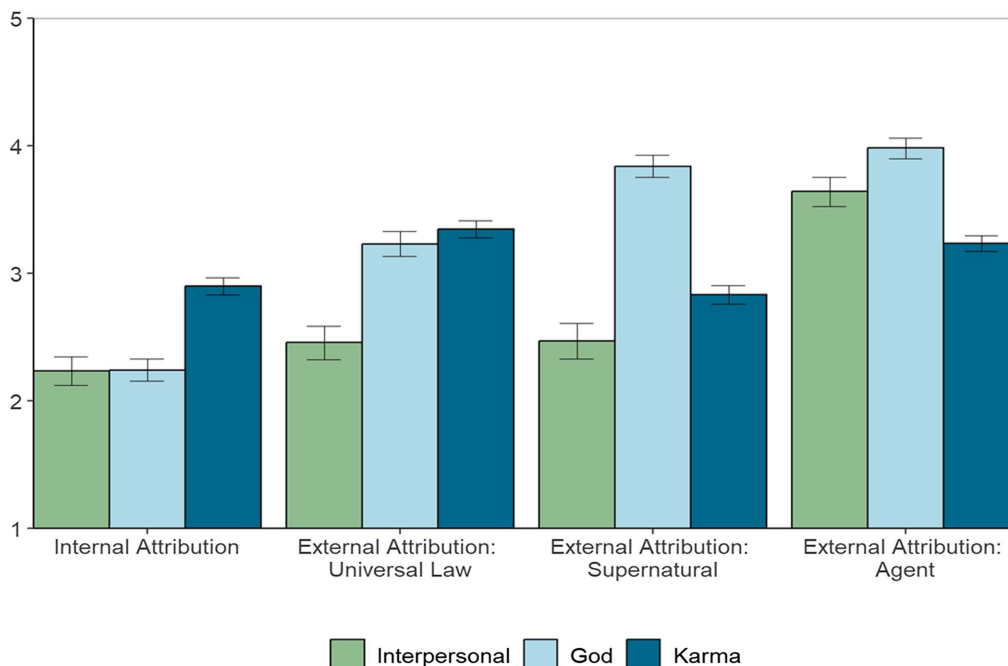
Experiences ascribed to karma (vs. God) were associated with more internal attributions, $d = 0.61$ [0.51, 0.72], $p < .001$, but less likely to be attributed to external supernatural agents, $d = -0.86$ [-0.97, -0.76], and interpersonal sources, $d = -0.74$ [-0.84, 0.63], $ps < .001$, and not significantly associated with attributions to a universal law, $d = 0.10$ [0.00, 0.21], $p = .055$.

Emotions Elicited by Experiences Caused by God and Karma

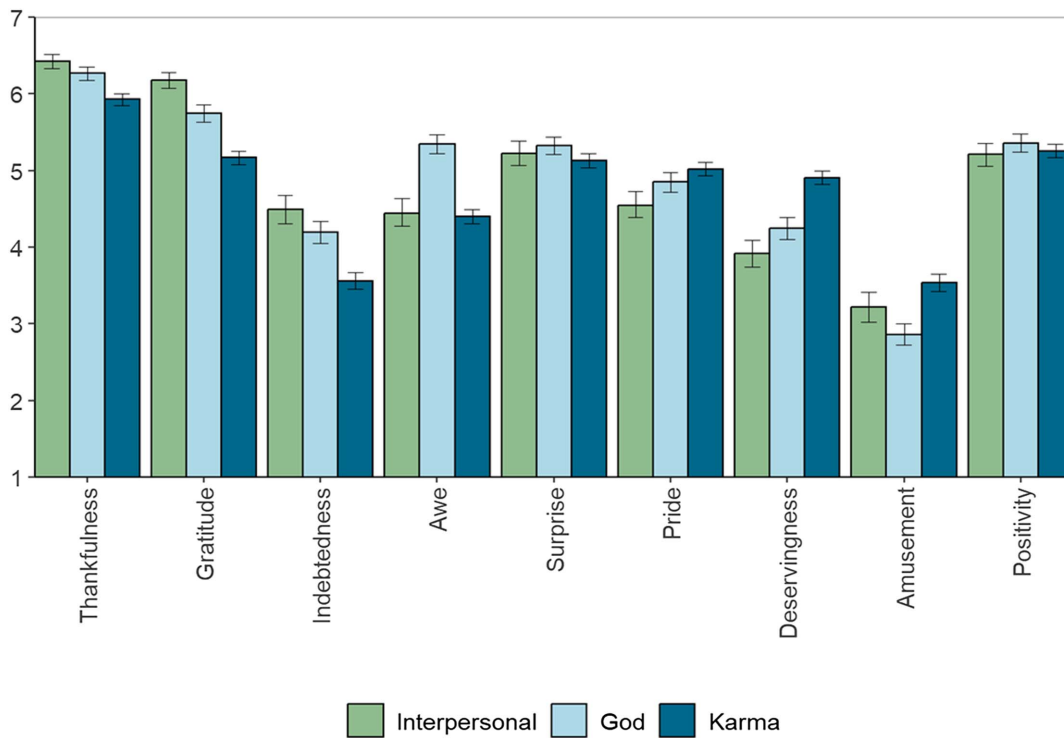
To investigate differences in emotional responses across the three conditions, we first conducted a MANOVA across all emotion types. Emotional responses showed a significantly different pattern

Figure 3

Mean Levels (With 95% Confidence Intervals) of Internal and External Attributions of Positive Experiences Across Conditions and Samples, Study 2



Note. See the online article for the color version of this figure.

Figure 4*Mean Levels (With 95% Confidence Intervals) of Emotions From Positive Experiences by Condition, Study 2*

Note. See the online article for the color version of this figure.

across these three types of benefactors, $F(27, 4,734) = 14.43$, $p < .001$.

Mean levels of emotions in each condition are shown in Figure 4, and differences between conditions are depicted in Table 6. As predicted, benefits attributed to other people were associated with the highest levels of personal gratitude and indebtedness but the lowest levels of pride and deservingness, as well as less awe compared with benefits from God (but not karma) and less amusement than benefits from karma (but not God). Further supporting our hypotheses, benefits that came from karma were associated with the lowest levels of personal gratitude and indebtedness and the highest levels of pride, deservingness, and amusement, compared to God and interpersonal benefits. Compared to karma, benefits that come from God were associated with greater gratitude, indebtedness, awe, and surprise but lower levels of pride, deservingness, and amusement. Surprise and general positivity did not significantly differ across conditions.

Do Attributions and Perceived Characteristics of God and Karma Explain Variation in Emotional Responses Across Conditions?

To test whether internal versus external attributions might explain variation in emotional responses, we first examined the bivariate correlations between the focal emotional responses (gratitude, indebtedness, pride, and deservingness), three types of attributions (internal, universal law, external supernatural, and external agent),

and perceived characteristics of God and karma (e.g., a mind/mental capacity and benevolence; Table 7).

We then conducted a series of multiple regressions⁵ that predicted emotional responses simultaneously from condition (God [coded 1] vs. karma [coded 0]) at Step 1. At Step 2, we entered perceived characteristics of God and karma and four types of attributions (i.e., internal, universal law, supernatural, agent) to assess how strongly these variables predict each emotional response. The results of these regression models are shown in Table 8. As preregistered, these analyses focused on comparing views of God and karma and excluded the interpersonal benefactor condition.

Thankfulness, $R^2 = 0.21$, $F(1587) = 58.97$, $p < .001$, was most strongly predicted by attributions to an external agent ($b = 0.31$). Thankfulness was also predicted by attributions to a universal law and perceptions of the source as having a mind and benevolence, but not significantly predicted by internal attributions or attributions to a

⁵ We had preregistered an analysis plan that would separately investigate (a) whether the perceived characteristics of God and karma predicted attributions and then (b) whether attributions predict emotional responses. These analyses are available in full in the Supplemental Tables S30–S34 and show that ratings of the benefactor's mind and benevolence predicted greater attributions to external (but not internal) entities. However, in the main text, we report a simplified comprehensive multiple regression analysis in which the perceived mental capacity of the source, the benevolence of the source, and attributions are simultaneously entered into a multiple regression predicting emotions because these analyses show that both perceptions of the benefactor and attributions are unique predictors of emotional responses.

