



PAPER

You get what you give: children's karmic bargaining

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Abstract

Do children believe in karma – the notion that life events occur to punish or reward our moral behavior? In three experiments, we investigate 4–6-year-old children's willingness to endorse and engage in the practice of performing good acts in order to secure an unrelated future desired outcome, so-called 'karmic bargaining'. Most children agreed that performing a morally good social behavior, but not a morally negative or morally neutral non-social behavior, would increase the chances that future desired outcomes would occur, in both first-party and third-party contexts. About half of children also engaged in karmic bargaining behavior themselves. We conclude that a belief in karma may therefore reflect a broad, early-emerging teleological bias to interpret life events in terms of agency, purpose, and design.

Research highlights

- We examine young children's belief in karmic bargaining – the practice of doing good acts in order to secure an unrelated future desired outcome.
- Children endorsed a belief in karmic bargaining in both first-person and third-person contexts.
- About half of children also engaged in karmic bargaining behavior themselves.
- A belief in karma may reflect a broad bias to interpret life events in terms of agency, purpose, and design.

Introduction

Karma is the familiar notion that what goes around comes around – that, in life, good things will happen to good people, and bad things will happen to bad people. A karmic worldview therefore entails that life events are not purely random occurrences but, instead, they are related to people's past moral behavior. A belief in karma is cross-culturally ubiquitous (Young & Morris, 2004; Young, Morris, Burrus, Krishnan & Regmi, 2011). It is also psychologically consequential: the common perception that the world is a fundamentally fair place

and people generally get what they deserve – a view typically referred to as a 'belief in a just world' – has far-reaching consequences, ranging from people's tendency to blame victims of injustice for their own misfortunes, to their willingness to defend social hierarchies that systematically privilege or disadvantage particular social groups (Furnham, 2003; Hafer & Bègue, 2005; Lerner, 1980; Lerner & Miller, 1978).

Importantly, a belief that life events occur to mete out cosmic justice is distinct from a belief in 'social karma' – the notion that do-gooders and transgressors tend to be rewarded or punished by other *people* responding to their behavior. Instead, a belief in 'karma', as we are defining it, entails that independent of any direct human intervention, the world itself is structured such that life events play out as vehicles of reward and punishment. This sort of karmic justice is believed to be built into the very fabric of the cosmos itself.

Where does this belief in karma come from? One possibility is that a belief in karma is a product of cultural religious training. Many world religions, including Hinduism, Buddhism, Jainism, and Sikhism, contain explicit doctrines that formalize the concept of karmic reward and retribution in official theological doctrine. In addition, even religions that lack formal karmic doctrines often contain elements that nonetheless seem to have

the flavor of karma, as in the Christian notion of ‘reaping what one sows’. More broadly, religious ideas about purposeful, just gods who reward goodness and punish evil may also support a belief that life events are meted out in accordance with one’s moral behavior.

However, a different possibility is that an intuitive belief in karma may also be rooted in a natural disposition to interpret life events in terms of deeper intended purpose and symbolic meaning. Recent research suggests that a suite of social-cognitive biases that make people highly sensitive to agency, purpose, and design in the social world may also color the way that people reason about the non-social world, including how we think about events that unfold in our lives (Banerjee & Bloom, 2013, 2014, 2015; Bering, 2006, 2011; Heywood & Bering, 2014; Lindeman, Svedholm-Häkkinen & Lipsanen, 2015; Svedholm, Lindeman & Lipsanen, 2010; Willard & Norenzayan, 2013). Specifically, a bias to overextend mentalistic inferences about purpose and design from the social domain to the non-social domain – what Kelemen (1999a) has referred to as ‘promiscuous teleology’ – might render karmic intuitions both highly intuitive and cognitively compelling. If so, then a belief in karma might emerge naturally, as a byproduct of humans’ ordinary social cognition, and even in the absence of explicit theistic belief or extensive cultural exposure to religion.

Developmental origins of a belief in karma

The present studies investigate the possibility that young children believe, like many adults do, that life events occur as punishments for our past moral transgressions and as rewards for our past virtuousness. If so, it would suggest that a belief in karma emerges naturally, even prior to extensive cultural religious learning.

Previous research is consistent with this hypothesis. By the age of 5, children show a broad teleological bias to interpret past life events in terms of deeper purpose and design (Banerjee & Bloom, 2015). They believe, for example, that events occur to teach important lessons or to send signs, and children prefer these sorts of purposeful explanations of past life events to ones that deny any deeper reason behind those events. Consistent with this, children also willingly endorse ‘immanent justice’ as a cause of certain life events (Fein & Stein, 1977; Jose, 1990; Piaget, 1965/1932). For example, in one study, children were told about a young boy who steals apples from an orchard and later falls through a rotting bridge (Piaget, 1965/1932). The children agreed that the boy suffered this ill fate because of his prior wrongdoing – a karmic view. Had he not stolen the apples, he would not have fallen through the bridge.

This previous research, however, focused primarily on children’s retrospective analyses of deeper purpose in past life events. Yet, if children really intuitively believe in karma, this belief might also be expected to influence how they reason about *future* life events that are contingent on a person’s current moral behavior. Investigating whether karmic intuitions influence children’s predictions about future outcomes can therefore offer further insight into just how rich children’s view of karma as a genuine causal feature of the world really is.

Karmic bargaining

To explore whether karmic intuitions might influence children’s expectations about future outcomes, we investigated children’s belief in the efficacy of karmic bargaining – the practice of doing good deeds for others in the hope of being rewarded with a unrelated desired good outcome of one’s own.

