

Current Biology

The Negative Association between Religiousness and Children's Altruism across the World

Highlights

- Family religious identification decreases children's altruistic behaviors
- Religiousness predicts parent-reported child sensitivity to injustices and empathy
- Children from religious households are harsher in their punitive tendencies

Authors

Jean Decety, Jason M. Cowell, Kang Lee, Randa Mahasneh, Susan Malcolm-Smith, Bilge Selcuk, Xinyue Zhou

Correspondence

decety@uchicago.edu

In Brief

Decety and colleagues assessed altruism and moral cognition in six countries. Parents in religious households reported that their children expressed more empathy and sensitivity for justice in everyday life. However, religiousness was inversely predictive of children's altruism and positively correlated with their punitive tendencies.

The Negative Association between Religiousness and Children's Altruism across the World

Jean Decety,^{1,*} Jason M. Cowell,¹ Kang Lee,² Randa Mahasneh,^{3,4} Susan Malcolm-Smith,⁵ Bilge Selcuk,⁶ and Xinyue Zhou⁷

¹The Child Neurosuite, Department of Psychology, University of Chicago, Chicago, IL 60637, USA

²Erick Jackman Institute of Child Study, University of Toronto, Toronto, ON M5R 2X2, Canada

³Department of Educational Psychology, Hashemite University, Zarqa 13133, Jordan

⁴College of Education, Qatar University, 2713 Doha, Qatar

⁵Department of Psychology, University of Cape Town, Rondebosch 7701, South Africa

⁶Department of Psychology, Koc University, Rumelifeneri Yolu 34450, Turkey

⁷Department of Psychology, Sun-Yat Sen University, Guangzhou 510275, China

*Correspondence: decety@uchicago.edu

<http://dx.doi.org/10.1016/j.cub.2015.09.056>

SUMMARY

Prosocial behaviors are ubiquitous across societies. They emerge early in ontogeny [1] and are shaped by interactions between genes and culture [2, 3]. Over the course of middle childhood, sharing approaches equality in distribution [4]. Since 5.8 billion humans, representing 84% of the worldwide population, identify as religious [5], religion is arguably one prevalent facet of culture that influences the development and expression of prosociality. While it is generally accepted that religion contours people's moral judgments and prosocial behavior, the relation between religiosity and morality is a contentious one. Here, we assessed altruism and third-party evaluation of scenarios depicting interpersonal harm in 1,170 children aged between 5 and 12 years in six countries (Canada, China, Jordan, Turkey, USA, and South Africa), the religiousness of their household, and parent-reported child empathy and sensitivity to justice. Across all countries, parents in religious households reported that their children expressed more empathy and sensitivity for justice in everyday life than non-religious parents. However, religiousness was inversely predictive of children's altruism and positively correlated with their punitive tendencies. Together these results reveal the similarity across countries in how religion negatively influences children's altruism, challenging the view that religiosity facilitates prosocial behavior.

RESULTS

Humans have evolved as highly cooperative species, and many forms of prosocial behavior emerge early in ontogeny, reflecting a biological predisposition [1]. Altruism (cost for the donor and benefit for the recipient) is particularly interesting because it is costly to the self. Studies of altruistic behavior have documented

that children in preschool tend to share less than a third of their resources and by late childhood share nearly half [6].

Globally, children have been and continue to be predominantly raised in households where religion is discussed, and oftentimes it provides fundamental guidance for everyday living and moral behavior. Yet, little is known about how children's altruistic tendencies are influenced by the religiousness of their households and how parents perceive their children's moral dispositions. Religious values and beliefs are transmitted to children through repeated rituals and practices in their communities. If religion promotes prosociality, children reared in religious families should show stronger altruistic behavior. Importantly, most research on the link between religion and morality has focused on convenience populations: college students from western, industrial, educated, rich, and democratic societies. The early experience of religion and variations in the nature of the rearing environment critically influence children's moral development from the standpoint of both psychology and economics [7]. Understanding the impact of religiosity on children's altruism provides insights about how prosocial behavior is shaped by gene-culture coevolution.

To examine the influence of religion on the expression of altruism, we used a resource allocation task, the dictator game, in a large, diverse, and cross-cultural sample of children ($n = 1,170$, ages 5–12) from Chicago (USA), Toronto (Canada), Amman (Jordan), Izmir and Istanbul (Turkey), Cape Town (South Africa), and Guangzhou (China). Consistent with literature in the development of generosity, age in years was predictive of the total resources shared ($r = 0.408$, $p < 0.001$) [4, 6], but the religious rearing environment fundamentally shaped how their altruism was expressed.

