



Being prosocial and happy, and believing in life-determining forces across cultures

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Abstract Believing that your life is shaped by internal forces, such as your own free will, is usually thought to lead to positive outcomes, such as being prosocial and happy. Believing that it is shaped by external forces, such as deterministic laws of nature, is usually thought to lead to negative outcomes. However, whether that is the case might vary with culture and with the nature of the force, specifically, whether the force is teleological. To test this, we investigated beliefs in five countries: China, India, Lithuania,

Mongolia, and the USA. We investigated beliefs in the importance of *choice* (an internal, teleological force), *gods* and *fate* (external, teleological forces), and *chance* and *luck* (external, non-teleological forces). Participants ($N = 1035$) played a hypothetical dictator game, rated their happiness, and rated how much, in their opinion, their life is determined by these forces. *Choice* was perceived as the most important and its perceived importance was positively associated with subjective happiness across cultures. It was also positively associated with prosocial intentions, although only in India. Perceived importance of *gods* and *fate* was mostly positively associated with prosocial intentions. Perceived importance of *gods*, but not *fate*, was positively associated with subjective happiness across cultures. Finally, perceived importance of *chance* and *luck* was mostly either negatively associated with prosocial intentions and subjective happiness or not at all. Our results highlight the importance of studying agency beliefs in different cultures and distinguishing different kinds of determination: not just internal and external but also teleological and non-teleological.

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Introduction: pro-sociality, happiness, and belief in free will and determinism

You can think that what happens in your life is determined by something internal to yourself, such as your own choices or your own free will. Alternatively, you can think that what happens in your life is determined by something external to yourself, such as gods, fate, chance, luck, or deterministic laws of nature (that is, laws that, together with initial conditions, fully determine everything that happens later). In the literature on agency beliefs, believing in the importance of an internal force, usually free will, is typically associated with positive outcomes. In contrast, believing in the importance of an external force, usually determinism, is typically associated with negative outcomes. For example, some studies have suggested that belief in free will underpins prosocial intentions and subjective happiness, while belief in determinism undermines them (e.g., Vohs & Schooler, 2008; Crescioni et al., 2016; for a review of the empirical literature, see Ewusi-Boisvert & Racine, 2018). According to a simple picture that these results might suggest, we all naturally believe in free will, and the stronger our belief, the nicer and happier we all are (and vice versa for determinism).

However, a considerable amount of recent research suggests that this simple picture is not quite right. First, some studies suggest that non-specialists do not normally use the heavily philosophically loaded concepts of free will and determinism in their reasoning (e.g., Clark et al., 2019; Monroe & Malle, 2010; Nadelhoffer et al., 2020). They usually think about agency in less philosophically loaded terms, such as choice and constraint. Second, other studies suggest that non-specialists from different cultures have significantly different conceptions of free will (e.g., Berniūnas et al., 2021; Hannikainen et al., 2019). Hence, when non-specialists say they believe in free will, they often mean different things, depending on their culture. Third, some studies have raised doubts whether belief in free will really underpins prosocial behavior and subjective happiness (e.g., Crone & Levy, 2019; Genschow et al., 2023; Gooding et al., 2018; Nadelhoffer et al., 2020). Researchers are finding results hard to replicate, and they are discovering new confounds. Finally, other studies suggest that, at least in some circumstances, belief in the importance of an external force leads to *more*

prosocial intentions and *higher* subjective happiness (e.g., Specht et al., 2011; Norenzayan et al., 2016; White et al., 2019).

To sum up, recent work on agency beliefs strongly suggests the following. First, there is a need to study less philosophically loaded and more cross-culturally recognizable agency beliefs. An example of such a belief in an internal life-determining force is the belief in the importance of your own choices. Examples of such beliefs in external life-determining forces are beliefs in gods, fate, chance, and luck. Second, there is a need to distinguish between different kinds of external life-determining forces. One important distinction here is between *teleological* external forces (i.e., those external forces that imply a purpose) and *non-teleological* external forces (those that do not). Examples of teleological external forces are gods and fate. It is often said that they “mean” things to happen or “lead” to certain things. Examples of non-teleological external forces are chance and luck. It is often said that things happen by “mere” chance or luck and that then those things happen “for no reason.”

In other words, when it comes to believing in the importance of an internal force, one can distinguish between more and less philosophically and culturally loaded beliefs, such as believing in free will and believing in choice. Similarly, when it comes to believing in the importance of an external force, one can distinguish between believing in a teleological external force, such as gods or fate, and believing in a non-teleological external force, such as chance or luck. One reason why some of the previous findings related to the consequences of believing in the importance of internal and external forces have been inconsistent may be precisely that these two further distinctions have not been made. In this paper, we aim to make some of the first steps in these two new research directions while keeping those two distinctions in mind.

Aims of the present study

The main aim of the present study is to investigate the relationship between prosocial intentions, subjective happiness, and the perceived importance of five life-determining forces (choice, gods, fate, chance, and luck), across five cultures (in China, India, Mongolia, Lithuania, and the USA). We aimed to investigate one

internal force (choice), two teleological external forces (gods and fate) and two non-teleological external forces (chance and luck). We also aimed to investigate them in an English-speaking Western country (the USA), a non-English-speaking Western country (Lithuania), and three Eastern countries (China, India, and Mongolia). The three Eastern countries have different religious influences (Confucian in China, Hindu in India, and Buddhist in Mongolia). The study aims to contribute to the broader project of investigating how agency beliefs influence people's moral behaviour and well-being.

