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Understanding of the functions of forgiveness among preschoolers

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ABSTRACT

Forgiveness plays an important role in restoring and maintaining cooperative relationships. Previous studies have demonstrated that young children could forgive transgressors both as a third party and as a victim. However, the research on young children's understanding of forgiveness is scant. This study focused on the two main functions of forgiveness—the restoration of a damaged relationship between the victim and the transgressor and the positive emotional change in the victim toward the transgressor. In this study, 48 4-year-olds (25 girls), 50 5-year-olds (21 girls), and 50 6-year-olds (21 girls) in Japan heard stories in which a victim either did or did not forgive a transgressor. They answered questions about the relationship between the victim and the transgressor and the victim's feelings toward the transgressor. Regarding the restoration of a damaged relationship, 4- to 6-year-olds understood that the restoration could occur in the presence of forgiveness. Yet, 6-year-olds showed more distinctive belief than 4- and 5-year-olds that the damaged relationship remains unrestored without forgiveness from the victim. For emotional changes, 6-year-olds understood that the forgiving victim would experience positive emotional changes, whereas the unforgiving victim would not. However, 4- and 5-year-olds expected positive emotional changes even without forgiveness, although they anticipated greater changes after forgiveness. The results show that the understanding of the important functions of forgiveness is present at 4 years of age and matures by 6 years of age. Children may develop

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a sophisticated understanding of the functions of forgiveness later than the actual forgiving behavior.

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Introduction

Humans are social beings and rely heavily on cooperative relationships to survive and achieve individual and communal goals (Tomasello et al., 2012). Hence, when these cooperative relationships are damaged by interpersonal transgressions, repairing them is necessary to continue benefiting from successful group living. A key to restoring damaged relationships is an expression of remorse and apology from the transgressor (Friedman, 2006; McCullough, 2008). However, this alone is insufficient to repair the damaged relationship; forgiveness from the victim is necessary. When the victim forgives the transgressor in response to the latter's apology, their cooperative relationship is restored, enabling them to continue benefiting from it (Denham et al., 2005; McCullough, 2008).

Although researchers have defined forgiveness in various ways, they agree that it is a prosocial change toward the transgressor (Forster et al., 2020). Specifically, McCullough et al. (2000) defined forgiveness as an "intraindividual, prosocial change toward a perceived transgressor that is situated within a specific interpersonal context" (p. 9). This definition has been used in several studies (Amir et al., 2021; Fincham et al., 2006; Forster et al., 2020; Martinez-Diaz et al., 2021; Worthington, 2019; Yucel & Vaish, 2021). Extensive research with adults to better understand forgiving behavior and its functions has been conducted. For example, forgiveness among adults is strongly driven by the presence of an apology from the transgressor, but not when it is considered insincere and lacking components that align with the transgressor's values, including the sense of norm or commitment (Fehr & Gelfand, 2010; Ohbuchi et al., 1989; Zechmeister et al., 2004). Adults are more forgiving toward transgressors who committed the transgression unintentionally and express guilt and remorse (Leunissen et al., 2013; Tabak et al., 2012). Moreover, forgiving a transgressor with whom the victim interacts frequently is more effective than punishing the transgressor and is a less costly way to maintain a cooperative relationship (Amir et al., 2021; Godfray, 1992).

Recently, forgiveness among young children has received significant attention. From a third-party perspective, children as young as 4 years exhibit forgiveness, and their evaluation of the transgressors becomes more sensitive to social variables regarding the transgressions by 6 years of age, enabling them to perform more complex forgiveness. For instance, McElroy et al. (2023) showed that, as bystanders, 6-year-olds were more forgiving of an accidental transgressor than of an intentional transgressor when both transgressors were remorseful, whereas 5-year-olds showed such differences only in a resource distribution task and not in the evaluations of the transgressor. McElroy et al. demonstrated that 6-year-olds were more likely to forgive a remorseful intentional transgressor than an unremorseful unintentional one. Similarly, Vaish et al. (2011) found that 4-year-olds evaluated a transgressor who explicitly apologized more positively than an unapologetic transgressor, and 5-year-olds could make such inferences regarding a remorseful transgressor even in the absence of a clear apology. In addition, Nobes et al. (2017) showed that 4- and 5-year-olds judged unintentional transgressors to be less punishable than intentional transgressors. Cameron et al. (2022) found that 6-year-olds evaluated a transgressor with a good moral character to be less punishable than one with a bad moral character.