In our sample, 23.9% of households identified as Christian ($n = 280$), 43% as Muslim ($n = 510$), 27.6% as not religious ($n = 323$), 2.5% as Jewish ($n = 29$), 1.6% as Buddhist ($n = 18$), 0.4% as Hindu ($n = 5$), 0.2% as agnostic ($n = 3$), and 0.5% as other ($n = 6$). Results from an independent samples t test, comparing altruism in children from religiously identifying ($M_{\text{sharing}} = 3.25$, $SD = 2.46$) and non-religiously identifying ($M_{\text{sharing}} = 4.11$, $SD = 2.48$) households indicated significantly less sharing in the former than the latter ($p < 0.001$). To further investigate these effects within specific religions, three large groupings were

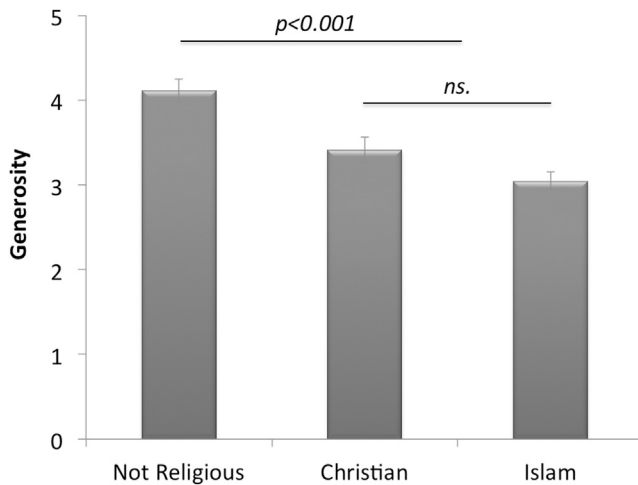


Figure 1. Altruism Is Negatively Influenced by the Religiosity of Children' Households

Children from non-religious households ($n = 323$) are more altruistic with an anonymous beneficiary than children from religious families ($n = 280$ Christians; $n = 510$ Muslims). Bars represent SEs.

established: Christian, Muslim, and not religious; children from other religious households did not reach a large enough sample size to be included in additional analyses. Results from a linear regression with number of stickers shared as the dependent variable and age (1-year bins), country of origin, socioeconomic status (SES), and religious identification of the household (dummy coded) suggest that age ($\beta_{\text{standardized}} = 0.39$, $p < 0.001$), SES ($\beta_{\text{standardized}} = 0.16$, $p < 0.001$), country ($\beta_{\text{standardized}} = 0.1$, $p < 0.01$), and religious identification ($\beta_{\text{standardized}} = -0.132$, $p < 0.001$) are significant predictors of sharing, (model $r^2_{\text{adjusted}} = 0.184$). Paired comparisons (corrected for family-wise error) showed that Christian children ($M_{\text{sharing}} = 3.33$, $SD = 2.46$) did not differ in their altruism from Muslims ($M_{\text{sharing}} = 3.20$, $SD = 2.24$); however, both were significantly less altruistic than non-religious children ($M_{\text{sharing}} = 4.09$, $SD = 2.52$, both $p < 0.001$; [Figure 1](#)).

Regardless of religious identification, frequency of religious practice, household spirituality, and overall religiosity were inversely predictive of children's altruism ($r = -0.161$, $p < 0.001$; $r = -0.179$, $p < 0.001$; $r = -0.173$, $p < 0.001$, respectively; [Figure 2](#)). Results from a linear regression with number of stickers shared as the dependent variable and age (1-year bins), country of origin, socioeconomic status (1–6 scale) and overall religiosity of the household (aggregate score) suggest that age ($\beta_{\text{standardized}} = 0.410$, $p < 0.001$), SES ($\beta_{\text{standardized}} = 0.13$, $p < 0.001$), and religiosity ($\beta_{\text{standardized}} = -0.150$, $p < 0.001$) are all significant predictors of sharing (model $r^2_{\text{adjusted}} = 0.194$). Importantly, the relations between altruism and the three aspects of religiosity were strongest in older children ($n = 533$, ages 8–12 years; $r = -0.187$, $p < 0.001$; $r = -0.211$, $p < 0.001$; $r = -0.202$, $p < 0.001$, respectively).

