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The Benefits of Forgiving: Young Children Respond Positively to Those Who Forgive

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Forgiveness helps to repair relationships and thus helps maintain cooperation. Might forgiveness also convey to others that the forgiver is a valuable cooperation partner? We propose that if victims' forgiveness displays have evolved as important social cues that help uphold cooperation, then even young children might respond positively to forgiveness displays. In a preregistered study, 4- and 5-year-olds (n = 20 per age group) watched videos of transgressions in which the victim either forgave or did not forgive the transgressor. As predicted, 5-year-olds robustly preferred the forgiver, expected the transgressor to like the forgiver more, and thought the nonforgiver would be more likely to transgress in the future. Four-year-olds did not show these effects as consistently. Both age groups distributed more resources to the forgiving victim. Thus, from an early age, forgiveness displays convey key information to others about the forgiver and may therefore help to repair relationships and promote cooperation.

Keywords: forgiveness, cooperation, moral development, remorse, apology

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Humans are highly social and we depend on group living and cooperation to survive (Tomasello, Melis, Tennie, Wyman, & Herrmann, 2012). As such, humans have evolved a wide range of adaptations and psychological attributes that promote cooperative group living (Tooby & Cosmides, 1992). This ultracooperative aspect of human culture is believed to explain our success as a species (Tomasello, 2009). However, individuals inevitably transgress at times, and such transgressions can threaten our cooperative relationships. This raises the question: When cooperative relationships break down, how do we repair them?

One key to repairing broken cooperative interactions is an expression of remorse by the transgressor. However, remorse only represents the transgressor's half of the repair process. The other half is forgiveness by the victim (McCullough, 2008; Worthington, 2010). We operationalized forgiveness by adopting the widely accepted conceptualization of forgiveness as *emotional forgiveness*, wherein negative emotions about the transgressor are replaced with positive, other-oriented emotions (Worthington & Scherer, 2004). (This is distinct from *decisional forgiveness,* which is a deliberate behavioral intention to act toward the transgressor as if no transgression had occurred; Exline, Worthington, Hill, & McCullough, 2003). Forgiveness, especially emotional forgiveness, thus restores a victim's positive feelings toward the transgressor, and allows the transgressor to reenter mutually beneficial relationships, thus maintaining cooperation (McCullough, 2008). Indeed, people do forgive transgressors who express remorse: Apologies, conciliatory gestures, and remorse from transgressors facilitate forgiveness in victims (e.g., McCullough, Pedersen, Tabak, & Carter, 2014), and victims strongly desire apologies from offenders (Petrucci, 2002). Remorse from offenders thus serves to appease victims and bystanders and thereby repair relationships and restore cohesion in social groups (e.g., Fehr, Gelfand, & Nag, 2010).

In fact, repairing damaged relationships is so important that even young children forgive remorseful transgressors. For instance, when young children suffer transgressions (such as when someone destroys their artwork), they forgive a transgressor who shows remorse more than one who does not. This is demonstrated in their preference for, positive evaluation of, and greater distribution of resources to the remorseful than the unremorseful transgressor (e.g., Oostenbroek & Vaish, 2018).

The act of forgiving also benefits forgivers. For instance, greater levels of forgiveness are associated with decreased stress and greater positive emotions (e.g., Berry & Worthington, 2001). Forgiveness also enhances psychological well-being and physical health (e.g., Karremans, Van Lange, Ouwerkerk, & Kluwer, 2003), and people who forgive report higher relationship quality and greater commitment to their relationships (e.g., Fincham, Hall, &

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Beach, 2006). Thus, the act of forgiving is vital for maintaining relationships and for living happy, healthy lives.

We propose here, for the first time, that in addition to these benefits of experiencing forgiveness, the *display* of forgiveness might also serve important functions. We reason that if forgiveness has been so vital in human evolution for restoring and maintaining cooperation, then those who readily forgive transgressors also convey something important about themselves to transgressors and to observers: namely, that they are reliable and committed cooperation partners who value their relationships (cf. Newberg, d'Aquili, Newberg, & deMarici, 2000, who argued that forgiveness displays evolved not only to help restore social cohesion but also because they are likely to increase empathy and positive feelings toward the forgiver). As such, those who display forgiveness should be evaluated more positively, preferred, and chosen as cooperation partners more than those who do not. This idea is, to our knowledge, novel in the forgiveness literature, but it draws from important work in other areas showing that displays of social emotions (e.g., embarrassment, guilt) often serve vital social functions such as appeasement and restoration of social order (Keltner, 1995). For example, embarrassment after a social norm violation indicates to observers that the norm violator is aware of the violation and is otherwise a competent partner or group member. Thus, embarrassment helps remedy social transgressions and damaged relationships (e.g., Keltner & Anderson, 2000). Guilt displays similarly serve vital social communication functions by conveying to the victim and bystanders that the transgressor is also suffering, is committed to the relationship and the group, and promises to behave better in the future (e.g., Leary, Landel, & Patton, 1996). There is thus good reason to think that forgiveness displays serve a comparable function.

The current study examined the social functions of forgiveness displays. We reasoned that if forgiveness displays have evolved as vital social cues that help uphold cooperation, then even young children might respond positively to forgiveness displays. We thus examined whether forgiveness displays serve their hypothesized social functions in early development. We focused on 4- and 5-year-old children, based on prior empirical work. First, recent developmental studies have revealed that children's own ability to forgive transgressors emerges and solidifies around these ages. For instance, when two transgressors have caused minor accidental harm to a child and one transgressor shows remorse whereas the other does not, 5-year-old children forgive the remorseful transgressor more than the unremorseful one as seen in their preference, positive evaluation, and greater prosocial behavior toward the remorseful transgressor; 4-year-old children do so only when the transgressor expresses remorse by explicitly apologizing (Oostenbroek & Vaish, 2018; see also Smith & Harris, 2012; Wellman, Larkey, & Somerville, 1979). This same developmental change is evident when children are the bystanders rather than the victims of transgressions (Vaish, Carpenter, & Tomasello, 2011; see Vaish, 2018). We reasoned that this increase in children's own capacity to forgive may be accompanied by a similar increase in children's expectations of and responses to forgiveness in others.

Second, research suggests that children's grasp of other complex social and cooperative phenomena also shows parallel developmental effects. For instance, 5-year-olds, but not 4-year-olds, form strong preferences for in-group members (Dunham, Baron, & Carey, 2011). Similarly, 5- but not 4-year-olds prefer, positively evaluate, and are more prosocial toward loyal group members than disloyal ones (Misch, Over, & Carpenter, 2014), and toward individuals who enforce norms than nonenforcers (Vaish, Herrmann, Markmann, & Tomasello, 2016). Given children's strengthening grasp of complex cooperative processes between 4 and 5 years, and given our proposal that forgiveness displays also convey underlying cooperativeness, we predicted that children may also increasingly expect and respond positively to such displays between these ages. We thus investigated whether 4- and 5-year-old children prefer, positively evaluate, and behave more prosocially toward those who forgive remorseful transgressors.

