Does she still love and feel hungry? Afterlife continuity beliefs and religion across 24 countries

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ABSTRACT

Many people believe that certain mental states, such as love, continue after physical death. However, the prevalence of such "continuity beliefs" and their relationship with culture and religious belief remains unclear. In the current preregistered study we draw on a large and diverse cross-cultural sample (24 countries, $N = 10{,}195$) to systematically quantify cultural variation in tendencies for continuity beliefs after death and the precedence of mental state continuity (e.g., love) over bodily state continuity (e.g., hunger). Our findings partly replicate previous work suggesting that (mental) afterlife continuity beliefs are cross-culturally prevalent, with individual religious beliefs predicting more continuity judgments, especially for mental states. Furthermore, our study reveals that an experimental manipulation inducing a religious framing amplifies continuity judgments tendencies relative to a secular framing. At the same time, however, the modal response across most countries was the cessation of all mental and bodily states after death. In addition, propositional self-reported afterlife beliefs (e.g., about heaven) were more prevalent than continuity beliefs as measured using a vignette task. Overall, these data reveal considerable variation within and between cultures in continuity judgments, with both materialist beliefs and mental continuity beliefs being widespread.

Keywords Afterlife beliefs · Culture · Mind-body dualism · Religion

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1 Introduction

The question of what happens to our minds after physical death has intrigued philosophers and theologians for centuries. Over the last several decades, social scientists have joined the discussion by exploring laypeople's conceptualizations of mental and bodily processes after death. Many people nowadays endorse the dominant neuroscientific view of the mind being a product of the physical brain [Valtonen et al., 2021, Berent and Platt, 2021, Riekki et al., 2013]. At the same time, substantial research has shown that people from a variety of cultures and age groups reason differently about the continuity of psychological and biological states [Bering and Bjorklund, 2004, Bloom, 2007, Harris and Giménez, 2005, Bering, 2002, 2006, Forstmann and Burgmer, 2015, Astuti and Harris, 2008, Chudek et al., 2013, Cohen et al., 2011, Huang et al., 2013]. In particular, many people tend to believe that while states often classified as bodily, such as hunger, cease at death, high-level mental states, such as love, do not, implying a form of mind-body dualism.

Afterlife continuity beliefs are often measured by asking about the extent to which various processes are still possible when an individual dies [Bering, 2002, Harris and Giménez, 2005]. In such a task, participants read a vignette about a person who has recently died and are asked to what extent they think that person can, for instance, still experience hunger and pain (bodily) or feel love and have memories (mental) after they have died (see Materials for the vignette as used in the current study). The relative difference in continuity judgments for mental and bodily states (mental minus bodily states) is typically taken as reflecting an implicit form of mind-body dualism [Bering, 2002, Harris and Giménez, 2005, Astuti and Harris, 2008, Watson-Jones et al., 2017]. The afterlife continuation scenario does not directly address mind-body dualism. Rather, continuity assumes the separation of mind and body as a necessary -though not sufficient-condition for the endorsement of afterlife beliefs [White, 2021]. In the current paper, we will therefore only use the term continuity beliefs in reference to our data and assess the precedence of mental over bodily continuity beliefs (i.e., the degree to which participants are disposed to attribute mental, rather than bodily, continuity beliefs). Moreover, we note that hunger and hearing are technically also mental states. Nonetheless, in the afterlife continuity paradigm, a distinction is typically made between states that are strongly body-dependent such as hunger, feeling pain, seeing or hearing (experiential, perceptual) and high-level mental states that are less closely linked to the physical body such as love, knowledge, desire (cognitive, agentic). In the literature various terms have been used to denote the body-dependent states, e.g., psychobiological, physiological, physical, body-related. Here, we use the term 'bodily states' to clearly contrast these body-dependent states with the high-order mental states, that we simply refer to as 'mental states'.

Overall continuity responses in the vignette task can be taken as an indirect expression of afterlife beliefs, as expressed continuity assumes the possibility of some persistence of the person after death [Barrett et al., 2021, Swan et al., 2023]. These indirect (assumed) continuity beliefs can be distinguished from direct (propositional) afterlife beliefs [Bloom, 2007, Swan et al., 2023, Barrett et al., 2021]; participants may or may not consciously reflect on their explicit beliefs about the existence of an afterlife (e.g., in heaven) and mind-body dualism when answering these vignette questions. The prevalent coexistence of seemingly incompatible beliefs about the nature of death [Harris and Giménez, 2005, Astuti and Harris, 2008, Legare et al., 2012, Watson-Jones et al., 2017], however, suggests that these continuity beliefs may exist even among people who explicitly reject an afterlife, such as atheists.

Here, we investigate the prevalence of afterlife continuity beliefs, the precedence of mental continuity beliefs, and whether the expression of these beliefs varies as a function of religiosity. That is, we set out to conceptually replicate a body of research that finds mental states are more likely to be judged to continue after death than bodily states in a large cross-cultural sample of adults ($N = 10{,}195$ participants from 24 countries). In addition, we assessed to what extent self-reported religiosity of the rater and a contextual emphasis on religion by means of a religious versus a secular framing influence both the tendency to make overall continuity judgments and to make more continuity judgements for mental states relative to biological states in particular. This cross-cultural replication attempt was motivated by theoretical and methodological concerns regarding the prevalence of mental continuity beliefs, on which we elaborate below.

Afterlife continuity beliefs and the dominance of expressed continuity of mental states over bodily states build on two representational assumptions: (1) the human mind and body are represented as separate entities (i.e., mind-body dualism), and (2) non-material entities (i.e., the mind) in particular can continue to exist after biological death [e.g., White, 2021]. A foundation of mind-body dualism is the so-called *parallel systems* account [Barrett et al., 2021]. According to this account, people can think about organisms in two distinct ways: as agents and as physical objects. By default, agency is attributed to living people and animals, but not to deceased ones [Gray et al., 2007, Barrett and Behne, 2005]. A shift in focus between agency and object allows for the possibility to distinguish between a mind and a body, and reason about people's emotions and physical movements, respectively. Typically, the mental dimension dominates the physical dimension when people reason about other living individuals; we tend to use intentional explanations, in terms of goals and desires etc., and social relations to represent others [Hodge, 2008, 2011, Dennett, 2006]. This precedence of mental over physical properties for constituting the self (i.e., a person's identity or 'essence') has been documented repeatedly among both children and adults [Bloom, 2005, Richert and Harris, 2006, Roazzi et al., 2013,

Corriveau et al., 2005] and has been suggested to underlie belief in spirit possession and reincarnation [White, 2017, Cohen and Barrett, 2008]. Indeed, this biased focus may also be extended to deceased individuals. That is, when people attribute continued functionality to the dead, they are more likely to do so for mental states than for bodily states, as the former are more central and relevant in the conceptualization of the deceased individual.

Some scholars have argued that distinguishing between a mental world and a physical world is not only possible, but that doing so is the cognitive default: dualistic beliefs about the mind and body as being separate entities are natural and intuitive [Bloom, 2005, Bering, 2002, Slingerland and Chudek, 2011]. At the same time, the empirical data suggest that many people view death in biological terms upon which all mental activity ends; the modal response of continuity judgments is often cessation rather than continuation, even for high-level mental states such as love [Barrett et al., 2021, Barlev and Shtulman, 2021]. In addition, various studies have demonstrated cultural variation in afterlife continuity beliefs [Astuti and Harris, 2008, Bering et al., 2005a, Harris and Giménez, 2005, Watson-Jones et al., 2017]. Specifically, while the precedence of mental continuation has been observed across various cultures, including the US, Madagascar, Brazil, Ecuador, Ukraine, Vanuatu, and China [Astuti and Harris, 2008, Chudek et al., 2013, Cohen et al., 2011, Huang et al., 2013], substantial cultural differences in both the overall rate of continuity judgments and the dominance of mental continuity as well as the categorization of different states have been documented [Weisman et al., 2021, Huang et al., 2013].

There are also systematic individual differences in the extent to which people reason about the continuity of states after death. Perhaps most obvious is the link between religious beliefs and continuity; most world religions involve some form of belief in an afterlife that typically emphasizes continuity of the soul/spirit/mind of the deceased. Indeed, the assumed naturalness of mind-body dualism has been used as an argument to explain why religious beliefs are widespread and intuitive [Bloom, 2007, Bering, 2006]. Empirical evidence also supports the link between religiosity and afterlife continuity beliefs, such that religious individuals are more likely to self-report dualistic beliefs and make more continuity judgments about deceased people [Riekki et al., 2013]. Notably, religious individuals have been found to be even more likely to attribute mental capacities to deceased individuals than to living individuals in a vegetative state [Gray et al., 2011]. At the same time, some studies have found that continuity judgments are even prevalent among atheists. For instance, over 50% of extinctivists (i.e., individuals who explicitly state lack of belief in an afterlife) judged high-level mental processes such as emotional and epistemic states to continue after death [Bering, 2002]. In addition, atheists have also been found to hold dualistic beliefs, albeit to a lesser degree than religious believers [Nelson et al., 2020]. Finally, experimental manipulations aimed at investigating the role of culture and context in afterlife beliefs have also capitalized on the relevance of religion; for instance, continuity judgments were found to occur more often in response to a narrative involving religious burial rites than a narrative focused on a corpse [Astuti and Harris, 2008, Bek and Lock, 2011, Harris and Giménez, 2005, Watson-Jones et al., 2017]. These experimental studies showed that whereas in the US, religious framing enhanced continuity for both biological and psychological processes, in Vanuatu, an island nation in the South Pacific, religious framing mostly enhanced continuity judgments for biological processes specifically [Watson-Jones et al., 2017].

In sum, in the literature there is some evidence for the cross-cultural universality of afterlife continuity beliefs, their relation with an individual's religious beliefs and the role of the framing of the narrative. In the current preregistered study, we presented participants with a vignette describing a woman who had recently died, based on the materials used in previous studies [Bering, 2002, Harris and Giménez, 2005, Barrett et al., 2021, Astuti and Harris, 2008, Watson-Jones et al., 2017]. In a between-subjects manipulation, her death was either framed in religious terms featuring a religious authority (e.g., a priest) and references to an afterlife ('now that she's with God...') or in secular terms featuring a medical doctor and no afterlife references ('now that she's dead...' [Harris and Giménez, 2005]). Then we asked participants to judge the continuity of six states, three of which we classified as *bodily states* (feeling hungry, having an active brain, hearing) and three of which we classified as *mental states* (wanting, knowing, loving).

We aimed to replicate previous findings that (1) mental states are more likely to be judged to continue than bodily states ($\mathcal{H}_1$), that (2) individual religiosity is associated with increased continuity judgments overall ($\mathcal{H}_2$), and that (3) a framing manipulation emphasizing religious practices increases continuity judgments ($\mathcal{H}_3$). While there is preliminary evidence for these main effects, replication seems crucial, especially since previous studies were non-preregistered and only based on small samples (ranging from 46 to 260 adults) and a few cultures [Hoogeveen and van Elk, 2021, Schmidt, 2009, Lindsay, 2015]. Moreover, it is unclear how exactly religion as an individual difference factor or as a contextual manipulation is related to relative rate of continuation of mental versus bodily states (i.e., a state-by-religiosity interaction effect; $\mathcal{H}_4$ and a state-by-framing interaction effect; $\mathcal{H}_5$). That is, using the vignette approach by asking participants to make continuity judgments for both mental and bodily states, religiosity might be associated with more continuity judgments uniformly across both mental and bodily states [Harris and Giménez, 2005], relatively more continuity of mental states (vs. bodily states), or relatively more continuity of bodily states.