Table 6*Cohen's d Effect Sizes and Significance Tests for Differences in Emotions Between Conditions, Study 2*

Emotion	God versus karma				God versus interpersonal				Karma versus interpersonal			
	<i>d</i>	<i>LL</i>	<i>UL</i>	<i>p</i>	<i>d</i>	<i>LL</i>	<i>UL</i>	<i>p</i>	<i>d</i>	<i>LL</i>	<i>UL</i>	<i>p</i>
Thankfulness	0.30	0.20	0.40	<.001	−0.16	−0.29	−0.02	.015	−0.46	−0.59	−0.33	<.001
Gratitude	0.41	0.31	0.51	<.001	−0.33	−0.47	−0.19	<.001	−0.76	−0.89	−0.63	<.001
Indebtedness	0.38	0.28	0.48	<.001	−0.17	−0.31	−0.04	.012	−0.56	−0.69	−0.43	<.001
Awe	0.62	0.52	0.73	<.001	0.60	0.46	0.74	<.001	−0.03	−0.16	0.1	.65
Surprise	0.13	0.03	0.23	.012	0.07	−0.07	0.20	.34	−0.06	−0.19	0.06	.33
Pride	−0.11	−0.21	−0.01	.036	0.19	0.05	0.33	.0063	0.31	0.19	0.44	<.001
Deservingness	−0.42	−0.53	−0.32	<.001	0.19	0.05	0.33	.0069	0.65	0.52	0.78	<.001
Amusement	−0.39	−0.49	−0.29	<.001	−0.20	−0.34	−0.06	.0042	0.19	0.06	0.31	.0056
General positivity	0.07	−0.03	0.17	.18	0.10	−0.04	0.23	.15	0.03	−0.10	0.16	.63

Note. *LL* = lower limit; *UL* = upper limit, of bootstrapped 95% confidence interval of *d*.

supernatural or external agent. Gratitude, $R^2 = 0.34$, $F(1587) = 118.32$, $p < .001$, was also most strongly predicted by attributions to an external agent ($b = 0.59$) but also predicted by internal attributions, attributions to universal law, and perceptions of a mind and benevolence of the source. However, gratitude was not significantly predicted by attributions to a supernatural agent, suggesting that the mental capacity and benevolence of the benefactor were more important in predicting gratitude than supernatural status. Indebtedness, $R^2 = 0.24$, $F(1587) = 69.72$, $p < .001$, was also predicted by attributions to an external agent, all other attributions, and benevolence. Feelings of indebtedness were not predicted by mind (i.e., mental capacity), $p = .087$.

Pride, $R^2 = 0.27$, $F(1587) = 84.70$, $p < .001$, was most strongly predicted by internal attributions ($b = .56$), and other variables were weaker predictors. Deservingness, $R^2 = 0.26$, $F(1587) = 77.83$, $p < .001$, was also most strongly directly predicted by internal attributions ($b = .56$) and more weakly predicted by attributions to universal law and the mind/mental capacity of the benefactor. Deservingness was not significantly predicted by attributions to a supernatural being, external agent, or perceptions of benevolence.

Discussion

In Study 2, we replicated the results of Study 1, showing that participants recalled emotions of thankfulness, gratitude, and indebtedness when believers attributed positive experiences to God, an external, benevolent agent. However, a distinct emotional profile arose when participants attributed good fortune to karma. Positive experiences with karma as the source were more likely to elicit feelings of pride and deservingness and associated with attributions to internal factors or a universal law.

Study 3: Types of Positive Experiences With God Versus Karma as the Source

Study 3 further explored differences between benefits caused by God, karma, and human benefactors, by analyzing participants' open-ended descriptions of experiences caused by each source using topic modeling, a form of natural language processing that extracts key themes from text documents based on the probability of word occurrence.

Table 7*Bivariate Correlations Between Variables, Study 2*

Variable	1	2	3	4	5	6	7	8	9	10	11
Emotions											
1. Thankfulness	—	.71***	.36***	.44***	.25***	.06	.32***	.26***	.33***	.21***	.19***
2. Gratitude	.75***	—	.59***	.35***	.18***	.02	.39***	.37***	.49***	.25***	.24***
3. Indebtedness	.42***	.59***	—	.18***	.05	.02	.28***	.38***	.42***	.23***	.22***
4. Pride	.46***	.45***	.31***	—	.60***	.43***	.27***	.24***	.14***	.27***	.21***
5. Deservingness	.22***	.17***	.09*	.60***	—	.43***	.19***	.11***	.03	.20***	.13***
Attributions											
6. Internal	−.12**	−.14***	−.03	.32***	.40***	—	.08*	−.09**	−.17***	.09**	.07*
7. Universal law	.21***	.18***	.24***	.29***	.32***	.08*	—	.65***	.50***	.30***	.21***
8. Supernatural	.42***	.53***	.38***	.19***	−.01	−.28***	.30***	—	.64***	.40***	.31***
9. Agent	.46***	.58***	.39***	.15***	−.04	−.36***	.26***	.74***	—	.29***	.24***
Characteristics											
10. Mind	.39***	.46***	.33***	.27***	.05	−.10*	.14***	.53***	.45***	—	.51***
11. Benevolence	.46***	.46***	.31***	.30***	.07	−.10**	.15***	.47***	.41***	.66***	—

Note. Upper diagonal represents karma condition. Lower diagonal represents God condition.

* $p < .05$. ** $p < .01$. *** $p < .001$.

Table 8
Multiple Regressions Predicting Emotional Responses From the Source of Benefits (God = 0.5, Karma = -0.5), Perceptions of God's/Karma's Mind/Mental Capacity and Benevolence, and Attributions (Centered) for the Event, Study 2

Predictor	Thankfulness			Gratitude			Indebtedness			Pride			Deservingness		
	b	[95% CI]	p	b	[95% CI]	p	b	[95% CI]	p	b	[95% CI]	p	b	[95% CI]	p
Step 1															
Intercept	6.10	[6.04, 6.15]	<.001	5.46	[5.39, 5.53]	<.001	3.88	[3.79, 3.96]	<.001	4.93	[4.86, 5.01]	<.001	4.58	[4.50, 4.65]	<.001
Source	0.34	[0.22, 0.45]	<.001	0.59	[0.44, 0.73]	<.001	0.64	[0.47, 0.81]	<.001	-0.17	[-0.32, -0.01]	.033	-0.67	[-0.82, -0.51]	<.001
Step 2															
Intercept	6.04	[5.99, 6.10]	<.001	5.37	[5.31, 5.43]	<.001	3.8	[3.72, 3.87]	<.001	4.92	[4.85, 4.98]	<.001	4.61	[4.54, 4.68]	<.001
Source	-0.12	[-0.25, 0.01]	.069	-0.17	[-0.32, -0.02]	.026	-0.06	[-0.25, 0.13]	.55	-0.32	[-0.48, -0.16]	<.001	-0.39	[-0.57, -0.22]	<.001
Mind/mental capacity	0.07	[0.02, 0.12]	.008	0.08	[0.02, 0.14]	.008	0.06	[-0.01, 0.14]	.087	0.13	[0.06, 0.19]	<.001	0.1	[0.03, 0.17]	.005
Benevolence	0.12	[0.07, 0.18]	<.001	0.14	[0.08, 0.20]	<.001	0.12	[0.04, 0.19]	.002	0.13	[0.07, 0.19]	<.001	0.04	[-0.03, 0.11]	.29
Internal attribution	0.05	[-0.00, 0.10]	.069	0.08	[0.02, 0.14]	.006	0.12	[0.05, 0.20]	.001	0.56	[0.50, 0.62]	<.001	0.57	[0.50, 0.63]	<.001
External attribution															
Universal law	0.11	[0.06, 0.17]	<.001	0.08	[0.02, 0.14]	.009	0.09	[0.01, 0.16]	.029	0.18	[0.11, 0.24]	<.001	0.3	[0.23, 0.37]	<.001
Supernatural	-0.01	[-0.07, 0.06]	.87	0.06	[-0.01, 0.14]	.10	0.18	[0.09, 0.28]	<.001	0.12	[0.03, 0.20]	.006	-0.04	[-0.13, 0.05]	.39
External agent	0.31	[0.25, 0.38]	<.001	0.59	[0.51, 0.67]	<.001	0.46	[0.36, 0.56]	<.001	0.09	[0.00, 0.18]	.044	-0.01	[-0.10, 0.08]	.83
Observations			1,588			1,588			1,588			1,588			1,588
R ² /R ² adjusted			0.207/0.204			0.344/0.341			0.236/0.233			0.273/0.270			0.256/0.253

Note. Bolded p-values are significant at $p < .05$.