Recently, Converse, Risen and Carter (2012) hypothesized that a karmic belief that ‘good begets good’ might lead adults to expect – whether explicitly or implicitly – that proactively doing good deeds for others can help them accrue good karma for themselves and thereby increase the chances that some future desired good outcome will happen for them. Hence, a belief in karma might sometimes encourage people to actively invest in good future karma. To test this possibility, they approached adults at a job fair and encouraged half of them to reflect on elements of the job search process that were under their personal control (e.g. ‘learning a lot about the industry’). They encouraged the other half of participants to reflect on elements of the process that were outside of their control (e.g. ‘whether new jobs will open up’). The researchers found that participants who were made to feel more uncertain about the job search process were later on willing to donate more money to charity. Furthermore, when participants were given the chance to donate money to charity, they were subsequently more optimistic about actually landing a job compared to when they were only given a chance to win money for themselves. Thus, when participants felt that the outcome of the job search was outside of their own control and in the hands of the universe, they behaved more prosocially and appeared to invest in karma.

In the present three studies, we investigated whether young children also believe in the efficacy of karmic bargaining. Specifically, we examined whether young children from both highly religious and non-religious households explicitly endorse a belief in karmic bargaining and whether, like adults, they sometimes also engage in karmic bargaining behavior themselves.

Study 1

In Study 1, we examined 4–6-year-old children's endorsement of karmic bargaining by introducing children to a desired outcome that was outside of their personal control: winning a highly desirable toy in a game of chance. We then examined whether children would endorse the karmic bargaining principle that doing something nice for others would increase their chances of winning the toy. We also investigated whether children would actually engage in karmic bargaining behavior themselves in order to win the toy.

Method

Participants

Participants were 20 4–6-year-old children ($M = 5.63$ years, range = 4.59 years to 6.96 years, 13 boys). Five additional children were tested but replaced due to failure to pass comprehension check questions (detailed below). Children were recruited from Yale University's child participant database and were tested in a laboratory.

Measures and procedure

We told children that they were going to play a game in which the experimenter used a coin with two different sides to determine whether they would win a highly desirable toy (a glow-in-the-dark water wiggle toy). The coin would be shaken up inside a box and then emptied on a table. If the coin landed on its side with a picture of the toy showing, children would win the toy. However, if the coin landed on its other, blank, side, they would win nothing. The experimenter emphasized repeatedly that nobody could possibly know the outcome of the coin shake ahead of time before it was emptied on the table, and it was made particularly clear that the experimenter had no way of influencing the outcome of the game.

Next, the experimenter performed three practice coin shakes in which the coin was rigged to land on its blank side twice and on its pictured side once. After each practice coin shake, children were asked whether they would have won the toy had it been the real game. Five 4-year-olds who failed to correctly answer these comprehension check questions were excluded and replaced.

The experimenter then asked children to indicate how sure they felt that they would win the toy when the coin was shaken for real, using a 4-point rating scale anchored at (1) very not sure and (4) very sure. She then gave children four stickers as a thank you gift for participating in the study.

Next, just before shaking the coin for real, the experimenter told children about two other children (gender-matched to participants) who played the same coin game previously in the identical testing room (see Figure 1), and who had different ideas about strategies they believed could help make the coin land on the side with the picture of the toy showing, so that they would win the game. One child thought that if you do something nice for someone else, by giving away stickers to a toy donation box for children with no toys of their own, then that would help make something nice happen to you: it would help make you win the coin game. The experimenter explained that this is precisely what this child did: he/she gave some of his/her stickers to a donation box that was located in the testing room. Thus, here, the experimenter described the karmic bargaining strategy that first doing something good for others would then beget a good outcome for the child playing the coin game.

The experimenter then told children that the other child who played the coin game previously had a different idea; he thought that if you take something you like, like stickers, and throw them in a trash can, then that would help make something nice happen to you: it would help make you win the coin game. The experimenter explained that this is precisely what this child did: he/she threw some of his/her stickers in a trash can that was located in the testing room. Thus, here, the experimenter described a morally neutral strategy that was also said to help beget the good outcome of winning the coin game. Conceivably, this strategy might also be construed as being morally negative, rather than morally neutral. After all, disposing of perfectly good stickers could be considered wasteful, and therefore, morally

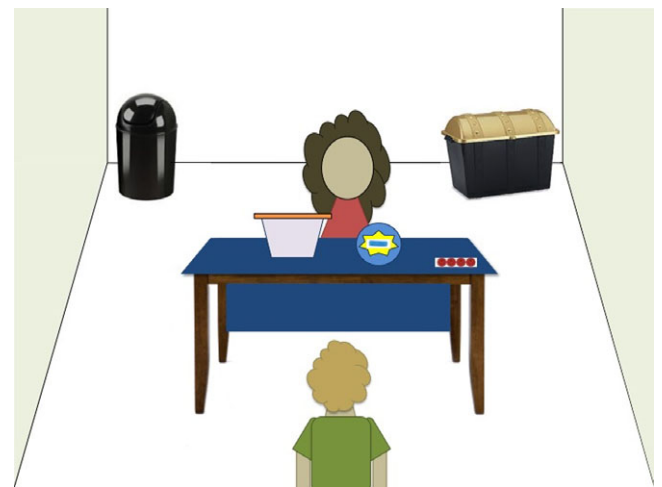


Figure 1 Study 1: Experimental testing room setup.

blameworthy – particularly when contrasted with the act of donating those same stickers to needy children (the karmic bargaining strategy). In either case, of primary importance here is that the trash strategy differs from karmic bargaining strategy in that it is an alternative, non-morally good act that is also said to increase one's chances of winning the coin game. Across children, these two strategies were presented in counterbalanced order.

The experimenter then asked children whether they believed what both of the other children said was true, in order to assess their explicit belief in the efficacy of both the karmic bargaining strategy and the trash strategy. Children responded using a 4-point rating scale anchored at (1) 'definitely not true' and (4) 'definitely true'.