Results from a univariate analysis of covariance (ANCOVA), with judgments of meanness of harmful actions as the dependent variable, religious identification as the independent variable, and age, SES, and country of origin (to account for known influences) as the covariates, revealed a significant main effect of

religious identification on meanness rating ($F(2, 767) = 6.521$, $p = 0.002$, $\eta^2 = 0.017$; [Figure 3](#)). Post hoc Bonferroni-corrected paired comparisons showed that children in Muslim households judged interpersonal harm as more mean than children from Christian ($p < 0.005$) and non-religious ($p < 0.001$) households, and children from Christian households judged interpersonal harm as more mean than children from non-religious households ($p < 0.01$). Moreover, children from religious households also differ in their ratings of deserved punishment for interpersonal harm ($F(2, 847) = 5.80$, $p < 0.01$, $\eta^2 = 0.014$); this was qualified by significantly harsher ratings of punishment by children from Muslim households than children from non-religious households ($p < 0.01$). There were no significant differences between children from Christian households and non-religious households.

Religiosity positively predicted parent-reported child sensitivity to injustice and child empathy, even after accounting for age, SES, and country of origin ($\beta_{\text{standardized}} = 0.194$, $p < 0.001$; $\beta_{\text{standardized}} = 0.89$, $p < 0.01$, respectively). Results from a univariate analysis of variance, with parent-reported justice sensitivity as the dependent variable and religious identification as the independent variable and age, SES, and country of origin as the covariates, revealed a significant main effect of religious identification on children's justice sensitivity ($F(2, 795) = 15.44$, $p < 0.001$, $\eta^2 = 0.04$; [Figure 4](#)). Children from Christian households were significantly higher in parent-rated justice sensitivity than children from Muslim households ($p < 0.001$) and non-religious households ($p < 0.001$).

DISCUSSION

A common sense notion and a theoretical assertion from religious metaphysics is that religiosity has a causal connection and a positive association with moral behaviors [8]. This view is so deeply embedded that individuals who are not religious can be considered morally suspect [9, 10]. In religious households, children receive a basic form of moral training and, over middle childhood, are expected to begin to be more sensitive to the plight of others as well as to express greater prosociality and less antisocial behavior [11]. Several mechanisms for this translation of moral values have been hypothesized, including basic socialization, co-regulation leading to better self-regulation, or a domain-specific increase in mental models of sensitivity to morality [12, 13]. These notions have been forwarded by recent publications as well, mostly using self-reports of hypothetical giving and charity, documenting that religious people are more likely to report higher rates of intended giving, but in fact, a careful meta-examination of the studies measuring actual behavior shows that there is little evidence for such a positive relation [14].

Here, we show that religiosity, as indexed by three different measures, is not associated with increased altruism in young children. Our findings robustly demonstrate that children from households identifying as either of the two major world religions (Christianity and Islam) were less altruistic than children from non-religious households. Moreover, the negative relation between religiosity and spirituality and altruism changes across age, with those children with longer experience of religion in the household exhibiting the greatest negative relations. Of additional note is that the sharing of resources was with an anonymous child beneficiary from the same school and similar ethnic

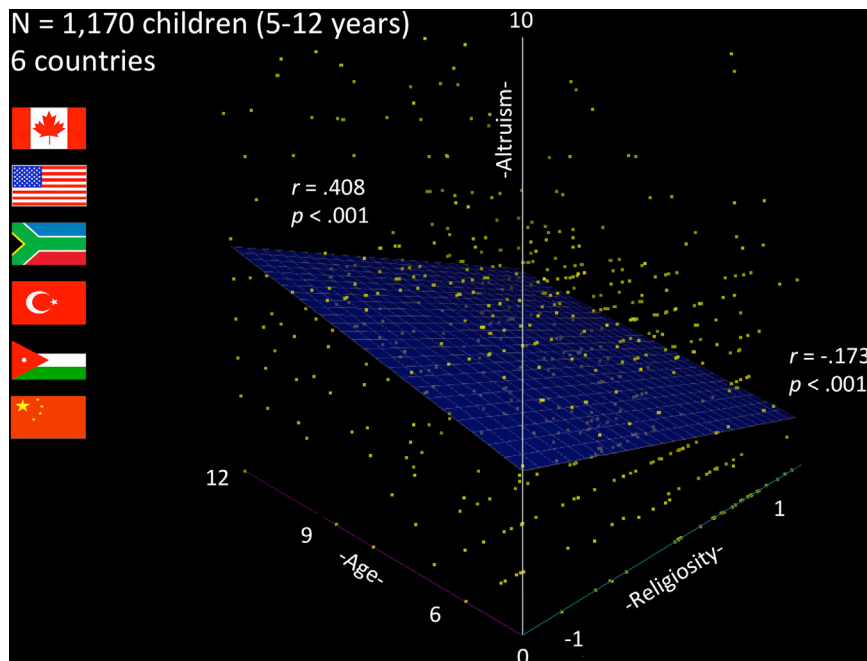


Figure 2. Relation between Overall Religiousness, Altruism, and Age in 1,151 Children across Six Countries