Method

We used the latent Dirichlet Allocation method for topic modeling using Python (Blair et al., 2020; Mutanga & Abayomi, 2022; see Supplemental Materials for further details), applied to the full set of experience descriptions from Studies 1 and 2, aggregated to provide a sufficiently large sample size for this type of analysis (Gong et al., 2019). We read through the keywords and examined participants' full responses that used those keywords for each topic to extract the general themes that best summarize the keywords in each algorithm-generated topic (full results are depicted in Supplemental Table S44).

Transparency and Openness

All data and analysis code are available on the Open Science Framework (<https://osf.io/2xt5n/>). This study's analyses were not preregistered but present a reanalysis of data collected using methods preregistered in Studies 1 and 2.

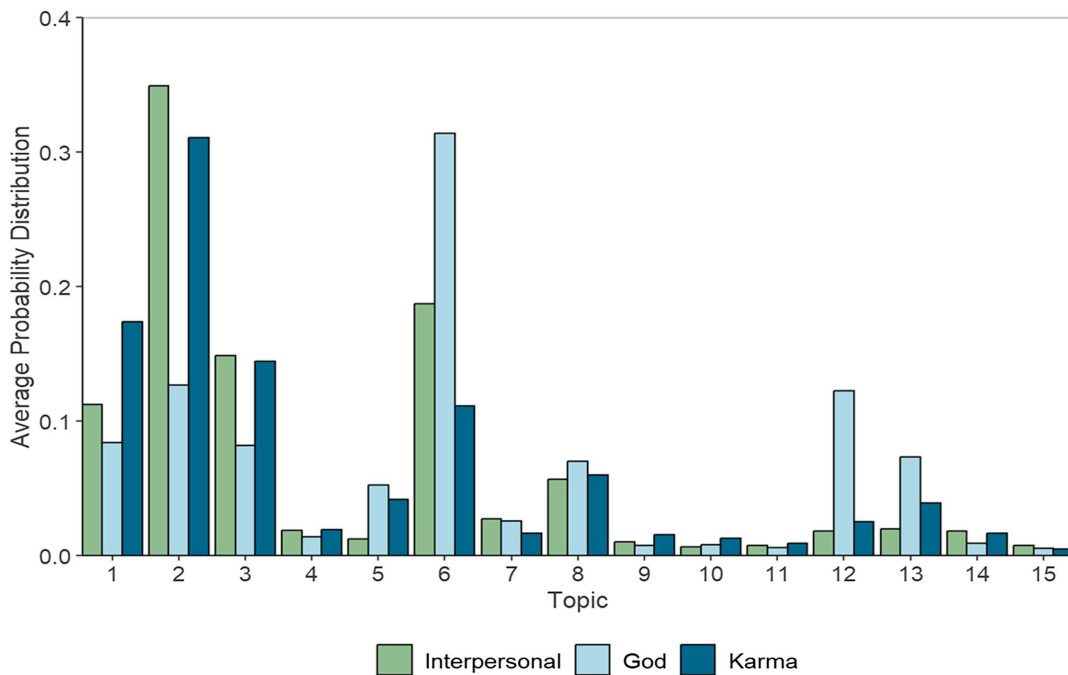
Results and Discussion

The best-fitting model (perplexity score: -7.60, coherence score: 51.72%) extracted 15 topics as shown in Figure 5: (1) general help from other people and from karma; (2) help with money and housing; (3) job and school success; (4) various medical issues and injuries; (5) supernatural beliefs, including karma, god, higher powers, and faith; (6) God, family, and other relationships; (7) personal and legal issues; (8) help finding various things, including dogs and wallets; (9) miscellaneous good fortune (e.g., at a casino); (10) miscellaneous benefits, related to purses, purchased products, gas, drinks; (11) work including volunteer activity; (12) pregnancy and parenthood; (13) driving and car-related issues; (14) animals and pets; and (15) help from family, such as with mechanical issues.

We then computed the average posterior probability of each topic across responses from God conditions, karma conditions, and interpersonal condition, to assess how the probability of these themes varies depending on the source of good experiences. As displayed in Figure 5, karma was more associated with topics of general help from other people, specific monetary and housing help, and job and school success (Topics 1, 2, and 3) than were benefits from God. God was more associated with topics like God and family (Topic 6), successful pregnancy and parenthood (Topic 12), and surviving driving and car-related issues (Topic 13) compared to benefits from karma. The frequency of topics for interpersonal benefits was similar to those for karmic benefits, with the most common themes being helped from other people with money, housing, and job/school success (Topics 2 and 3), along with positive family relationship (Topic 6). This pattern is consistent with karma evoking more exchange-based situations in which people might be able to receive money and help as rewards for their good behavior, compared to God evoking more situations that are largely outside of human control, such as medical conditions, pregnancy, and accidents.

As another way of visualizing participants' descriptions, we also created word clouds using the wordcloud package in R, which can illustrate the most frequently used terms in each condition. For example, as shown in Figure 6, there were substantial differences in the key terms used when describing experiences caused by karma, God, and humans. Specifically, giving or receiving help was frequently used when recalling karmic or interpersonal benefits, and

Figure 5
Average Probability Distribution of Topics Across Conditions, Aggregated Across Studies 1 and 2



Note. See text for key themes of each topic: (1) general help from other people; (2) help with money and housing; (3) job and school success; (4) medical issues and injuries; (5) supernatural beliefs; (6) relationships; (7) personal and legal issues; (8) help finding lost items, including dogs and wallets; (9) miscellaneous good fortune (e.g., gambling); (10) miscellaneous (e.g., purses, purchased products, gas, drinks); (11) work and volunteer activities; (12) pregnancy and parenthood; (13) driving, accidents, and car-related issues; (14) animals and pets; and (15) help from family (e.g., with mechanical issues). See the online article for the color version of this figure.

“God” was the central theme when describing benefits received from God.

Finally, we conducted sentiment analysis using VADER (Hutto & Gilbert, 2014) to model the overall positivity or negativity of the

words used to describe experiences caused by God, karma, and interpersonal benefactors. God-caused experiences were overall less positive ($m = 0.35$) than karma-caused experiences ($m = 0.45$), $t(2,511) = 5.01$, $p < .001$, and interpersonal experiences ($m = 0.40$),

Figure 6
Word Cloud of Terms Used in Recalling Positive Experiences in God, Karma, and Interpersonal Conditions, Studies 1 and 2

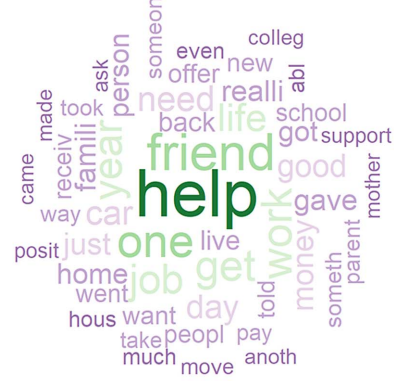
(A) God



(B) Karma



(C) Interpersonal



Note. Word clouds omit the words “time,” “feel,” and “felt,” which were common merely because of the question prompts. See the online article for the color version of this figure.

$t(969) = 2.03, p = .043$. Karma-caused and interpersonal experiences did not significantly differ, $t(799) = 1.78, p = .075$.