At this point in the study, children were generally eager for the coin shake to occur so that they could find out if they would win the toy. However, just before shaking the coin and while children's anticipation was high, the experimenter told children that she needed to do something in another room first. She then asked children to wait in the testing room for 2 minutes, after which time she would return to finally shake the coin for real. During this time, children were surreptitiously monitored via a hidden camera to determine whether, having just heard about both the karmic bargaining strategy and the trash strategy, they would actually try out either strategy in an attempt to increase their odds of winning the coin game. We hypothesized that while some children might choose to try one of these strategies in full view of the experimenter, others might feel freer to do so when they believed they were not being observed. After 2 minutes, the experimenter returned and finally shook up the coin. The game was rigged so that all children won in the end.

Finally, we asked parents to complete a questionnaire that assessed their own religiosity, how important they felt it was to raise their child in a religious tradition, and their child's frequency of attendance at religious worship services.

Results

Explicit belief in karmic bargaining

To assess children's explicit belief in the efficacy of both the karmic bargaining strategy and the trash strategy, we analyzed their ratings of the likelihood that each strategy was true (i.e. that each would help make one win the coin game). A paired samples *t*-test revealed that children generally rated the karmic bargaining strategy as being true ($M = 3.25$, $SD = .85$) and far more likely to be true than the trash strategy, which they were generally

skeptical of and rated as maybe untrue ($M = 1.95$, $SD = 1.05$), $t(19) = 4.61$, $p < .001$.

Karmic bargaining behavior

We next examined whether children themselves engaged in either the karmic bargaining strategy or the trash strategy in an attempt to increase their odds of winning the coin game. Just under half of the children (45%) did try out one of the strategies, and when they did, nearly all of them (89%) tried the karmic bargaining strategy. Only one child (11%) ever tried the trash strategy.

Next, we analyzed whether children's optimism about the likelihood of winning the coin game before the coin was flipped was related to their tendency to try the karmic bargaining strategy. In general, children were mildly optimistic ('a little sure') that they would win the coin game ($M = 3.2$, $SD = .98$). A multinomial logistic regression revealed that the less sure individual children felt about winning the game, the more likely they were to try out the karmic bargaining strategy, relative to trying no strategy at all, $b = -1.70$, $SE = .85$, $p = .045$.

Exposure to religion

Finally, we examined whether children's explicit belief in karmic bargaining and also their karmic bargaining behavior were related to their exposure to religion. Children's parents reported both how important religious faith was to them and also how important they felt it was to raise their child in a religious tradition, using a 1–4 response scale anchored at (1) not at all important and (4) very important. We averaged these responses ($\alpha = .94$) to compute an overall measure of parental religious attitudes for each child, with higher values indicating greater parental religiosity, range = 1–4, $M = 2.85$, $SD = .88$. Values for one child who was missing information for both parents were calculated based on a single parent's information only. Parents also reported their child's frequency of attendance at religious worship services using the following response scale: (1) daily, (2) a few times a week, (3) a few times a month, (4) a few times a year, (5) less than once a year, and (6) never. Most children attended religious worship services a few times a month (44.4%). Two children whose parents did not complete the religious background questionnaire were excluded from analyses.

A principal components factor analysis of parents' religious attitudes and children's frequency of attendance at religious services revealed a single 'exposure to religion' factor (eigenvalue = 4.00) that accounted for 79.93% of variance in responses. Although children came

from a range of both religious and non-religious families, there was no relation between children's exposure to religion and either their karmic bargaining belief or behavior, both $ps > .30$.

Discussion

Children who were made to feel uncertain about a highly desirable future outcome – winning an exciting toy in a game of chance – agreed with statements that claimed that performing a morally good social behavior, but not a non-social behavior that could be construed as either morally neutral or morally negative, would increase one's chances of winning. In other words, children agreed that by doing a good deed for others, they would be rewarded by winning the coin game. Importantly, children did not indiscriminately endorse any strategy that was said to supposedly increase their odds of winning the coin game; only the prosocial one.

In addition to endorsing a belief in the efficacy of karmic bargaining, just under half of children also engaged in karmic bargaining behavior themselves in an attempt to increase their odds of winning the coin game. It appears, then, that children do sometimes act on their karmic intuitions and are willing to engage in costly karmic investments (i.e. giving away stickers to other children) in order to secure a highly desired, though unrelated, future outcome. Importantly, children who felt more uncertain about winning the coin game at the start of the game were especially likely to go on to try out the karmic bargaining strategy. This finding supports the view that children interpreted the karmic bargaining strategy as a causally effective means of increasing their chances of winning the coin game, particularly when they felt very uncertain about this highly desirable outcome.

Study 1 also found that children's endorsement of the karmic bargaining strategy was unrelated to their exposure to religion. Both children who received no formal exposure to religion at all and those who received substantial exposure to religion believed in the efficacy of karmic bargaining and also sometimes engaged in karmic bargaining behavior. This finding supports the hypothesis that an intuitive belief in karma may emerge independent of children's exposure to religious ideas (e.g. about divine justice).

However, another possible interpretation of Study 1's main results is that children did not actually believe in the efficacy of karmic bargaining at all; perhaps they simply felt that it was nice to be nice to others. Maybe this is why they explicitly endorsed the karmic bargaining strategy of giving stickers to needy children when

asked and also why they sometimes gave their own stickers to the toy donation box. It may also be that children endorsed the karmic bargaining strategy simply because they wished to socially signal their niceness to the experimenter. Now, our finding that children's initial uncertainty about winning the game predicted their tendency to engage in karmic bargaining behavior suggests that this interpretation is unlikely to account for our results, as this relation would be unexpected if children were simply trying to be nice. Nevertheless, we evaluated this alternative possibility more directly in Study 2.