Young children can forgive transgressors even when they are the direct victims. Oostenbroek and Vaish (2019b) put children in a context where their drawings were torn and examined whether the children forgave the transgressors if they apologized and displayed guilt. The results showed that 4-year-olds forgave the transgressors more if they apologized clearly, and 5-year-olds forgave remorseful transgressors more even in the absence of apologies. Moreover, Vaish and Oostenbroek (2022) showed that 5-year-olds were more forgiving of in-group members than of out-group members when both displayed remorse; however, when the in-group members were unremorseful, they

forgave remorseful out-group members rather than unremorseful in-group members. Drell and Jaswal (2016) demonstrated that 6- and 7-year-olds positively evaluated and shared more resources with a transgressor who apologized or offered restitution than one who did not apologize. Taken together, young children forgive others and, with age, learn to decide whether to forgive transgressors based on various social variables.

Most previous studies examined children's evaluation and behavior regarding forgiveness. However, it is unclear in the literature how young children understand forgiveness and its functions. Previous research indicates that forgiveness has two main functions. The first is to restore positive relationships between the transgressor and the transgressed. Second, forgiveness involves psychological changes within the victims (Tabak et al., 2012); therefore, it has an important psychological function of changing the victim's negative feelings toward the transgressor into benevolence (Denham et al., 2005; Forster et al., 2020). Research shows that adults and children in primary school and above understand these two functions. For instance, 11-year-olds mentioned both restoration of broken relationships and psychological changes when asked about the functions of forgiveness (Wainryb et al., 2020). Another study on primary school-aged children and adults indicated that they understood the restoration of relationships and emotional changes as the main functions of forgiveness (Scobie & Scobie, 2003; Zembylas & Michaelidou, 2013). There are some findings, albeit limited ones, related to young children's understanding of the relational and emotional functions of forgiveness. Oostenbroek and Vaish (2019a) investigated how 4- and 5-year-olds reacted to forgiving and unforgiving victims from a third-party perspective. In their study, 5-year-olds believed that a forgiving victim is less likely to commit a transgression against the transgressor than an unforgiving victim, suggesting that they expected the forgiving victim to have a better future relationship with the transgressor than the unforgiving victim. However, this question focuses on the victim's retaliatory behavior rather than the restoration of damaged relationships. In addition, this study used a forced-choice approach when asking children to predict a victim's future transgression toward the transgressor, asking whether the forgiving or unforgiving victim would transgress. Therefore, it cannot separately assess the changes that children expect to occur after forgiveness and non-forgiveness, and it remains unclear whether children can understand the restorative function of forgiveness. Regarding a victim's feelings following a transgression, Smith and Harris (2012) asked 4- to 7-year-olds about their feelings as a victim after a transgression. The results showed that they reported more positive feelings when they received an apology from the transgressor than when they did not. Although this study provides important insights into young children's understanding of emotions following transgression and apology, it does not address the aspect of forgiveness, which raises a question about whether they understand that forgiveness can bring positive emotional changes toward the transgressor. Therefore, it remains unclear whether preschool children who begin to show forgiving behavior understand the relational and emotional functions of forgiveness. Examining this aspect is critical as children's understanding of forgiveness and their forgiving behavior might not necessarily develop at the same time. Previous research points out the possibility that young children who show forgiving behavior do not understand the concept of forgiveness and consider it merely a verbal response against transgression and apology (Denham et al., 2005). Hence, it is unclear whether young children's forgiving behavior is based on their conceptual understanding of forgiveness or simply an association with the transgression or apology. Thus, exploring whether young children understand the functions of forgiveness is indispensable for elucidating the early development of forgiveness.

This study examined 4- to 6-year-olds' understanding of the two functions of forgiveness by using original vignettes and tasks that evaluate children's inferences about relational and emotional changes regarding forgiveness. These tasks used two vignettes in which the victim forgives or does not forgive the transgressor. Children were asked to infer (a) the relationships between the victim and the transgressor and (b) the victim's emotions after hearing each vignette. Investigating whether children change these inferences based on the presence or absence of forgiveness allowed us to distinguish children's understanding of the functions of forgiveness from superficial understanding associated with transgressions and apologies and to examine whether the children understood it is forgiveness that can bring about these relational and emotional changes. Previous studies demonstrate that children aged 5 or 6 years can forgive transgressors considering various social variables regarding the transgressors and their transgressions such as the transgressor's apology and guilt (Amir et al.,