In addition, five complementary hypotheses were tested. First, we expected explicit propositional afterlife beliefs to be positively related to afterlife continuity beliefs ($\mathcal{H}_6$) and to the dominance of mental versus bodily continuation (i.e, a state-by-afterlife beliefs interaction; $\mathcal{H}_7$). Second, we assessed mind-body dualism with a pictorial self-rating scale that has previously been used in research on dualism [Forstmann et al., 2012]. We expected participants' ratings on this item to be positively related to the difference between continuity of mental and bodily states in the vignette ($\mathcal{H}_8$). Finally, while we expected some afterlife continuity beliefs to be present across all cultures, the prevalence of these beliefs might very well differ substantially across countries. Specifically, mirroring the religiosity effect at the individual level, we expected that the level of cultural religiosity within a country would be positively related to overall continuity beliefs ($\mathcal{H}_9$) and to the size of the state effect (i.e., the mental states vs. bodily states difference) in that respective country ($\mathcal{H}_{10}$). All ten hypotheses were preregistered.

2 Methods

2.1 Participants

In total, 10,535 participants completed the online experiment. Of these, 340 participants (3.23%) were excluded because they failed the attention check, leaving an analytic sample of $N = 10,195$ participants from 24 countries. Participants were recruited from university student samples, from personal networks, and from representative samples accessed by panel agencies and online platforms (MTurk, Kieskompas, Sojump, TurkPrime, Lancers, Qualtrics panels, Crowdpanel, and Prolific). Participants were compensated for participation by a financial remuneration, the possibility for a reward through a raffle, course credits, or received no compensation. There were no a priori exclusion criteria; everyone over 18 years old could participate. Participants were forced to answer all multiple choice questions, hence there were no missing data. The countries were convenience-sampled (i.e., through personal networks), but were selected to cover six continents and include different ethnic majorities and religious majorities (Christian, Muslim, Hindu, Jewish, Eastern religions, as well as highly secular societies). See Table 1 for the descriptive statistics and method of recruitment per country and Online Supplementary Table S2 for a breakdown of religious affiliations by country.

2.1.1 Ethical approval

The study was approved by the local ethics committee at the Psychology Department of the University of Amsterdam (Project #2018-SP-9713). Additional approval was obtained from local IRBs at the Adolfo Ibáñez University (Chile), the Babes-Bolyai University (Romania), James Cook University (Singapore), Royal Holloway, University of London (UK), the University of Connecticut (US), and the Max Planck Society, as well as the Senate Department for Education, Youth and Family from the Ministry of Education in Berlin (Germany). All participants were treated in accordance with the Declaration of Helsinki.

2.2 Sampling Plan

We preregistered a target sample size of $n = 400$ per country and 20-25 target countries. The preregistered sample size and composition allowed us to look at overall effects, effects within countries, and between countries. As we applied a Bayesian statistical framework, we needed a minimum of 20 countries to have sufficient data for accurate estimation in cross-country comparisons [Hox et al., 2012]. However, we were mainly interested in overall effects - rather than effects for individual countries. With approximately 8,800 participants, we would have sufficient data to reliably estimate overall effects, especially since the state effect (mind vs. body) is within-subjects. We planned to terminate data collection on November 30th, 2019, but retained data from ten participants who completed the survey after this termination date.

2.3 Materials

This study was part of a larger cross-cultural data collection project (see [Hoogeveen et al., 2022, 2023]). The key variables of interest are as follows: individual religiosity, target state category (mental state vs. bodily state), the manipulated framing of the narrative (secular vs. religious) and the binary continuity judgments for each state. Participant religiosity was measured using standardized items taken from the World Values Survey (WVS; [World Values Survey, 2010]), covering religious behaviours (institutionalized such as church attendance and private such as prayer/meditation), beliefs, identification, values, and denomination. Besides having high face-validity, these measures have been applied cross-culturally in other studies ([Lindeman et al., 2015, Lun and Bond, 2013, Stavrova, 2015]; see also [Hoogeveen et al., 2022]). A Bayesian reliability analysis using the `Bayesrel` package [Pfadt and van den Bergh, 2020] indicated good internal consistency of the religiosity measure, McDonald omega = 0.930 [0.927, 0.931] (all item-rest correlations > 0.61). All individual religiosity items were transformed on a 0-1 scale (to make each item

Table 1: Descriptive statistics per country

Country	N	Age (SD)	Women	Religiosity (SD)	Hu Br He Kn De Lo (%)	Sample
Australia	463	48.3 (16.0)	48.4%	0.52 (0.35)	7 11 35 43 44 62	online panel
Belgium	320	34.6 (13.1)	55.6%	0.24 (0.26)	1 4 19 26 30 51	mixed
Brazil	402	28.8 (10.4)	73.1%	0.51 (0.32)	5 11 38 50 37 63	mixed
Canada	351	33.2 (10.5)	52.4%	0.28 (0.27)	3 7 30 43 40 58	online panel
Chile	308	30.8 (9.9)	59.1%	0.33 (0.29)	2 5 35 41 36 56	mixed
China	390	32.1 (8.4)	55.9%	0.32 (0.24)	11 27 34 50 63 82	online panel
Croatia	309	28.0 (6.9)	78.3%	0.41 (0.35)	3 7 30 37 34 52	mixed
Denmark	415	27.9 (10.3)	71.3%	0.26 (0.27)	1 7 24 30 26 49	mixed
France	405	40.6 (12.8)	64.2%	0.29 (0.27)	2 6 33 40 31 53	online panel
Germany	1,287	27.5 (9.0)	62.2%	0.32 (0.26)	3 8 32 38 38 59	mixed
India	394	30.4 (6.5)	36.3%	0.73 (0.16)	28 42 52 65 59 73	online panel
Ireland	434	42.6 (15.0)	51.8%	0.48 (0.30)	5 14 41 50 50 67	online panel
Israel	501	27.9 (10.1)	73.5%	0.37 (0.28)	3 7 36 47 50 64	students
Italy	342	27.2 (8.2)	50.9%	0.26 (0.25)	1 9 35 40 46 57	mixed
Japan	424	40.6 (10.0)	43.9%	0.29 (0.19)	3 8 34 59 66 75	online panel
Lithuania	291	24.1 (7.0)	83.2%	0.35 (0.27)	3 7 30 40 37 57	students
Morocco	329	32.1 (11.8)	16.1%	0.70 (0.35)	4 19 31 33 39 55	online panel
Netherlands	482	57.6 (14.7)	25.3%	0.28 (0.29)	2 4 15 17 19 31	online panel
Romania	539	24.4 (7.4)	85.2%	0.55 (0.28)	4 9 49 57 52 73	mixed
Singapore	308	22.2 (3.4)	62.0%	0.45 (0.25)	13 26 51 65 72 82	students
Spain	337	41.9 (13.9)	31.2%	0.21 (0.26)	1 3 20 20 21 30	online panel
Turkey	362	39.2 (11.1)	24.6%	0.33 (0.35)	2 7 17 21 18 28	online panel
UK	400	36.2 (12.7)	65.8%	0.23 (0.25)	2 6 29 34 37 55	online panel
US	402	35.8 (14.4)	51.0%	0.45 (0.31)	4 9 43 50 52 69	mixed
Total	10,195	33.8 (13.8)	55.9%	0.38 (0.31)	5 11 33 42 42 59	-

Note. Religiosity refers to the self-reported level of individual religiosity based on 9 items, transformed on a 0-1 scale. Hu=hunger, Br=working brains, He=hearing, Kn=knowledge, De=desire, and Lo=love; this column gives the percentages of continuity per state. Sample indicates the sample composition based on the method of recruitment per site.

contribute equally to the scale), averaged to create a religiosity score per participant, and grand-mean standardized for the analyses.

The English version of the vignette read as follows: *Bill and his grandmother were very close to each other. Each week, they took a walk in the park together and talked for hours. Afterwards, grandmother always cooked Bill's favorite food. At the end of her life Bill's grandmother became very ill. She was taken to a hospital where they tried to help her but she was too old and they could not cure her. The DOCTOR / PRIEST came to talk to Bill about what had happened to his grandmother. He said to Bill: 'Your grandmother was very ill. There was nothing the doctors could do. Your grandmother is DEAD / WITH GOD now.' Now that she is DEAD / WITH GOD, do you think that Bill's grandmother...*

- *... can still be hungry? (yes/no) [B]*
- *... still wants to talk to Bill? (yes/no) [M]*
- *... still loves Bill? (yes/no) [M]*
- *... can still hear Bill's voice? (yes/no) [B]*
- *... still knows what Bill's favorite food is? (yes/no) [M]*
- *... still has a functioning brain? (yes/no) [B]*

The framing was manipulated (between-subjects) by either introducing a priest (or comparable religious authority) or a doctor to mention the grandmother's death and stating that she is either *with God now* or *dead now*, respectively. Participants responded to each of the six items with *yes* or *no*. Items indicated above with [B] were classified as bodily states (psychobiological/perceptual) and the items indicated with [M] as mental states (emotional/cognitive). The responses were sum-scored per state category (yes=1, no=0). The narratives and process items were based on previously used materials [Harris and Giménez, 2005]. The name of the target person, the specific religious authority, and the religious reference were adapted to the language and cultural context of each country (e.g., a priest/ a rabbi/ an imam;

with God/ with the Gods/ with the spirits) through discussion with our local collaborators. The order of the six items was randomized across participants.

For the complementary hypotheses we additionally used the item on afterlife beliefs from the religiosity scale ('To what extent do you believe in a life after death?'), a pictorial dualism self-rating item, and two items assessing cultural norms of religiosity in one's country. The pictorial dualism item was taken from Forstmann et al.[Forstmann et al., 2012], which was adjusted from the self-other inclusion scale [Aron et al., 1992]. The self-rating item had seven response options, showing two circles representing the mind and the body that are separate or overlapping to various degrees. The cultural norms items assessed participants' perception of the importance of religious beliefs and behaviors for the average citizen in their country. See the Online Supplementary Materials (section 1.1) for the full materials, including the pictorial dualism item.

2.4 Procedure

Participants received a link to the Qualtrics survey, either by email, social media or through an online platform. After reading the instructions and providing informed consent, they first completed items for a separate study about religiosity and trustworthiness and source credibility for spirituality and science (see [Hoogeveen et al., 2022]) Subsequently, they were presented with the short narrative in either the religious or secular context (between-subjects), provided continuity judgments for the six process items, and completed the manipulation check to validate that they recalled the type of authority (religious vs. medical). Finally, they provided demographics, a quality of life scale, the religiosity items, and were given the opportunity to provide comments. The median completion time for the entire survey was 11.4 minutes.

2.5 Data Analysis

Analyses were carried out in R. The models were built using the package `brms` [Bürkner, 2017], which relies on the Stan language [Carpenter et al., 2017] (MCMC diagnostics are discussed in Online Supplementary Results section 2.6). The `bridgesampling` package [Gronau et al., 2020] was used to estimate the log marginal likelihood of the models of interest and calculate Bayes factors.