Study 2

To further investigate whether children genuinely believe in karma, we next examined whether they expect that doing a good deed for others can help secure one's own future desired good outcome, but this time in a third-party context in which we removed the opportunity for children to engage in nice behaviors themselves and also to socially signal their niceness to others. To do this, in Study 2, we presented children and adults with vignettes that described fictional children who desired some particular future good outcome to happen for them. After hearing each vignette, we introduced participants to two characters, one of whom endorsed the karmic bargaining principle that doing a good deed for others would help bring about the future desired good outcome for the child in the vignette. The other character denied this. Importantly, both characters acknowledged that doing a good deed for others was a nice thing to do; they differed only in their belief that doing this good deed could then causally influence an unrelated future desired outcome for the child in the vignette.

We then asked participants to indicate which character they believed was right in order to assess their preference for the character who endorsed the karmic bargaining principle. Children were allowed to indicate their selection either verbally or by pointing to an image of the character they wished to choose. This experimental methodology was adapted from Kelemen (1999b) and has also been used in our own previous work (Banerjee & Bloom, 2015) to assess young children's causal beliefs. Importantly, because both characters explicitly acknowledged the niceness of doing good deeds for others in Study 2, this methodology allowed us to directly assess participants' belief in the causal efficacy of karmic bargaining, removed from concerns about participants' desire to socially signal to the experimenter their belief that it is nice to do good deeds for others.

Method

Participants

Participants were 40 5-year-old children (15 boys), 40 6-year-old children (22 boys), and 80 adults (46 men). Ten additional children were tested but replaced due to apparatus or experimenter error, being a non-native English speaker, or an inability to complete the study due to extreme inattention. Children were recruited from Yale University's child participant database and tested in the lab or else recruited and tested at a local Connecticut children's museum. Adults residing in the United States were tested using the online research survey website, Amazon Mechanical Turk, and were paid 40 cents in accordance with standard online payment norms.

Measures and procedure

Half of participants were randomly assigned to participate in a karmic bargaining condition in which they heard six vignettes, each describing a fictional child who desired some future good outcome that was intended to seem significant to young children and that was outside of the fictional child's personal control (e.g. a desire for one's broken leg to get better faster) (see Table 1 for complete stimuli). Vignettes were presented in random order and each vignette was accompanied by a relevant cartoon depiction.

Participants then heard one fictional character state that if the child in each vignette did a good deed for someone else, that would be a nice thing to do, and that would help make something nice happen for that child: it would help make his or her future desired outcome occur. Participants heard a different fictional character state that while it would be nice for the child in each vignette to do a good deed for someone else, that would not help make the child's future desired outcome occur. Therefore, although both characters explicitly acknowledged the niceness of doing good deeds for others, only one character endorsed the karmic bargaining causal principle, and the other character denied it. For example, participants heard:

Luke really wants his broken leg to get better faster so that he can go camping with his friends.

This is Sarah. Sarah thinks that if Luke does something nice for someone else, then that will help make something nice happen for Luke. Sarah thinks that if Luke shares his toys with other kids who don't have any toys of their own, that would be a nice thing to do, and Sarah thinks that will help make Luke's leg get better faster.

Table 1 Study 2 stimuli

Child's desired outcome	Karmic bargaining condition behavior	Control condition behavior
1. Luke really wants his broken leg to get better faster so that he can go camping with his friends.	Shares toys with other kids who don't have any toys of their own.	Changes color of his bedroom.
2. Julie really wants to find her missing puppy that ran away.	Is friendly to the new girl at school.	Makes her hair shorter.
3. Annie really wants her new front teeth to grow in straight so that she won't need braces.	Gives some of her food to a hungry girl at school.	Makes her umbrella wet.
4. Brian really wants to get a good grade on his test in school.	Helps his sister with her chores.	Makes his sink cold.
5. Dan really wants to win a prize at the town fair.	Takes care of his sick brother.	Makes his room warmer.
6. Carly really wants her ear infection to go away.	Brings a present to her new neighbor.	Makes her camping tent brighter.

Note: The behaviors listed for both the karmic bargaining condition and the control condition were said to help beget the child's future desired outcome by one character, but were said not to help beget this same outcome by another character.

This is Betsy. She disagrees. Betsy doesn't think that if Luke does something nice for someone else, then that will help make something nice happen for Luke. Betsy thinks that if Luke shares his toys with other kids who don't have any toys of their own, that would be a nice thing to do, but Betsy doesn't think that will help make Luke's leg get better faster.

Across participants, we counterbalanced which of the two statements was presented first. Participants were then asked to indicate which character they believed was right. We predicted that if children believe not only that good deeds are nice to do, but also that doing good genuinely begets future good, then they should favor the character who endorsed the karmic bargaining principle.

However, it is possible that children have a general baseline preference to endorse causal claims that link particular actions with particular outcomes simply because they like the narrative poetry of cause and effect. Perhaps this factor alone would lead children to favor the character who endorsed the karmic causal claim over the character who denied it. To investigate this, half of our participants were randomly assigned to

participate in a separate control condition. In this condition, participants heard the identical vignettes as in the karmic bargaining condition, except that for each vignette, instead of endorsing or rejecting the karmic bargaining principle, the two characters now endorsed or rejected an erroneous, morally neutral causal principle (e.g. that if the child in the vignette changes the color of his bedroom, that would help make his good future outcome occur) (see Table 1 for complete stimuli). The control causal claims were designed to link particular acts to topically and causally unrelated outcomes, and were therefore intentionally nonsensical (e.g. claiming that making an umbrella wet would help make one's front teeth grow straight). This presented a strong test of the hypothesis that children may be so seduced by the 'cause and effect' structure of such claims that they may willingly endorse them even independent of those claims' actual explanatory merit. We predicted that if children do not indiscriminately favor characters who assert causal claims over those who deny them, then they should favor the character who denied the erroneous causal claims in the control condition. We also expected that children would be more likely to reject the erroneous causal claims in the control condition than to reject the karmic causal claims in the karmic bargaining condition.