Predictions: pro-sociality, happiness, and belief in gods, fate, chance, and luck

Choice. Based on previous literature, we predicted that the perceived importance of the one internal force, *choice*, will be positively related to prosocial intentions and subjective happiness; we also predicted some cultural variation. The reasons why we expected a positive relationship are as follows. First, some previous studies have suggested that the concept of choice is at the core of our conception of free will, at least in the West (Feldman et al., 2014; Monroe & Malle, 2010). Second, there is some evidence that it is this core that explains the positive relation that is sometimes found between belief in free will, on the one hand, and prosocial behaviour and subjective happiness, on the other (Gooding et al., 2018; Monroe et al., 2017). So, generally, we expected a positive relation between the perceived importance of choice, prosocial intentions, and subjective happiness across cultures.

Our reasons for expecting some cultural variations are the following. First, earlier studies suggest that Westerners are more likely than Easterners to think something is a result of choice (Markus & Schwartz, 2010; Savani et al., 2010). We therefore expected that Westerners would perceive choice as more important. Second, it has also been argued that Westerners are more likely to think that a choice results from individual dispositions instead of social expectations (Markus & Kitayama, 2003; Markus 2006). Perhaps as a consequence, some earlier studies also report a negative relation between the perceived importance of choice and pro-sociality among Western participants (Savani & Rattan, 2012; Savani et al., 2011). So, we

expected a more positive relation between the perceived importance of choice and prosocial intentions in the Eastern sample.

Gods. We predicted that the perceived importance of the first teleological external force, *gods*, will be positively related to prosocial intentions and subjective happiness across cultures. Regarding prosocial intentions, previous studies have found that beliefs in gods and spirits are associated with prosocial behaviour (Norenzayan et al., 2016; Purzycki et al., 2016; Singh et al., 2021). One way to explain why this should be so is the *supernatural punishment hypothesis*. It suggests that belief in (punishing) supernatural agents emerged as a cultural evolutionary adaptation precisely because it facilitated adhering to social norms and cooperating with more distant others (Norenzayan, 2013). If that is the case, it is reasonable to expect that those who perceive gods as more important will be more prosocial.

Regarding subjective happiness, first, previous studies link religiosity with well-being (Hoogeveen et al., 2022). Second, other studies link prosocial behaviour with subjective happiness across cultures (Aknin et al., 2013). One indirect way in which prosocial behaviour could lead to more subjective happiness is through helping to develop close relationships, which are among the best predictors of happiness (Saphire-Bernstein & Taylor, 2013). Consequently, if belief in gods is associated with prosocial behaviour and if prosocial behaviour is associated with subjective happiness, it is reasonable to expect that belief in gods will be associated with subjective happiness.

Fate. We predicted that the perceived importance of the other teleological external force, *fate*, would be positively related to prosocial intentions across cultures; we predicted that its relation to subjective happiness would be culturally variable. Regarding prosocial intentions, first, there is some evidence that belief in karma, a closely related belief, is associated with prosocial behaviour (e.g., White et al., 2019; Willard et al., 2020). Second, like belief in gods, belief in fate implies a plan made by a higher force, which usually prescribes how one should act towards others and which can, therefore, invoke a sense of obligation. Third, both beliefs arguably stem from the same overly strong human inclination to attribute agency and mentality to other (animate and inanimate) things and events (Kelemen, 2004; Baumard & Chevallier,

2012; Banerjee & Bloom, 2014; Kelemen et al., 2014; Rottman et al., 2017). It is, therefore, reasonable to expect that people who have a stronger belief in fate will also be more sensitive to other people's mental states and, consequently, more likely to act pro-socially.

Regarding subjective happiness, however, belief in fate is importantly different from belief in karma or gods (at least those of the dominant religions) in that it does not imply justice or good outcomes for good deeds. It is sometimes said that fate is "cruel". In fact, in the Western philosophical tradition (e.g., Rice, 2023) and psychology (e.g., Norenzayan & Lee, 2010), belief in fate (or fatalism) is usually associated with negative outcomes. However, in anthropology (e.g., Elliot & Menin, 2018), and non-Western philosophical traditions (see Au et al., 2011), there is a different conception of fate. It is not conceptualised in such negative and completely deterministic terms but instead thought of as something one can "negotiate with." In fact, belief in negotiable fate is often associated with positive outcomes (Au et al., 2011, Au et al., 2012, Au et al., 2017; see also Young et al., 2011, on the cultural variability of the concept of fate). Hence, we expected the perceived importance of fate to have a more positive relation to subjective happiness for Easterners than for Westerners.

Chance and luck. We predicted that the two non-teleological external forces, chance and luck, will have a negative relation to prosocial intentions and subjective happiness across cultures. In previous literature, "chance" and "luck" were usually taken to be synonymous (André, 2006; Day & Maltby, 2003). For our purpose here, which is to investigate the role of non-teleological agency beliefs, i.e., those beliefs that imply randomness, belief in chance might seem to be the more obvious choice. It clearly implies randomness. In contrast, luck might be construed either as a completely random external force or as a more predictable internal force (a trait of a "lucky" or "unlucky" person; Darke & Freedman, 1997; Thompson & Prendergast, 2013). It is also somewhat harder to ensure that "luck" is thought of as neutral, in terms of valence, as opposed to being read as short for "good luck" (Darke & Freedman, 1997; Day & Maltby, 2003). That said, belief in chance is less cross-culturally recognisable than belief in luck, and the corresponding term is harder to translate into other languages (as was the case with the languages of our

study). Therefore, given this ambiguity, it is better to investigate beliefs in chance and luck separately.