2021; Cameron et al., 2022; Oostenbroek & Vaish, 2019b). Their forgiveness is preferentially directed toward a cooperating partner (Vaish & Oostenbroek, 2022). This indicates that children of this age are sensitive to cooperative signals given by the transgressor to restore the relationship. In contrast, forgiveness among 4-year-olds is less sophisticated and less dependent on social factors regarding transgressions (Oostenbroek & Vaish, 2019b). Therefore, this study expected that 5- and 6-year-olds would come to understand the relational and restorative functions of forgiveness, whereas the understanding among 4-year-olds would be on a less mature level. In addition, previous work shows that, compared with 4-year-olds, 5-year-olds have more advanced theory of mind skills (Sabbagh et al., 2006; Wellman et al., 2001) and a solid understanding of complex social emotions such as guilt and gratitude (Oostenbroek & Vaish, 2019a; Vaish et al., 2011; Vaish & Savell, 2022). Based on these findings, we expected that 5- and 6-year-olds would be likely to understand the emotional functions of forgiveness, whereas 4-year-olds might not have a clear comprehension yet.

Method

Participants

The participants included 48 4-year-olds ($M = 54.06$ months, $SD = 3.14$; 25 girls and 23 boys), 50 5-year-olds ($M = 64.26$ months, $SD = 2.90$; 21 girls and 29 boys), and 50 6-year-olds ($M = 73.04$ months, $SD = 3.19$; 21 girls and 29 boys) from Osaka, Japan. Their parents provided written informed consent. Given that no previous study has examined the current questions, we could not predict a particular effect size to conduct a priori power analysis. Therefore, based on a previous study following a similar procedure (Langenhoff et al., 2022), we aimed to test at least 48 participants per age group who passed the inclusion criterion. The criterion included answering all four comprehension probes correctly within two trials. All the participants met this criterion, and no participant was excluded. The experiment conformed to the Declaration of Helsinki and was approved by the ethics review board of Osaka University (approval number HB021-049-01).

Materials and procedure

This experiment was conducted in kindergartens and day-care centers in Japan. The children individually participated in two tasks on the same day: (a) Forgiveness Vignette Task and (b) Picture Vocabulary Test. A Picture Vocabulary Test, which can evaluate the development of basic word comprehension, was conducted to consider the effect of participants' linguistic abilities on the Forgiveness Vignette Task. The same experimenter (E) conducted both tasks with all the children. Another experimenter noted children's responses on a recording sheet. A video camera placed behind the participants recorded their responses. Both tasks were completed in approximately 15 to 20 min. All materials and data are available at <https://www.doi.org/10.17605/OSF.IO/6GJ8H>. The study design and analysis were not preregistered.

Forgiveness Vignette Task

In this task, the children participated in two trials. In each trial, they listened to a moral story comprising a transgression and an ending story. Both transgression and ending stories had two varieties—Stories A and B as transgression stories and Forgiving and Rejecting stories as ending stories. The two ending stories (Forgiving and Rejecting) were integrated after Stories A and B were counterbalanced across the participants. For example, some participants heard the Forgiving ending after Story A and heard the Rejecting ending after Story B, whereas others heard the opposite combination. The order of presentation of the transgression stories was counterbalanced. All the stories were presented with pictures (Fig. 1). Characters' sexes matched those of the participants listening to the story. To facilitate the reader's understanding, we use stories with boy main characters as examples to introduce the storyline.



Fig. 1. Pictures of Story A (boys).

Story A: Takashi (a boy; the main character) was making a tower with blocks with his friend, Kenta, in kindergarten (Fig. 1, Scene A1). Takashi wanted to show the tower they had made to his class teacher (Scene A2); however, Kenta intentionally broke it (Scene A3). Takashi got very sad (Scene A4) and started playing with dolls separately from Kenta (Scene A5).

Story B: Hiroki (the main character) was drawing a picture with his friend, Yuya, in kindergarten (Fig. 2, Scene B1). Hiroki drew a beautiful flower and wanted to take the picture home (Scene B2); however, Yuya intentionally tore it (Scene B3). Hiroki got very sad (Scene B4) and started doing origami separately from Yuya (Scene B5).

In the girls' stories, Hana was the main character and Yumi was her friend in Story A, and Rika was the main character and Mari was her friend in Story B.