Children watched videos of a transgressor causing accidental minor harm to two different victims and displaying remorse in both instances. One victim forgave the transgressor whereas the other victim did not. We assessed children's evaluations of the two victims, including their expectations about the victims' future behavior and about the transgressor's relationship with the victims. We also examined children's distribution of resources between the two victims. Based on our theorizing about the social functions of forgiveness displays as well as on the prior literature on children's responses to remorseful transgressors, we hypothesized that by 5 but not by 4 years of age, children would positively evaluate, prefer, and distribute more resources to victims who forgive transgressors than victims who do not. We also asked children to justify their responses, to assess which aspects of the situations children used to make their evaluations.

Method

The design, hypotheses, and analysis plans for this study were preregistered with the Open Science Framework: https://osf.io/93jd5/?view_only=29c324d75e63444ba79146104524f5dd. This study was approved by the institution's review board for social and behavioral sciences.

Participants

Twenty 4-year-olds (M = 52 months and 13 days, SD = 2 months and 27 days; range = 48 months and 13 days to 57 months and 1 day, 10 boys) and twenty 5-year-olds (M = 64 months and 25 days; SD = 2 months and 9 days; range = 60 months and 18 days to 68 months and 21 days, 12 boys) were included in the study. Two additional 5-year-old children were tested but excluded due to unwillingness to participate. Participants were recruited from a medium-sized mid-Atlantic university town in the United States, through the institution's database of families interested in participating in child development research. Of the families that provided information about race and education (n = 39), 85% of the parents were Caucasian, and 95% of the parents were at least college educated. Our decision to include 20 children per age group was informed by Vaish et al.'s (2011) study, which addressed a related research question with children in the same age groups using comparable procedures, measures, and analysis techniques. Among 5-year-olds, their primary (forced-choice) measures produced binomial proportions of "successful" responses ranging from .80 to .95. With a sample size of 20 children, their power to detect a binomial proportion of .80 successes at the .05 level was .91, which is considerable.

Design and Materials

The design of the study was based on Vaish et al. (2011). Children sat at a table on which two laptops were placed beside each other, one to the left and one to the right of the child. A camera was positioned in front of the child to record their behavior and verbal responses during the experiment. There were two phases to the procedure. In each phase, children viewed one forgiving video and one nonforgiving video, about which they were asked comprehension questions (to make sure they understood the content of each video) and eight test questions. After the second phase, children completed a distribution of resources task and were asked one final test question to justify their distribution of the resources. Thus, altogether, children viewed four videos (two per phase) and answered 17 test questions (eight after each of the two phases and one after the distribution of resources task).

Video Stimuli

Videos featuring two adult actresses (research assistants in the lab) were used as the stimuli. These videos depicted an interaction between a "transgressor" accidentally causing harm to a "victim" and then the victim either forgiving the transgressor (forgiving video) or not forgiving the transgressor (nonforgiving video). The role of the transgressor (Susie) was always played by the same actress in all videos, while two different actresses (Rachel and Laura) played the forgiving and nonforgiving victim roles across the videos. Each video featured one target object: a car, doll, clay bird, or picture. Laura was always the victim in the car and bird situations, and Rachel was always the victim in the doll and picture situations. Each video began with the transgressor and one of the victims seated around a table. The future victim enthusiastically told Susie that she wanted to show her something, and then presented the target object for approximately 45 s, as follows:

Car. Laura said this was her favorite toy car and then excitedly showed off the car's bright colors and played with it by driving it back and forth.

Doll. Rachel said this was her favorite doll and then excitedly showed off the doll's eyes, clothes, and so forth.

Bird. Laura brought out a clay bird and excitedly talked about how she had made it and how pretty it was. After 35 s, she proudly added a feather with some more clay. When she was done, she again stated how pretty the bird was and how much she liked it.

Picture. Rachel brought out a drawing of a butterfly and excitedly talked about how she had drawn it and how pretty it was. After 35 s, she proudly completed the drawing by adding some more spots to the wings. When she was done, she again stated how pretty the butterfly was and how much she liked it.

After proudly showing off the target object, the future victim placed the object on the table. The transgressor (Susie) then acted on the target object, as follows:

Car. Susie picked up the car to admire it, but as she placed it back on the table to drive it forward, the wheels detached from the back of the car.

Doll. Susie picked up the doll to admire it, but while she was playing with the doll, its head came off and fell onto the table.

Bird. Susie picked up the clay bird to admire it, but as she touched one of the wings, it broke off and the rest of the bird fell onto the table.

Picture. Susie admired the picture, but while giving it back to Rachel, she accidentally tore it.

After each accident, the transgressor placed the target object back on the table. The victim now said sadly, "Oh, my [target object]," and then the transgressor remorsefully said (with furrowed brow and concerned eyes; cf. Vaish, Carpenter, & Tomasello, 2009), "Oh I've broken/torn your [target object]. I'm sorry. I didn't want that to happen." While speaking, she alternated her gaze between the victim and the target object on the table. She then continued to look remorseful throughout the rest of the interaction. The victim then said sadly, "Oh you broke/tore my [target object]. I'm really upset with you," then paused to look at the damaged object for approximately 5 s.

At this point, the forgiving and nonforgiving videos differed. In the forgiving videos, the victim now looked at Susie and said with a neutral facial expression and in a neutral tone of voice, "I've thought about it some more. I know you're sorry. I'm not upset with you anymore." In the nonforgiving videos, the victim continued to look mildly upset and said to Susie in a neutral tone of voice, "I've thought about it some more. I know you're sorry. I'm still really upset with you." The video concluded with a still frame of this final scene (with the victim and transgressor looking at each other, and the transgressor still looking remorseful), which remained on the screen for 6 s. The average duration of the videos was approximately 1 min and 40 s. There were also shorter versions of all videos (which started with Susie admiring the target object) that concluded with the same still frames (see below). These shorter versions were on average 40 s long.

Procedure

Each child was tested by one of two female adult experimenters (E), who always sat to the left of the child during the experiment (and who did not feature in the videos). E told children that she had videos for them to watch of some people doing some things and that they should watch carefully and afterward she would ask them some questions. E opened the first video, introduced the two characters on the still opening frame, and then played the video (e.g., a forgiving video of the doll situation on the left computer). Once the video was finished, E paused the final still frame and asked the first comprehension question: "What did Susie do to [victim's target object]?" The child was expected to answer, "She broke it," or something similar. If the child's response was less specific (e.g., "She dropped the doll"), E prompted the child further (e.g., "And what happened to the doll?").

The first comprehension question was designed to ensure that the child grasped that the transgressor had damaged the object. Once the child's response indicated that he or she understood this, E said, "That's right," and asked the second comprehension question: "Is [victim's name] not upset with Susie anymore or still really upset with Susie?" (order of "not upset anymore" and "still really upset" was counterbalanced across children). This second comprehension question was designed to ensure that the child understood how the victim felt, which was crucial if the child was going to draw any inferences on this basis. If the child answered correctly ("not upset" or something similar in the forgiving case; "still upset" or something similar in the nonforgiving case), E said, "That's right. You've understood correctly. Let's watch that last part again." E then played the shorter version of the video and

paused it on the final still frame. If, however, the child answered the second comprehension question incorrectly (e.g., "still upset" in the forgiving case), E said, "Hmm, I'm not so sure about that. Let's watch that last part again, and I'll ask you the questions again afterwards." E then played the shorter version of the video, paused it on the still frame, and repeated both comprehension questions. If the child still answered the second comprehension question incorrectly, E then corrected him or her by saying, "No, she is not upset with Susie anymore/still really upset with Susie for breaking/tearing the [target object]." (Thus, irrespective of whether or not children correctly answered the comprehension questions, all children saw each video entirely once and partially once.)