Regarding our prediction, to the best of our knowledge, there is no strong evidence suggesting either a positive or a negative relation to prosocial intentions or subjective happiness. One indirect way that belief in the importance of non-teleological forces could lead to less prosocial intentions is by diminishing perceived moral responsibility (philosophers have long been discussing chance and luck as potential threats to moral responsibility; see Levy, 2009). Similarly, one indirect way in which belief in the importance of non-teleological forces could lead to less subjective happiness is by diminishing the perceived meaningfulness of life (whereas, in contrast, belief in free will has been found to be positively associated with perceived meaningfulness; see Crescioni et al., 2016). More generally, since there are reasons to expect positive outcomes for teleological beliefs, and since beliefs in chance and luck are their opposites, it is reasonable to expect negative outcomes for belief in chance and luck.

Methods

Ethical Approval

At the time this research was conducted in Lithuania, non-biomedical survey research was not subject to ethics review, so we did not seek to obtain approval from a Human Research Ethics Committee. All procedures involving human participants were in accordance with the national and institutional ethical standards and the 1964 Helsinki Declaration and its later amendments.

Participants

Participants were from five countries: China, India, Lithuania, Mongolia, and the USA ($N = 1035$; 53% female; mean age = 26 years; 44% religious).¹ This gave us an English-speaking Western country (the USA), a non-English-speaking Western country (Lithuania), and three Eastern countries with different religious influences (Confucian in China, Hindu in

¹ Participants with some missing answers were kept for the analyses.

India, and Buddhist in Mongolia; note, however, that we did not exclude participants if they lacked these religious affiliations). A further reason for selecting these Eastern countries was good knowledge of, and easy access to, these countries, which was crucial for translating the materials and getting enough participants.

Participants from the USA were recruited using the paid platform Prolific ($N = 203$; 54% female; mean age = 33 years; 51% religious, of which 88% Christian).² Participants from Lithuania were recruited at Vilnius University ($N = 199$; 35% female; mean age = 19 years; 48% religious, of which 100% Christian). Participants from China were recruited using the online paid platform SoJump ($N = 242$; 51% female; mean age = 31 years; 16% religious, of which 74% Buddhist). Participants from India were recruited at the Dev Sanskriti University, in the city of Haridwar, in the Northern part of India ($N = 200$; 65% female; mean age = 21 years; 94% religious, of which 100% Hindu). Participants from Mongolia were recruited in the capital city of Ulaanbaatar, either at the National University of Mongolia, or in public places ($N = 191$; 60% female; mean age = 27 years; 36% religious, of which 84% Buddhist).

Materials and procedure

Participants were presented with materials in their local language. Materials for measuring prosocial intentions and subjective happiness were translated from existing sources in English (into Chinese, Hindi, Lithuanian, and Mongolian). Materials for measuring the perceived importance of life-determining forces were developed in English and then translated into Chinese, Hindi, Lithuanian, and Mongolian. More specifically, we translated the key terms, discussed them with native speakers, then translated the entire materials, then discussed them again with native speakers, and then made further corrections. The materials were presented either online or on paper. They were presented in the following order: first, measures of prosocial intentions and subjective happiness (in random order); second, measures of

perceived importance of life-determining forces; third, demographic measures.³

Prosocial intentions. Participants played a hypothetical dictator game. They imagined receiving a significant amount of money and were asked how much they would keep for themselves and how much they would give away to family, friends, or a stranger in need (see *Supplements* for the Mongolian example). Earlier studies suggest that hypothetical and actual dictator games produce similar results (Ben-Ner et al., 2006, 2008). However, one should keep in mind that prosocial *intentions* and prosocial *behaviour* might come apart (though both are interesting in their own right). Giving money to family can be interpreted as *personal* (or kin-based) pro-sociality, while giving money to a stranger in need can be interpreted as *impersonal* (or anonymous) pro-sociality (Schulz, 2019; Henrich, 2020).⁴ The amount of money participants imagined receiving was adjusted by taking into consideration the economic situation of the specific country (wages, purchasing power, etc.). We aimed at a reasonably attractive sum, which would be close to what one would typically spend on a single day. We settled for 50 dollars in the USA, 20 euros in Lithuania, 200 yuan in China, 1000 rupees in India, 50 000 tugriks in Mongolia.

Subjective happiness. Participants rated their own happiness on the Subjective Happiness scale, in which they were asked whether they considered themselves a happy person (Lyubomirsky & Lepper, 1999). The internal consistency of the scale, as indicated by Cronbach's alpha, was excellent in the USA ($\alpha = 0.90$), good in China ($\alpha = 0.81$), and acceptable in Lithuania ($\alpha = 0.79$) and Mongolia ($\alpha = 0.72$), though questionable in India ($\alpha = 0.61$).

³ Before the prosocial intentions and subjective happiness measures, participants listed what they associate with one of the following terms: "free will", "choice", "fate", "chance", or "luck". There were no differences between these groups when it comes to prosocial intentions or subjective happiness. The data will be analysed and reported separately.