E first read either Story A or Story B and then posed three comprehension probes. E asked the participants to identify the main character and the friend by pointing to the correct character in the picture of the transgression scene (Scene A3 or B3). If the children pointed to the wrong character, E

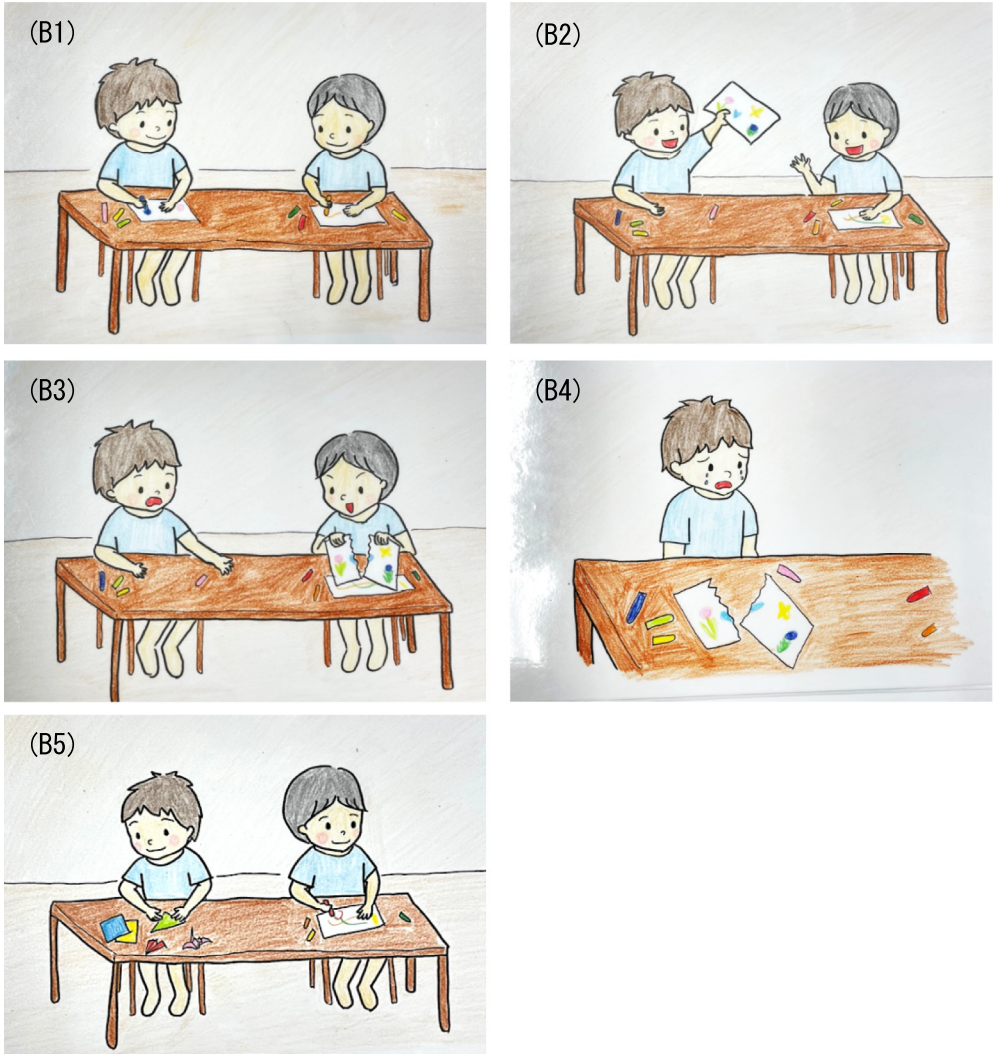


Fig. 2. Pictures of Story B (boys). The pictures of the other stories can be found in the Open Science Framework repository (<https://www.doi.org/10.17605/OSF.IO/6GJ8H>).