Adult and child participants received identical test materials and procedures in Study 2, except that an experimenter led children through the study, while adults simply read the instructions and vignettes. We also collected information from parents about children's exposure to religion.

Results

We conducted an ANOVA to examine the effect of condition (karmic bargaining, control) and age (5-year-olds, 6-year-olds, adults) on participants' endorsement of the causal claims. This analysis revealed a significant main effect of age, $F(2, 154) = 45.71, p < .001, \eta_p^2 = .37$, and a significant main effect of condition, $F(1, 154) = 34.20, p < .001, \eta_p^2 = .18$, both of which were qualified by a significant age by condition interaction, $F(2, 154) = 7.26, p = .001, \eta_p^2 = .086$. We examined these effects in greater detail in the analyses reported below.

Karmic bargaining condition

On average, 5-year-olds ($M = 75.83\%$, $SD = 25.06\%$) believed that the character who endorsed the karmic bargaining causal claim was right for three-quarters of the vignettes, and 6-year-olds ($M = 59.17\%$, $SD = 32.66\%$) believed so for just over half of the vignettes. In contrast to children, adults ($M = 16.25\%$,

$SD = 23.42\%$) rarely favored the character who endorsed the karmic bargaining causal claims for the same set of child-friendly vignettes. An ANOVA with planned follow-up comparisons using LSD tests revealed a significant effect of age on participants' endorsement of the karmic bargaining claims, $F(2, 77) = 39.75, p < .001, \eta_p^2 = .51$. Specifically, 5-year-olds were significantly more likely to endorse the karmic bargaining claims than either 6-year-olds, $p = .049$, or adults, $p < .001$. Six-year-olds were also significantly more likely to endorse these claims than adults, $p < .001$. Results are presented in Figure 2.

Next, we examined the number of vignettes (out of a total of six) for which participants in each age group endorsed the karmic bargaining claims.

Among 5-year-olds, seven children (35%) endorsed the karmic bargaining claims for all six vignettes, six children (30%) did so for five vignettes, one child (5%) did so for four vignettes, three children (15%) did so for three vignettes, and three (15%) children did so for two vignettes. Thus, most of the 5-year-olds endorsed the karmic bargaining claims for a majority of the vignettes.

Among 6-year-olds, six children (30%) endorsed the karmic bargaining claims for all six vignettes, four children (20%) did so for four vignettes, three children (15%) did so for three vignettes, four children (20%) did so for two vignettes, two children (10%) did so for one vignette, and one child never endorsed the karmic bargaining claims for any of the vignettes (5%). Thus, although most of the 6-year-olds also endorsed the karmic bargaining claims for a majority of the vignettes, 6-year-olds more frequently rejected these claims for some subset of the vignettes compared to 5-year-olds.

Finally, one adult (2.5%) endorsed the karmic bargaining claims for all six vignettes, one adult (2.5%) did so for four vignettes, four adults (10%) did so for three vignettes, two adults (12.5%) did so for two vignettes,

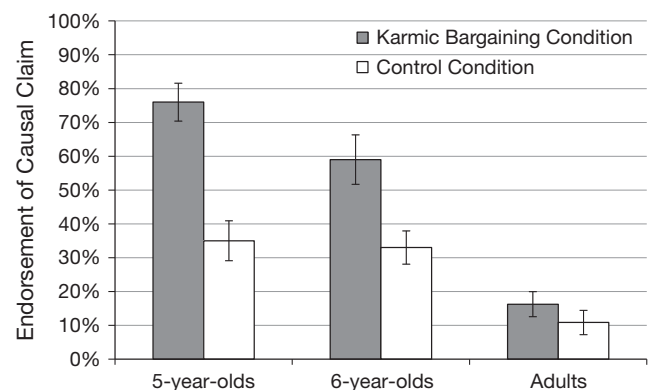


Figure 2 Study 2: Endorsement of causal claims.

seven adults (17.5%) did so for one vignette, and 22 adults (55.5%) never endorsed the karmic bargaining claims for any of the vignettes. Thus, in contrast to children, most adults rejected the karmic bargaining claims for all six vignettes.

Control condition

Both 5-year-olds ($M = 35.00\%$, $SD = 26.44\%$) and 6-year-olds ($M = 32.50\%$, $SD = 21.95\%$) occasionally believed that the character who endorsed the erroneous, morally neutral control causal claims was right, but adults rarely did ($M = 10.83\%$, $SD = 22.50\%$). An ANOVA with planned follow-up comparisons using LSD tests revealed a significant effect of age on participants' endorsement of the control causal claims, $F(2, 77) = 9.64$, $p < .001$, $\eta_p^2 = .20$. Although 5-year-olds and 6-year-olds did not differ from each other, $p = .74$, both groups of children were significantly more likely to endorse these claims than adults, both $ps \leq .001$. Results are presented in Figure 2.

Comparison of conditions

We conducted independent samples t -tests to compare participants' endorsement of the karmic bargaining causal claims and the erroneous, morally neutral control causal claims across the two conditions. These analyses revealed that 5-year-olds, $t(38) = 5.01$, $p < .001$, Cohen's $d = 1.63$, and 6-year-olds, $t(38) = 3.03$, $p = .004$, Cohen's $d = .98$, both endorsed the causal claims significantly more often in the karmic bargaining condition than in the control condition. However, adults endorsed both types of causal claims equally often, $p = .30$.

Exposure to religion

Finally, we examined whether children's endorsement of the karmic bargaining causal claims was related to their exposure to religion. As in Study 1, we averaged parents' responses to questions assessing their religious attitudes, $\alpha = .94$, range = 1–4, $M = 2.23$, $SD = .91$. Values for eight children who were missing information for both parents were calculated based on a single parent's information only. Most children attended religious worship services never (34.12%), a few times a year (28.9%), or a few times a month (23.7%). Two children whose parents did not complete the religious background questionnaire were excluded from analyses.