Three-dimensional scatterplot of generosity (y axis) as predicted by overall religiousness of children's rearing environments (x axis) and age (Z axis). Dots represent individual data points, and the grid represents best-fit slope for altruism, religiousness, and age.

to justice). Religious individuals consistently score higher than non-religious ones on self-reported measures of socially desirable responding [26]. This previous literature, coupled with the current findings, supports an internal consistency in adults' self-assessments of their moral dispositions and extends to their beliefs about their children. Children from religious households are more likely to be identified by their parents as more empathic and more sensitive to the plight of others. They also believe that interpersonal harm is more "mean" and

deserving of harsher punishment than non-religious children. Thus, children who are raised in religious households frequently appear to be more judgmental of others' actions, while being less altruistic toward another child from the same social environment, at least when generosity is spontaneously directed to an ambiguous beneficiary. While there is a gap between children's knowledge of fairness and their actual behavior between 3 and 8 years of age [27], it cannot explain the negative impact of religiosity on altruism. The phenomenon of moral licensing is well established in a variety of domains including prosocial behavior. It can disinhibit selfish behavior and reduce prosocial behavior [28] and may account in explaining how children raised in religious households, who are perceived to be more empathetic and sensitive to justice, are in fact less altruistic to their own class mates.

Overall, our findings cast light on the cultural input of religion on prosocial behavior and contradict the common-sense and popular assumption that children from religious households are more altruistic and kind toward others. More generally, they call into question whether religion is vital for moral development, supporting the idea that the secularization of moral discourse will not reduce human kindness—in fact, it will do just the opposite [29].

group. Therefore, this result cannot be simply explained by in-group versus out-group biases that are known to change children's cooperative behaviors from an early age [15], nor by the known fact that religious people tend to be more altruistic toward individuals from their in-group [8, 16].

A second major finding from these data is that religiosity affects children's punitive tendencies when evaluating interpersonal harm. Interestingly, this result is in sharp contrast with reports that patterns of moral judgments made by subjects with a religious background do not differ from those who are atheists [17]. Of note, most of these studies relied on moral dilemmas that have poor ecological validity, as the situations they depict are unlikely to happen, and thus tell us little about moral decision making in everyday life [18]. Here, we employed ecologically valid depictions of everyday mundane interpersonal harm that occur in schools, from a task previously used in neurodevelopmental investigations of moral sensitivity [19–21]. Research indicates that religiousness is directly related to increased intolerance for and punitive attitudes toward interpersonal offenses, including the probability of supporting harsh penalties [22]. For instance, within Christianity, fundamentalists tend to be more punitive and advocate for harsher corrections than non-fundamentalists [23]. Moreover, Christians are also argued to view the moral wrongness of an action as a dichotomy and are less likely to discriminate between gradients of wrongness, yielding equal ratings for a variety of transgressions [24]. While this association is documented in adults of the major world religions, here the relation between greater religiousness and preference for more severe punishment is observed in development, when morality is in a sensitive and fragile period, subject to social learning and cultural practices [25].

Consistent with research linking religiousness and adult self-reports of moral behavior, frequency of religious attendance, spirituality, and overall religiousness predicted parent-reported child sensitivity to the plight of others (empathy and sensitivity

deserving of harsher punishment than non-religious children. Thus, children who are raised in religious households frequently appear to be more judgmental of others' actions, while being less altruistic toward another child from the same social environment, at least when generosity is spontaneously directed to an ambiguous beneficiary. While there is a gap between children's knowledge of fairness and their actual behavior between 3 and 8 years of age [27], it cannot explain the negative impact of religiosity on altruism. The phenomenon of moral licensing is well established in a variety of domains including prosocial behavior. It can disinhibit selfish behavior and reduce prosocial behavior [28] and may account in explaining how children raised in religious households, who are perceived to be more empathetic and sensitive to justice, are in fact less altruistic to their own class mates.