Study 4: Manipulating Order of Supernatural Attributions

Study 3 revealed that participants described somewhat different types of events, depending on the source of good experience, with karma more often implicated in situations of interpersonal exchange and personal effort, and God more often responsible for events typically outside human control (e.g., childbearing, accidents, illnesses). Therefore, Study 4 investigated whether the previously documented patterns of attributions and emotions in Studies 1 and 2 were robust regardless of the type of event. In Study 4, we retained two conditions instructing participants to recall a positive experience with God/karma as the source and added two conditions instructing participants to recall a positive experience and then consider God or karma as the source. (We had previously found very few differences in views of God between prompt conditions, no significant differences in views of karma between prompt conditions, and no significant differences in attributions or emotions comparing God or karma prompts. Thus, we did not include higher power or personal/impersonal karma conditions.)

We hypothesized that attributions to God would elicit greater external attributions and gratitude, whereas attributions to karma would elicit greater internal attributions and pride, even if the source was identified after recalling the positive event (in other words, participants were not merely describing different types of events depending on assigned condition).

Method

Transparency and Openness

All methods and analysis plans were registered on the Open Science Framework before collecting data, and we uploaded all data and analysis code after completing the study: <https://osf.io/yfuac/>.

Participants

We used a Cloud Research panel of approved participants from the United States to recruit approximately 300 participants in each of the four conditions (i.e., God/before, God/after, karma/before, and karma/after). We excluded 46 participants who failed the comprehension and attention checks (described in Study 1). We also excluded participants who did not believe in God and also did not believe in karma ($n = 746$). Using these criteria, the final sample consisted of 1,264 participants, including 57% women, 42% men, 1% nonbinary or no gender provided; ages ranging from 20 to 85 years ($M = 42$ years); 72% White, 12% Black, 6% Hispanic/Latino, 3% East Asian, 3% multiple or other ethnicities; 23% Catholic Christian, 38% other Christian, 10% spiritual-but-not-religious, 16% Agnostic or nonreligious, and 2% other religious affiliation.

Materials and Procedure

Participants completed a survey following a similar format as Studies 1 and 2. They first completed a prescreen questionnaire assessing their level of belief in God and karma alongside other demographic questions. Participants who scored above the midpoint

in belief in God or karma were directed to the full survey and randomly assigned to one of four conditions if they believed in both God and karma; randomly assigned between two karma conditions if they only believed in karma; and randomly assigned between two God conditions if they only believed in God (nonbelievers in both God and karma were disqualified).⁶

Positive Experience Prompt. The positive experience prompts for God and karma were adapted from Studies 1 and 2, but we added two conditions where participants provided positive experiences without specific identification of the source and only afterward associated the event with either karma or God. In the two new conditions, participants were first instructed to “write about an experience in your life where something good happened to you” and only after writing about the experience were they presented with the description of God or karma from Study 2 and asked to think about their experience and write “In what ways was this experience caused by the karmic merit created by your good deeds [God’s grace and provision in your life]?”

Thus, depending on their previously measured levels of belief, participants were randomly assigned to one of four conditions in a 2 (God vs. karma as benefactor) $\times$ 2 (positive experience provided before vs. after source identification) design, which asked participants to recall and write about (a) a positive experience caused by karma ($n = 285$), (b) a positive experience later attributed to karma (i.e., after description; $n = 339$), (c) a positive experience caused by God’s grace ($n = 296$), or (d) a positive experience later attributed to God’s grace (i.e., after description; $n = 344$). Participants high in God belief were directed to one of the two God conditions, participants high in karma belief were directed to one of the two karma conditions, whereas participants high in both God and karma beliefs were randomly assigned to any of the four conditions. In this final study, we only used a subset of measures from prior studies that were most relevant to our focal hypotheses.

Emotional Responses. After writing about their positive experience, participants reported the extent to which they felt various positive emotions, which we combined into composite scores indexing feelings of thankfulness ($\alpha = .89$), gratitude ($\alpha = .85$), pride ($\alpha = .86$), deservingness ($\alpha = .89$), and awe/transcendence ($\alpha = .91$). The items were the same as Study 2, but due to the high correlation between and similar pattern of emotions for gratitude and thankfulness items ($\alpha = .91$), and for pride and deservingness ($\alpha = .90$), we focus analyses on analyzing these pairs of emotions together.

Attributions of the Event. As in Studies 1 and 2, participants reported how much they made *internal attributions* and attributions to an *external agent* that influenced the positive experience they had just recalled. All items were completed on 5-point Likert scales ranging from 1 = *not at all* to 5 = *completely*.

Characteristics of God/Karma and Individual Differences. Using measures from Study 1, participants reported whether God/karma possesses a mind ($\alpha = .94$), is benevolent ($\alpha = .90$), and is authoritarian ($\alpha = .86$). Participants also completed measures of

⁶ We repeated the key analyses in the subset of participants who believe in both God and karma ($n = 275/640$ in the God conditions, $n = 230/624$ in the karma conditions) and therefore experienced true random assignment. The pattern of differences in emotions and attributions between God and karma conditions remained in the same direction but was not consistently statistically significant in this greatly reduced subsample size (see [Supplemental Materials](#)).

dispositional gratitude and beliefs about the attributes and nature of God and karma.

Results

Differences in Traits and Attributions Across Conditions

Multiple regression analyses were used to predict each outcome variable from the source of benefits (God vs. karma), order of instructions (before vs. after describing the event), and the interaction between source and order (all conditions dummy coded and centered). These analyses confirmed that God was rated as having more mental attributes, $b = 1.51$ [1.38, 1.64], and benevolent traits, $b = 1.51$ [1.39, 1.63], $ps < .001$, compared to karma. There were no significant interactions, $ps > .70$, indicating that this difference in traits did not depend on whether participants made attributions before or after describing the event (see Supplemental Figures 21–22 and Tables 45–47 for more details).

We also replicated the difference in attributions when thinking about God-caused versus karma-caused benefits, although there was a significant interaction both when predicting internal attributions, $b = -0.46$ [0.22, 0.69], $p < .001$, and when predicting external attributions, $b = -0.25$ [-0.47, -0.03], $p = .028$: The difference in attributions was much greater when participants were instructed to think about God versus karma before describing the event than when asked to think about God versus karma after selecting an event, internal attribution: $b = -0.72$ [-0.90, -0.55] versus $b = -0.27$ [-0.43, -0.11], external attribution: $b = 0.69$ [0.53, 0.86] versus $b = 0.44$ [0.29, 0.60], $ps < .001$.

Differences in Emotions Across Conditions

Using the same regression models to predict emotions, we replicated the overall pattern of more gratitude when thinking about God versus karma, $b = 0.25$ [0.13, 0.37], and less pride when thinking about God versus karma, $b = -0.29$ [-0.44, -0.14], $ps < .01$. However, the gratitude effect was significantly moderated by order of attribution, interaction $b = -0.24$ [-0.48, -0.00], $p = .048$. As depicted in Figure 7, the difference in gratitude to God versus karma was greater when thinking about God *before* describing the event (when the event was specifically attributable to God vs. karma per the instructions), $b = 0.37$ [0.19, 0.55], $p < .001$, then when thinking about God after describing the positive event, where the God/karma difference is not significant, $b = 0.13$ [-0.04, 0.29], $p = .13$. Exploratory follow-up analyses indicated that when events were ascribed to God/karma *after* describing the event, ascriptions to God generated significantly greater endorsement of items classified as gratitude (consistent with Studies 1 and 2), $b = 0.24$ [0.04, 0.44], $p = .017$, but differences were not significant for thankfulness items (in contrast to Studies 1 and 2), $b = 0.01$ [-0.14, 0.17], $p = .86$.

Likewise, feelings of awe were higher when thinking about God than karma, interaction term $b = -0.85$ [-1.21, -0.50], $p < .001$, and this was explained by a larger difference when God ascriptions occurred *before* describing the event.

In contrast, but in accord with Studies 1 and 2, feelings of pride were consistently higher when benefits were deemed to have come from karma rather than God. The interaction terms were nonsignificant suggesting that the differences were not based on the order of instructions, $b = 0.01$ [-0.29, 0.31], $p = .94$.

Do Attributions and Perceived Characteristics of God and Karma Explain Variation in Emotional Responses Across Conditions?