For the confirmatory tests, we used Bayes factor model comparison. To quantify the evidence for the effects of interest, we built hierarchical models reflecting different structures of the data, varying in the extent to which they constrain their predictions. For each hypothesis, we compare between (i) a null-model ($\mathcal{M}_0$, in every country the effect is truly null); (ii) a common-effect model ($\mathcal{M}_1$, all countries share a common nonzero effect); (iii) a positive-effects model ($\mathcal{M}_+$, countries differ, but all effects are in the same (predicted) direction); and (iv) an unconstrained model ($\mathcal{M}_u$, in some countries the effect is positive whereas in others the effect is negative) [Haaf and Rouder, 2017, Rouder et al., 2019]. Note that while the predictions from model (iii) are less constrained than those from model (ii), it is more difficult to obtain evidence for small effects under model (iii) because it assumes that the effect is present in every country, rather than only in the aggregate sample.

When applied to our hypothesis for the mental versus bodily state effect ($\mathcal{H}_1$), evidence for (i) would indicate that people from these 24 countries do not differentially evaluate continuity of bodily and mental states after death, evidence for (ii) would indicate that on average people from these 24 countries consider mental states more likely to continue than bodily states, evidence for (iii) would indicate that in all of the 24 countries, people consider mental states more likely to continue than bodily states, but there is cultural variation in the size of this effect, and evidence for (iv) would indicate that in some countries people consider mental states more likely to continue than bodily states, and in other countries people consider bodily states more likely to continue than mental states, indicating cultural variation in the direction (and size) of the effect. Note that we use the term 'effects' for all predictors in the statistical sense; we do not necessarily imply causality. Evidence is quantified by order-restricted Bayes factors, i.e., BF_{+0} in case of an expected positive effect, reflecting the ratio of marginal likelihoods of the observed data under $\mathcal{H}_n$ versus the respective $\mathcal{H}_0$. Note that the subscripts on the Bayes factor refer to the hypotheses being compared, with the first and second subscript referring to the one-sided hypothesis of interest and the null hypothesis, respectively.

For the full model including all main effects and relevant interaction effects, we specified the following unconstrained model. Let Y denote the continuity responses per participant aggregated over the three binary items per state, where 0 indicates discontinuity and 1 indicates continuity and $Y = 0, \ldots, 3$. Further, let Y_{ijkl} be the continuity judgment for the ith participant, $i = 1, \ldots, N$, in the jth country, $j = 1, \ldots, 24$, for the kth state category, $k = 1, 2$ (bodily or mental states, respectively), and the lth framing condition, $l = 1, 2$ (secular or religious framing, respectively). The responses Y_{ijkl} are modeled using an aggregated binomial model with a logit link to transform probabilities into real numbers $\in (-\infty, \infty)$:

$$Y_{ijkl} \overset{ind}{\sim} \text{Binomial}(3, p_{ijkl}),$$
$$\text{logit}(p_{ijkl}) = \alpha_j + x_k\beta_j + u_i\delta_j + c_l\gamma_j + v_{ki}\theta_j + w_{kl}\zeta_j.$$

where $\text{logit}(p_{ijkl})$ is the combined effect of observations, countries, and state categories on the tendency to indicate 'continues.' Note that $\text{logit}(p_{ijkl}) = 0$ reflects a probability of 0.5 of indicating continuity. The term α_j serves as the baseline continuity intercept for the jth country. The indicator $x_k = -0.5, 0.5$ if $k = 1, 2$, respectively, where $k = 1$ indicates the bodily state condition and $k = 2$ indicates the mental state condition. The term β_j is the jth country's main effect of state category on continuity judgments. The variable u_i gives the ith participant's standardized religiosity score and δ_j is the jth country's main effect of religiosity. The indicator $c_l = -0.5, 0.5$ if $l = 1, 2$, respectively, where $l = 1$ indicates the secular framing condition and $l = 2$ indicates the religious framing condition. The term γ_j is then the jth country's main effect of framing. The indicator v_{ki} gives the state-by-religiosity interaction term and θ_j is the corresponding interaction effect for the jth country. Finally, indicator w_{kl} gives the state-by-framing interaction term and ζ_j is the corresponding interaction effect for the jth country.

3 Results

Here, we report the descriptive pattern of the data, the results of the confirmatory hypotheses, and robustness checks. Additional exploratory results, including an analysis on atheist extinctivists, an exploratory factor analysis and tests for measurement invariance, and an alternative analysis for the cultural norms hypothesis can be found in the Online Supplementary Results (section 2). The observed data of continuity judgments by state category, religiosity, framing condition, and country are visualized in Figure 1.

3.1 Pattern of Continuity Judgments

On average, people made continuity judgments for 31.8% of the states, with 16.1% for bodily states and 47.4% for mental states. Additionally, 61.0% of participants judged at least one state to continue after death, while 2.0% reported all six states to continue. At the same time, the modal response across most countries is complete cessation rather than continuity: in only five out of 24 countries, the modal sum score across the six items was either 3 or 4, in all other countries it was 0 (see Figure 2). Specifically, only in China, India, Japan, Romania, and Singapore were participants more likely to indicate continuity of some states than complete cessation of all states. Across the aggregated sample, the mode is also complete cessation.

In addition, the proportion of people that display afterlife continuity beliefs in the absence of explicit afterlife beliefs (i.e., self-reported belief in life after death) is much smaller than the proportion of people endorsing explicit afterlife beliefs but rejecting continuity of states after death in the narrative. In particular, most people in the sample indicate that they at least somewhat believe in an afterlife (i.e., score > 1 on the 7-point Likert scale) and rate at least one state to continue in the narrative task (55.2%). Additionally, 19.6% of participants both explicitly reject the possibility of an afterlife and the continuity of states. Then there are 19.4% of participants who explicitly state that they somewhat believe in an afterlife, but reject continuity of any states in the vignette. Yet only 5.8% of participants explicitly reject an afterlife but allow for states to continue after death in the narrative task.

3.2 Confirmatory Results

As can be seen in Table 2, we found substantial evidence in favor of our hypotheses for the state effect ($\mathcal{H}_1$), the religiosity effect ($\mathcal{H}_2$), the framing effect ($\mathcal{H}_3$), and the state-by-religiosity interaction effect ($\mathcal{H}_4$), yet strong evidence against the state-by-framing effect ($\mathcal{H}_5$).

3.2.1 Mental versus bodily continuity

First, regarding the state effect, mental processes are judged as more likely to continue after death than psychobiological processes, to a varying degree across countries: $\text{BF}_{+0} = \infty$; $\text{BF}_{+1} = 10^{26}$, $\mu_\beta = 1.71$ [1.55, 1.86], $\sigma_\beta = 0.35$ [0.25, 0.50] (see Figure 3a). This effect translates into an increase of 0.326 [0.129, 0.513] on the probability scale.

3.2.2 Religiosity and continuity beliefs

Second, religiosity is positively associated with continuity judgments, to a varying degree across countries: $\text{BF}_{+0} = \infty$; $\text{BF}_{+1} = 10^{87}$, $\mu_\delta = 0.84$ [0.71, 0.96], $\sigma_\delta = 0.28$ [0.21, 0.39] (see Figure 3b). In other words, the most religious participants (i.e., those 164 individuals who reported the highest score on the religiosity measure, $z_{\text{rel}} = 1.74$) are 46.5% [13.9%, 72.0%] more likely to make continuity judgments than the least religious participants (i.e., those 1163 individuals who did not report any religiosity).
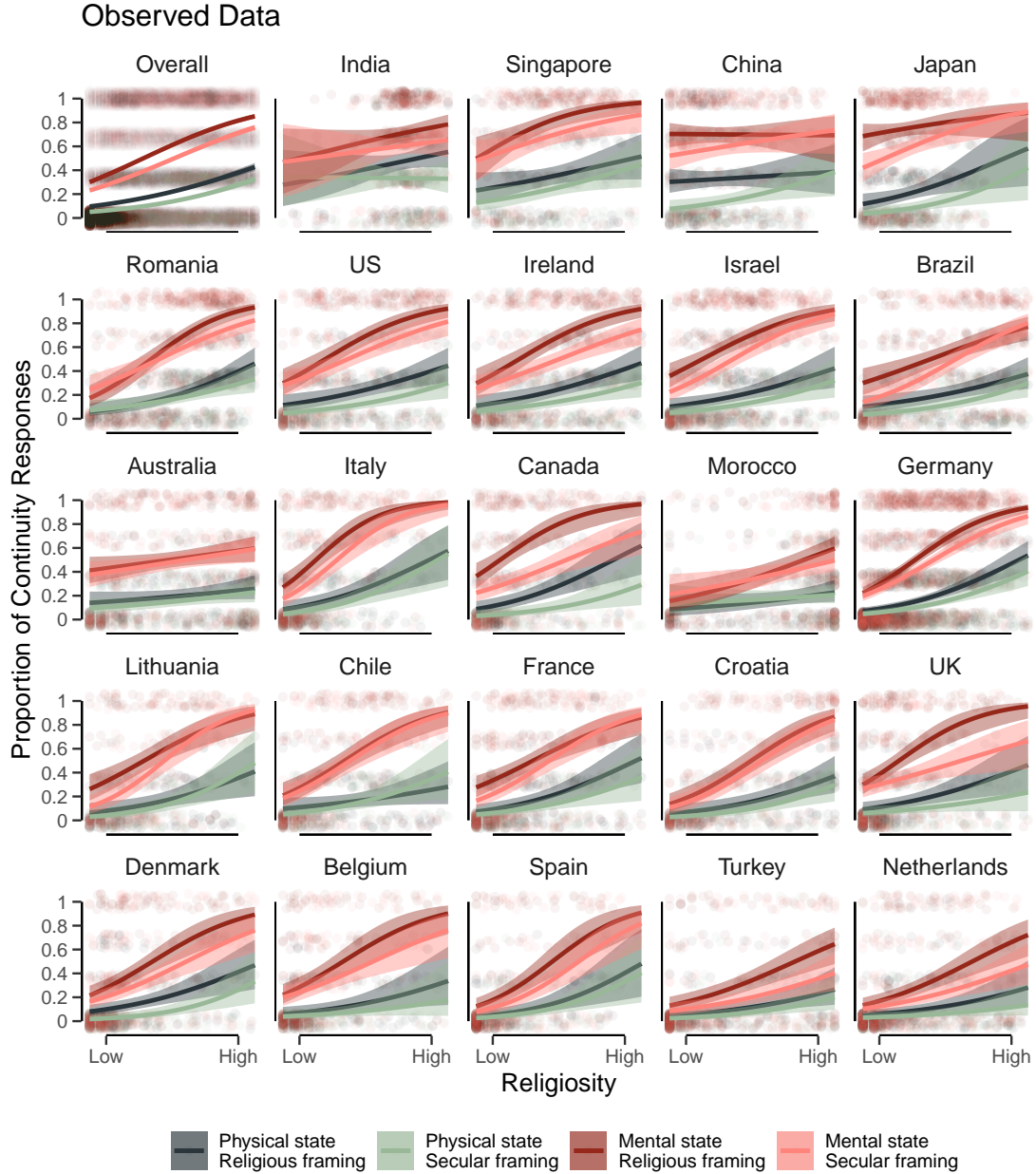
Figure 1: **Descriptive pattern of results (overall and by country).** Countries are ordered by the average proportion of continuity judgments (from left to right, top to bottom). Dark red lines denote proportions for mental states in the religious framing condition, orange lines denote proportions for mental states in the secular framing condition, dark blue lines denote proportions for the bodily states in the religious framing condition, and green lines denote proportions for bodily states in the secular framing condition. The shaded bands around the lines denote the 95% confidence interval. Data points are jittered to enhance visibility. Proportions are averaged over the three items per state category.