Overall, our findings cast light on the cultural input of religion on prosocial behavior and contradict the common-sense and popular assumption that children from religious households are more altruistic and kind toward others. More generally, they call into question whether religion is vital for moral development, supporting the idea that the secularization of moral discourse will not reduce human kindness—in fact, it will do just the opposite [29].

EXPERIMENTAL PROCEDURES

Participants

5- to 12-year-old children ($n = 1,151$, mean (M) age = 8.29 years, $SD = 2.17$ years, $n = 559$ females) were recruited from local schools in six countries around the world: Chicago (USA), Toronto (Canada), Cape Town (South Africa), Istanbul and Izmir (Turkey), Amman (Jordan), and Guangzhou (China) (Table S1).

Procedure

Children completed a moral sensitivity task programmed in E-prime 2.0 and presented on ASUS T101MT Touchscreen computers and administered in their native language by trained researchers, as well as a dictator game, in the laboratory of each local university or in small rooms adjoining classrooms

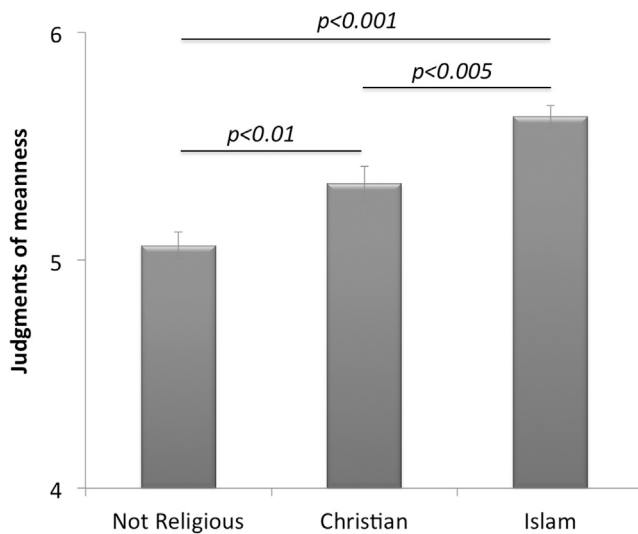


Figure 3. Children from Religious Households Judge Interpersonal Harm More Severely Than Children from Non-religious Households
Bars represent SEs.

in each school. Parents completed religiosity measures, a sensitivity to justice measure [30] and an empathy measure [31] for their child, as well as demographic information. Written informed consent was obtained from all parents, and verbal assent was given by all children. All procedures were approved by each local Institutional Review Board.

Religiosity Measures

Religiosity was assessed in three ways. First, parents of participants were asked their religious identification (e.g., Christianity, Islam, Judaism, etc.) in a free response question. Parental religious identification was then coded into Christianity, Islam, Judaism, Hinduism, Buddhism, atheism, agnostic, spiritual, multi-theistic, other, and no answer. From the frequency distributions, three large groupings were established: Christians, Muslims, and not religious. Beyond parental identification, caregivers also completed the Duke Religiosity Questionnaire (DRQ) [32], which assesses the frequency of religious attendance rated on a 1–6 scale from never to several times per week (frequency of service attendance and at other religious events), and questions regarding the spirituality of the household (1–5 scale; see DRQ). Average religious frequency and religious spirituality composites were created, standardized, and combined for an average overall religiosity composite.

Dictator Game

In this task, children were shown a set of 30 stickers and were told to choose their ten favorite [6]. They were then told “these stickers are yours to keep.” Children were instructed that the experimenter did not have the time to play this game with all of the children in their school, so not everyone would be able to receive stickers.

Moral Sensitivity Task

In this computerized task, used previously with children in both behavioral and functional neuroimaging studies [19], a series of short dynamic visual scenarios depicting interpersonal harm (e.g., pushing, bumping) was presented.

Maternal Education

As a metric for socioeconomic status, parents were asked to specify the level of education of the mother.

Child Dispositional Measures

The Questionnaire of Cognitive and Affective Empathy (QCAE) [31] to assess children's empathy and the justice sensitivity inventory [30] to measure children's sensitivity to injustice were reported by parents.