Finally, we conducted multiple regressions⁷ that predicted emotional responses from the source of benefits, the perceived mind/mental capacity and benevolence of the benefactor, and internal and external attributions. Due to the significant difference in gratitude based on the order of supernatural attribution, we conducted separate analyses for each order (before vs. after describing the event) when predicting gratitude/thankfulness, but only one model when predicting pride/deservingness because order effects were not significant.

As depicted in Table 9, the composite gratitude/thankfulness score was most strongly predicted by attributions to an external agent, mind, and benevolence in both the before and after conditions. Internal attributions weakly predicted gratitude/thankfulness in the after-event condition only. Pride/deservingness, in contrast, was most strongly predicted by internal attributions and also by external attributions, mind, and benevolence. After adding perceptions of the source traits (mind and benevolence) and attributions, there remained a negative effect of source on emotions, such that participants report comparatively more gratitude/thankfulness from karma than God (a reversal of the main effect of source) and more pride/deservingness from karma than God (consistent with the main effect of source), indicating that differences in mind/benevolence and external attributions largely account for why more gratitude is felt toward God-caused events, and there are likely additional unmeasured variables that could account for emotions elicited by karma.

Discussion

The results of Study 4 largely replicate the pattern of God/karma differences documented in Studies 1 and 2, although these relationships were often smaller in magnitude and less consistent when events were ascribed to God versus karma after the fact, rather than when participants were instructed to recall events caused by God (or karma). These results indicate that part of the reason why participants feel different emotions when thinking about God-caused and karma-caused events is the type of event, with certain situations and experiences being more characteristic of God and therefore more likely to elicit gratitude than experiences characteristic of karma (see Study 3). However, this is only part of the story, and even post hoc explanations of the source of positive events tend to generate more gratitude-like feelings when the benefactor is deemed to be an external, personified being and more pride-like feelings are reported when the event is attributed to internal factors and karmic causality.

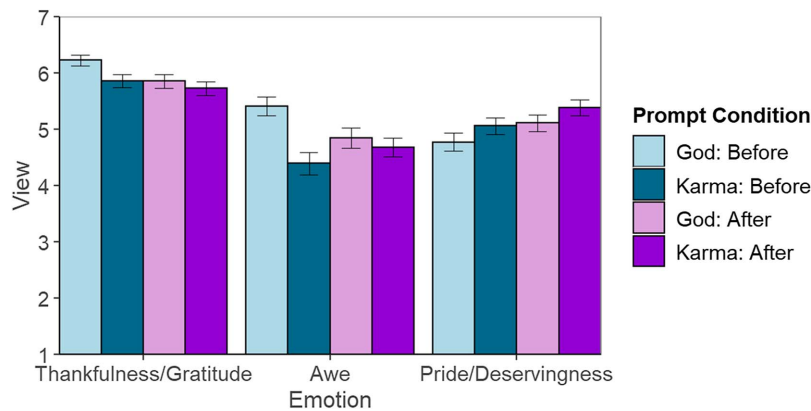
General Discussion

Across four studies, we found reliable differences between the patterns of positive emotions recalled from positive experiences that were caused by God, karma, or human benefactors and the perceived

⁷ We had initially preregistered path modeling to measure the indirect pathways between source of benefits and emotions, via perceived source traits and attributions. However, in the main text, we report a simpler multiple regression model that shows the direct pathways between emotions and mind, benevolence, internal attributions, and external attributions. The path model is provided in the Supplemental Materials.

Figure 7

Mean Levels (With 95% Confidence Intervals) of Emotions Reported in Each Condition, Study 4



Note. See the online article for the color version of this figure.

mental capacities of each benefactor differentially predicted these emotional responses. Feelings such as thankfulness, gratitude, and indebtedness were most often reported toward other people, also quite commonly toward God, and were least likely to be felt when karma was the source of benefits. (Compared to the other sources, positive experiences caused by God were also likely to elicit feelings of awe and surprise.) In contrast, thinking about positive experiences caused by karma was most likely to elicit feelings of pride and deservingness (and fairness of the outcome).

These results are partly explained by somewhat different types of experiences being characteristic of different supernatural entities (Study 3). Karma was implicated in experiences of receiving help from other people in return for good deeds and receiving money and success in jobs and education, whereas God was implicated in experiences that are less under any human's control, such as avoiding accidents, recovery from illness, or being able to conceive offspring. Study 4, which manipulated the order of (a) describing a

positive experience and then considering the source versus (b) considering the source and then describing a positive experience, revealed that these ordering differences partly explained why gratitude is felt more often toward God: Differences in gratitude were reduced when attributions to God versus karma were made post hoc (after being asked to recall a positive experience). However, participants did report feeling more gratitude and less pride when they ascribed their experiences to God rather than karma, providing additional evidence that characteristics of the benefactor also affect emotional responses.

Specifically, participants reported more gratitude and indebtedness the more they viewed the benefactor as someone or something external to themselves, especially when the benefactor was characterized as benevolent and having mental capacities (i.e., having a mind—an independent agent who can think, plan, reward, and punish). Internal attributions were not significantly associated with these gratitude-related feelings but instead predicted feelings of

Table 9

Multiple Regressions Predicting Emotional Responses From the Source of Benefits (God = 0.5, Karma = -0.5), Perceptions of God's/ Karma's Mind and Benevolence, and Attributions (Centered) for the Event, Study 4

Predictor	Thankfulness/gratitude (before)		Thankfulness/gratitude (after)		Pride/deservingness	
	<i>b</i> [95% CI]	<i>p</i>	<i>b</i> [95% CI]	<i>p</i>	<i>b</i> [95% CI]	<i>p</i>
Step 1						
Intercept	6.04 [5.96, 6.12]	<.001	5.79 [5.70, 5.88]	<.001	5.10 [5.02, 5.18]	<.001
Source	0.37 [0.21, 0.53]	<.001	0.13 [-0.05, 0.30]	.15	-0.29 [-0.44, -0.14]	<.001
Step 2						
Intercept	5.93 [5.86, 6.01]	<.001	5.90 [5.82, 5.97]	<.001	5.10 [5.04, 5.16]	<.001
Source	-0.34 [-0.54, -0.15]	.001	-0.46 [-0.64, -0.28]	<.001	-0.41 [-0.58, -0.25]	<.001
Mind	0.14 [0.07, 0.21]	<.001	0.09 [0.01, 0.16]	.021	0.16 [0.09, 0.23]	<.001
Benevolence	0.20 [0.12, 0.28]	<.001	0.16 [0.09, 0.24]	<.001	0.08 [0.02, 0.15]	.015
Internal attributions	0.00 [-0.07, 0.08]	.91	0.12 [0.05, 0.19]	.001	0.66 [0.59, 0.72]	<.001
External attributions	0.31 [0.23, 0.39]	<.001	0.53 [0.45, 0.60]	<.001	0.13 [0.06, 0.20]	<.001
Observations	581		683		1,264	
<i>R</i> ² / <i>R</i> ² adjusted	0.249/0.243		0.320/0.315		0.291/0.288	

Note. Bolded *p*-values are significant at *p* < .05. Due to the significant difference in gratitude based on the order of supernatural attribution, we conducted separate analyses for each order (before vs. after describing the event) when predicting gratitude but only one model when predicting pride because order effects were not significant.

Table 10
Assessment of Limitations

Dimension	Assessment
Measures and methods	
Experimental evidence	We experimentally manipulated the source of benefits (karma, God, or humans) and whether the supernatural benefactor was more versus less agentic. Only the source of benefits was successfully manipulated across studies.
High statistical power	Yes. Studies had >80% statistical power to detect small-to-medium differences between conditions or correlations between variables.
Reliability of measures	Psychometric analyses (including exploratory factor analyses and Cronbach's α) confirmed the reliability of emotion and attribution subscales.
Robustness to covariates	Statistical models were robust to include/exclude a variety of individual differences, including the dispositional tendency to experience certain emotions, anthropomorphism, religiosity, and strength of belief in God and karma.
Constraints on generalizability	
Generalizability across participants from different backgrounds	Participants were primarily Christian, Hindu, Buddhist, or nonreligious, living in the United States or United Kingdom, who believe in God or karma. Results may not generalize to members of other religions, or members of these religions living in different countries, or to nonbelievers.
Generalizability across different supernatural beliefs	Studies only describe beliefs about God, a higher power, or karma. Similar theoretical models can be used to make predictions about other supernatural entities that are believed to be sources of good and bad fortune, such that particular attributions predict distinct patterns of emotional responses.
Generalizability to different methods	These studies rely on self-reported emotions in recalled scenarios. Future research could test for similar patterns using other measures of emotional response (e.g., nonverbal displays) in spontaneous emotional experiences.
Generalizability to real-world contexts	These studies asked participants to recall events in their lives and therefore rely on real experiences rather than contrived lab scenarios. However, participants' recollections of experiences may differ from what they actually experienced in the moment.

pride and deservingness that are more typically associated with personal accomplishments. These patterns of attributions help to explain why different patterns of emotions were elicited by events deemed to have been caused by God versus karma. Human-caused positive experiences elicited even more gratitude and less pride than positive experiences caused by God or karma, suggesting that the proximity and salience of an agentic benefactor may also be relevant, in addition to the benefactor's mental capacities.