3.2.3 Religious framing and continuity beliefs

Third, people are more likely to make continuity judgments when framed in a religious context than in a secular (medical) context, to a varying degree across countries: $\text{BF}_{+0} = 10^{146}$; $\text{BF}_{+1} = 10^{11}$, $\mu_\gamma = 0.52$ [0.41, 0.61], $\sigma_\gamma = 0.22$ [0.15, 0.32] (see Figure 3c). That is, people are 9.8% [0.9%, 21.4%] more likely to make continuity judgments in
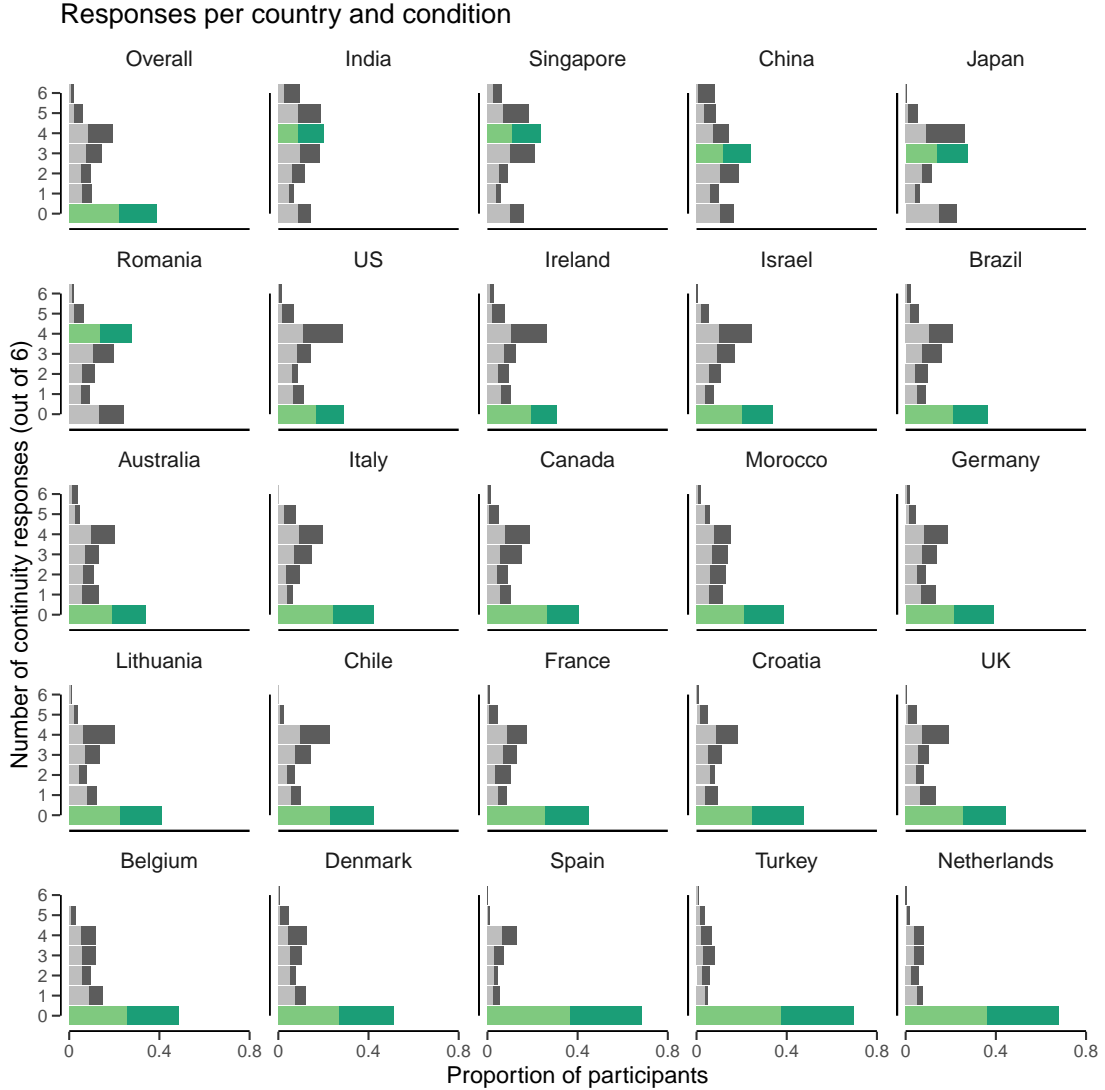
Figure 2: **Proportion of participants and number of continuity responses per country.** Countries are ordered by the overall probability of making a continuity judgment (from left to right, top to bottom). Dark bars reflect responses for the religious framing condition and light bars reflect responses for the secular framing condition. The modal number of continuity responses per country is indicated in green. Continuity responses were out of six states (three mental states and three bodily states).

the religious framing condition than in the secular framing condition. Note that only in Morocco does the effect not appear convincingly, as the credible interval overlaps with zero.

3.2.4 Religiosity and mental vs bodily continuity

Fourth, the difference in continuity judgments between mental and bodily states becomes larger with increased religiosity, to a varying degree across countries: $BF_{10} = 10^{16}$; $BF_{+1} = 3143$, $\mu_\theta = 0.24$ [0.14, 0.33], $\sigma_\theta = 0.18$ [0.11, 0.28] (see Figure 3d). That is, overall, the most religious participants make an estimated 43.4% [23.2%, 57.8%] more continuity judgments about mental processes than about bodily processes, while this difference is only 17.2% [3.9%, 41.8%] for the least religious participants. Note, however, that while the model comparison indicated substantial evidence for the interaction effect, the unconstrained model slightly outperforms the positive-effects model: $BF_{u+} = 1.19$. This is due to the fact that when looking at the countries separately, for seven of them the credible interval of the interaction effect includes zero (see Figure 3).

Table 2: Bayes factor model comparison and parameter estimates for the key effects

Effect	Bayes factors				Parameter estimates	
	$\mathcal{M}_0$	$\mathcal{M}_1$	$\mathcal{M}_+$	$\mathcal{M}_u$	μ	σ
State Effect	0.00	0.00	**1.00**	0.09	1.71 [1.55, 1.86]	0.35 [0.25, 0.50]
Religiosity Effect	0.00	0.00	**1.00**	0.08	0.84 [0.71, 0.96]	0.28 [0.21, 0.39]
Framing Effect	0.00	0.00	**1.00**	0.09	0.52 [0.41, 0.61]	0.22 [0.15, 0.32]
State-by-Religiosity Effect	0.00	0.00	0.84	**1.00**	0.24 [0.14, 0.33]	0.18 [0.11, 0.28]
State-by-Framing Effect	**1.00**	0.02	0.00	0.11	-0.09 [-0.19, 0.00]	0.08 [0.00, 0.22]

Note: The preferred model for each effect is assigned value 1.00 and displayed in bold. The remaining values are the Bayes factors for the respective model relative to this preferred model. Subscripts reflect constraints on the critical parameter; $_0$ indicates no effect, $_1$ indicates a common (positive) effect, $_+$ indicates a varying positive effect, and $_u$ indicates an unconstrained effect. Parameter estimates (median and 95% credible interval) are taken from the unconstrained model for $\mathcal{H}_5$. σ reflects the between-country variation in the respective effect.

3.2.5 Religious framing and mental vs bodily continuity

Fifth, the difference in continuity judgments between mental and bodily states is not larger in a religiously-framed than in a secularly-framed context: $BF_{01} = 40.34$, $\mu_\zeta = $ -0.09 [-0.19, 0.00], $\sigma_\zeta = 0.08$ [0.00, 0.22] (see Figure 3e). In the Online Supplementary Results (section 2.3), we additionally report exploratory analyses on the religiosity-by-framing interaction and the three-way state-by-religiosity-by-framing interaction effects. However, the data do not indicate substantial evidence for either of these interaction effects.

3.2.6 Propositional afterlife beliefs

To test the hypothesis that explicit propositional afterlife beliefs are related to both overall continuity judgments and the precedence of mental versus bodily continuity, we constructed the models used to test $\mathcal{H}_2$ with the item on afterlife beliefs as the predictor. The Bayes factor analysis provided strong evidence for $\mathcal{H}_6$ that explicit afterlife beliefs are positively related to the overall probability of making continuity judgments, to a varying degree across countries ($BF_{+0} = \infty$; $BF_{+1} = 10^{96}$, $\mu_\delta = 0.90$ [0.78, 1.01], $\sigma_\delta = 0.28$ [0.21, 0.39]). In addition, afterlife beliefs were also related to the tendency to differentiate between mental and bodily states (i.e, $\mathcal{H}_7$), to a varying degree across countries ($BF_{+0} = 10^{12}$; $BF_{+1} = 3.01$, $\mu_\theta = 0.19$ [0.13, 0.26], $\sigma_\theta = 0.10$ [0.03, 0.18]).

3.2.7 Pictorial dualism item

We also assessed whether a pictorial dualism self-rating item predicted mental versus bodily continuity. The Bayes factor model comparison gave evidence against the pictorial item predicting the difference in continuity between mental and bodily states: $BF_{10} = 0.07$; $BF_{01} = 13.76$, $\mu_\theta = 0.02$ [-0.03, 0.07], $\sigma_\theta = 0.06$ [0.00, 0.12]).

3.2.8 Country-level cultural norms

Mirroring the religiosity effect at the individual level, we expected a positive relation between both the overall continuity judgments and cultural norms of religion and between the state effect and cultural norms of religion (measured with two items on the perceived normativity of religion in a given country). To investigate this effect, we correlated cultural norms aggregated at the country-level with country-level estimates of the intercepts (α_j) and state-effects (β_j) in the models. First, we find some weak evidence against a positive correlation between the country-level overall probability of continuity and cultural norms of religion: $BF_{+0} = 0.32$; $BF_{0+} = 3.09$. Second, we obtained moderate evidence against a positive correlation between country-level estimates of the dominance of mental versus bodily continuity (i.e., the state effect) and cultural norms of religiosity aggregated at the country-level: $BF_{+0} = 0.13$; $BF_{0+} = 7.66$ (see Online Supplementary Figure S10). In fact, if anything, the correlation appears to be negative, rather than positive; the estimated size of the correlation coefficient is -0.48 [-0.71, -0.13]. Note that if we release the directional constraint, we get strong evidence in favor of a correlation: $BF_{10}= 15.69$. This suggests that participants from countries where religion is more normative are *not* more likely to make continuity judgments in general or specifically for mental states. Instead, in more religious countries, people appear less likely to distinguish between bodily and mental states.