E then opened the second video, which was in the other condition and on the other computer (e.g., a nonforgiving video of the car situation on the right computer). She introduced the characters' names and then repeated the procedure as with the first video. After the child had watched both videos and answered the comprehension questions, E provided a reminder of both videos, for example: "So Susie [pointing to corresponding computer screen] broke Rachel's [target object] and Rachel is not upset with Susie anymore, and Susie broke Laura's [target object] and Laura is still really upset with Susie" (always starting with the first video children had watched in that phase). While providing this reminder (and throughout the entire procedure), E was careful to speak in a neutral tone and not to influence the child's evaluations of the victims in any way. E then asked the following test questions:

1. "Whom does Susie like more? Rachel or Laura?" (pointing to each in turn)

1a. "Why does she like her more?"

2. "If Susie was playing on the swings, who do you think would push her off? Rachel or Laura?" (pointing to each)

2a. "Why do you think she would push her off?"

3. "Who do you think is not so nice? Rachel or Laura?" (pointing to each)

3a. "Why do you think she is not so nice?"

4. "Whom would you prefer to play with? Rachel or Laura?" (pointing to each)

4a. "Why would you prefer to play with her?"

The order of the question pairs was counterbalanced across children. Questions 1, 2, 3, and 4 were forced-choice questions, designed to assess whether, when presented with the choice, children would be able to use the information about the victims' forgiving or nonforgiving responses to answer in the predicted ways. Questions 1 and 4 assessed children's positive evaluations of the victims, whereas Questions 2 and 3 assessed children's negative evaluations of the victims. In answering the forced-choice questions, children were expected to name (or point to) one of the victims. If a child responded with "both" or "neither", E encouraged the child to choose one. If a child made no response, E repeated the question, but if the child still did not respond, E moved on to the next question. Questions 1a, 2a, 3a, and 4a were open questions, designed to elicit justifications for children's responses to the forced-choice questions. Such justifications will help clarify which aspects of the situations children are relying on to arrive at their forced-choice responses, and specifically, the degree to which they are relying on those aspects most relevant to forgiveness. E therefore did not further prompt or probe children during the open questions and did not provide any feedback on the content of their responses. Following these eight test questions, E repeated the entire procedure and all of the questions with the second pair of videos (Phase 2).

Finally, after the second phase, E said that she would see Rachel and Laura soon and could bring them something from the child. E then placed a box in front of each laptop. Each box contained a photograph of the victim (looking neutrally at the camera) who had featured on the respective laptop. E then gave the child three cloth flowers to distribute how ever he or she wanted. Children were expected to distribute all three flowers between the two victims. If the child was hesitant or asked for guidance, E said, "You can give the flowers out how ever you like." Once children distributed the flowers, E asked them a final justification question, saying, "Why did you give [Rachel or Laura] more flowers?" Again, the child was free to respond, and E did not prompt or probe the child further.

Counterbalancing

Four videos were created for each target object, in which the side that the actresses sat on and whether the victim was forgiving or nonforgiving were fully counterbalanced. For example, there were four videos of the car scenario: Laura on the left and being forgiving or nonforgiving, and on the right and being forgiving or nonforgiving. Altogether, there were 16 videos (four per target object), although each child only viewed four of the 16 videos (one per target object). During testing, the car and doll videos (both involving possessions belonging to the victim) were always shown together as one pair, as were the bird and picture videos (both involving objects that the victim had made).

Children in each age group were assigned to one of 20 presentation orders, which were counterbalanced for the following: the sides on which each actress sat, which actress was forgiving or nonforgiving, the order in which the videos were presented to the child and whether children saw the car and doll or the bird and picture video pair first. The computer on the left always showed the situations involving the victim on the left, and the computer on the right always showed the situations involving the victim on the right.

For a given child, Phases 1 and 2 were matched in terms of which victim was forgiving, on which side of the transgressor she sat, and the order in which the victims' names appeared in the test questions. However, the order of the test questions was counterbalanced across children and across the two phases for a given child.

Coding and Reliability

The primary dependent measures were children's responses to the forced-choice questions and how many flowers children distributed to the forgiving victim. The primary coder (the first author) used transcriptions to code whether children responded

correctly to the comprehension questions. The coder also coded responses to the forced-choice test questions (Questions 1, 2, 3, and 4). Responses were assigned a score of 1 if they were consistent with the hypotheses that children should (a) judge that the transgressor likes the forgiving victim more, (b) judge that the nonforgiving victim would push the transgressor off the swing, (c) indicate that they themselves think the nonforgiving victim is not so nice, and (d) indicate that they themselves would prefer to play with the forgiving victim; responses not consistent with these hypotheses were scored 0. A second coder (unaware of the hypotheses) coded 100% of the sample. Reliability was perfect, $\kappa = 1$.

The primary coder used the videos to code children's distribution of the flowers. The number of flowers given to the forgiving victim (0, 1, 2, or 3) was scored. A second coder also coded the children's responses for the whole sample and agreement between coders was 100%.

In addition, children's justifications (in response to Questions 1a, 2a, 3a, and 4a, as well as following the distribution of flowers) were coded from the transcriptions. Justifications were either assigned a score of 1 or 0 (see Table 1 for details of the coding scheme; see also Oostenbroek & Vaish, 2018; Vaish et al., 2011). A score of 1 indicated relevant and sophisticated reasoning about the victims and their responses, including justifications that referred to feelings of forgiveness or involved moral evaluations. References to a victim's feelings of forgiveness (or the lack thereof) could be of two types: One type—*forgiveness (repeated)*—involved repeating phrases that had been used in the videos or by E (e.g., "Because she said she wasn't upset with Susie anymore"), whereas the other type—*forgiveness (redescribed)*—involved using phrases other than those used in the videos or by E (e.g., "Because she's not mad at her anymore"). Although forgiveness (repeated) was obviously relevant to our question of whether children value forgiveness in others, when children repeated phrases used in the videos, it was not clear whether they were engaging in higher-level reasoning or not. That is, did children really understand the victims' responses in a sophisticated way but nonetheless repeated the words they heard in the videos, or did they not understand the victims' responses in a sophisticated way and therefore just repeated the words they heard in the videos? We thus conducted two sets of analyses of children's justifications to account for both possibilities: one in which forgiveness (repeated) was assigned a score of 1, and the other in which it was assigned a score of 0.

All other justifications received a score of 0, including justifications that were not diagnostic. For instance, justifications based on the transgressor damaging the victim's object received a score of 0 because in fact both victims' objects were damaged by the transgressor. A second coder (unaware of the hypotheses) coded justifications of a random 25% of children. Reliability was excellent, $\kappa = .93$.