Moreover, experiences attributed to some (but not all) supernatural entities and forces seem to co-opt sociocognitive processes that are also employed in more mundane interpersonal contexts. Consistent with prior research on the structure and function of various interpersonal, self-transcendent, and self-conscious emotions, we found that if one's positive experiences are perceived as coming from a benevolent, external benefactor (whether human or divine), then feelings like gratitude and indebtedness are likely to follow. If, instead, someone views their positive experiences as coming about through karmic repercussions based on their own actions, then self-referential positive emotions like pride and deservingness are more common.

Limitations

We provided evidence of what people think and feel when recalling two sources of positive experiences that are understudied in the literature (i.e., benefits received from God and from karma), but this only represents a small portion of the supernatural beliefs that can be used to explain and interpret life events (see Table 10 for further limitations). We also only sampled from a limited set of Western participants (U.S. and U.K. participants who report belief in God or karma). Future research can extend these findings to other cultural groups that hold different views of what deities and karma

are like (e.g., where people believe karmic outcomes are also dependent on the will of the gods), other supernatural causes (e.g., saints, ancestors), and diverse personal experiences (e.g., positive vs. negative). For example, there may also be a distinct emotional response pattern to negative life events, with other-focused negative emotions (e.g., anger, fear) being more common toward malicious supernatural agents, whereas self-focused negative emotions (e.g., shame) may be more common for karmically generated negative experiences or impersonal sources (e.g., bad luck).

Our results also focus on only one dimension (internally focused vs. externally focused) through which emotional experiences can differ, but broad categories of emotions like "pride" and "gratitude" are complex and multifaceted. For example, authentic pride and hubristic pride both arise from internal attributions for success but have distinct personality correlates, antecedents, and consequences (Tracy & Robins, 2007). Varieties of gratitude and indebtedness are also likely to depend on many features beyond the externality of the benefactor, such as the tangibility, proximity, responsiveness, and dispositions of the benefactor (Nelson et al., 2023; Tsang et al., 2022; White et al., 2024). Further research, examining a wider array of life experiences, is likely to reveal important nuance in why people experience particular feelings in response to good and bad fortune.

Our main findings were also limited in that our attempts to manipulate whether participants conceived of God and karma in more versus less agentic ways were not consistently successful and only showed evidence of small effects, in contrast to the robust differences between responses to different types of benefactors. This pattern is likely part of a broader trend in experimental studies of religious cognition, which can experimentally activate different religious concepts and find reliable effects on psychological

outcomes (e.g., prosociality; Shariff et al., 2016; White, Kelly, et al., 2019), but are far less reliable in the ability to manipulate religious beliefs themselves (e.g., whether someone believes in a controlling God; Hoogeveen et al., 2018). Future research may require more powerful manipulations or might employ alternative techniques to gather evidence regarding causal direction to help overcome the powerful influence of participants' preexisting belief systems, which affect how they respond in experimental studies.

Future Directions

Overall, these studies demonstrate that different mental representations of various supernatural benefactors may lead people to make certain types of attributions for their good fortune, which predicts their likelihood of feeling specific patterns of positive emotions. We suspect that there may be cultural differences as well. There has been some work on attributions of (mainly negative) life events to various supernatural agents across cultural and historical contexts (Dein, 2004; Exline & Wilt, 2023; Krull, 2022; Legare et al., 2012; Ray et al., 2015; Shweder et al., 1997). However, supernatural attributions for positive events have been understudied, and our research suggests that cultural and religious group differences may also influence positive emotions—and cultural differences in emotional profiles. For example, Christians and Muslims may experience more gratitude on average (particularly, if they view God as responsible for life's benefits) compared with Buddhist or nonreligious populations which may tend to make internal attributions and, therefore, experience more pride when recalling life's positive events. On the other hand, there may also be a tendency for theists to view their well-being as an indication of right standing with God which may, in turn, also increase feelings of pride and deservingness in the long run. More research is needed to provide a richer understanding of how worldviews and religious beliefs shape perceptions of positive life events and the experience of corresponding positive emotions such as gratitude and pride across cultural and historical contexts.

Examining patterns of cognitive appraisal and emotions across a range of perceived secular and supernatural benefactors can expand our understanding of these psychological processes, as well as ensure that our findings are inclusive of the diverse range of spiritual experiences that are common and important in many people's lives. Further research may also document behavioral implications of these different emotional responses, such as if feelings of gratitude to God elicit more prosocial behavior toward other people, as a means of paying forward one's good fortune (e.g., Nelson et al., 2023), whereas attributing positive experiences to karma may not generate similar prosociality.

In sum, our findings provide novel evidence regarding the unique profile of traits, attributions, and emotions that characterize God and karma—two supernatural benefactors that are widely endorsed explanations for life's blessings. A better understanding of how theistic and karmic beliefs affect psychological outcomes (including positive emotions) and how these effects differ from the patterns of emotion in secular interpersonal settings will reveal how supernatural beliefs provide another pathway through which culture shapes social cognition and emotion.