3.2.9 Robustness checks

Here, we report the results of six alternative analysis choices that the results should be robust against. First, based on the ambiguity in the literature and the results of the exploratory factor analysis (see exploratory results in the Online
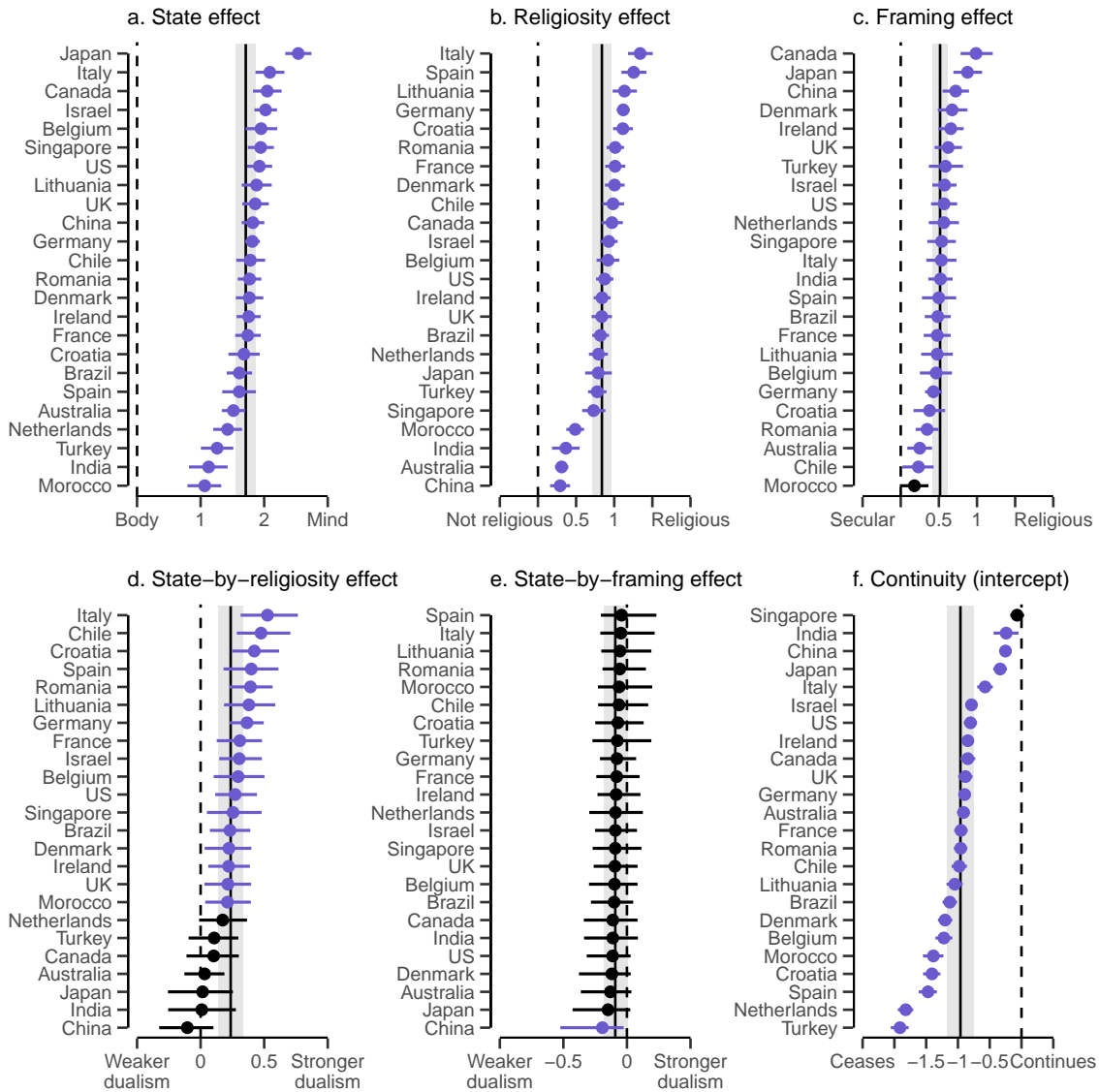
Figure 3: **Estimated country-level effects (posterior medians) in increasing order.** a. state contrast effects. b. religiosity effects. c. framing effects. d. state-by-religiosity interaction effects. e. state-by-framing interaction effects. f. intercepts. Each dot represents a country. Estimates with credible intervals colored in purple exclude zero and estimates with credible intervals colored in black include zero. The errorbars give the 95% credible interval for each country. The vertical lines denote the posterior median of the overall mean of the respective effect with the 95% credible interval in the shaded bands. The dashed lines indicates zero.

Supplementary Results section 2.2), we classified 'hearing' as a mental state rather than a bodily state. Second, we reran the analyses excluding participants who failed to correctly identify a target figure mentioned in the narrative (i.e., a priest or a doctor). Third, we included measured demographics (i.e., level of education, age, self-reported socioeconomic status and gender) as covariates in the analyses, which were identified as potential confounding variables that warranted inclusion in the statistical models (see Online Supplementary Results section 2.7). Fourth, we preregistered a lower limit of 300 participants per country and hence reran the analyses while excluding data from Lithuania since $n = 291$. Fifth, we conducted an additional check with the (suboptimal) preregistered prior settings. That is, in the preregistration, we specified half-cauchy priors on the standard deviation. However, the prior predictive checks showed that the fat tails of the cauchy distribution resulted in implausible predictions on the probability scale (see the Online Supplementary Results section 2.5 for details). Following recommendations [McElreath, 2020, Betancourt et al., 2015], we used the half-normal(0,1) prior on the country-level standard deviation instead. This resulted in more reasonable prior predictions. Sixth, instead of a composite measure based on the religiosity scale, we also assessed the models using a

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binary religion item, comparing self-identified religious individuals and non-religious or atheist individuals. As shown in Table 3, the results are qualitatively very similar across the different robustness checks: we obtained strong support for a varying positive effect of state ($\mathcal{H}_1$), religiosity ($\mathcal{H}_2$), framing ($\mathcal{H}_3$), and a state-by-religiosity interaction ($\mathcal{H}_4$), but strong evidence against a state-by-framing interaction ($\mathcal{H}_5$).

Table 3: Bayes factor of different models for robustness checks.

Robustness set	μ [95% CI]	BF_{10}	BF_{+1}	Preferred model
State Effect				
Main analysis	1.71 [1.55, 1.86]	∞	10^{26}	$\mathcal{M}_+$
Hearing as mental state	1.16 [1.04, 1.27]	∞	10^{11}	$\mathcal{M}_+$
Excluding manipulation check failures	1.75 [1.59, 1.88]	∞	10^{20}	$\mathcal{M}_+$
Education, age, gender, SES as covariates	1.73 [1.57, 1.88]	∞	10^{26}	$\mathcal{M}_+$
Excluding Lithuania[a]	1.70 [1.54, 1.85]	∞	10^{26}	$\mathcal{M}_+$
Cauchy$^+$(0,2) prior on SD^a	1.71 [1.54, 1.86]	∞	10^{25}	$\mathcal{M}_+$
Binary religion	1.69 [1.54, 1.82]	∞	10^{26}	$\mathcal{M}_+$
Religiosity Effect				
Main analysis	0.84 [0.71, 0.96]	∞	10^{87}	$\mathcal{M}_+$
Hearing as mental state	0.88 [0.75, 1.01]	∞	10^{116}	$\mathcal{M}_+$
Excluding manipulation check failures	0.85 [0.72, 0.96]	∞	10^{75}	$\mathcal{M}_+$
Education, age, gender, SES as covariates	0.85 [0.73, 0.97]	∞	10^{78}	$\mathcal{M}_+$
Excluding Lithuania[a]	0.83 [0.70, 0.94]	∞	10^{85}	$\mathcal{M}_+$
Cauchy$^+$(0,2) prior on SD^a	0.84 [0.71, 0.96]	∞	10^{87}	$\mathcal{M}_+$
Binary religion	0.97 [0.79, 1.13]	∞	10^{54}	$\mathcal{M}_+$
Framing Effect				
Main analysis	0.52 [0.41, 0.61]	10^{135}	10^{11}	$\mathcal{M}_+$
Hearing as mental state	0.56 [0.45, 0.66]	10^{174}	10^{16}	$\mathcal{M}_+$
Excluding manipulation check failures	0.52 [0.41, 0.63]	10^{127}	10^{14}	$\mathcal{M}_+$
Education, age, gender, SES as covariates	0.51 [0.41, 0.61]	10^{134}	10^{11}	$\mathcal{M}_+$
Excluding Lithuania[a]	0.52 [0.41, 0.62]	10^{132}	10^{11}	$\mathcal{M}_+$
Cauchy$^+$(0,2) prior on SD^a	0.51 [0.41, 0.62]	10^{135}	10^{10}	$\mathcal{M}_+$
Binary religion	0.48 [0.39, 0.58]	10^{120}	10^9	$\mathcal{M}_+$
State-by-Religiosity Effect				
Main analysis	0.24 [0.14, 0.33]	10^{16}	3127	$\mathcal{M}_u$
Hearing as mental state	0.14 [0.05, 0.22]	10^5	7.66	$\mathcal{M}_u$
Excluding manipulation check failures	0.24 [0.14, 0.33]	10^{15}	180	$\mathcal{M}_+$
Education, age, gender, SES as covariates	0.24 [0.14, 0.33]	10^{15}	2817	$\mathcal{M}_u$
Excluding Lithuania[a]	0.23 [0.13, 0.33]	10^{15}	2593	$\mathcal{M}_u$
Cauchy$^+$(0,2) prior on SD^a	0.24 [0.14, 0.33]	10^{16}	1160	$\mathcal{M}_u$
Binary religion	0.22 [0.11, 0.33]	10^5	0.81	$\mathcal{M}_1$
State-by-Framing Effect				
Main analysis	-0.09 [-0.19, 0.00]	0.02	0.04	$\mathcal{M}_0$
Hearing as mental state	-0.11 [-0.20, -0.02]	0.02	0.03	$\mathcal{M}_0$
Excluding manipulation check failures	-0.07 [-0.17, 0.02]	0.03	0.03	$\mathcal{M}_0$
Education, age, gender, SES as covariates	-0.09 [-0.18, 0.01]	0.03	0.03	$\mathcal{M}_0$
Excluding Lithuania[a]	-0.10 [-0.19, -0.01]	0.02	0.03	$\mathcal{M}_0$
Cauchy$^+$(0,2) prior on SD^a	-0.09 [-0.18, 0.01]	0.03	0.01	$\mathcal{M}_0$
Binary religion	-0.12 [-0.20, -0.03]	0.02	0.03	$\mathcal{M}_0$

Note: Across all six sets of robustness checks, the results are qualitatively very similar to those of the main analyses; the data indicate (a) strong state, religiosity, and framing effects that vary between countries but are consistently positive (mind > body; religious > non-religious; religious framing > secular framing), (b) a varying state-by-religiosity interaction effect (though sometimes the unconstrained model is preferred or the common effect model), and (c) no state-by-framing effect. Subscripts reflect parameter constraints; $_0$ indicates the null model, $_+$ indicates a varying positive effect, and $_1$ indicates a common effect. [a] These options followed from strict adherence to the preregistration.

4 Discussion

In the current cross-cultural study, we investigated adult populations in 24 countries to replicate and extend previous work showing that many laypeople tend to believe in the continuity of states after death, in particular regarding mental states. Moreover, across all 24 countries, the evaluated probability that mental states such as love and knowledge continue after death was higher than the evaluated probability for continuation of bodily states such as hunger or a working brain. In addition to this robust precedence for mental continuity over bodily continuity, we also found that individual religiosity is consistently associated with increased overall continuity beliefs. Moreover, a cultural framing manipulation affected responses; in all but one country –Morocco– a framing emphasizing religion also increased overall continuity judgments.