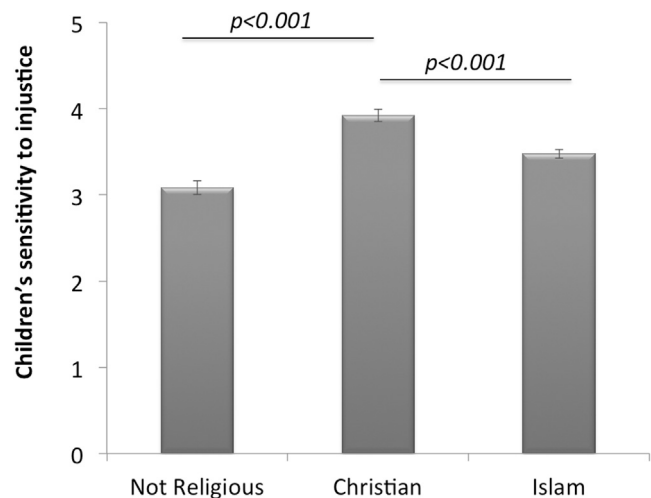


Figure 4. Parents of Children from Christian Households View Their Children as More Sensitive to Injustices toward Others
Bars represent SEs.

SUPPLEMENTAL INFORMATION

Supplemental Information includes Supplemental Experimental Procedures and one table and can be found with this article online at <http://dx.doi.org/10.1016/j.cub.2015.09.056>.

ACKNOWLEDGMENTS

This research was supported by a grant from the John Templeton Foundation (Science of Philanthropy Initiative).

Received: July 23, 2015
Revised: September 9, 2015
Accepted: September 20, 2015
Published: November 5, 2015

REFERENCES

- Jensen, K., Vaish, A., and Schmidt, M.F.H. (2014). The emergence of human prosociality: aligning with others through feelings, concerns, and norms. *Front. Psychol.* 5, 822.
- Chudek, M., and Henrich, J. (2011). Culture-gene coevolution, norm-psychology and the emergence of human prosociality. *Trends Cogn. Sci.* 15, 218–226.
- House, B.R., Silk, J.B., Henrich, J., Barrett, H.C., Scelza, B.A., Boyette, A.H., Hewlett, B.S., McElreath, R., and Laurence, S. (2013). Ontogeny of prosocial behavior across diverse societies. *Proc. Natl. Acad. Sci. USA* 110, 14586–14591.
- Fehr, E., Bernhard, H., and Rockenbach, B. (2008). Egalitarianism in young children. *Nature* 454, 1079–1083.
- Pew Research Center (2012). The global religious landscape. <http://www.pewforum.org/2012/12/18/global-religious-landscape-exec/>.
- Benenson, J.F., Pascoe, J., and Radmore, N. (2007). Children's altruistic behavior in the dictator game. *Evol. Hum. Behav.* 28, 168–175.
- Smetana, J. (2006). Social-cognitive domain theory: consistencies and variations in children's moral and social judgments. In *Handbook of Moral Development*, M. Killen, and J. Smetana, eds. (Mahwah: Lawrence Erlbaum Associates), pp. 119–153.
- Galen, L.W. (2012). Does religious belief promote prosociality? A critical examination. *Psychol. Bull.* 138, 876–906.