A principal components factor analysis of parents' religious attitudes and children's frequency of attendance at religious services revealed a single 'exposure to

religion' factor (eigenvalue = 3.71) that accounted for 74.23% of variance in responses. Although children came from a range of both religious and non-religious families, there was no relation between children's exposure to religion and their endorsement of the karmic bargaining claims, $p = .13$.

Discussion

Children generally agreed with the karmic bargaining principle that doing a good deed for others would help make a person's own unrelated future desired outcome occur, when reasoning about third-party vignettes. This belief was strongest among the youngest children that we tested, with 5-year-olds endorsing the karmic bargaining claims for around 75% of the vignettes, and 6-year-olds endorsing them for nearly 60% of the vignettes. Adults, in contrast, generally rejected the notion that doing good deeds for others would help make a future desired outcome occur for the characters depicted in the same vignettes.

Importantly, children could not have favored the karmic bargaining claims in Study 2 solely due to a desire to endorse good deeds. Both characters who endorsed or denied a karmic claim for each vignette explicitly acknowledged that doing a good deed for others was a nice thing to do; they differed only in whether they went on to assert that doing that good deed could causally influence some unrelated future good outcome. Hence, the results of Study 2 support the interpretation that young children favored the karmic causal claims because they genuinely believe in karma as a causal force capable of influencing future life outcomes.

Study 2's design also addresses another possible interpretation of children's apparent karmic intuitions, namely, that children do not actually believe in karma at all, but instead they simply associate good entities (e.g. good deeds) with other good entities (e.g. good outcomes). It is unlikely that this would account for our findings since, in Study 2, both characters who made claims about each vignette referenced identical good deeds and good outcomes. The only difference between the two characters' claims was that one proposed a causal link between the good deed and the good outcome while the other character denied this causal link. If children simply followed an indiscriminating 'good goes with good' valence matching strategy, then they should have been indifferent in choosing between both characters in this study. Instead, children reliably endorsed the character who *causally* linked a good deed to a good outcome, consistent with a genuine belief in the causal efficacy of karmic bargaining.

Study 2 also found that both 5-year-old and 6-year-old children occasionally endorsed the morally neutral, erroneous control causal claims in the control condition. It appears, then, that children do, in fact, exhibit a low-level baseline preference for causal claims that link particular actions with particular outcomes, even if those causal claims have nothing to do with karma. Importantly however, children were much more likely to endorse causal claims in the karmic bargaining condition than they were to endorse causal claims in the control condition. Thus, children's preference for karmic causal claims far exceeded their baseline bias to endorse causal claims in general – again, revealing a genuine appetite for karmic reasoning.

Finally, as in Study 1, children's exposure to religion was unrelated to their belief in the efficacy of karmic bargaining. Children from both highly religious and highly secular household were equally likely to express this belief. This result further supports the conclusion that an intuitive belief in karma in childhood may not derive solely from cultural religious teaching.

Building on these findings, we next sought to determine the boundaries of children's karmic intuitions in Study 3.

Study 3

If children believe in the karmic bargaining principle that doing good begets further good, do they expect, like most adults do, that securing a future good outcome is contingent on doing a good deed oneself? Or, alternatively, could it be that children's intuitive conception of karma is even broader, whereby any good deed, regardless of who performs it, can help bring about a future desired good outcome, even for a different individual? To test the boundaries of children's karmic intuitions in Study 3, we employed the same methodology from Study 1 in which children played a game of chance (shaking a coin) in the hope of winning a highly desirable toy. However, this time, we examined whether children believe that a good deed performed by one individual can help increase the chances of a good outcome occurring for a different individual. Specifically, we examined whether children believe that if a stranger who lives very far away performs a prosocial act, that act would help make a different person playing the coin game win.

If children believe that only the person who performs a good deed himself will be rewarded with a future good outcome, then they should reject the possibility that a third-party do-gooder could influence the outcome of a different individual's coin game.

However, if children's conception of karma is even broader, allowing for the possibility that any good deed in the world begets a subsequent good outcome – even across individuals – then children might accept this possibility.

Method

Participants

Participants were 20 4–6-year-old children ($M = 5.89$ years, range = 4.73 years to 6.91 years, 13 boys). Five additional children were tested but replaced due to failure to pass comprehension check questions, failure to complete the study, or severe inattention. Children were recruited from Yale University's child participant database and tested in the lab or else recruited and tested at a local Connecticut children's museum.

Measures and procedure

In Study 3, children played the identical coin game described in Study 1, in which the experimenter shook up a coin inside a box to see if children would win a water wiggle toy, but with a few modifications. As in Study 1, the experimenter again told children about two other children who believed either that giving stickers to other children with no toys of their own would help make one win the coin game (karmic bargaining strategy) or that throwing stickers in a trash can would help make one win the coin game (trash strategy). Children were again asked to rate their agreement that each strategy was true (i.e. that it would help make one win the coin game), using a 1–4 rating scale anchored at 1 (definitely not true) and 4 (definitely true). However, this time, the experimenter also asked children to rate their agreement with a third strategy – that if a stranger who lives really far away gave away some of his stickers to other children who have no toys of their own, then that would also help make a different person playing the coin game win (stranger karmic bargaining strategy). Thus, in this 'stranger karmic bargaining' case, the experimenter described the same good deed referenced in the original karmic bargaining strategy, only this time the good deed was said to be performed by a different person, a stranger, rather than by the person actually playing the coin game.

Questions assessing children's belief in the original karmic bargaining strategy, the trash strategy, and the stranger karmic bargaining strategy were presented in semi-counter-balanced order, with the stranger karmic bargaining question always asked either before or after

questions assessing children's belief in the other two strategies (which were also counter-balanced).