In addition to these main effects, we investigated the relationship between religion and the precedence of mental continuity over bodily continuity: is religion associated with an increased tendency to distinguish between the continuity of mental and bodily states? In contrast to the main effect, we found that religiosity and a religious framing manipulation were not universally associated with increased mental continuity relative to bodily continuity after death. Specifically, across 18 out of 24 countries, individual religiosity of the rater was related to more continuity judgments for mental states relative to bodily states. In the remaining six countries, there was no such religiosity-by-state interaction effect. For the experimental framing manipulation, we did not find evidence that emphasis on religion increased mental continuity in particular. On the contrary, in China, the effect went slightly in the opposite direction; the religious framing increased the relative continuity for bodily compared to mental states. In all other countries, there was no state-by-framing interaction effect, nor was there a common effect in the aggregated sample.

While individual religiosity was consistently associated with a higher tendency for continuity judgments and –albeit somewhat less consistently– with increased dominance of mental versus bodily continuity, this association was not present at the country-level; the perceived normativity of religion within a country was not related to general afterlife continuity beliefs, and, if anything, was negatively related to the difference between mental relative to bodily continuity. Overall continuity judgments were most prevalent in Asian countries (Singapore, China, India, and Japan). With the exception of India, these countries are not perceived as particularly religious based on the current data. However, cultural traditions related to immortality of the soul may exist outside of religious traditions. In China, for instance, less than 20% of the population is religiously affiliated [Grim, 2008], yet over 70% engages in ancestor worship, including venerating the spirits of deceased relatives [Hu, 2016]. Indeed, research shows that many Chinese people indicate that the soul would persist after biological death, either in the afterlife or after reincarnation [Gut et al., 2021]. So while afterlife continuity beliefs and religion are clearly linked, there are also other cultural traditions that may affect people's afterlife beliefs.

In sum, our results suggest that the tendency to think dualistically about people's capabilities after death is pervasive; across all 24 countries, we found robust evidence that adults are more likely to judge mental states to continue than bodily states. Even among atheist extinctivists who explicitly deny the existence of the afterlife, 16.9% of participants judged at least one state to continue after death and again in each of the 24 countries a state effect emerged, reflecting the tendency to attribute a higher likelihood of continuity for mental compared to bodily states (see Online Supplementary Results section 2.1).

At the same time, these findings and their interpretation should be put into perspective. In all but five countries, as well as in the aggregated sample, the modal response was complete cessation rather than continuity, and over one third of the total sample (39%) judged none of the states to continue. Notably, if we take continuity beliefs in the vignette task as an indirect measure of afterlife beliefs, we find that more people endorse explicit afterlife beliefs in the absence of continuity beliefs (∼20%), than the other way around (∼5%). This pattern seems problematic for intuitive dualism accounts, which suggest that continuity beliefs should be especially widespread, more so than explicit and culturally transmitted afterlife beliefs such as about the existence of a heaven. Overall, our findings indicate that in adults, belief in complete cessation and materialism appears rather common: at least in 19 out of 24 countries the modal response reflects the view that physical death ends all mental and bodily processes.

Our samples were selected to be globally and demographically diverse (e.g., including online panels instead of only highly-educated university students). Nevertheless, the sample was still restricted to 'modern societies' of literate participants with internet access, which puts a constraint on the generalizability of our results. At the same time, three investigated small-scale societies using a similar vignette as in the present study, displayed the very same pattern of (mental versus bodily) continuity beliefs, tentatively suggesting that the results are qualitatively comparable across different types of societies [Barrett et al., 2021]. In addition, while previous studies often investigated continuity beliefs in children, our sample only included adults. This setup does not allow for direct conclusions on whether the biased tendency toward mental versus bodily continuity is culturally learned [Bering and Bjorklund, 2004, Astuti and Harris, 2008, Bering et al., 2005a, Harris and Giménez, 2005, Watson-Jones et al., 2017] or unlearned through formal education

[Bloom, 2005, Bering, 2002, 2006, Slingerland and Chudek, 2011]; the former account presumes that dualistic afterlife reasoning increases with age whereas the latter 'intuitive dualism' account presumes that dualistic reasoning about continuity decreases with age. Relatedly, the causal relation between continuity beliefs and self-reported belief in an afterlife remains unclear. On the one hand, explicit religious or spiritual beliefs involving an afterlife could make people more receptive to the possibility of continuation of (mental) states [Barrett et al., 2021]. On the other hand, it could also be that the intuitive appeal of mental continuation serves as an evolutionary explanation for the appeal of religion [Bloom, 2007, Bering, 2002].

The exact nature of the continuity beliefs observed in our experiment remains unclear: do people truly believe that the deceased person has an independent mind maintaining these capacities, or do these beliefs rather reflect some sort of persistence of positive associations or feelings that the person had before they died (e.g., a loving person can still feel love)? That is, do people believe that the deceased grandmother can literally hear her grandson, or is this 'hearing' a metaphorical representation of a sustained connection between grandmother and grandson? Even if one assumes that all (mental) functioning stops at death, one might still prefer to hold on to social relations and emotions that were present before the passing. In that sense, perhaps the notion of persistent love is intuitive because the alternative that she does not love him anymore feels harsh, cold, and uncomfortable. Future research could possibly address the nature of these continuity beliefs by manipulating the valence and relevance of the implied states. If people are more likely to indicate that love and kindness continue than anger and jealousy, this might suggest that some idealization of the deceased plays a role [Allison et al., 2009, Eylon and Allison, 2005, Bering et al., 2005b]. This 'death positivity bias' may serve the purpose of giving comfort when losing a loved one [Attig, 1996]. Similarly, a difference in continuity judgments covarying with the mundaneness of the emotion (e.g., loving his wife versus loving to watch Netflix) or attitudes towards the target person (e.g., a loved relative versus a "bad guy" or a stranger) might also signal a bias in how we remember the dead, which spills over to the capacities attributed to them.

Moreover, following previous research, we only studied bodily states, but not bodily features of the deceased. Research on reincarnation beliefs, however, has shown that people tend to use distinctive individual bodily marks (e.g., a scar, a birthmark, or a mole) to establish identification of reincarnated individuals [White, 2017, Matlock and Mills, 1994]. The question thus remains to what extent distinctive bodily features are believed to continue in some form after death.

In addition, the validity of the deceased grandmother vignette as a measure of afterlife beliefs could be questioned, as the general validity of vignette designs in experimental research has been [Argyris, 1975, Collett and Childs, 2011]. On the one hand, there are clear benefits of using narratives to measure certain beliefs, attitudes, and intentions, including experimental control and the accessibility of ethically or practically difficult to manipulate scenarios [Aguinis and Bradley, 2014], such as someone dying. On the other hand, drawbacks include limited external validity and generalizability. First, a form of demand characteristics could have played a role, resulting in an overestimation of afterlife continuity beliefs. Perhaps participants did not literally believe that the dead grandmother could still feel love, but simply responded within the context of the story, as if immersing themselves in a fairy-tale. This might explain why even atheists exhibited some afterlife beliefs in the narrative task, especially in the religious framing condition; rather than their continuity responses reflecting a divergence between explicit afterlife beliefs and continuity judgments and hence a contraction in their beliefs, they may simply have 'played along' with the task. Second, responses to the vignette might reflect unintended peculiarities of the specific narrative [Gould, 1996]. That is, the observed pattern could be idiosyncratic to the presented narrative and underestimate true afterlife beliefs; perhaps people think that deceased individuals are in principle capable of feeling love and having knowledge, but that this does not hold for the grandmother in the narrative for some reason. However, we consider this explanation rather unlikely, as we see no obvious reason for participants to assume that this particular grandmother would not love her grandson anymore if she is indeed still capable of feeling love. Moreover, work by Bering indicated that coded (dis)continuity judgments based on follow-up interview questions ("why do you think so?") nearly always coincided with the initial 'yes' or 'no' response in both children and adults [Bering, 2002, Bering and Bjorklund, 2004]. Nevertheless, it would be worthwhile for future research to include validity-checks and/or qualitative methods to further explore folk afterlife beliefs, for instance in the form of "think aloud" paradigms [Solomon, 1995] or using an empirical approach to evaluate the response process on survey items [Wolf et al., 2023] (as has for instance been applied to the measurement of non-ordinary experiences across different cultures [Taves et al., 2023]).

Our results should be interpreted with some caution in light of concerns about data quality in online surveys [Zhou and Fishbach, 2016, Peer et al., 2022, Agley et al., 2022, Zorowitz et al., 2023]. For instance, the finding that about 20% of our participants self-report belief in an afterlife but do not make any continuity judgments in the vignette task seems puzzling. This pattern could indicate that these participants hold a particular, restrictive view of the afterlife (e.g., only a select group of people quality for an afterlife or autobiographical memories are not transferred to the afterlife, hence the grandmother cannot remember her grandson, nor love him). Alternatively, it is possible that inattention or miscomprehension could account for this seemingly inconsistent pattern. Future studies might include more stringent quality screening criteria to identify careless responses [Sulik et al., 2023, Arthur et al., 2021, Agley et al., 2022].

The conceptualization of mental and bodily states seems not unequivocal across individuals and countries. The exploratory factor analysis indicated that the perceptual state ('hearing') is mostly perceived as a mental rather than a bodily state. In some Asian countries (India, China), however, this does not seem to be the case, rendering the standard distinction between mental and bodily states problematic (see also Huang et al., 2013). The clustering of perceptual states might also depend on the object of the state (i.e., to which the specific state is directed). Here we asked about the grandmother hearing her grandson's voice; results might be different for 'hearing the equipment in the hospital room' or 'hearing the traffic outside'. Based on the current data, we found two distinct factors across most countries, reflecting body-independent and body-dependent states. We could imagine, however, that employing a larger set of states in the vignette could result in more factors [Yarkoni, 2022], such as bodily states, perceptual/cognitive states, and socio-emotional states [cf. Weisman et al., 2021], mapping onto different aspects associated with the body, the mind, the spirit, and the soul [Roazzi et al., 2013, Richert and Harris, 2008].

More generally, our data suggest a lack of measurement invariance for the constructs of state continuity and religiosity: the factor structure of the data is not equal across countries. This means that a direct comparison between countries is not straightforward: an effect of .1 of religiosity on continuity judgments in, for instance, China and Italy should potentially not be interpreted equally because religiosity may mean something different in China compared to Italy. Therefore, caution is warranted in comparing effects across countries. We note, however, that none of the previous cross-cultural studies on continuity beliefs assessed measurement invariance regarding the clustering of states, mirroring a general disregard of measurement invariance testing in psychological research [Maassen et al., 2023]. In fact, some studies have highlighted differences in the factor structure of continuity beliefs across countries as an explicit source of cultural variation [Weisman et al., 2021, Huang et al., 2013], so we assume that people's conceptualization of 'mental' and 'bodily' states is indeed culture-specific and measurement invariance would likely not hold for data from previous studies either. Examining causal structures underlying the sources of measurement (in)variance might reveal new cross-cultural explanations for these differences [Sterner et al., 2024]. We also note that some authors have criticised the necessity of measurement invariance for meaningful group comparisons [Rohrer, 2024, Robitzsch and Lüdtke, 2022, Funder and Gardiner, 2024]. Regardless, the qualitative pattern of results in our study is stable across a range of analytic choices including different clusterings of the states and using a binary religiosity indicator, boosting the confidence in our findings.