⁴ Personal pro-sociality relates to living within intensive kin-based institutions with tight social norms, interdependence, and strong in-group cooperation. It is directed towards people one knows are kin related. Impersonal pro-sociality relates to social norms, expectations, and motivations for impartial fairness and cooperation with strangers or even abstract institutions like police or government. It is directed towards people unrelated to one's social network (Henrich, 2020).

² For full information about religious affiliation, see *Supplements*, Table S7.

Perceived importance of life-determining forces. Although there were measures for most of the beliefs we were interested in, there were no materials for measuring all of them that would make the results readily comparable. Moreover, there was a lack of measures for the perceived importance of these life-determining forces, specifically for the cross-culturally recognisable aspects of life that we were interested in (health, wealth, marriage, and social status). We therefore chose to develop our own measure.

Participants were asked how much, in their opinion, their health, wealth, marriage, and social status depended on choice, gods, fate, chance, and luck (see *Supplements*, Tables S6a–d, for confirmatory factor analysis).⁵ For example, for wealth, we had the following statements: (1) “My wealth and prosperity depend on fate,” (2) “My wealth and prosperity depend on luck,” (3) “My wealth and prosperity depend on chance,” (3) “My wealth and prosperity depend on God,” (4) “My wealth and prosperity depend on my own choices.” After each statement, there was a 6-point scale: 0 = does not depend at all, 1 = mostly does not depend, 2 = slightly depends, 3 = somewhat depends, 4 = depends a lot, 5 = completely depends.⁶

Demographics. Participants indicated their age, gender, and religiosity. There were two questions about religiosity. First, we asked them to indicate their religious affiliation, if any. Second, we asked them to indicate their religious participation: “How often have you attended religious services at the temple, shrine or any other place of religious significance during the past year?”; 5 = daily; 4 = weekly; 3 = monthly; 2 = few times a year; 1 = once a year; 0 = never.

⁵ To translate “god”, we chose words that refer more generally to supernatural agents recognisable in the given culture. For example, we used the Mongolian word “Burkhan”, which denotes an unspecified deity. Similarly, for “fate”, we chose words that refer more generally to teleological life-determining forces recognisable in those cultures. One should keep in mind, therefore, that the correspondences are approximate.

⁶ A complementary questionnaire was constructed to investigate the third-person perspective. In that questionnaire, participants read four short vignettes about another person, in situations related to health, wealth, marriage, or social status. The data will be analysed and reported separately.

Results

Descriptive statistics on demographics and the hypothetical dictator game are presented in Table 1.

Perceived importance of life-determining forces

We calculated composite means for each life-determining force (choice, gods, fate, chance, and luck) across life aspects (health, wealth, marriage, and social status) within each country (China, India, Lithuania, Mongolia, and the USA) (Fig. 1). For example, the mean perceived importance of *choice* across health, wealth, marriage, and social status in the USA was 4.05 ($SD = 0.79$). *Choice* was perceived as the most important life-determining force, across cultures. Internal consistency for the four life aspects, as measured by Cronbach’s alpha, ranged from acceptable in the case of fate in India ($\alpha = 0.73$), to excellent in the case of gods in the USA ($\alpha = 0.97$) (see *Supplements*, Table S1, for all composite means, alpha coefficients, and related samples Friedman’s ANOVA tests).

We calculated bivariate Pearson correlations between pro-social intentions, demographic variables, and perceived importance of life-determining forces (Table 2). There was a negative correlation between the perceived importance of each of the external life-determining forces and the perceived importance of the internal life-determining force. This was so overall as well as within each cultural group. The perceived importance of each of the external forces correlated with the perceived importance of each other external force, with chance and luck having the strongest relation ($r = 0.627$) (see *Supplements*, Table S3, for all correlations).⁷

⁷ It should be noted that a measurement equivalence test that we conducted with the life-determining forces questionnaire suggested non-invariance. However, it has recently been argued that such tests are not appropriate for this kind of study. Namely, they might not be appropriate for a cross-cultural study that uses “formative” instead of “reflective” constructs, that uses closed-ended scales, and that has a large sample mean disparity (Welzel et al., 2021; Welzel et al., 2022).

Table 1 Descriptive statistics of demographic variables and responses to hypothetical dictator game

	<i>N</i>	Mean Age	Gender (female %)	Religious (%)	Religious practice ^a	Family <i>M (SD)</i>	Friends <i>M (SD)</i>	Stranger <i>M (SD)</i>	Happiness <i>M (SD)</i>
USA	203	33	54	52	1.21	30.49 (29.07)	21.08 (23.63)	25.86 (27.77)	4.57 (1.45)
LTU	199	19	44	47	1.35	50.95 (32.95)	31.66 (24.63)	31.88 (33.28)	4.67 (1.15)
CHN	242	31	51	16	2.04	61.53 (23.79)	24.88 (20.25)	37.11 (31.23)	4.77 (1.23)
IND	200	21	65	94	3.23	64.30 (31.38)	28.95 (24.26)	56.05 (37.51)	4.91 (1.11)
MNG	191	27	60	36	1.10	48.90 (28.10)	23.66 (20.88)	11.31 (19.69)	4.69 (1.05)

There are some missing values for age, gender, religiosity, and religious practice. ^a7-point scale, from 0 (never) to 6 (every day)