pointed to the correct one and introduced their names again. After checking the names of the characters with the children, E showed the same scene and asked, “What did Kenta/Yumi [Yuya/Mari in Story B] do in this scene?” This probe ensured that the children understood that the main character’s friend committed a transgression. If the children answered correctly (“He/She broke the tower” for Story A; “He/She tore Hiroki’s/Rika’s picture” for Story B), E said, “Yes, that’s right,” and proceeded to the third probe. However, if the children’s answer was less specific (e.g., “He touched the tower”), E prompted them to give more details (e.g., “Then what happened to the tower?”). If the answer was incorrect, E said, “Are you sure? Let’s read that part again and check,” and read the story from the previous scene and repeated the probe. The third probe was “How did Takashi/Hana (Hiroki/Rika in Story B) feel?” If the children answered correctly (e.g., “He/She felt sad” or “He/She felt bad”), E replied, “Yes, that’s right.” If the children answered “He/She cried,” E asked, “How did he/she feel when he/she was crying?” However, if the children answered incorrectly or did not answer, E said, “Are you sure? Let’s read

that part again and check,” and read the story from the previous scene and repeated the probe. In each probe, if the children answered incorrectly even in the second trial, their data were to be excluded. However, all the participants answered correctly within two trials.

After these probes, we evaluated how children inferred the main character's feelings toward the transgressor. E showed the transgression scene again (Scene A3 or B3) and asked, “How do you think Takashi/Hana (Hiroki/Rika in Story B) feels about Kenta/Yumi (Yuya/Mari in Story B)?” Children answered this on an evaluation sheet with seven face pictures ranging from *dislikes a lot* to *likes a lot*, including *neutral* (see Fig. S1 in the online [supplementary material](#)). Answers were recorded as the pre-apology score ranging from -3 (*dislikes a lot*) to $+3$ (*likes a lot*).

Thereafter, E introduced either the Forgiving story or the Rejecting story. In the Forgiving story, the friend comes to say sorry, and the main character forgives the friend, saying, “Yes (that's okay).” In the Rejecting story, the friend comes to say sorry, but the main character does not forgive the friend, saying, “No (that's not okay).” We used “Yes” and “No” to indicate forgiveness or non-forgiveness because these are the most common and natural forgiving or unforgiving reactions to an apology in Japanese. Both stories were presented with the same pictures, with the main character's response written on the pictures being the only difference. Subsequently, E posed the fourth comprehension probe, asking the children what the friend and the main character said. When the children answered correctly (“He/She said ‘sorry’” for the friend, and “He/She said ‘Yes’” and “He/She said ‘No’” for the main character in the Forgiving and Rejecting stories, respectively), E said, “You're right.” If the children answered incorrectly or did not answer, E read the Forgiving or Rejecting story and asked the probe again. If the children failed to answer correctly in the second trial, their data were to be excluded. However, all the participants answered correctly within two trials.

Once the children understood the Forgiving or Rejecting story, we again evaluated children's inferences about the main character's feelings toward the transgressor. E asked the second test question, “How do you think Takashi/Hana (Hiroki/Rika in Story B) feels about Kenta/Yumi (Yuya/Mari in Story B)?” The children again answered on the evaluation sheet, and their answer was recorded as a post-apology score ranging from -3 to $+3$. Finally, E showed a picture of the two characters standing next to each other and asked the third test question: “The next day, they had playtime again in kindergarten. Do you think Takashi/Hana (Hiroki/Rika in Story B) will play together with Kenta/Yumi (Yuya/Mari in Story B), or will he/she play separately?” Two pictures of the characters either playing together or playing separately were presented together, and the children answered by pointing to one of them. The position of the two pictures was counterbalanced.

After this question, E repeated the entire process with the other set of stories.

Picture Vocabulary Test

Given that the Forgiveness Vignette Task is based on linguistic instructions, participants' linguistic abilities might have influenced their understanding of the stories and responses. Therefore, we conducted the Picture Vocabulary Test–Revised (PVT-R; Nihon Bunka Kagakusha, Tokyo, Japan), which is a Japanese version of the Peabody Picture Vocabulary Test–Revised (Dunn & Dunn, 1981). The PVT-R is a short test that evaluates the development of basic word comprehension from 3 to 12.3 years of age. Children were shown four different pictures in each session and asked to choose the picture that showed or was related to the word provided by E. According to the test's rules, the number of sessions was determined corresponding to the number of correct answers given by the children. The PVT-R score was calculated based on the number of correct and incorrect answers.

Data analysis

We first assessed the extent to which the participants understood the transgression stories by calculating the percentage of children who correctly answered the four comprehension probes in the first trial in each age group. Two regression analyses were performed to assess the children's understanding of the function of forgiveness: (1) restoration of the damaged relationship between the victim and the transgressor and (2) positive emotional change in the victim toward the transgressor. The dependent variable for (1) was the children's answer about whether the main character and the transgressor would play together or separately the next day. To predict the proportion of their choice, we fitted the

data into a generalized linear mixed model using a binomial distribution with a logit link function. The dependent variable for (2) was the emotion score, which was calculated by subtracting the pre-apology score from the post-apology score. A positive emotion score indicated that the children expected the main character to have positive emotional changes toward the transgressor, and a negative emotion score indicated that the children expected the main character to have negative emotional changes. Data were fitted to a linear mixed model.