Finally, unlike in Study 1, we did not collect data on children's own inclination to engage in either the karmic bargaining strategy or the trash strategy themselves.

Results

To assess children's explicit belief in the efficacy of the karmic bargaining strategy, the trash strategy, and the stranger karmic bargaining strategy, we analyzed their ratings of the likelihood that all three strategies were true (i.e. that they would help make a person playing the coin game win). A repeated measures ANOVA revealed that children's likelihood ratings differed across the three strategies, $F(2, 42) = 21.43, p < .001, \eta_p^2 = .51$. Children generally rated both the karmic bargaining strategy ($M = 3.20, SD = .95$) and the stranger karmic bargaining strategy ($M = 2.95, SD = .89$) as being true, but they were skeptical of the trash strategy, which they rated as being between maybe and definitely untrue ($M = 1.70, SD = .80$). In addition, children rated the karmic bargaining strategy and the stranger karmic bargaining strategy as *equally* true, $t(19) = 1.05, p = .31$, but they rated both karmic strategies as more likely to be true than the trash strategy, respectively, $t(19) = 5.63, p < .001$, and $t(19) = 4.80, p < .001$.

Exposure to religion

Finally, we examined whether children's endorsement of the karmic bargaining strategy and the stranger karmic bargaining strategy were related to their exposure to religion. As in Studies 1 and 2, we averaged parents' responses to questions assessing their religious attitudes, $\alpha = .94$, range = 1–4, $M = 2.70, SD = .94$. Values for three children who were missing information for both parents were calculated based on a single parent's information only. Most children attended religious worship services a few times a month (64.3%). Six children whose parents did not complete the religious background questionnaire were excluded from analyses.

A principal components factor analysis of parents' religious attitudes and children's frequency of attendance at religious services revealed a single 'exposure to religion' factor (eigenvalue = 4.24) that accounted for 84.71% of variance in responses. Exposure to religion was significantly positively related to endorsement of the karmic bargaining strategy, $b = .65, SE = .24, p = .02$, but was unrelated to children's endorsement of the stranger karmic bargaining strategy, $b = .37, SE = .26, p = .19$.

Discussion

Children agreed that doing a good deed for others would help bring about an unrelated future desired good outcome, both when that deed was performed by the person actually desiring the good outcome and also when it was performed by a different person altogether. In other words, children did not restrict the expectation of a good outcome exclusively for the individual performing the good deed. This finding suggests that young children may hold a fairly diffuse notion of the karmic causal principle that good begets good – one that is broader and more unconstrained than adults' typical conception of karma, which typically entails that receiving a karmic reward is contingent on doing a good deed oneself. Children, on the other hand, may believe that any goodness in the world begets further goodness in a more global sense that is initially more abstract and which may, over time, become more refined and restricted to take on the mature adult form of the view. While additional research will be necessary to further illuminate developmental changes in the boundaries of children's karmic intuitions, the present study offers further evidence that young children broadly believe in the karmic notion that good begets good.

Study 3 also found that children with more exposure to religion believed in the efficacy of the karmic bargaining strategy more strongly than those with less exposure to religion. This finding contrasts with the results of Studies 1 and 2, which found no relationship between children's religious exposure and either their karmic belief or behavior; instead, children from a range of religious backgrounds were equally likely to endorse the notion of karma. Two points are worth noting. First, taken together, the results of our three studies suggest that cultural religious learning may not be a necessary prerequisite to get karmic beliefs off the ground in childhood, as even children with minimal or no formal exposure to religion express these beliefs. Second, at the same time, Study 3's findings also reveal that cultural religious learning may nevertheless sometimes reinforce or augment children's core karmic intuitions. Plausibly, being exposed to religious ideas about just and purposeful gods or to explicit religious notions of karmic justice heightens children's readiness to interpret life events as vehicles of reward for one's good behavior.

At the same time, we found that children's exposure to religion was unrelated to their belief in the efficacy of the stranger karmic bargaining strategy. This result is somewhat surprising since the effect of cultural religious exposure might be expected to influence children's belief in both types of karmic strategies in much the same way. Future research might therefore usefully further explore

whether cultural religious input reliably promotes certain karmic beliefs (e.g. that good outcomes accrue only to the person performing a good deed), but not others (e.g. that a good outcome accrues to a person other than the one performing a good deed).

General discussion

In three studies, we found evidence that young children believe in the efficacy of karmic bargaining – the practice of doing good deeds for others in order to help bring about some future desired, but unrelated, good outcome. We conclude that, beginning early in development, children expect that life events are not purely random occurrences, but instead that they happen for an intended reason, such as rewarding people for their good behavior. We also found that many children engaged in karmic bargaining behavior themselves, revealing a willingness to act on their karmic expectations and to incur the costs of other-serving karmic investments in the hope of securing a future reward.

Our studies are the first to show that karmic intuitions influence children's causal reasoning about future events that have yet to occur. They thereby complement previous research showing that children readily interpret past life events as vehicles of reward and punishment for people's prior moral behavior (Fein & Stein, 1977; Jose, 1990; Piaget, 1965/1932; see also Woolley, Cornelius & Lacy, 2011). Our results offer further evidence, then, that children conceive of karma as a causally potent feature of the world, relevant both for explaining past life events, and also for predicting future life outcomes.

Although our studies only explored children's expectations about how good deeds may promote future rewards, we suspect that a belief in karma also influences their expectations about how moral transgressions may provoke future punishment. In fact, it may even be the case that expectations about future karmic retribution are stronger than expectations about future karmic reward, and they may therefore also be more powerful drivers of children's own behavior. This is because negative events, in particular, have been argued to motivate the search for purposeful causal explanation (e.g. Gray & Wegner, 2010; Morewedge, 2009). Exploring valence asymmetries in children's karmic reasoning about future life events therefore presents a promising direction for future research.