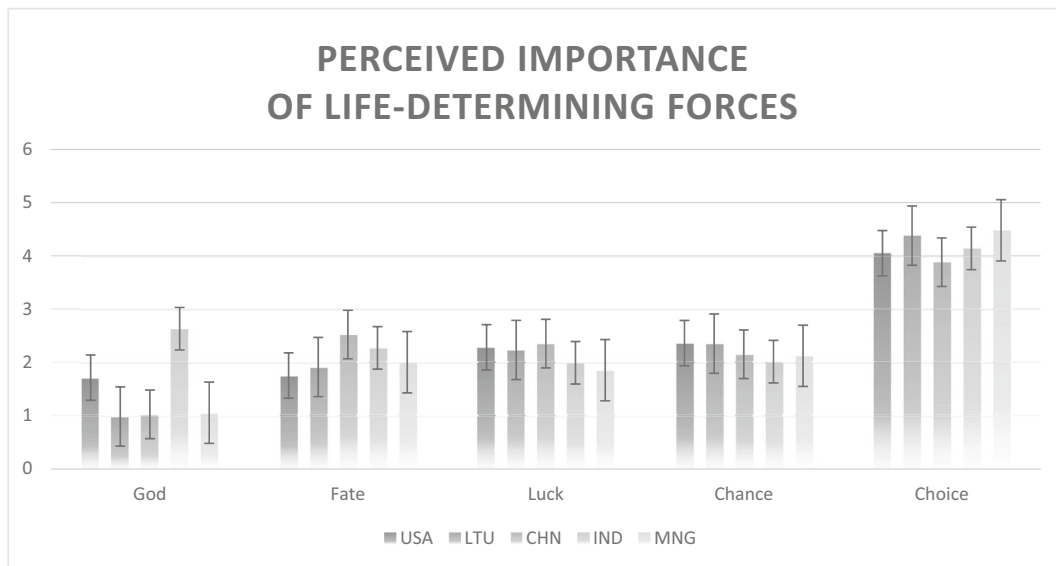


Fig. 1 Composite means (with standard error bars) across life aspects, within cultural groups

Regressions: prosocial intentions and perceived importance of life-determining forces

We conducted regression analyses within and across cultures with the perceived importance of life-determining forces as predictor variables and prosocial intentions as outcome variables (see *Supplements*, Table S2, for full results). Since the outcome variables express the proportion (in rounded percentages) of allocated money, we treated them as count data. Responses were not normally distributed; therefore, we used the Generalised Linear Model. Since the

distribution of counts did not follow a Poisson distribution, we used a Generalised Linear Model with a quasi-Poisson error structure to fit the over-dispersed data (see *Supplements*, Table S4, for odds ratios and 95% confidence intervals for quasi-Poisson regression models for prosocial intentions towards family, friends, and a stranger in need, within each cultural group).

Perceived importance of *choice* was associated with lower pro-sociality towards friends in Lithuania [*OR* = 0.85, 95% *CI* (0.72, 0.99), *p* = 0.036], and higher pro-sociality towards a stranger in need in India

Table 2 Pearson correlations between all the variables, across cultures

	Gender	Religion	Rel.Part	FATE	LUCK	CHANCE	GOD	CHOICE	Family	Friends	Strangers	Happy
Age	- 0.025	- 0.028	- 0.083**	0.039	0.074*	- 0.012	0.021	- 0.125**	0.005	- 0.054	- 0.071*	0.127**
Gender		0.051	0.054	- 0.011	- .076*	- .088**	0.035	0.033	0.040	0.010	0.040	0.036
Religion			.385**	0.087**	.001	- .056	0.487**	0.068*	0.107**	0.117**	0.110**	0.151**
Rel.Part				0.172**	- 0.006	- .026	0.355**	-.002	0.177**	0.085**	0.143**	0.137**
FATE					0.549**	0.372**	0.380**	- 0.155**	0.156**	0.030	- 0.024	- 0.004
LUCK						0.627**	0.222**	- 0.086**	0.027	- 0.023	- 0.020	- 0.057
CHANCE							0.121**	- 0.012	- 0.037	- 0.021	- 0.100**	- 0.062*
GOD								- 0.126**	0.157**	0.062*	0.139**	0.137**
CHOICE									0.014	0.022	- 0.011	0.190**
Family										0.452**	0.204**	0.164**
Friends											0.216**	0.112**
Strangers												0.132**

** . Correlation is significant at the 0.01 level (2-tailed). * . Correlation is significant at the 0.05 level (2-tailed)