9. Sinnott-Armstrong, W. (2009). *Morality without God?* (New York: Oxford University Press).
10. Beit-Hallahmi, B. (2015). *Psychological Perspectives on Religion and Religiosity* (Hove: Routledge).
11. Saslow, L.R., Willer, R., Feinberg, M., Piff, P.K., Clark, K., Keltner, D., and Saturn, S.R. (2013). My brother's keeper? Compassion predicts generosity more among less religious individuals. *Soc. Psychol. Personal. Sci.* *4*, 31–38.
12. Grusec, J.E., Chaparro, M.P., Johnston, M., and Sherman, A. (2014). The development of moral behavior from a socialization perspective. In *Handbook of Moral Development 2*, M. Killen, and J. Smetana, eds. (New York: Psychology Press), pp. 113–134.
13. Volling, B.L., Mahoney, A., and Rauer, A.J. (2009). Sanctification of parenting, moral socialization, and young children's conscience development. *Psychol. Relig. Spiritual.* *1*, 53–68.
14. Sablosky, R. (2014). Does religion foster generosity? *Soc. Sci. J.* *51*, 545–555.
15. Efferson, C., Lalive, R., and Fehr, E. (2008). The coevolution of cultural groups and ingroup favoritism. *Science* *321*, 1844–1849.
16. Shariff, A.F., Piazza, J., and Kramer, S.R. (2014). Morality and the religious mind: why theists and nontheists differ. *Trends Cogn. Sci.* *18*, 439–441.
17. Pysiäinen, I., and Hauser, M. (2010). The origins of religion: evolved adaptation or by-product? *Trends Cogn. Sci.* *14*, 104–109.
18. Kahane, G. (2015). Sidetracked by trolleys: why sacrificial moral dilemmas tell us little (or nothing) about utilitarian judgment. *Soc. Neurosci.* 1–10.
19. Decety, J., Michalska, K.J., and Kinzler, K.D. (2012). The contribution of emotion and cognition to moral sensitivity: a neurodevelopmental study. *Cereb. Cortex* *22*, 209–220.
20. Yoder, K.J., and Decety, J. (2014). Spatiotemporal neural dynamics of moral judgment: a high-density ERP study. *Neuropsychologia* *60*, 39–45.
21. Cowell, J.M., and Decety, J. (2015). The neuroscience of implicit moral evaluation and its relation to generosity in early childhood. *Curr. Biol.* *25*, 93–97.
22. Batson, C.D., Schoenrade, P.A., and Ventis, W.L. (1993). *Religion and the Individual: A Social-Psychological Perspective* (New York: Oxford University Press).
23. Applegate, B.K., Cullen, F.T., Fisher, B.S., and Vander Ven, T. (2000). Forgiveness and fundamentalism: Reconsidering the relationship between correctional attitudes and religion. *Criminology* *38*, 719–754.
24. Curry, T.R. (1996). Conservative protestantism and the perceived wrongfulness of crimes: a research note. *Criminology* *34*, 453–464.
25. Turiel, E. (2006). The development of morality. In *Handbook of Child Psychology, Volume 3*, N. Eisenberg, ed. (Hoboken: Wiley), pp. 789–857.
26. Sedikides, C., and Gebauer, J.E. (2010). Religiosity as self-enhancement: a meta-analysis of the relation between socially desirable responding and religiosity. *Pers. Soc. Psychol. Rev.* *14*, 17–36.
27. Blake, P.R., McAuliffe, K., and Warneken, F. (2014). The developmental origins of fairness: the knowledge-behavior gap. *Trends Cogn. Sci.* *18*, 559–561.
28. Merritt, A.C., Effron, D.A., and Monin, B. (2010). Moral self-licensing: when being good frees us to be bad. *Soc. Personal. Psychol. Compass* *45*, 344–357.
29. Beit-Hallahmi, B. (2010). Morality and immorality among the irreligious. In *Atheism and Secularity, Volume 1*, P. Zuckerman, ed. (Santa Barbara: ABC-Clío), pp. 113–148.
30. Schmitt, M., Gollwitzer, M., Maes, J., and Arbach, D. (2005). Justice sensitivity: assessment and location in personality space. *Eur. J. Psychol. Assess.* *21*, 202–211.
31. Reniers, R.L.E.P., Corcoran, R., Drake, R., Shryane, N.M., and Völlm, B.A. (2011). The QCAE: a questionnaire of cognitive and affective empathy. *J. Pers. Assess.* *93*, 84–95.
32. Koenig, H.G., and Bussing, A. (2010). The Duke University Religion Index (DUREL): a five-item measure for use in epidemiological studies. *Religions (Basel)* *1*, 78–85.

Current Biology

Supplemental Information

**The Negative Association between Religiousness
and Children's Altruism across the World**

**Jean Decety, Jason M. Cowell, Kang Lee, Randa Mahasneh, Susan Malcolm-Smith,
Bilge Selcuk, and Xinyue Zhou**

Supplemental Table 1. Recruitment of children by country

Country	N (females)	Mean Age	SD
Canada	206 (100)	8.01	2.13
China	219 (114)	8.87	2.20
Jordan	152 (62)	8.96	2.12
South Africa	188 (95)	8.56	1.94
Turkey	196 (84)	7.35	2.24
United States	190 (104)	8.11	1.92

Supplemental Methods

Participants. Five to 12 year-old children ($N = 1170$, M age = 8.29 years, $SD = 2.17$ years, $n = 559$ females) were recruited from six countries around the world: Chicago (USA), Toronto (Canada), Cape Town (South Africa), Istanbul (Turkey), Amman (Jordan), and Guangzhou (China), from ethnically/socially homogeneous schools. Age was included in analyses as 1-year bins (from 5-12 years of age).

Procedure. All children completed a moral sensitivity task programmed in E-prime 2.0 and presented on ASUS™ T101MT Touchscreen computers and administered in the native language of the child, as well as a sharing game, presented in a set order to distribute any order effects uniformly across all subjects. Parents completed religiousness measures, a sensitivity to justice measure (S1) and a QCAE (S2) for their child, and demographic information, including maternal education. Written informed consent was obtained from all parents, and verbal assent was given by all children in line with ethical guidelines for testing children. All these procedures, including consent from parents and children were approved by each local Institutional Review Board.