Results

First, we report results of the comprehension questions in order to provide a summary of how well children grasped the content of the videos. We then report children's performance on test questions and the distribution of resources task. Preliminary analyses revealed that for both age groups, there were no significant effects of gender. We therefore collapsed across this variable for all analyses.

Comprehension Checks

Comprehension Check 1: "What did [transgressor] do to [victim's object]?" For all four videos, responses to the first comprehension question revealed that, with the exception of one 4-year-old who did not provide any verbal responses to the first comprehension question across any of the videos, all children at both ages understood that the transgressor had damaged the target objects. Thus, all children who provided verbal responses understood the basic premise of the videos.

Comprehension Check 2: "Is [victim] not upset with [transgressor] anymore or still really upset with [transgressor]?"

4-year-olds. The 4-year-old children showed robust comprehension of the victims' responses. In Phase 1, when the victim was forgiving, one 4-year-old did not provide a verbal response. Of the 19 children who provided a response, 18 children correctly responded that the victim was not upset with the transgressor anymore (binomial probability, using a test proportion of .50, $p < .0005$). The one child who did not answer correctly did so after

Table 1
Coding Scheme for Justifications

Score	Category	Content
1	Forgiveness (redescribed)	Victim did (or did not) show forgiveness (child uses words other than those used by the actresses in the videos or by E); e.g., "Because she wasn't mad at Susie anymore"
	Moral character, evaluation, or norm	Victim is a good (or bad) person, victim's response to the transgression was good (or bad), or victim broke (or did not break) a moral norm; e.g., "Because she said the right thing" or "Because she's a nicer person"
	Forgiveness (repeated) [analyses were conducted with this category scored as "1" and as "0"]	Victim did (or did not) show forgiveness (child uses words that had been used by the actresses in the videos or by E); e.g., "Because she said, 'She wasn't upset with Susie anymore'" or "Because she said, 'She was still really upset with Susie'"
0	Own preference	Child's own preference for the victim; e.g., "Because I like her more"
	Visible emotion	Child comments on the visual emotive state of the victim; e.g., "She looks happier" or "She looks sadder"
	Action	Victim's target object was damaged by the transgressor
	Object	The target object is broken or ripped and can no longer be repaired
	Other, irrelevant, or uncodable	Response could not be put into any of the above categories (e.g., "Just because"), was irrelevant (e.g., "Her doll is pretty") or could not be coded (e.g., because the child's speech could not be understood)

rewatching the video. When the victim was not forgiving, two 4-year-olds did not provide any verbal responses. The remaining 18 children correctly responded that the victim was still really upset with the transgressor (binomial probability, $p < .0005$).

Two children in the 4-year-old group did not complete Phase 2 of the study and were thus excluded from Phase 2 analyses. In Phase 2, when the victim was forgiving, 17 of 18 children correctly identified that the victim was not upset with the transgressor anymore (binomial probability, $p < .0005$). The one child who did not answer correctly failed to do so again after rewatching the video, and was thus provided the correct information by E. When the victim was not forgiving, one child did not provide any verbal response. Of the 17 children who provided a response, 16 children correctly identified her as still being really upset with the transgressor (binomial probability, $p < .0005$). The one child who did not answer correctly failed to do so again after rewatching the video and was thus provided the correct information by E. Altogether, in the forgiving case, 16 of the 17 children who provided responses in both phases responded correctly right away in both phases, and in the nonforgiving case, all 16 children who provided responses in both phases responded correctly right away in both phases.

5-year-olds. The 5-year-old children showed excellent comprehension of the victims' responses. In Phase 1, when the victim was forgiving, all 20 correctly responded that the victim was not upset with the transgressor anymore (binomial probability, $p < .0005$). When the victim was not forgiving, 19 of 20 children correctly responded that the victim was still really upset with the transgressor (binomial probability, $p < .0005$). The one child who did not answer correctly did so after rewatching the video. In Phase 2, when the victim was forgiving, 19 of 20 children correctly identified that the victim was not upset with the transgressor anymore; when the victim was not forgiving, all 20 children correctly identified her as still being really upset with the transgressor (binomial probabilities, both ps $< .0005$). The one child who did not respond correctly in the forgiving case did so after rewatching the video. Altogether, 19 of 20 children responded correctly right away in both phases in both the forgiving and nonforgiving cases.

Age comparisons. The 4- and 5-year-olds' initial responses to the second comprehension question (pooled across Phases 1 and 2) were analyzed. The number of children who responded correctly in both phases did not differ by age group for either the forgiving or nonforgiving case, Fisher's exact test (due to small *N*s in some cells), both ps $= 1.00$. Thus, children in both age groups showed similarly high comprehension of the forgiving and nonforgiving scenarios.

Test Questions

Forced-choice questions. Preliminary analyses revealed no significant effects of either 4- or 5-year-olds' comprehension performance on their performance on the forced-choice questions. Children's comprehension performance was thus not included in analyses of their forced-choice question performance and no data were excluded from these analyses due to incorrect comprehension performance.

4-year-olds. The 4-year-olds' performance was mixed. In Phase 1, the 4-year-olds drew all of the hypothesized inferences on all four forced-choice test questions. That is, 4-year-olds thought the transgressor would like the forgiving victim more (binomial probability, $p = .041$), thought the nonforgiving victim would be more likely to push the transgressor off a swing ($p = .003$), thought the nonforgiving victim was not so nice ($p = .012$), and preferred to play with the forgiving victim ($p = .041$). In Phase 2, however, the 4-year-olds did not perform significantly above chance on any of the forced-choice questions (all ps $> .096$). Comparing across phases revealed no significant differences in performance on any of the four questions, all ps $> .375$.

Combining the forced-choice questions across the two phases (for a total of eight questions), we found that only 13 of the 20 four-year-olds responded in the hypothesized way to more than half of the eight questions, which was not significantly different from chance (binomial probability, $p = .263$). However, a one sample t test indicated that the proportion of the eight forced-choice test questions that the 4-year-olds answered in the hypothesized way was significantly higher than 0.50, $M = .73$, $SD = .23$, $t_{(19)} = 4.42$, $p < .0005$, Cohen's $d = 1.00$.

5-year-olds. The 5-year-olds performed far more consistently. As predicted, in both Phases 1 and 2, the 5-year-olds answered in the hypothesized way to all forced-choice test questions (the proportion of children who responded in the predicted way on each question ranged from .85 to .90; binomial probabilities, all ps $<$ .003). Comparing performance across phases revealed no significant differences on any of the questions, all ps $> .500$.

Combining the eight questions across phases revealed that 19 of 20 children responded in the hypothesized way to more than half of the eight forced-choice questions (binomial probability, $p <$ .0005). Further, a one-sample t test indicated that the proportion of the eight forced-choice test questions that 5-year-olds answered in the hypothesized way was significantly higher than 0.50, $M = .93$, $SD = .23$, $t_{(19)} = 8.37$, $p < .0005$, Cohen's $d = 1.87$.