For the two models predicting (1) or (2), the fixed effects included age group (4-, 5-, or 6-year-olds), story type (Forgiving or Rejecting), and their interaction. The standardized PVT-R scores were included as a covariate in the model to control participants' linguistic abilities. Considering within-participant effects, the models included random intercepts of participants. Regarding (2), to investigate whether the children's emotion score was significantly positive in the Forgiving story, we also compared participants' emotion scores against zero. In addition, supplementary analyses were conducted using the same models as the main analyses, with children's age in months as a continuous variable, to clarify the developmental changes to be investigated.

All analyses were conducted using R Version 4.3.0 (R Core Team, 2023). For linear mixed modeling and generalized linear mixed modeling, the "lme4" package (Bates et al., 2015) was used. This study used Holm's method for post hoc analyses to examine the interaction of age group and story type and to adjust p values.

Results

Comprehension checks

In both Forgiving and Rejecting stories, most children in all three age groups correctly answered all four comprehension probes in their first trial. Approximately 70% of the children answered Probe 1 and more than 90% answered Probes 2 to 4 correctly in their first trial (see Table S1 in Supplementary Material). Therefore, it is likely that all the stories were adequately understood by children in all age groups, and it is unlikely that inadequate understanding of the stories affected the results.

Restoration of relationship

To assess whether 4- to 6-year-olds understand the restorative function of forgiveness, children were asked whether the main character would play again with the transgressor after forgiving or rejecting. There were significant main effects of the story type, $\chi^2(1) = 17.10, p < .001$, and interaction of age group and story type, $\chi^2(2) = 6.93, p = .031$; however, no significant main effects of age group, $\chi^2(2) = 2.33, p = .31$, or standardized PVT-R score, $\chi^2(1) = 0.34, p = .56$, were noted.

Given that the main effects alone cannot precisely explain the findings due to the significant interaction, planned pairwise comparisons were conducted to examine the simple main effect of story type in each age group. Significant effects of story type were found in all age groups, indicating that 4- to 6-year-olds believed that the victim is less likely to play together with the transgressor in the Rejecting story than in the Forgiving story (4-year-olds: $estimate = -2.40, SE = 0.74, p = .001$; 5-year-olds: $estimate = -2.01, SE = 0.68, p = .003$; 6-year-olds: $estimate = -4.51, SE = 1.01, p < .001$). To examine the simple main effect of age group in each condition, other planned pairwise comparisons were conducted. In the Rejecting story, significant pairwise differences were found between 4- and 6-year-olds ($estimate = 1.73, SE = 0.75, p = .041$) and between 5- and 6-year-olds ($estimate = 2.08, SE = 0.76, p = .018$); no other significant age differences were found (Fig. 3). There were no significant differences among all age groups in the Forgiving story (4- and 5-year-olds: $estimate = 0.05, SE = 0.80, p = 1.0$; 4- and 6-year-olds: $estimate = 0.05, SE = 0.80, p = 1.0$; 5- and 6-year-olds: $estimate = -0.42, SE = 0.79, p = 1.0$). Therefore, in the Rejecting story, more 6-year-olds believed that the main character would not play together with the transgressor than 4- and 5-year-olds, whereas 4- to 6-year-olds uniformly expected the main character to play in the Forgiving story. Supplementary analyses, using age as a continuous variable, demonstrated qualitatively equivalent results (see Supplementary Material and Fig. S2).