Measures

Religiousness Measures: Religiousness was assessed in three ways. First, parents of participants were asked their religious identification (e.g., Christianity, Islam, Judaism, etc.) in a free response question. Parental religious identification was then coded into Christianity, Islam, Judaism, Hinduism, Buddhism, Atheism, Agnostic, Spiritual, multi-theistic, other, and no answer. From the frequency distributions, three large groupings were established, Christians, Muslims, and Not Religious. Beyond parental identification, caregivers also completed the Duke Religiousness Questionnaire (S3), which asked questions regarding the frequency of religious attendance rated on a 1-6 scale from never to several times per week (e.g., How often do you attend services?) and questions on spirituality (e.g., How often do you experience the “divine” in your everyday life). Average religious frequency and religious spirituality composites were created, then standardized and combined for an average overall religiousness composite.

Children's Dictator Game: This tabletop, modified version of the standard dictator game is designed to assess altruism/generosity in children (S4) and was run by trained research assistants. In this task, children were shown a set of 30 stickers and told to choose their 10 favorite. They were then told "these stickers are yours to keep." Children were instructed that the experimenter did not have the time to play this game with all of the children in the school, so not everyone would be able to receive stickers. Children were finally shown a set of envelopes and informed that they could give some of their stickers to another child who would not be able to play this game by putting them in one envelope and they could put the stickers they wanted to keep in the other envelope. Experimenters turned around during the child's choice and children were instructed to inform the experimenter when they were finished. Altruism was calculated as the number of stickers shared out of 10. A full description of the tasks is available in (S4).

Moral Sensitivity Task: In this computerized task, used previously with children in both behavioral and functional neuroimaging studies from 4 years of age and older (S5), a series of short dynamic visual scenarios involving an interaction two individuals were shown. In each of the scenario, one person is performing an action on another individual (pushing, bumping, etc), either accidentally or purposefully. After seeing each situation, children were asked two questions, in a counterbalanced order, with the use of a seven-point child friendly visual Likert scale, about the meanness of the behavior and the amount of deserved punishment. Judgments of the meanness of an action and judgments of punishment were calculated as the mean response to each respective question across all trials (10 scenes total, 5 accidental and 5 intentional) (Range of 1-7).

Maternal Education: As a metric for socioeconomic status around the world, parents were asked to specify the level of education of the mother. The scale ranged from 1: 0-5 years of total education to 6: graduate or professional degree, with a mean of 4.6 and a standard deviation of 1.24. As our sample was entirely urban, less than 1% of the population had 0-5 total years of education.

Child dispositional measures: The QCAE (S2) was used to assess children's empathy through parent report. The justice sensitivity inventory (S1) was used to measure children's sensitivity to injustice for others, as reported by parents. Both measures are consistently employed in social and personality research with adults as well as in social neuroscience studies (S6).

References

- S1. Baumert, A., Rothmund, T., Thomas, N., Gollwitzer, M., & Schmitt, M. (2013). Justice as a moral motive: Belief in a just world and justice sensitivity as potential indicator of the justice motive. In K. Heinrichs, F. Oser and T. Lovat (eds), *Handbook of Moral Motivation* (pp. 159–180). Rotterdam: Sense Publishers.
- S2. Reniers, R. L. E. P., Corcoran, R., Drake R., Shryane, N. M., Völlm, B, (2011). The QCAE: a Questionnaire of Cognitive and Affective Empathy. *Journal Personality Assessment*, 93, 84–95.

S3. Koenig, H. G., & Bussing, A. (2010). The Duke University Religion Index (DUREL): A Five-Item Measure for Use in Epidemiological Studies. *Religions*, 1, 78-85.

S4. Benenson, J. F., Pascoe, J., & Radmore, N. (2007). Children's altruistic behavior in the dictator game. *Evolution and Human Behavior*, 28, 168–175.

S5. Decety, J., Michalska, K. J., & Kinzler, K. D. (2012). The contribution of emotion and cognition to moral sensitivity: A neurodevelopmental study. *Cerebral Cortex*, 22, 209-220.

S6. Decety, J., & Yoder, K. J. (2015). Empathy and motivation for justice: Cognitive empathy and concern, but not emotional empathy, predicts sensitivity to injustice for others. *Social Neuroscience*, epub ahead of print.