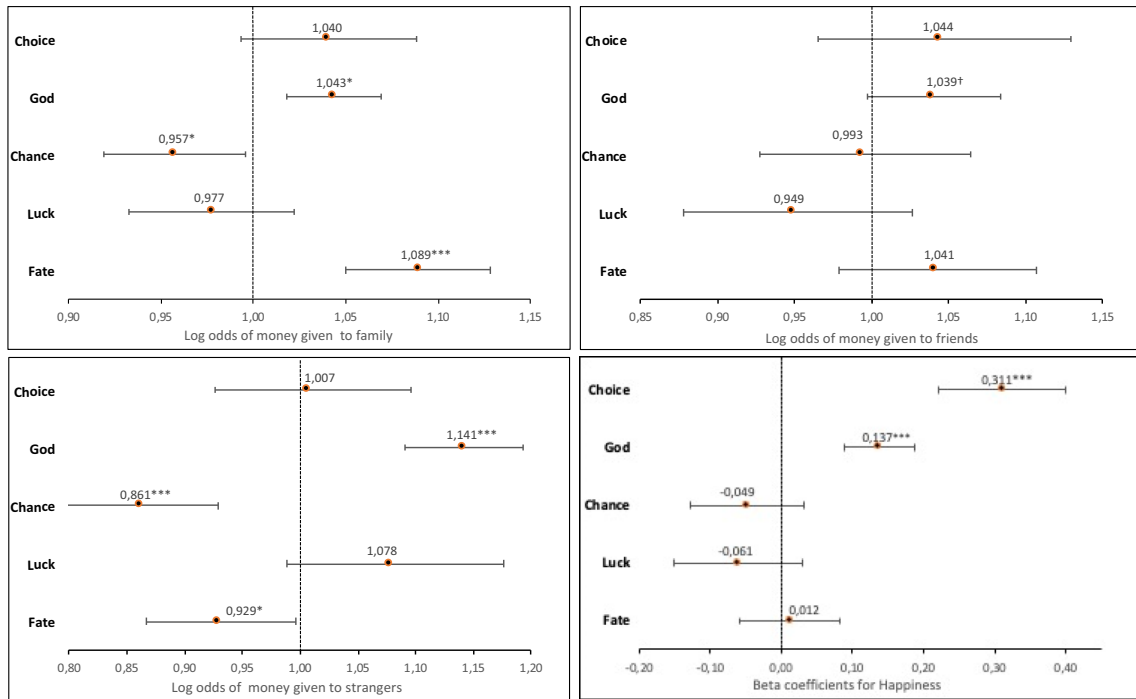
[OR = 1.15, 95% CI (1.03, 1.28), p = 0.014]. Perceived importance of *gods* was associated with higher pro-sociality towards family in the USA [OR = 1.13, 95% CI (1.05, 1.22), p = 0.002] and Lithuania [OR = 1.09, 95% CI (1.02, 1.16), p = 0.012], and higher pro-sociality towards everyone in Mongolia. In Lithuania, perceived importance of *chance* was associated with lower pro-sociality towards family and friends. In Mongolia, perceived importance of *luck* was associated with lower pro-sociality towards family and friends.

Taking all cultural groups together (Fig. 2), perceived importance of life-determining forces was not associated with pro-sociality towards friends. Perceived importance of *gods* and *fate* was associated with higher pro-sociality towards family. Perceived importance of *gods* was associated with higher pro-sociality towards a stranger in need. Perceived importance of *fate* was associated with lower pro-sociality towards a stranger in need. Perceived importance of *chance* was associated with lower pro-sociality towards family and a stranger in need. Finally, perceived importance of *luck* was not associated with pro-sociality towards anyone.

We also conducted regression analyses with age, gender, religious affiliation, religious participation, and country (with the USA as the reference group) as predictor variables and allocation of money towards family, friends, and a stranger in need as outcome variables (N = 923) (Table 3). Participants from the USA were less pro-social towards family than participants from any other country. They were also less pro-social than participants from Lithuania, China, and India, but not Mongolia, towards a stranger in need. Female participants were more pro-social towards a stranger in need. Religious participants were more pro-social towards family. Participants who attended religious services more often were more pro-social towards a stranger in need. Older participants were more pro-social towards family.

Regressions: subjective happiness and perceived importance of life-determining forces

We conducted regression analyses with the perceived importance of life-determining forces as predictor variables and subjective happiness as outcome variables (see *Supplements*, Table S5, for the full results). Perceived importance of *choice* and *gods* was



Note: * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$ † $P \leq 0.10$

Fig. 2 Odds ratios and 95% confidence intervals for quasi-Poisson regression models for prosocial intentions towards kin, friends, and a stranger in need. Lower right corner: beta

coefficients and 95% confidence intervals for multiple linear regression models for subjective happiness, across cultures. * $p \leq 0.05$; ** $p \leq 0.01$; *** $p \leq 0.001$ † $P \leq 0.10$

associated with higher subjective happiness in all cultures. Perceived importance of *fate* was associated with lower subjective happiness in China. Perceived importance of *chance* was not associated with subjective happiness. Perceived importance of *luck* was associated with higher subjective happiness in China.

Taking all samples together (Fig. 2), perceived importance of *choice* and *gods* was associated with higher subjective happiness. Whereas perceived importance of *fate*, *chance*, or *luck* was not associated with subjective happiness.

We conducted regression analyses with demographic variables as predictors and subjective happiness as outcome variable ($N = 920$) (Table 3). Participants from the USA had lower subjective happiness than participants from any other country. Participants who attended religious services more often had higher subjective happiness. Older participants had higher subjective happiness.

Regressions: prosocial intentions and subjective happiness

We conducted regression analyses with prosocial intentions as predictor variables and subjective happiness as outcome variable. Pro-sociality towards family [$b = 0.005$, 95% CI (0.002, 0.008), $p < 0.001$] or a stranger in need [$b = 0.003$, 95% CI (0.001, 0.004), $p = 0.002$] was associated with higher subjective happiness (however, note that effects were significant but small). Pro-sociality towards friends was not associated with subjective happiness [$b = 0.001$, 95% CI (- 0.001, 0.004), $p = 0.345$].