One open question is whether children's expectation that 'good begets good' (or that 'bad begets bad') is restricted exclusively to morally good (or morally bad) acts. For example, do children believe that only other-serving, morally good deeds (e.g. sharing toys with other

children) can help secure an unrelated future desired outcome for oneself? Alternatively, might they expect that *any* good act, even a non-moral good act (e.g. eating ice cream or painting a pretty picture), would have a similar effect? If the latter is true, then children's karmic intuitions may gain intuitive cognitive support from a much broader, non-moral heuristic that assumes that causes and effects tend to match in valence (i.e. that good acts produce good outcomes and that bad acts produce bad outcomes). Building on the findings reported in this paper, future research might usefully explore this possibility. Such work holds the potential to shed further light on the boundaries of children's casual inferences about life events and also the cognitive origins of their karmic intuitions.

The present studies are also the first to examine how a belief in karma is related to children's early exposure to religion – a common cultural source of karmic concepts and narratives (Young & Morris, 2004; Young *et al.*, 2011). Across our studies, we found that children consistently expressed a belief in karma even if they had no formal exposure to religion at all (i.e. children of atheist parents who grow up in secular homes). At the same time, Study 3 revealed that children's karmic intuitions are sometimes moderated by their exposure to religion, with greater exposure predicting stronger karmic belief. Moreover, Study 3 also found that religious exposure was related to children's belief that doing a good deed oneself can beget a future good outcome for oneself, but that it was unrelated to their belief that a stranger's good deed could similarly beget a good outcome for oneself. Taken together, these findings suggest that an intuitive belief in karma may not depend exclusively on cultural religious learning, although the boundaries and scope of children's karmic intuitions may be shaped to some extent by exposure to common religious ideas (e.g. about divine retribution and reward for one's own behaviors).

We have proposed that a belief in karma emerges naturally as a consequence of certain universal social-cognitive biases that dispose even young children to interpret life events in terms of agency, purpose, and design (Banerjee & Bloom, 2015; Bering & Parker, 2006; Evans & Wellman, 2006). Our results are also consistent with another related and compatible account of children's karmic intuitions. Perhaps children's belief in 'cosmic karma' – the notion that the world itself is structured such that good begets good and bad begets bad – also derives in part from a justified belief in 'social karma'. Specifically, the expectation that doing good deeds for others begets good outcomes for oneself and that transgressing against others is likely to provoke retribution is, in fact, a good heuristic in the social

domain, where people really do reward and punish others' behavior. Young children frequently hear these lessons from parents and authority figures, and they also learn them firsthand from their own interactions with other people. So although a belief in social karma is importantly different from a belief in cosmic karma, people's justified expectations about social karma might inform and color their expectations about cosmic karma.

Note that this account is fully consistent with the broader proposal that an intuitive belief in karma reflects a general tendency for people to overextend inferences and expectations from the social domain to the non-social domain. Specifically, just as people appear biased to export mentalistic inferences about purpose and design from the social world to the non-social world (Banerjee & Bloom, 2013, 2014, 2015; Bering, 2006, 2011; Heywood & Bering, 2014; Lindeman *et al.*, 2015; Svedholm *et al.*, 2010; Willard & Norenzayan, 2013), they may also be inclined to export specific expectations about interpersonal justice in their social relationships to how they reason about justice playing out in life events and in the world at large. These expectations in turn, may seem particularly compelling in light of a broad teleological bias to infer purpose and design embedded in life events (Banerjee & Bloom, 2014, 2015; Bering, 2006, 2011; Heywood & Bering, 2014; Lindeman *et al.*, 2015; Svedholm *et al.*, 2010; Willard & Norenzayan, 2013).

Taken together, our findings support the view that notions of karma may be so cross-culturally successful because they capitalize on certain more general social-cognitive propensities and heuristics for navigating our social relationships that are present and active early in development. These tendencies may make both children and adults highly receptive to culturally transmitted ideas about karmic justice because they seem intuitively plausible. They may thereby promote the early adoption of karmic religious worldviews. This possibility is consistent with a growing body of evidence suggesting that a suite of early-emerging cognitive adaptations for social life naturally dispose children and adults to detect non-random design throughout the social and non-social worlds, and thereby facilitate the acquisition of common religious concepts (e.g. gods, fate, creationism) (Banerjee & Bloom, 2013; Barrett, 2000, 2012; Bering, 2006, 2011; Bloom, 2004, 2007; Kelemen, 2004; Rottman & Kelemen, 2012).

But if a belief in karma is universal, then why did adults in Study 2 reject the karmic claims that doing good for others can help beget good for oneself? We suspect that this was due to the fact that the vignettes in that study intentionally described child-friendly deeds and desires, appropriate for use with young children, but which may have seemed fairly trivial to adults, and which

likely therefore failed to trigger karmic intuitions among adults. We expect that describing good deeds and desired outcomes that adults find highly significant would have more effectively invoked their karmic expectations (e.g. Converse *et al.*, 2012). Thus, the observed developmental differences between children and adults in the present research may reflect features of our experimental design rather than a genuine age-related decline in karmic reasoning.

An intuitive belief in karma can sometimes have positive effects, such as encouraging people to invest in prosocial behaviors that benefit others (see also Converse *et al.*, 2012). However, it is worth noting that the belief that the world is a fundamentally fair and just place might also have a darker side: it might encourage people to believe that bad outcomes in life are in some deep sense deserved and right even in cases where they may not be. Indeed, the present research hints that the psychological foundations of phenomena such as victim blaming or bias against disadvantaged social groups – phenomena present early in childhood (see Olson, Dunham, Dweck, Spelke & Banaji, 2008) – may be rooted in a broad cognitive bias to see life outcomes not as random occurrences, but rather, as just deserts.

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