Age comparisons. To examine age effects, we first compared children's performance across the eight test questions. A greater number of 5-year-olds than 4-year-olds responded in the hypothesized way to more than half of the eight forced-choice test questions, Fisher's exact test (due to small *N*s in some cells), $p =$ .044. Furthermore, an independent-samples t test revealed that the proportion of the eight forced-choice test questions answered in the hypothesized way was significantly higher among the 5-year-olds than the 4-year-olds, $t_{(38)} = 2.76$, $p = .009$, Cohen's $d = .87$.

Finally, to compare the age groups on each type of test question, we conducted two sets of analyses. The first set of analyses used a stringent pooling criterion in which we pooled children's responses to each type of question across the two phases (given that there were no significant effects of phase on children's responses to any of the four types of forced-choice questions). For example, responses to Question 1 ("Whom does Susie like more?") in Phase 1 and in Phase 2 were pooled, and a score of 1 was assigned for this question if both responses drew the hypothesized inference, otherwise, a score of 0 was assigned. By using this conservative approach, children are not given credit for guessing, which is more likely to produce inconsistent responses across the two phases. (Table 2 provides the number of children who responded differently in Phase 1 vs. Phase 2 in response to each of the test questions and thus received a score of 0 in the pooled data. See also Supplemental Figure S1 and Supplemental Table S1 in the

Table 2
Number of Children Who Received a Pooled Score of Zero Due to Mixed Responses Across Phase 1 (P1) and Phase 2 (P2)

	4-year-olds		5-year-olds	
Question	Answered as predicted P1, unpredicted P2	Answered unpredicted P1, as predicted P2	Answered as predicted P1, unpredicted P2	Answered unpredicted P1, as predicted P2
Question 1	4	2	0	2
Question 2	6	3	0	1
Question 3	4	1	0	1
Question 4	4	2	0	1

Note. All 5-year-olds completed both phases ($n = 20$ children per cell). Two 4-year-olds did not complete Phase 2 because of an unwillingness to participate ($n = 18$ children per cell).

online supplementary materials for the number of children who responded as predicted for each phase separately.)

These pooled data revealed that the 4-year-olds did not draw any of the four hypothesized inferences (binomial probabilities, all $ps > .503$), whereas the 5-year-olds drew all of the hypothesized inferences on all four types of forced-choice test questions (all $ps < .003$; see Figure 1). To compare across ages, we conducted a chi-square analysis using pooled responses for each question. This analysis revealed that on all forced-choice test questions, significantly more 5- than 4-year-olds drew the hypothesized inferences (all $ps < .038$; see Figure 1).

In the second set of analyses, we ran generalized linear mixed models (GLMMs; binomial error distribution) in R (Bates, Maechler, & Bolker, 2014; R Core Team, 2015). For each question (e.g., Question 1), the GLMM included children's response to that question in Phase 1 and Phase 2 as the dependent variables, age as a fixed factor, and a random intercept for participant. The statistical significance of age was tested with a likelihood ratio test comparing a full model including age to a reduced model excluding age. These analyses partially confirmed the age effects revealed in the first set of analyses: They revealed a statistically significant effect of age for Question 2 (GLMM: $\chi^2[df = 1] = 4.05$, $p = .044$) and Question 4 ($\chi^2[df = 1] = 4.04$, $p = .044$), a marginally significant effect of age for Question 1 ($\chi^2[df = 1] = 3.42$, $p = .064$), and no significant effect of age for Question 3 ($p = .29$). This second set of analyses thus also suggested that 5-year-olds were more likely to draw some of the hypothesized inferences than the 4-year-olds, though these age effects were not as consistent across the four questions as in the first (pooled) set of analyses.

Justifications. We compared children's justifications across the two age groups. Justifications were only included in analyses if children had answered the corresponding forced-choice test question in the predicted way (following Oostenbroek & Vaish, 2018; Vaish et al., 2011). This resulted in twenty 4-year-olds and nineteen 5-year-olds being included, as one 5-year-old did not answer any of the forced-choice questions in the predicted ways. In addition, one 4-year-old did respond to some forced-choice questions in the predicted way but did not provide any verbal responses

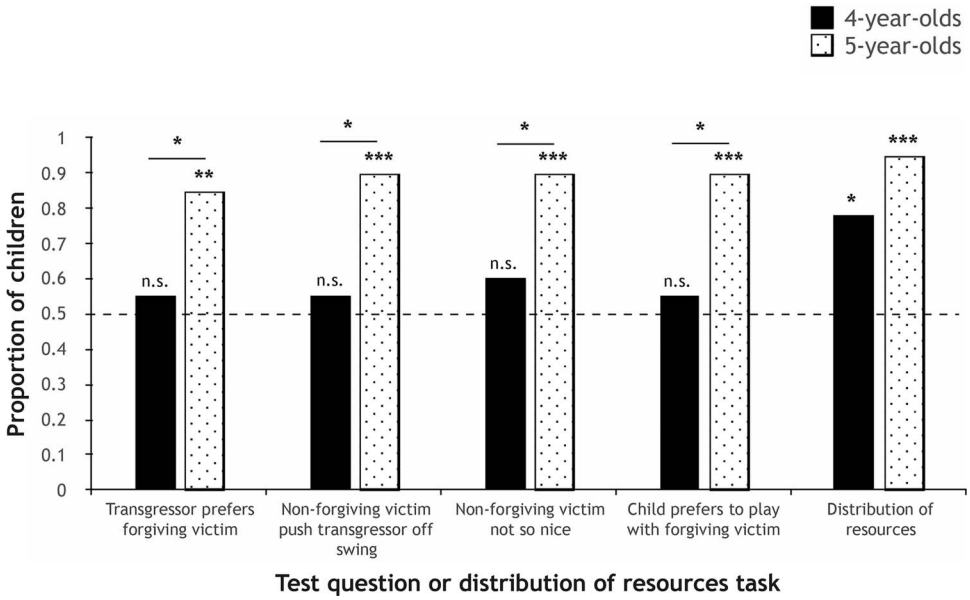

Figure 1. Proportion of children who answered each test question in the predicted way in both phases (i.e., based on pooled data) and distributed resources in the predicted way. The dashed line indicates chance level. * $p < .05$. ** $p < .005$. *** $p < .0005$.

to the respective justification questions, so this child's data were also excluded from analyses (but note that including this child in analyses and assigning their responses a score of 0 did not change the pattern of any of the results). The analyses of justifications were thus conducted with nineteen 4-year-olds and nineteen 5-year-olds.

When forgiveness (repeated) was assigned a score of 1, only 13 of the 19 four-year-olds provided a Level 1 justification. On the other hand, all of the nineteen 5-year-olds provided at least one higher Level 1 justification across all justification questions, indicating a sophisticated level of understanding and reasoning about the victims and their responses among these older children. Comparing across age groups revealed that significantly more 5-year-olds than 4-year-olds provided at least one higher-level justification (Fisher's exact test [due to small *N*s in some cells], $p = .020$). When forgiveness (repeated) was assigned a score of 0, less than half of the 4-year-olds (nine of 19) provided at least one Level 1 justification, whereas the majority of the 5-year-olds (16 of 19) still did so. Even with this more stringent coding, a chi-square analysis revealed that significantly more 5-year-olds than 4-year-olds provided at least one higher-level justification, $\chi^2(1, N = 38) = 5.73$, $p = .017$, $\varphi = .39$. (Table 3 provides the numbers obtained using both coding methods.)