Mediation: life-determining forces, prosocial intentions, subjective happiness

We conducted a bias-corrected bootstrapping mediation analysis with perceived importance of life-determining forces as predictor variables, prosocial intentions as mediator variables, and subjective happiness as outcome variable (for full results, see

Table 3 Regressions with other demographic variables. Odds ratios and 95% confidence intervals for quasi-Poisson regressions in Models 1 and 2, and beta coefficients and 95% confidence intervals for multiple linear regression in Model 4

	Model 1 Prosociality-Family		Model 2 Prosociality-Friends		Model 3 Prosociality-Strangers		Model 4 Happiness	
	<i>p</i>	OR [Lower, Upper]	<i>p</i>	OR [Lower, Upper]	<i>p</i>	OR [Lower,Upper]	<i>p</i>	<i>Beta</i> [Lower,Upper]
(Intercept)	0.000	19.77 [16.22,24.11]	0.000	16.68 [12.01,23.15]	0.000	18.35 [13.01,25.88]	< 0.001	3.45 [3.09,3.82]
Culture-MN ^a	< 0.001	1.72 [1.50,1.97]	0.229	1.15 [0.92,1.43]	< 0.001	0.44 [0.33,0.58]	0.01	0.32 [0.08,0.57]
Culture-IN	0.000	2.32 [1.98,2.73]	< 0.001	1.61 [1.24,2.09]	< 0.001	2.21 [1.73,2.83]	0.01	0.41 [0.10,0.73]
Culture-CH	0.000	2.15 [1.88,2.45]	0.074	1.22 [0.98,1.52]	< 0.001	1.42 [1.16,1.75]	0.012	0.31 [0.07,0.55]
Culture-LT	0.000	1.97 [1.69,2.29]	< 0.001	1.62 [1.27,2.06]	0.015	1.36 [1.06,1.74]	0.002	0.44 [0.17,0.72]
Gender ^b	0.239	1.05 [0.97,1.13]	0.794	1.02 [0.89,1.16]	0.024	1.16 [1.02,1.33]	0.300	0.08 [– 0.07,0.24]
Religion ^c	0.006	1.14 [1.04,1.25]	0.129	1.13 [0.96,1.33]	0.835	0.98 [0.83,1.16]	0.003	0.29 [0.10,0.49]
R.Participation	0.785	1.00 [0.98,1.03]	0.541	1.01 [0.97,1.06]	0.077	1.04 [0.996,1.08]	0.022	0.06 [0.009,0.11]
Age	< 0.001	1.01 [1.01,1.02]	0.274	1.004 [0.996,1.01]	0.149	1.01 [0.998,1.02]	< 0.001	0.025 [0.02,0.04]
<i>N</i>	923		920					

^aCulture: four cultural groups, as nominal variables, were compared against the USA group. For Model 4, cultural groups were dummy coded for linear regression. ^bGender: 0—Male, 1—Female, compared to males. ^cReligion: 0—non-religious, 1—religious; compared to non-religious

Supplements, Table S8). The effect of perceived importance of *gods* on subjective happiness was mediated by prosocial intentions towards family [$b = 0.009$, 95% *CI* (0.003, 0.021), $p = 0.020$] and a stranger in need [$b = 0.011$, 95% *CI* (0.003, 0.018), $p = 0.020$]. The effect of perceived importance of *fate* on subjective happiness was mediated by prosocial intentions towards family [$b = 0.018$, 95% *CI* (0.006, 0.037), $p = 0.010$]. The effect of perceived importance of chance on subjective happiness was mediated by prosocial intentions towards a stranger in need [$b = -0.011$, 95% *CI* (– 0.026, – 0.001), $p = 0.038$].

Discussion

We investigated the relationship between prosocial intentions, subjective happiness, and perceived importance of five life-determining forces (choice, gods,

fate, chance, and luck) across five cultures (China, India, Mongolia, Lithuania, and the USA). For measuring prosocial intentions, we used a hypothetical dictator game. For measuring subjective happiness, we used the Subjective Happiness Scale. For measuring the perceived importance of these life-determining forces, we used a new questionnaire where participants answered how much, in their opinion, their health, wealth, marriage, and social status depend on choice, gods, fate, chance, and luck.

Based on previous research, we predicted that perceived importance of the one internal life-determining force that we investigated, *choice*, will be positively related to prosocial intentions, but that the relation will be less positive for Westerners (see Predictions above). Our results provide no support for the first part of this prediction. Perceived importance of choice was not associated with pro-sociality across cultures. Our results provide mixed support for the

second part of this prediction. Perceived importance of choice was associated with higher pro-sociality towards a stranger in need in at least one Eastern country, India, and lower pro-sociality towards a stranger in need in at least one Western country, Lithuania.

One interpretation of the cultural difference is that Easterners are more likely to associate choice with social expectations, whereas Westerners are more likely to associate choice with individual dispositions (see Predictions). Consequently, Easterners who perceive choice as more important might perceive the expectations of others as more important. In contrast, Westerners who perceive choice as more important might perceive their own dispositions as more important. However, against this interpretation, perceived importance of choice was not associated with pro-sociality towards family or friends in India or Lithuania or towards a stranger in need in any of the other countries. Another interpretation is that there is something specific to India and Lithuania, as opposed to Eastern and Western countries generally, that explains this result. Further research should try to determine what those more specific reasons might be.