References

- Aghababaei, N., & Tabik, M. T. (2013). Gratitude and mental health: Differences between religious and general gratitude in a Muslim context. *Mental Health, Religion & Culture*, 16(8), 761–766. <https://doi.org/10.1080/13674676.2012.718754>
- Algoe, S. B. (2012). Find, remind, and bind: The functions of gratitude in everyday relationships. *Social and Personality Psychology Compass*, 6(6), 455–469. <https://doi.org/10.1111/j.1751-9004.2012.00439.x>
- Blair, S. J., Bi, Y., & Mulvenna, M. D. (2020). Aggregated topic models for increasing social media topic coherence. *Applied Intelligence*, 50(1), 138–156. <https://doi.org/10.1007/s10489-019-01438-z>
- Bronkhorst, J. (2011). *Karma*. University of Hawai'i Press. <https://muse.jhu.edu/book/1739>
- Bufford, R. K., Sisemore, T. A., & Blackburn, A. M. (2017). Dimensions of grace: Factor analysis of three grace scales. *Psychology of Religion and Spirituality*, 9(1), 56–69. <https://doi.org/10.1037/rel0000064>
- Campos, B., Shiota, M. N., Keltner, D., Gonzaga, G. C., & Goetz, J. L. (2013). What is shared, what is different? Core relational themes and expressive displays of eight positive emotions. *Cognition and Emotion*, 27(1), 37–52. <https://doi.org/10.1080/02699931.2012.683852>
- Dein, S. (2004). Explanatory models of and attitudes towards cancer in different cultures. *The Lancet Oncology*, 5, 119–124. [https://doi.org/10.1016/S1470-2045\(04\)01386-5](https://doi.org/10.1016/S1470-2045(04)01386-5)
- Emmons, R. A., Froh, J., & Rose, R. (2019). Gratitude. In M. W. Gallagher & S. J. Lopez (Eds.), *Positive psychological assessment: A handbook of models and measures* (2nd ed., pp. 317–332). American Psychological Association. <https://doi.org/10.1037/0000138-020>
- Emmons, R. A., Hill, P. C., Barrett, J. L., & Kopic, K. M. (2017). Psychological and theological reflections on grace and its relevance for science and practice. *Psychology of Religion and Spirituality*, 9(3), 276–284. <https://doi.org/10.1037/rel0000136>
- Emmons, R. A., & Kneezel, T. T. (2005). Giving thanks: Spiritual and religious correlates of gratitude. *Journal of Psychology and Christianity*, 24(2), 140–148.
- Exline, J. J., & Wilt, J. A. (2023). Supernatural attributions: Seeing God, the devil, demons, spirits, fate, and karma as causes of events. *Annual Review of Clinical Psychology*, 19(1), 461–487. <https://doi.org/10.1146/annurev-clinpsy-080921-081114>
- Exline, J. J., Wilt, J. A., Stauner, N., Schutt, W. A., Pargament, K. I., Fincham, F. D., & May, R. W. (2023). Supernatural operating rules: How people envision and experience God, the devil, ghosts/spirits, fate/destiny, karma, and luck. *Psychology of Religion and Spirituality*, 15(4), 504–514. <https://doi.org/10.1037/rel0000444>
- Fuller, C. J. (2004). *The camphor flame: Popular Hinduism and society in India* (Rev. and expanded ed.). Princeton University Press.
- Gong, Z., Zhong, P., & Hu, W. (2019). Diversity in machine learning. *IEEE Access: Practical Innovations, Open Solutions*, 7, 64323–64350. <https://doi.org/10.1109/ACCESS.2019.2917620>
- Gordon, A. M., Impett, E. A., Kogan, A., Oveis, C., & Keltner, D. (2012). To have and to hold: Gratitude promotes relationship maintenance in intimate bonds. *Journal of Personality and Social Psychology*, 103(2), 257–274. <https://doi.org/10.1037/a0028723>
- Hlava, P., & Elfers, J. (2014). The lived experience of gratitude. *Journal of Humanistic Psychology*, 54(4), 434–455. <https://doi.org/10.1177/0022167813508605>
- Hlava, P., Elfers, J., & Offringa, R. (2014). A transcendent view of gratitude: The Transpersonal Gratitude Scale. *International Journal of Transpersonal Studies*, 33(1), 1–14. <https://doi.org/10.24972/ijts.2014.33.1.1>
- Hoogeveen, S., Wagenmakers, E.-J., Kay, A. C., & Van Elk, M. (2018). Compensatory control and religious beliefs: A registered replication report across two countries. *Comprehensive Results in Social Psychology*, 3(3), 240–265. <https://doi.org/10.1080/23743603.2019.1684821>

- Hutto, C. J., & Gilbert, E. E. (2014). *VADER: A parsimonious rule-based model for sentiment analysis of social media text* [Conference session]. Eighth International Conference on Weblogs and Social Media (ICWSM-14). Ann Arbor, MI, United States.
- Johnson, K. A., Li, Y. J., Cohen, A. B., & Okun, M. A. (2013). Friends in high places: The influence of authoritarian and benevolent god-concepts on social attitudes and behaviors. *Psychology of Religion and Spirituality*, 5(1), 15–22. <https://doi.org/10.1037/a0030138>
- Johnson, K. A., Okun, M. A., & Cohen, A. B. (2015). The mind of the Lord: Measuring authoritarian and benevolent God representations. *Psychology of Religion and Spirituality*, 7(3), 227–238. <https://doi.org/10.1037/re10000011>
- Johnson, K. A., Okun, M. A., Cohen, A. B., Sharp, C. A., & Hook, J. N. (2019). Development and validation of the five-factor LAMBI measure of God representations. *Psychology of Religion and Spirituality*, 11(4), 339–349. <https://doi.org/10.1037/re10000207>
- Johnson, K. A., Weinberger, A. B., Dyke, E., Porter, G. F., Kraemer, D. J. M., Grafman, J., Cohen, A. B., & Green, A. E. (2023). Differentiating personified, supernatural, and abstract views of God across three cognitive domains. *Psychology of Religion and Spirituality*, 15(1), 128–142. <https://doi.org/10.1037/re10000460>
- Jones, E. E., & Nisbett, R. E. (1987). The actor and the observer: Divergent perceptions of the causes of behavior. In E. E. Jones, D. E. Kanouse, H. H. Kelley, R. E. Nisbett, S. Valins, & B. Weiner (Eds.), *Attribution: Perceiving the causes of behavior* (pp. 79–94). Lawrence Erlbaum Associates.
- Keltner, D., & Haidt, J. (2003). Approaching awe, a moral, spiritual, and aesthetic emotion. *Cognition and Emotion*, 17(2), 297–314. <https://doi.org/10.1080/02699930302297>
- Krause, N. (2006). Gratitude toward god, stress, and health in late life. *Research on Aging*, 28(2), 163–183. <https://doi.org/10.1177/0164027505284048>
- Krause, N., Emmons, R. A., & Ironson, G. (2015). Benevolent images of God, gratitude, and physical health status. *Journal of Religion and Health*, 54(4), 1503–1519. <https://doi.org/10.1007/s10943-015-0063-0>
- Krause, N., & Hayward, R. D. (2015). Humility, compassion, and gratitude to God: Assessing the relationships among key religious virtues. *Psychology of Religion and Spirituality*, 7(3), 192–204. <https://doi.org/10.1037/re10000028>
- Krull, D. S. (2022). On nudges from the unseen: Attributions to God and Satan for major historical events. *Psychology of Religion and Spirituality*, 14(1), 51–58. <https://doi.org/10.1037/re10000437>
- Lambert, N. M., Graham, S. M., & Fincham, F. D. (2009). A prototype analysis of gratitude: Varieties of gratitude experiences. *Personality and Social Psychology Bulletin*, 35(9), 1193–1207. <https://doi.org/10.1177/0146167209338071>
- Legare, C. H., Evans, E. M., Rosengren, K. S., & Harris, P. L. (2012). The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, 83(3), 779–793. <https://doi.org/10.1111/j.1467-8624.2012.01743.x>
- Ma, L. K., Tunney, R. J., & Ferguson, E. (2017). Does gratitude enhance prosociality? A meta-analytic review. *Psychological Bulletin*, 143(6), 601–635. <https://doi.org/10.1037/bul0000103>
- MacKenzie, M. J., Vohs, K. D., & Baumeister, R. F. (2014). You didn't have to do that: Belief in free will promotes gratitude. *Personality and Social Psychology Bulletin*, 40(11), 1423–1434. <https://doi.org/10.1177/0146167214549322>
- McCullough, M. E., Emmons, R. A., & Tsang, J. A. (2002). The grateful disposition: A conceptual and empirical topography. *Journal of Personality and Social Psychology*, 82(1), 112–127. <https://doi.org/10.1037/0022-3514.82.1.112>
- McCullough, M. E., & Tsang, J. A. (2004). Parent of the virtues? The prosocial contours of gratitude. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 123–141). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195150100.003.0007>
- Mutanga, M. B., & Abayomi, A. (2022). Tweeting on COVID-19 pandemic in South Africa: LDA-based topic modelling approach. *African Journal of Science, Technology, Innovation and Development*, 14(1), 163–172. <https://doi.org/10.1080/20421338.2020.1817262>
- Nelson, J. M., Hardy, S. A., & Watkins, P. (2023). Transcendent indebtedness to God: A new construct in the psychology of religion and spirituality. *Psychology of Religion and Spirituality*, 15(1), 105–117. <https://doi.org/10.1037/re10000458>
- Oishi, S., Koo, M., Lim, N., & Suh, E. M. (2019). When gratitude evokes indebtedness. *Applied Psychology: Health and Well-Being*, 11(2), 286–303. <https://doi.org/10.1111/aphw.12155>
- Peng, C., Nelissen, R. M. A., & Zeelenberg, M. (2018). Reconsidering the roles of gratitude and indebtedness in social exchange. *Cognition and Emotion*, 32(4), 760–772. <https://doi.org/10.1080/02699931.2017.1353484>
- Purzycki, B. G., Willard, A. K., Klocová, E. K., Apicella, C., Atkinson, Q., Bolyanatz, A., Cohen, E., Handley, C., Henrich, J., Lang, M., Lesorogol, C., Mathew, S., McNamara, R. A., Moya, C., Norenzayan, A., Placek, C., Soler, M., Vardy, T., Weigel, J., ... Ross, C. T. (2022). The moralization bias of gods' minds: A cross-cultural test. *Religion, Brain & Behavior*, 12(1–2), 38–60. <https://doi.org/10.1080/2153599X.2021.2006291>
- Ray, S. D., Lockman, J. D., Jones, E. J., & Kelly, M. H. (2015). Attributions to God and Satan about life-altering events. *Psychology of Religion and Spirituality*, 7(1), 60–69. <https://doi.org/10.1037/a0037884>
- R Core Team. (2023). *R: A language and environment for statistical computing*. R Foundation for Statistical Computing. <https://www.R-project.org/>
- Roberts, R. C. (2014). Cosmic gratitude. *European Journal for Philosophy of Religion*, 6(3), 65–83. <https://doi.org/10.24204/ejpr.v6i3.163>
- Rosmarin, D. H., Pirutinsky, S., Cohen, A. B., Galler, Y., & Krumrei, E. J. (2011). Grateful to God or just plain grateful? A comparison of religious and general gratitude. *The Journal of Positive Psychology*, 6(5), 389–396. <https://doi.org/10.1080/17439760.2011.596557>
- Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs: General and Applied*, 80(1), 1–28. <https://doi.org/10.1037/h0092976>
- Rusk, R. D., Vella-brodrick, D. A., & Waters, L. (2016). Gratitude or gratefulness? A conceptual review and proposal of the system of appreciative functioning. *Journal of Happiness Studies: Dordrecht*, 17(5), 2191–2212. <https://doi.org/10.1007/s10902-015-9675-z>
- Shariff, A. F., Willard, A. K., Andersen, T., & Norenzayan, A. (2016). Religious priming: A Meta-analysis with a focus on prosociality. *Personality and Social Psychology Review*, 20(1), 27–48. <https://doi.org/10.1177/1088868314568811>
- Shiota, M. N., Keltner, D., & John, O. P. (2006). Positive emotion dispositions differentially associated with Big Five personality and attachment style. *The Journal of Positive Psychology*, 1(2), 61–71. <https://doi.org/10.1080/17439760500510833>
- Shweder, R. A., Much, N. C., Mahapatra, M., & Park, L. (1997). The “Big Three” of morality (autonomy, community, divinity) and the “Big Three” explanations of suffering. In A. M. Brandt & P. Rozin (Eds.), *Morality and health* (pp. 119–169). Routledge.
- Steindl-Rast, D. (2004). Gratitude as thankfulness and as gratefulness. In R. A. Emmons & M. E. McCullough (Eds.), *The psychology of gratitude* (pp. 282–290). Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780195150100.003.0014>
- Stellar, J. E., Gordon, A. M., Piff, P. K., Cording, D., Anderson, C. L., Bai, Y., Maruskin, L. A., & Keltner, D. (2017). Self-transcendent emotions and their social functions: Compassion, gratitude, and awe bind us to others through prosociality. *Emotion Review*, 9(3), 200–207. <https://doi.org/10.1177/1754073916684557>
- Tong, E. M. W. (2015). Differentiation of 13 positive emotions by appraisals. *Cognition and Emotion*, 29(3), 484–503. <https://doi.org/10.1080/02699931.2014.922056>