Distribution of Resources

Distribution.

4-year-olds. Of the twenty 4-year-olds, two children did not complete the distribution of resources task. Of the remaining 18 children, 14 gave more flowers (two or three out of three) to the forgiving victim (binomial probability, $p = .031$).

5-year-olds. All but one 5-year-old (19 of 20) gave more flowers to the forgiving victim (binomial probability, $p < .0005$).

Age comparisons. There was no significant difference between the number of 5- and 4-year-olds who gave more flowers to the forgiving victim, Fisher's exact test (due to small *N*s in some cells), $p = .170$. There was also no significant difference in the number of flowers given to the forgiving victim by the 5-year-olds ($M = 2.00$, $SD = .32$) versus 4-year-olds ($M = 1.72$, $SD = .57$), $t_{(36)} = 1.86$, $p = .071$ (see Supplemental Table S2 in the online supplemental materials for the number of children who distributed the resources to the forgiving and nonforgiving victims).

Justifications. Levels of children's justifications were compared across the two age groups. Children's justifications were included in analyses only if children had distributed the resources as predicted (i.e., given more flowers to the forgiving victim). Furthermore, assigning forgiveness (repeated) a score of 1 versus 0 did not change the pattern of results, so we will only report analyses in which it was assigned a score of 1 (but see Table 3 for numbers obtained with both coding methods). Of the fourteen 4-year-olds who distributed the resources as predicted, only five children provided Level 1 justifications. Of the nineteen 5-year-olds who distributed the resources as predicted, 16 provided Level 1 justifications. The difference between the number of 5- versus 4-year-olds who provided Level 1 justifications on the distribution of resources task was thus significant, $\chi^2(1, N = 33) = 8.19$, $p = .004$, $\varphi = .50$.

Table 3
Children's Justifications

	4-year-olds: Forgiveness score		5-year-olds: Forgiveness score	
Variable	1	0	1	0
"Forgiveness (repeated)"coded as 1				
Test questions	13	6	19	0
Distribution of resources	5	9	16	3
"Forgiveness (repeated)" coded as 0				
Test questions	9	10	16	3
Distribution of resources	2	12	14	5

Note. The values represent the number of children who provided at least one higher-level justification (score of 1) versus none (score of 0).

Discussion

When our cooperative relationships break down, it is crucial that they are repaired. One part of this process is the transgressor's expression of remorse, but remorse alone is not sufficient. Forgiveness by the victim is additionally needed to complete the reparative loop. We reasoned that if forgiveness is critical for upholding cooperation, then those who readily forgive transgressors not only restore their relationships, but, crucially, may also convey to their transgressors and to bystanders that they are valuable cooperation partners. We examined whether communicating this vital information is indeed a deep-rooted function of forgiveness by assessing whether young children evaluate those who forgive more positively than those who do not. As predicted, 5-year-olds, and more weakly 4-year-olds, preferred and evaluated more positively a forgiving than a nonforgiving victim, though children of both ages gave more resources to the forgiving victim. Thus, by 5 years of age, children robustly value and respond positively to the vital social information conveyed by forgiveness displays, and a sensitivity to this information is already emerging by 4 years of age.

Although prior work has established that forgiveness offers benefits for both victims and offenders and that even young children forgive transgressors, no prior work had investigated whether the display of forgiveness also carries information about underlying cooperativeness. The current work demonstrates this phenomenon for the first time by showing that young children value victims who exhibit forgiveness. Forgiveness displays thus serve deep-rooted and vital social functions, and do so from early in development.

Our findings revealed a developmental shift between 4 and 5 years of age. Specifically, 5-year-olds drew all the hypothesized inferences, including evaluating the forgiving victim more positively, expecting the nonforgiving victim to be less cooperative in the future, as well as preferring and expecting the transgressor to prefer the forgiving victim. On the other hand, 4-year-olds did not draw these hypothesized inferences as consistently. What accounts for this developmental change?

One possibility is that as children's own ability to forgive remorseful transgressors solidifies and becomes more sophisticated between 4 and 5 years of age, they also come to expect and value forgiveness in others between these ages (see Oostenbroek & Vaish, 2018; Vaish et al., 2011). Relatedly, 5-year-olds may have a more sophisticated understanding of the norms of forgiveness than that of 4-year-olds. That is, older children may have a stron-

ger expectation that one ought to forgive a remorseful transgressor or a transgressor who accidentally caused harm. Under this account, between 4 and 5 years of age, children become more acutely aware of the importance of norms and thus increasingly value those who follow norms, including the norms of forgiveness. This proposal is consistent with other research showing that between these ages, children also begin to prefer and respond positively to those who enforce norms (Vaish et al., 2016), and those who follow complex cooperation norms such as norms of group loyalty (Misch et al., 2014).

Another possibility is that 5-year-olds' emotional understanding is more advanced than that of 4-year-olds (e.g., Pons, Lawson, Harris, & de Rosnay, 2003). For example, 5-year-olds might have a more sophisticated capacity to read others' emotions and understand the implications of complex emotional displays such as forgiveness. This proposal is supported by the higher-level justifications provided by the 5-year-olds in our study. As one example, a 5-year-old stated that they chose the forgiving victim because, "If I break her toy she won't be mad at me anymore," indicating a sophisticated inference based on the victim's emotional display. The majority of the 4-year-olds' justifications, in contrast, did not demonstrate such sophistication (e.g., "Because I like her doll"). The older children's more advanced understanding of others' emotions likely underlies their more sophisticated responses to the emoters. Additionally, younger preschoolers have been shown to need more behavioral examples to make trait attributions (e.g., Boseovski & Lee, 2006). This may have made it especially difficult for the 4-year-olds to draw distinct conclusions about the character or future behavior of the two victims based only on the two behavioral examples that they witnessed per victim.

Importantly, we do not see these various interpretations as mutually exclusive. On the contrary, we would expect that multiple mechanisms underlie humans' emerging capacity to forgive and value forgiveness. Specifying which mechanisms are at work and how they interact with one another are fascinating questions for future work.

We would also like to consider a few alternative interpretations of our findings. First, it may be that 5-year-olds' positive responses to the forgiving victim were based on her faster recovery from distress rather than on considerations of forgiveness as such. However, note that several children referred to forgiveness or its central function of restoring the relationship when justifying their responses to the test questions. For example, in response to the question "Whom does Susie (the transgressor) like more?," 33% of 5-year-olds who chose the forgiving victim justified their responses with statements such as, "because she forgave her," "because she's her friend," and "because they are both still friends," and 10% of 4-year-olds did so. Thus, some children (particularly in the older age group) spontaneously referred to forgiveness or its relational benefits rather than only basing their preferences and evaluations on the forgiving victim's quicker recovery from distress. This was despite the fact that the victims made no mention of forgiveness or relationship restoration. Such justifications increase our confidence that children were indeed responding to victims' forgiveness or the lack thereof.