We predicted that perceived importance of the two teleological external forces, *gods* and *fate*, will be positively related to prosocial intentions across cultures (see Predictions). Our results mostly support this prediction. Taking all cultures together, perceived importance of gods and fate was associated with higher pro-sociality towards family. Perceived importance of gods was also associated with higher pro-sociality towards a stranger in need. In Mongolia, perceived importance of gods was also positively associated with pro-sociality towards friends. However, again taking all cultures together, perceived importance of gods or fate was not associated with pro-sociality towards friends. Moreover, perceived importance of fate was negatively associated with pro-sociality towards a stranger in need, the opposite of what was predicted.

A possible interpretation of these results is that people who believe in fate distinguish between relationships that are given by fate, i.e., with family, and relationships that are not given by fate but chosen, i.e., with friends and strangers. Consequently, since only the former relations are given by fate, belief in fate might be associated with a sense of obligation to one's family but not to one's friends or to strangers.

Another interpretation of these results is that belief in gods is associated with a sense of obligation more strongly than belief in fate is. For example, this could be because belief in gods is associated with reward and punishment for complying with the plan of the higher force. In contrast, belief in fate does not imply an expectation of reward or punishment. Both interpretations should be tested in further research.

We predicted that the perceived importance of the two non-teleological external forces, *chance* and *luck*, will be negatively associated with pro-sociality across cultures (see Predictions). Our results mostly support this prediction. Taking all cultures together, perceived importance of chance was associated with lower pro-sociality towards family and a stranger in need, although not towards friends. In Lithuania, it was also associated with lower pro-sociality towards friends. On the other hand, again taking all countries together, perceived importance of luck was not associated with pro-sociality towards anyone. In Mongolia, it was associated with lower pro-sociality towards family and friends, however. One interpretation of this is that people implicitly associate randomness in the world with reduced obligation to be cooperative, and that this aspect is more salient in the case of *chance* than in the case of *luck*.

Moving on to subjective happiness, we predicted that perceived importance of *choice* and *gods* would be positively related to subjective happiness across cultures (see Predictions). Our results fully support this prediction. We also predicted that perceived importance of *fate* will have a more negative relation to subjective happiness for Westerners than for Easterners. Our results do not support this prediction. Perceived importance of fate was associated with subjective happiness in only one country, China, and contrary to our expectation, it was associated with lower subjective happiness.

Finally, we predicted that perceived importance of *chance* and *luck* will have a negative relation to subjective happiness and that it will be more negative in the case of chance than in the case of luck (see Predictions). Our results do not provide support for the first part of this prediction. Taking all cultures together, perceived importance of chance and luck was not associated with subjective happiness. Our results provide mixed support for the second part of the prediction. Perceived importance of *chance* was not associated with subjective happiness, and

perceived importance of luck was associated with higher subjective happiness in China. So, in China, the relationship was more positive for luck than chance. This could be due to a culturally specific conception of luck among the Chinese.

Conclusions

In the literature on agency beliefs, belief in internal life-determining forces (especially free will) is typically associated with being prosocial and happy, while belief in the importance of external life-determining forces (especially deterministic natural laws) is associated with the opposite. Based on some recent research, however, we argued that this picture, where the internal is linked to the good and the external is linked to the bad, is overly simplified. Based on this previous research, we also argued that there is a need to study more cross-culturally recognisable forces and to distinguish between different kinds of external ones, such as those that do and do not imply a purpose.

We then presented the results of our study, in which we looked at the relationship between prosocial intentions, subjective happiness, and five life-determining forces (choice, gods, fate, chance, and luck), in five countries (China, India, Mongolia, Lithuania, and the USA). Overall, our results support the idea that culture plays an important role here, in line with previous work that emphasises the importance of culture and the broader context in different countries more generally (e.g., Henrich, 2020). In line with this, in our study, first, the relation between prosocial intentions, subjective happiness, and perceived importance of life-determining forces was not uniform across cultures. Second, prosocial intentions and subjective happiness had a different relation to external forces, depending on whether those forces implied a purpose (teleology) or not.

In particular, perceived importance of the two *teleological* external forces, *gods* and *fate*, was associated with higher pro-sociality, at least towards family. Whereas perceived importance of the two *non-teleological* external forces, *chance* and *luck*, was either associated with lower pro-sociality or had no association with pro-sociality whatsoever. Similarly, whereas perceived importance of the two *teleological* external forces was either associated with higher subjective happiness or had no association, perceived

importance of the two *non-teleological* external forces mostly had no association. The only exception was the positive relationship in the case of luck in China. However, as mentioned above, luck is a term that might be susceptible to both teleological and non-teleological interpretations. Also, the finding might be related to a culturally specific notion of luck in China.

Here is one possible interpretation of our overall results. It is believing in those life-determining forces that imply a purpose that makes us more prosocial and that promotes well-being. Those forces might be internal, like in the case of *choice* and *luck* (when interpreted as a trait of the lucky or the unlucky person). Or they might be external, like in the case of *gods* and *fate*. These internal and external forces significantly differ from a force that clearly implies randomness, i.e., from *chance*. In other words, perhaps people are nicer and happier when they can make sense of the purpose behind the forces that shapes the events in their life. One way to investigate this further would be to find and compare two forces that equally imply randomness, but where one of them is clearly internal, while the other one is clearly external. Although it could also be that randomness is immediately construed as external to a person, even if it happens inside the person in the physical sense. These might be worthwhile avenues for future studies to explore.

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Declarations

Competing interests The authors declare no competing interests.

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