5 Conclusion

In conclusion, our results suggest both universality and cross-cultural variation in beliefs about mental processes after biological death. Using a large sample from 24 different countries, we replicated previous findings that people tend to reason dualistically about death as they consider mental states more likely to continue than bodily states and that a framing manipulation emphasizing a religious conception of death increases overall continuity judgments, though not specifically for mental relative to bodily continuity. In addition, we showed that individual religiosity in general, and propositional afterlife beliefs in particular, are predictive of both overall continuity beliefs and mental continuity specifically. At the same time, the pattern of the data does not imply universal belief in mental continuation after death. Specifically, the modal response across the majority of countries and the aggregated sample was complete cessation of all states and propositional afterlife beliefs were more prevalent than continuity judgments in the task. Based on these data, it seems that many people – at least in modern societies – entertain a materialistic conception of death, assuming that all mental activity ends at physical death. At the same time, there is considerable variation across individuals and countries in the extent to which people endorse afterlife continuity beliefs, both overall and for mental states in particular.

6 Supplementary Material

Supplementary material is available at osf.io/3p78n/.

7 Funding

8   Author contributions statement

Contributorship was documented with CRediT taxonomy using tenzing [Holcombe et al., 2020].
Conceptualization: S.H. and M.v.E.
Data curation: S.H.
Formal analysis: S.H., J.A.B., and J.M.H.
Funding acquisition: S.A., N.L., R.M., and M.v.E.
Investigation: S.H., S.A., T.B., R.B., A.C., C.G., R.G., K.H., C.K., R.M., A.N., L.Q., A.R., J.E.R., R.M.R., H.T., R.W., and D.X.
Methodology: S.H.
Project administration: S.H. and M.v.E.
Supervision: M.v.E.
Visualization: S.H.
Writing - original draft: S.H.
Writing - review & editing: S.A., T.B., R.B., J.A.B., A.C., C.G., R.G., J.M.H., K.H., C.K., N.L., R.M., A.N., L.Q., A.R., J.E.R., R.M.R., H.T., R.W., D.X., and M.v.E.

9   Data and code availability

All data collected as part of the current study (including relevant documentation) are provided at https://osf.io/3p78n/. Analysis code for all main results and supplementary analyses is available at https://osf.io/3p78n/.

References

Jussi Valtonen, Woo-kyoung Ahn, and Andrei Cimpian. Neurodualism: People assume that the brain affects the mind more than the mind affects the brain. *Cognitive Science*, 45(9):e13034, 2021. ISSN 1551-6709. doi:10.1111/cogs.13034.

Iris Berent and Melanie Platt. The true "me"—Mind or body? *Journal of Experimental Social Psychology*, 93:104100, March 2021. ISSN 0022-1031. doi:10.1016/j.jesp.2020.104100.

Tapani Riekki, Marjaana Lindeman, and Jari Lipsanen. Conceptions about the mind-body problem and their relations to afterlife beliefs, paranormal beliefs, religiosity, and ontological confusions. *Advances in Cognitive Psychology*, 9 (3):112–120, September 2013. ISSN 1895-1171. doi:10.2478/v10053-008-0138-5.

Jesse M Bering and David F Bjorklund. The natural emergence of reasoning about the afterlife as a developmental regularity. *Developmental psychology*, 40(2):217, 2004. doi:10.1037/0012-1649.40.2.217.

Paul Bloom. Religion is natural. *Developmental Science*, 10(1):147–151, 2007. doi:10.1111/j.1467-7687.2007.00577.x.

Paul L. Harris and Marta Giménez. Children's acceptance of conflicting testimony: The case of death. *Journal of Cognition and Culture*, 5(1):143–164, 2005. doi:10.1163/1568537054068606.

Jesse M Bering. Intuitive conceptions of dead agents' minds: The natural foundations of afterlife beliefs as phenomenological boundary. *Journal of Cognition and Culture*, 2(4):263–308, 2002. doi:10.1163/15685370260441008.

Jesse M. Bering. The folk psychology of souls. *Behavioral and Brain Sciences*, 29(5):453–462, 2006. doi:10.1017/S0140525X06009101.

Matthias Forstmann and Pascal Burgmer. Adults are intuitive mind-body dualists. *Journal of Experimental Psychology: General*, 144(1):222–235, 2015. ISSN 1939-2222(Electronic),0096-3445(Print). doi:10.1037/xge0000045.

Rita Astuti and Paul L. Harris. Understanding mortality and the life of the ancestors in rural Madagascar. *Cognitive Science: A Multidisciplinary Journal*, 32(4):713–740, 2008. doi:10.1080/03640210802066907.

Maciej Chudek, Rita McNamara, Susan Birch, Paul Bloom, and Joseph Henrich. Developmental and cross-cultural evidence for intuitive dualism. *Psychological Science*, 20, 2013.

Emma Cohen, Emily Burdett, Nicola Knight, and Justin Barrett. Cross-cultural similarities and differences in person-body reasoning: Experimental evidence from the United Kingdom and Brazilian Amazon. *Cognitive Science*, 35(7): 1282–1304, 2011. ISSN 1551-6709. doi:10.1111/j.1551-6709.2011.01172.x.

Junwei Huang, Lehua Cheng, and Jing Zhu. Intuitive conceptions of dead persons' mentality: A cross-cultural replication and more. *International Journal for the Psychology of Religion*, 23(1):29–41, January 2013. ISSN 1050-8619, 1532-7582. doi:10.1080/10508619.2013.735493.

Rachel E. Watson-Jones, Justin T. A. Busch, Paul L. Harris, and Cristine H. Legare. Does the body survive death? Cultural variation in beliefs about life everlasting. *Cognitive Science*, 41:455–476, 2017. doi:10.1111/cogs.12430.

Claire White. *An Introduction to the Cognitive Science of Religion: Connecting Evolution, Brain, Cognition and Culture*. Routledge, March 2021. ISBN 978-1-351-01095-5.

H. Clark Barrett, Alexander Bolyanatz, Tanya Broesch, Emma Cohen, Peggy Froerer, Martin Kanovsky, Mariah G. Schug, and Stephen Laurence. Intuitive dualism and afterlife beliefs: A cross-cultural study. *Cognitive Science*, 45 (6):e12992, 2021. ISSN 1551-6709. doi:10.1111/cogs.12992.

Thomas Swan, Jesse Bering, Ruth Hughes, and Jamin Halberstadt. The Role of Implicit and Explicit Beliefs in Grave-Good Practices: Evidence for Intuitive Afterlife Reasoning. *Cognitive Science*, 47(4):e13263, 2023. ISSN 1551-6709. doi:10.1111/cogs.13263.

Cristine H Legare, E Margaret Evans, Karl S Rosengren, and Paul L Harris. The coexistence of natural and supernatural explanations across cultures and development. *Child Development*, 83(3):779–793, 2012. doi:10.1111/j.1467-8624.2012.01743.x.

Heather M Gray, Kurt Gray, and Daniel M Wegner. Dimensions of mind perception. *Science (New York, N.Y.)*, 315 (5812):619–619, 2007. doi:10.1126/science.1134475.

H. Clark Barrett and Tanya Behne. Children's understanding of death as the cessation of agency: A test using sleep versus death. *Cognition*, 96(2):93–108, June 2005. ISSN 00100277. doi:10.1016/j.cognition.2004.05.004.

K. Mitch Hodge. Descartes' mistake: How afterlife beliefs challenge the assumption that humans are intuitive Cartesian substance dualists. *Journal of Cognition and Culture*, 8(3-4):387–415, 2008. doi:10.1163/156853708X358236.

K. Mitch Hodge. Why immortality alone will not get me to the afterlife. *Philosophical Psychology*, 24(3):395–410, 2011. doi:10.1080/09515089.2011.559620.

Daniel Clement Dennett. *Breaking the Spell: Religion as a Natural Phenomenon*. Penguin, New York, NY, 2006.

Paul Bloom. *Descartes' Baby: How the Science of Child Development Explains What Makes Us Human*. Random House, 2005.

Rebekah Richert and Paul Harris. The Ghost in My Body: Children's Developing Concept of the Soul. *Journal of Cognition and Culture*, 6(3-4):409–427, January 2006. ISSN 1568-5373, 1567-7095. doi:10.1163/156853706778554913.

Maira Roazzi, Melanie Nyhof, and Carl Johnson. Mind, Soul and Spirit: Conceptions of Immaterial Identity in Different Cultures. *The International Journal for the Psychology of Religion*, 23(1):75–86, January 2013. ISSN 1050-8619. doi:10.1080/10508619.2013.735504.

Kathleen H. Corriveau, Elisabeth S. Pasquini, and Paul L. Harris. "If it's in your mind, it's in your knowledge": Children's developing anatomy of identity. *Cognitive Development*, 20(2):321–340, April 2005. ISSN 0885-2014. doi:10.1016/j.cogdev.2005.04.005.

Claire White. Who Wants to Live Forever?: Explaining the Cross-Cultural Recurrence of Reincarnation Beliefs. *Journal of Cognition and Culture*, 17(5):419–436, November 2017. ISSN 1568-5373, 1567-7095. doi:10.1163/15685373-12340016.

Emma Cohen and Justin Barrett. When minds migrate: Conceptualizing spirit possession. *Journal of Cognition and Culture*, 8(1-2):23–48, January 2008. ISSN 1568-5373, 1567-7095. doi:10.1163/156770908X289198.

Edward Slingerland and Maciej Chudek. The prevalence of mind–body dualism in early China. *Cognitive Science*, 35: 997–1007, 2011. doi:10.1111/j.1551-6709.2011.01186.x.

Michael Barlev and Andrew Shtulman. Minds, bodies, spirits, and gods: Does widespread belief in disembodied beings imply that we are inherent dualists? *Psychological Review*, 128(6):1007–1021, November 2021. ISSN 1939-1471, 0033-295X. doi:10.1037/rev0000298.

J M Bering, C Hernández-Blasi, and D F Bjorklund. The development of afterlife beliefs in secularly and religiously schooled children. *British Journal of Developmental Psychology*, 23:587–607, 2005a.

Kara Weisman, Cristine H. Legare, Rachel E. Smith, Vivian A. Dzokoto, Felicity Aulino, Emily Ng, John C. Dulin, Nicole Ross-Zehnder, Joshua D. Brahinsky, and Tanya Marie Luhrmann. Similarities and differences in concepts of mental life among adults and children in five cultures. *Nature Human Behaviour*, August 2021. ISSN 2397-3374. doi:10.1038/s41562-021-01184-8.

Kurt Gray, T. Anne Knickman, and Daniel M. Wegner. More dead than dead: Perceptions of persons in the persistent vegetative state. *Cognition*, 121(2):275–280, November 2011. ISSN 0010-0277. doi:10.1016/j.cognition.2011.06.014.

Taylor A. Nelson, Andrew A. Abeyta, and Clay Routledge. Does meaning motivate magical thinking among theists and atheists? *Social Psychological and Personality Science*, 11(2):176–184, March 2020. ISSN 1948-5506. doi:10.1177/1948550619829063.

Judith Bek and Suzanne Lock. Afterlife beliefs: Category specificity and sensitivity to biological priming. *Religion, Brain and Behavior*, 1(1):5–17, 2011. doi:10.1080/2153599X.2010.550724.

Suzanne Hoogeveen and Michiel van Elk. Advancing the cognitive science of religion through replication and open science. *Journal for the Cognitive Science of Religion*, 6(1-2):158–190, 2021. ISSN 2049-7563. doi:10.1558/jcsr.39039.

S. Schmidt. Shall we really do it again? The powerful concept of replication is neglected in the social sciences. *Review of General Psychology*, 13:90–100, 2009. doi:10.1037/a0015108.

D. S. Lindsay. Replication in Psychological Science. *Psychological Science*, 26:1827–1832, 2015. doi:10.1177/0956797615616374.