It could also be argued that perhaps 4-year-olds had more difficulty in considering the perspectives of the transgressor and the victims when answering some of the test questions (due to a less sophisticated theory of mind). However, note that these younger children performed similarly on questions that did not require them to take others' perspectives (e.g., "Whom would you prefer to play with?") as on questions that did require them to do so (e.g., "Whom does Susie like more?"). Furthermore, prior work exploring children's responses to transgressors' apologies using very similar methodology and test questions found that 4-year-olds performed significantly above chance on questions from both a first- and third-party perspective (Vaish et al., 2011). It is thus unlikely that limitations in perspective-taking account for the developmental change seen here, though we expect that advances in theory of mind over the course of development undoubtedly bolster more sophisticated forms of and responses to forgiveness.

Finally, it is important to point out that the 4-year-olds in our study did perform significantly above chance on all test questions in Phase 1 (but not Phase 2), answered more than half of the total questions in the hypothesized way, and distributed more resources to the forgiving victim. This suggests that 4-year-olds may be on the cusp of grasping the important information that forgiveness displays carry but perhaps cannot form or articulate this understanding consistently. Fatigue or decay of attention could account for this inconsistency, though previous work using the same paradigm and two phases with 4-year-olds did not report such problems (see Vaish et al., 2011). Future work should explore whether providing more—and more explicit or strongly valenced—instances of forgiving versus nonforgiving behavior could help even these younger children to demonstrate a more robust understanding of the value of forgiveness displays.

One limitation of the present work was our use of forced-choice questions. Although such questions are extremely useful in examining children's preferences, their format forces participants to choose between two individuals when they may have wanted to choose both or neither. Note, however, we did include justification questions which allowed children to rationalize their choices. Nonetheless, it would be interesting for future research to consider using alternative paradigms, such as having children only evaluate one individual in a between-groups design, rather than two contrasting individuals.

Our results highlight a number of interesting avenues for future research. First, whereas forgiveness displays may cue that one is a valuable cooperation partner, there may be situations in which the cost of forgiveness outweighs its benefits. For instance, repeatedly displaying forgiveness, particularly toward the same transgressor, may convey that one is a "pushover," which may have negative consequences (e.g., being taken advantage of). Similarly, forgiveness may not be the optimal response when transgressors have caused egregious or intentional harm (e.g., Lamb, 2006; Struthers, Eaton, Santelli, Uchiyama, & Shirvani, 2008). Indeed, adults are less likely to forgive an intentional transgressor than an accidental one, even if the offender apologizes (Struthers et al., 2008). In our current study, as a first step in a new research area, we were interested in how children respond to forgiveness displays when forgiveness seems the most appropriate response: when the transgressions are accidental and minor, and the transgressor immediately apologizes. However, a critical question is whether and when children see forgiveness as an inappropriate or undesirable response. It is possible that 5-year-olds' expectations of forgiveness are rudimentary: They see forgiveness as appropriate for all transgressions, and only later in development do they form more

nuanced expectations about the appropriateness of forgiveness. Alternatively, perhaps 5-year-olds already have nuanced expectations such that, like adults, they see forgiveness as more appropriate in response to minor or accidental transgressions than to serious or intentional transgressions. In either case, the emergence of such nuanced expectations will rely on the emerging ability to distinguish different types of transgressions (e.g., minor vs. serious; accidental vs. deliberate). Indeed, in our study, 5-year-olds may have outperformed 4-year-olds in part because they were better able to identify the accidental and minor nature of the transgressions and thus better use their expectation that accidental and minor transgressions be forgiven. Addressing these questions was beyond the scope of the current study, which demonstrated, as a first step, that children value forgiveness for minor, accidental transgressions when the transgressor has shown remorse.

Note also that forgiveness is not the only response we have to transgressors. For instance, adults and even young children often enforce norms on or punish transgressors and value others who do so (e.g., Fehr & Gächter, 2002; Fessler & Haley, 2003; Kenward & Östh, 2015; Vaish et al., 2016). An important avenue for future research, therefore, is examining when forgiveness displays are desirable and serve the cooperative functions we have focused on here, when they are undesirable and possibly cause further damage to individuals or relationships, and when other responses such as norm enforcement or punishment are more desirable or more effective in restoring cooperation.

Relatedly, it would be fascinating to examine if victims modify their forgiveness displays depending on context. For instance, do victims elaborate their forgiveness displays in group contexts to ensure that their display is conveyed to the many potential cooperation partners? Do observers respond more positively to more elaborate displays of forgiveness, or do they respond most positively when forgiveness displays are in proportion to the transgression? Future research would benefit from examining these exciting directions in both adults and young children to deepen our understanding of the development and functions of forgiveness.

Finally, in the current study, we operationalized forgiveness as emotional forgiveness, which is a widely accepted conceptualization of forgiveness in the adult literature (McCullough & Witvliet, 2002). However, it would also be extremely interesting to investigate the forms and functions of decisional forgiveness, especially in children. Limited research exists in this area. For example, a decision-based forgiveness intervention was found to promote forgiveness and improved psychological well-being in Chinese children aged 11 to 12 years (Hui & Chau, 2009). Yet we do not know whether younger children also engage in decisional forgiveness or how children respond to others' displays of decisional forgiveness. This remains an important avenue for future research.

In conclusion, humans depend upon the cooperation of others for survival (Tomasello et al., 2012). When relationships are damaged by transgressions, it is vital that they are repaired. Forgiveness helps repair those relationships and thus helps uphold cooperation. Here we proposed another fundamental function of forgiveness, namely, that forgiveness displays convey to the transgressor and to observers that the forgiver is a reliable cooperation partner who values her relationships. In support of this proposal, we demonstrated for the first time that from early in development, we value and prefer victims who display forgiveness more than those who do not. Forgiveness displays thus serve deep-rooted and vital social cues that help sustain and promote cooperation.

References

Bates, D., Maechler, M., & Bolker, B. M. (2014). *lme4: Linear mixed-effects models using Eigen and S4* (R package version 1.1–7). Retrieved from http://CRAN.R-project.org/package=lme4%3E

Berry, J. W., & Worthington, E. L. (2001). Forgivingness, relationship quality, stress while imagining relationship events, and physical and mental health. *Journal of Counseling Psychology, 48,* 447–455. http://dx.doi.org/10.1037/0022-0167.48.4.447

Boseovski, J. J., & Lee, K. (2006). Children's use of frequency information for trait categorization and behavioral prediction. *Developmental Psychology, 42,* 500–513. http://dx.doi.org/10.1037/0012-1649.42.3.500

Dunham, Y., Baron, A. S., & Carey, S. (2011). Consequences of "minimal" group affiliations in children. *Child Development, 82,* 793–811. http://dx.doi.org/10.1111/j.1467-8624.2011.01577.x

Exline, J. J., Worthington, E. L., Jr., Hill, P., & McCullough, M. E. (2003). Forgiveness and justice: A research agenda for social and personality psychology. *Personality and Social Psychology Review, 7,* 337–348. http://dx.doi.org/10.1207/S15327957PSPR0704_06

Fehr, E., & Gächter, S. (2002). Altruistic punishment in humans. *Nature, 415,* 137–140. http://dx.doi.org/10.1038/415137a

Fehr, R., Gelfand, M. J., & Nag, M. (2010). The road to forgiveness: A meta-analytic synthesis of its situational and dispositional correlates. *Psychological Bulletin, 136,* 894–914. http://dx.doi.org/10.1037/a0019993

Fessler, D. M. T., & Haley, K. (2003). The strategy of affect: Emotions in human cooperation. In P. Hammerstein (Ed.), *Genetic and cultural evolution of cooperation* (pp. 7–36). Cambridge, MA: MIT Press.