- Tong, E. M. W., & Jia, L. (2017). Positive emotion, appraisal, and the role of appraisal overlap in positive emotion co-occurrence. *Emotion*, 17(1), 40–54. <https://doi.org/10.1037/emo0000203>
- Tracy, J. L., & Robins, R. W. (2007). The psychological structure of pride: A tale of two facets. *Journal of Personality and Social Psychology*, 92(3), 506–525. <https://doi.org/10.1037/0022-3514.92.3.506>
- Tsang, J. (2006). Gratitude and prosocial behaviour: An experimental test of gratitude. *Cognition and Emotion*, 20(1), 138–148. <https://doi.org/10.1080/02699930500172341>
- Tsang, J., Schnitker, S. A., Emmons, R. A., & Hill, P. C. (2022). Feeling the intangible: Antecedents of gratitude toward intangible benefactors. *The Journal of Positive Psychology*, 17(6), 802–818. <https://doi.org/10.1080/17439760.2021.1952480>
- Valdesolo, P., & Graham, J. (2014). Awe, uncertainty, and agency detection. *Psychological Science*, 25(1), 170–178. <https://doi.org/10.1177/0956797613501884>
- Waytz, A., Cacioppo, J., & Epley, N. (2010). Who sees human? The stability and importance of individual differences in anthropomorphism. *Perspectives on Psychological Science*, 5(3), 219–232. <https://doi.org/10.1177/1745691610369336>
- Weidman, A. C., & Tracy, J. L. (2020). A provisional taxonomy of subjectively experienced positive emotions. *Affective Science*, 1(2), 57–86. <https://doi.org/10.1007/s42761-020-00009-7>
- Weiner, B. (1986). Attribution, emotion, and action. In R. M. Sorrentino & E. T. Higgins (Eds.), *Handbook of motivation and cognition: Foundations of social behavior* (pp. 281–312). Guilford Press.
- Weinstein, N., DeHaan, C. R., & Ryan, R. M. (2010). Attributing autonomous versus introjected motivation to helpers and the recipient experience: Effects on gratitude, attitudes, and well-being. *Motivation and Emotion*, 34(4), 418–431. <https://doi.org/10.1007/s11031-010-9183-8>
- White, C. J. M., Johnson, K. A., & Mirbozorgi, B. (2024). Unique cognitive and emotional profiles of interpersonal gratitude and spiritual gratitude. *The Journal of Positive Psychology*, 19(1), 25–36. <https://doi.org/10.1080/17439760.2023.2239781>
- White, C. J. M., Kelly, J. M., Shariff, A. F., & Norenzayan, A. (2019). Supernatural norm enforcement: Thinking about Karma and God reduces selfishness among believers. *Journal of Experimental Social Psychology*, 84, Article 103797. <https://doi.org/10.1016/j.jesp.2019.03.008>
- White, C. J. M., & Norenzayan, A. (2019). Belief in karma: How cultural evolution, cognition, and motivations shape belief in supernatural justice. In J. M. Olson (Ed.), *Advances in experimental social psychology* (Vol. 60, pp. 1–63). Academic Press. <https://doi.org/10.1016/bs.aesp.2019.03.001>
- White, C. J. M., & Norenzayan, A. (2022). Karma and God: Convergent and divergent mental representations of supernatural norm enforcement. *Psychology of Religion and Spirituality*, 14(1), 70–85. <https://doi.org/10.1037/rel0000436>
- White, C. J. M., Norenzayan, A., & Schaller, M. (2019). The content and correlates of belief in Karma across cultures. *Personality and Social Psychology Bulletin*, 45(8), 1184–1201. <https://doi.org/10.1177/0146167218808502>
- White, C. J. M., Willard, A. K., Baimel, A., & Norenzayan, A. (2021). Cognitive pathways to belief in karma and belief in God. *Cognitive Science*, 45(1), Article e12935. <https://doi.org/10.1111/cogs.12935>
- White, C. J. M. (2023). *Gratitude*. <https://doi.org/10.17605/OSF.IO/BFPND>
- Williams, L. A., & DeSteno, D. (2008). Pride and perseverance: The motivational role of pride. *Journal of Personality and Social Psychology*, 94(6), 1007–1017. <https://doi.org/10.1037/0022-3514.94.6.1007>
- Wilt, J. A., & Exline, J. J. (2022). Receiving a gift from God in times of trouble: Links between gratitude to God, the affective circumplex, and perceived closeness to God. *Mental Health, Religion & Culture*, 25(3), 362–379. <https://doi.org/10.1080/13674676.2022.2033710>
- Wood, A. M., Maltby, J., Stewart, N., Linley, P. A., & Joseph, S. (2008). A social-cognitive model of trait and state levels of gratitude. *Emotion*, 8(2), 281–290. <https://doi.org/10.1037/1528-3542.8.2.281>
- Yih, J., Kirby, L. D., & Smith, C. A. (2020). Profiles of appraisal, motivation, and coping for positive emotions. *Cognition and Emotion*, 34(3), 481–497. <https://doi.org/10.1080/02699931.2019.1646212>

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