Matthias Forstmann, Pascal Burgmer, and Thomas Mussweiler. "The mind is willing, but the flesh is weak": The effects of mind-body dualism on health behavior. *Psychological Science*, 23(10):1239–1245, October 2012. ISSN 0956-7976, 1467-9280. doi:10.1177/0956797612442392.

Joop J. C. M. Hox, Rens van de Schoot, and Suzette Matthijsse. How few countries will do? Comparative survey analysis from a Bayesian perspective. *Survey Research Methods*, 6:87–93, 2012. doi:10.18148/srm/2012.v6i2.5033.

Suzanne Hoogeveen, Julia M. Haaf, Joseph A Bulbulia, Robert M. Ross, Ryan McKay, Sacha Altay, Theiss Bendixen, Renatas Berniūnas, Arik Cheshin, Claudio Gentili, Raluca Georgescu, Will M Gervais, Kristin Hagel, Christopher M. Kavanagh, Neil Levy, Alejandra Neely, Lin Qiu, André Rabelo, Jonathan E. Ramsay, Bastiaan T. Rutjens, Hugh Turpin, Filip Uzarevic, Robin Wuyts, Dimitris Xygalatas, and Michiel van Elk. The Einstein effect provides global evidence for scientific source credibility effects and the influence of religiosity. *Nature Human Behaviour*, 6(4): 523–535, 2022. doi:10.1038/s41562-021-01273-8.

Suzanne Hoogeveen, Alexandra Sarafoglou, Balazs Aczel, Yonathan Aditya, A.J. Alayan, P.J. Allen, Sacha Altay, S Alzahawi, Y. Amir, F-V. Anthony, O.K. Appiah, Quentin D. Atkinson, Adam Baimel, Merve Balkaya-Ince, M. Balsamo, S. Banker, F Bartoš, M. Becerra, B. Beffara, J. Beitner, Theiss Bendixen, Jana B. Berkessel, Michiel van Elk, and E.-J. Wagenmakers. A many-analysts approach to the relation between religiosity and well-being. *Religion, Brain & Behavior*, 13(3):237–283, 2023. doi:10.1080/2153599X.2022.2070255.

World Values Survey. Wave 6 Official Aggregate v. 20150418. worldvaluessurvey.org, 2010.

Marjaana Lindeman, Tapani Riekki, and Annika M. Svedholm-Häkkinen. Individual Differences in Conceptions of Soul, Mind, and Brain. *Journal of Individual Differences*, 2015. doi:10.1027/1614-0001/a000167.

Vivian Miu-Chi Lun and Michael Harris Bond. Examining the relation of religion and spirituality to subjective well-being across national cultures. *Psychology of Religion and Spirituality*, 5(4):304–315, 2013. ISSN 1943-1562, 1941-1022. doi:10.1037/a0033641.

Olga Stavrova. Religion, self-rated health, and mortality: Whether religiosity delays death depends on the cultural context. *Social Psychological and Personality Science*, 6(8):911–922, 2015. doi:10.1177/1948550615593149.

Julius M. Pfadt and Don van den Bergh. Bayesrel: Bayesian reliability estimation, 2020.

Arthur Aron, Elaine N. Aron, and Danny Smollan. Inclusion of Other in the Self Scale and the structure of interpersonal closeness. *Journal of Personality and Social Psychology*, 63(4):596–612, 1992. doi:10.1037/0022-3514.63.4.596.

Paul-Christian Bürkner. Brms: An R package for Bayesian multilevel models using Stan. *Journal of Statistical Software*, 80(1):1–28, 2017. doi:10.18637/jss.v080.i01.

B. Carpenter, A. Gelman, M. Hoffman, D. Lee, B. Goodrich, M. Betancourt, M. A. Brubaker, J. Guo, P. Li, and A. Riddell. Stan: A probabilistic programming language. *Journal of Statistical Software*, 76, 2017. doi:10.18637/jss.v076.i01.

Q. F. Gronau, H. Singmann, and E.-J. Wagenmakers. Bridgesampling: An R Package for Estimating Normalizing Constants. *Journal of Statistical Software*, 92, 2020.

Julia M Haaf and Jeffrey N Rouder. Developing constraint in Bayesian mixed models. *Psychological Methods*, 22(4): 779–798, 2017. doi:10.31234/osf.io/ktjnq.

J. N. Rouder, Julia M Haaf, Clintin P Davis-Stober, and Joseph Hilgard. Beyond overall effects: A Bayesian approach to finding constraints in meta-analysis. *Psychological Methods*, 24:606–621, 2019. doi:10.1037/met0000216.

R. McElreath. *Statistical Rethinking: A Bayesian Course with Examples in R and Stan*. Chapman & Hall/CRC Press, Boca Raton (FL), 2nd edition, 2020. doi:10.1201/9781315372495.

Michael Betancourt, Aki Vehtari, and Andrew Gelman. Prior choice recommendations, 2015.

B.J. Grim. Religion in China on the eve of the 2008 Beijing Olympics, May 2008.

Anning Hu. Ancestor worship in contemporary China: An empirical investigation. *China Review*, 16(1):169–186, 2016.

Arkadiusz Gut, Andrew Lambert, Oleg Gorbaniuk, and Robert Mirski. Folk beliefs about soul and mind: Cross-cultural comparison of folk intuitions about the ontology of the person. *Journal of Cognition and Culture*, 21(3-4):346–369, October 2021. ISSN 1568-5373, 1567-7095. doi:10.1163/15685373-12340116.

Scott T. Allison, Dafna Eylon, James K. Beggan, and Jennifer Bachelder. The demise of leadership: Positivity and negativity biases in evaluations of dead leaders. *The Leadership Quarterly*, 20(2):115–129, April 2009. ISSN 1048-9843. doi:10.1016/j.leaqua.2009.01.003.

Dafna Eylon and Scott T. Allison. The "frozen in time" effect in evaluations of the dead. *Personality and Social Psychology Bulletin*, 31(12):1708–1717, December 2005. ISSN 0146-1672. doi:10.1177/0146167205277806.

Jesse M. Bering, Katrina McLeod, and Todd K. Shackelford. Reasoning about dead agents reveals possible adaptive trends. *Human Nature*, 16(4):360–381, December 2005b. ISSN 1936-4776. doi:10.1007/s12110-005-1015-2.

Thomas Attig. *How We Grieve: Relearning the World*. New York: Oxford University Press, 1996.

J. G. Matlock and A. Mills. *Amerindian Rebirth: Reincarnation Belief Among North American Indians and Inuit*. University of Toronto Press, 1994. ISBN 978-0-8020-7703-5.

Chris Argyris. Dangers in applying results from experimental social psychology. *American Psychologist*, 30(4):469–485, 1975. ISSN 1935-990X. doi:10.1037/h0076834.

Jessica L. Collett and Ellen Childs. Minding the gap: Meaning, affect, and the potential shortcomings of vignettes. *Social Science Research*, 40(2):513–522, March 2011. ISSN 0049-089X. doi:10.1016/j.ssresearch.2010.08.008.

Herman Aguinis and Kyle J. Bradley. Best practice recommendations for designing and implementing experimental vignette methodology studies. *Organizational Research Methods*, 17(4):351–371, October 2014. ISSN 1094-4281. doi:10.1177/1094428114547952.

Dinah Gould. Using vignettes to collect data for nursing research studies: How valid are the findings? *Journal of Clinical Nursing*, 5(4):207–212, 1996. ISSN 1365-2702. doi:10.1111/j.1365-2702.1996.tb00253.x.

Paul Solomon. The think aloud method: A practical guide to modelling cognitive processes. *Information Processing & Management*, 31(6):906–907, November 1995. ISSN 03064573. doi:10.1016/0306-4573(95)90031-4.

Melissa Gordon Wolf, Elliott Ihm, Andrew Maul, and Ann Taves. The Response Process Evaluation Method, February 2023.

Ann Taves, Elliott Ihm, Melissa Gordon Wolf, Michael Barlev, Michael Kinsella, and Maharshi Vyas. The Inventory of Nonordinary Experiences (INOE): Evidence of Validity in the United States and India, February 2023.

Haotian Zhou and Ayelet Fishbach. The pitfall of experimenting on the web: How unattended selective attrition leads to surprising (yet false) research conclusions. *Journal of Personality and Social Psychology*, 111(4):493–504, 2016. ISSN 1939-1315. doi:10.1037/pspa0000056.

Eyal Peer, David Rothschild, Andrew Gordon, Zak Evernden, and Ekaterina Damer. Data quality of platforms and panels for online behavioral research. *Behavior Research Methods*, 54(4):1643–1662, 2022. ISSN 1554-351X. doi:10.3758/s13428-021-01694-3.

Jon Agley, Yunyu Xiao, Rachael Nolan, and Lilian Golzarri-Arroyo. Quality control questions on Amazon's Mechanical Turk (MTurk): A randomized trial of impact on the USAUDIT, PHQ-9, and GAD-7. *Behavior Research Methods*, 54(2):885–897, April 2022. ISSN 1554-3528. doi:10.3758/s13428-021-01665-8.

Samuel Zorowitz, Johanne Solis, Yael Niv, and Daniel Bennett. Inattentive responding can induce spurious associations between task behaviour and symptom measures. *Nature Human Behaviour*, 7(10):1667–1681, October 2023. ISSN 2397-3374. doi:10.1038/s41562-023-01640-7.

Justin Sulik, Robert M Ross, Ryan Balzan, and Ryan McKay. Delusion-like beliefs and data quality: Are classic cognitive biases artifacts of carelessness? *Journal of Psychopathology and Clinical Science*, 132:749–760, 2023. doi:10.1037/abn0000844.

Winfred Arthur, Ellen Hagen, and Felix George. The Lazy or Dishonest Respondent: Detection and Prevention. *Annual Review of Organizational Psychology and Organizational Behavior*, 8(1):105–137, 2021. doi:10.1146/annurev-orgpsych-012420-055324.

Tal Yarkoni. The generalizability crisis. *Behavioral and Brain Sciences*, 45:e1, January 2022. ISSN 0140-525X, 1469-1825. doi:10.1017/S0140525X20001685.

Rebekah Richert and Paul Harris. Dualism Revisited: Body vs. Mind vs. Soul. *Journal of Cognition and Culture*, 8(1-2):99–115, January 2008. ISSN 1568-5373, 1567-7095. doi:10.1163/156770908X289224.

Esther Maassen, E. Damiano D'Urso, Marcel A. L. M. Van Assen, Michèle B. Nuijten, Kim De Roover, and Jelte M. Wicherts. The dire disregard of measurement invariance testing in psychological science. *Psychological Methods*, December 2023. ISSN 1939-1463, 1082-989X. doi:10.1037/met0000624.

Philipp Sterner, Florian Pargent, Dominik Deffner, and David Goretzko. A Causal Framework for the Comparability of Latent Variables, January 2024.

Julia M. Rohrer. A casual but causal take on measurement invariance, 2024.

Alexander Robitzsch and Lüdtke. Why measurement invariance is not necessary for valid group comparisons, 2022.

D. C. Funder and Gwendolyn Gardiner. MIsgivings about measurement invariance. *European Journal of Personality*, 2024. doi:10.1177/08902070241228338.

Alex O Holcombe, Marton Kovacs, Frederik Aust, and Balazs Aczel. Documenting contributions to scholarly articles using CRediT and tenzing. *PLoS One*, 15(12):e0244611, 2020.