Fincham, F. D., Hall, J., & Beach, S. R. H. (2006). Forgiveness in marriage: Current status and future directions. *Family Relations: An Interdisciplinary Journal of Applied Family Studies, 55,* 415–427. http://dx.doi.org/10.1111/j.1741-3729.2005.callf.x-i1

Hui, E. K. P., & Chau, T. S. (2009). The impact of a forgiveness intervention with Hong Kong Chinese children hurt in interpersonal relationships. *British Journal of Guidance & Counselling, 37,* 141–156. http://dx.doi.org/10.1080/03069880902728572

Karremans, J. C., Van Lange, P. A. M., Ouwerkerk, J. W., & Kluwer, E. S. (2003). When forgiving enhances psychological well-being: The role of interpersonal commitment. *Journal of Personality and Social Psychology, 84,* 1011–1026. http://dx.doi.org/10.1037/0022-3514.84.5.1011

Keltner, D. (1995). Signs of appeasement: Evidence for the distinct displays of embarrassment, amusement, and shame. *Journal of Personality and Social Psychology, 68,* 441–454. http://dx.doi.org/10.1037/0022-3514.68.3.441

Keltner, D., & Anderson, C. (2000). Saving face for Darwin: The functions and uses of embarrassment. *Current Directions in Psychological Science, 9,* 187–192. http://dx.doi.org/10.1111/1467-8721.00091

Kenward, B., & Östh, T. (2015). Five-year-olds punish antisocial adults. *Aggressive Behavior, 41,* 413–420. http://dx.doi.org/10.1002/ab.21568

Lamb, S. (2006). Forgiveness, women, and responsibility to the group. *Journal of Human Rights, 5,* 45–60. http://dx.doi.org/10.1080/14754830500485874

Leary, M. R., Landel, J. L., & Patton, K. M. (1996). The motivated expression of embarrassment following a self-presentational predicament. *Journal of Personality, 64,* 619–636. http://dx.doi.org/10.1111/j.1467-6494.1996.tb00524.x

McCullough, M. E. (2008). *Beyond revenge: The evolution of the forgiveness instinct*. San Francisco, CA: Jossey-Bass.

McCullough, M. E., Pedersen, E. J., Tabak, B. A., & Carter, E. C. (2014). Conciliatory gestures promote forgiveness and reduce anger in humans. *Proceedings of the National Academy of Sciences of the United States of America, 111,* 11211–11216. http://dx.doi.org/10.1073/pnas.1405072111

McCullough, M. E., & Witvliet, C. V. (2002). The psychology of forgiveness. In C. R. Snyder & S. J. Lopez (Eds.), *Handbook of positive psychology* (pp. 446–458). New York, NY: Oxford University Press.

Misch, A., Over, H., & Carpenter, M. (2014). Stick with your group: Young children's attitudes about group loyalty. *Journal of Experimental Child Psychology, 126,* 19–36. http://dx.doi.org/10.1016/j.jecp.2014.02.008

Newberg, A. B., d′Aquili, E. G., Newberg, S. K., & deMarici, V. (2000). The neuropsychological correlates of forgiveness. Forgiveness. In M. E. McCullough, K. I. Pargament, & C. E. Thoresen (Eds.), *Forgiveness: Theory, research, and practice* (pp. 91–110). New York, NY: Guilford Press.

Oostenbroek, J., & Vaish, A. (2018). The emergence of forgiveness in young children. *Child Development*. Advance online publication. http://dx.doi.org/10.1111/cdev.13069

Petrucci, C. J. (2002). Apology in the criminal justice setting: Evidence for including apology as an additional component in the legal system. *Behavioral Sciences & the Law, 20,* 337–362. http://dx.doi.org/10.1002/bsl.495

Pons, F., Lawson, J., Harris, P. L., & de Rosnay, M. (2003). Individual differences in children's emotion understanding: Effects of age and language. *Scandinavian Journal of Psychology, 44,* 347–353. http://dx.doi.org/10.1111/1467-9450.00354

R Core Team. (2015). *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistial Computing. Retrieved from http://www.R-project.org/

Smith, C. E., & Harris, P. L. (2012). He didn't want me to feel sad: Children's reactions to disappointment and apology. *Social Development, 21,* 215–228. http://dx.doi.org/10.1111/j.1467-9507.2011.00606.x

Struthers, C. W., Eaton, J., Santelli, A. G., Uchiyama, M., & Shirvani, N. (2008). The effects of attribution of intent and apology on forgiveness: When saying sorry may not help the story. *Journal of Experimental Social Psychology, 44,* 983–992. http://dx.doi.org/10.1016/j.jesp.2008.02.006

Tomasello, M. (2009). *Why we cooperate*. Cambridge, MA: MIT Press. http://dx.doi.org/10.7551/mitpress/8470.001.0001

Tomasello, M., Melis, A. P., Tennie, C., Wyman, E., & Herrmann, E. (2012). Two key steps in the evolution of human cooperation: The interdependence hypothesis. *Current Anthropology, 53,* 673–692. http://dx.doi.org/10.1086/668207

Tooby, J., & Cosmides, L. (1992). The psychological foundations of culture. In J. Barkow, L. Cosmides, & J. Tooby (Eds.), *The adapted mind: Evolutionary psychology and the generation of culture* (pp. 19–136). New York, NY: Oxford University Press.

Vaish, A. (2018). The prosocial functions of early social emotions: The case of guilt. *Current Opinion in Psychology, 20,* 25–29. http://dx.doi.org/10.1016/j.copsyc.2017.08.008

Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology, 45,* 534–543. http://dx.doi.org/10.1037/a0014322

Vaish, A., Carpenter, M., & Tomasello, M. (2011). Young children's responses to guilt displays. *Developmental Psychology, 47,* 1248–1262. http://dx.doi.org/10.1037/a0024462

Vaish, A., Herrmann, E., Markmann, C., & Tomasello, M. (2016). Preschoolers value those who sanction non-cooperators. *Cognition, 153,* 43–51. http://dx.doi.org/10.1016/j.cognition.2016.04.011

Wellman, H. M., Larkey, C., & Somerville, S. C. (1979). The early development of moral criteria. *Child Development, 50,* 869–873. http://dx.doi.org/10.2307/1128956

Worthington, E. L. (2010). The new science of forgiveness. In D. Keltner, J. Marsh, & J. A. Smith (Eds.), *The compassionate instinct: The science of human goodness* (pp. 62–71). New York, NY: Norton, Inc.

Worthington, E. L., & Scherer, M. (2004). Forgiveness is an emotion-focused coping strategy that can reduce health risks and promote health resilience: Theory, review, and hypotheses. *Psychology & Health, 19,* 385–405. http://dx.doi.org/10.1080/0887044042000196674

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