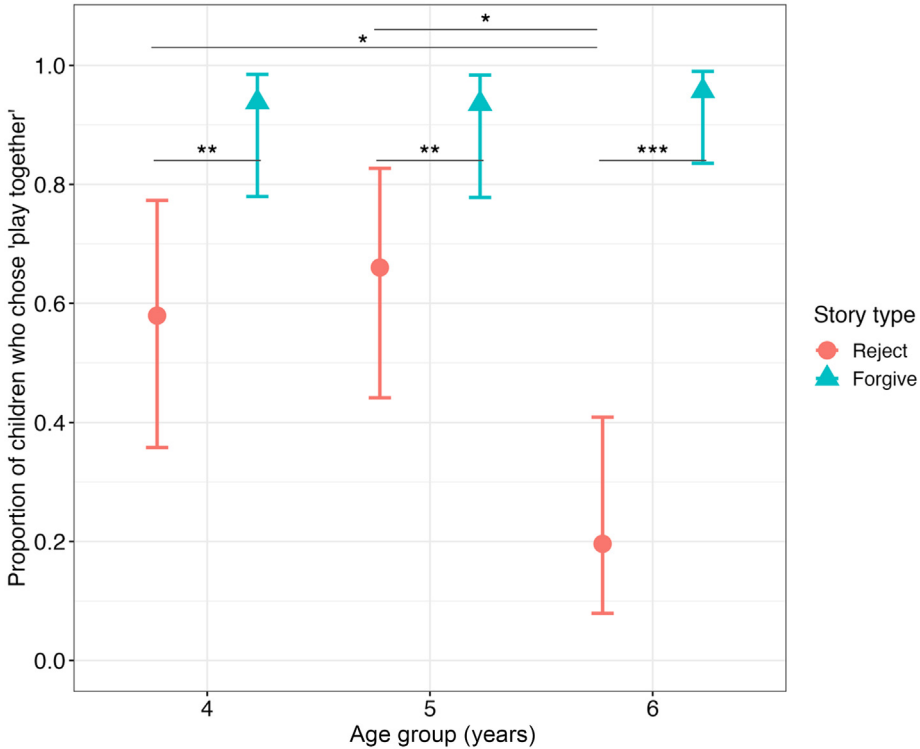


Fig. 3. Proportions of children who chose “play together” in the Forgiving and Rejecting stories. The points indicate predicted values from the model fitting. The error bars indicate 95% confidence intervals. * $p < .05$; ** $p < .01$; *** $p < .001$.

Hence, children in all age groups understood that the victim in the Forgiving story was more likely to “play together” than the victim in the Rejecting story. In addition, in the Rejecting story, there was a significant developmental difference, such that 6-year-olds more explicitly expected that the unforgiving victim would “play separately” than 4- and 5-year-olds.

Emotional changes

To assess whether 4- to 6-year-olds understand the changes in the victim’s feelings toward the transgressor from negative to positive as a function of forgiveness, participants were asked about the victim’s favorability toward the transgressor. The data on the mean and standard deviation of the children’s pre- and post-apology emotion scores are available in the [Supplementary Material \(Table S2\)](#). The emotion score, which implies the emotional changes of the victim as evaluated by the participants, was analyzed in each age group and story type. Similar to the restoration of a relationship, there were significant main effects of story type, $\chi^2(1) = 181.95, p < .001$, and interaction of age group and story type, $\chi^2(2) = 16.39, p < .001$; however, no significant main effects of age group, $\chi^2(2) = 3.45, p = .18$, or standardized PVT-R score, $\chi^2(1) = 0.74, p = .39$, were found.

Given that the main effects alone cannot adequately explain the findings due to the significant interaction, planned pairwise comparisons were conducted to examine the simple main effect of story type, which detected significant differences between the Forgiving and Rejecting stories in all the age groups (4-year-olds: *estimate* = $-1.92, SE = 0.40, p < .001$; 5-year-olds: *estimate* = $-3.06, SE = 0.39, p < 0.001$; 6-year-olds, *estimate* = $-4.18, SE = 0.39, p < .001$). Hence, the emotion score in the Forgiving story was significantly higher than that in the Rejecting story in all the age groups. Furthermore, to

examine the age differences in the children's emotion score in each story type, planned pairwise comparisons were conducted on the simple main effect of age group in each story type. In the Forgiving story, we detected significant pairwise differences between 4- and 5-year-olds (*estimate* = -1.32, *SE* = 0.49, *p* = .015) and between 4- and 6-year-olds (*estimate* = -1.62, *SE* = 0.50, *p* = .004) (Fig. 4). However, no other significant age differences were found. Therefore, 5- and 6-year-olds believed that the main character in the Forgiving story would experience greater and more positive emotional changes. Supplementary analyses regarding children's age in months as a continuous variable showed compatible results (see Supplementary Material and Fig. S3).

Further analyses were conducted to examine whether children understood that the victim's feelings toward the transgressor would be more positive after forgiveness. We assessed whether children's emotion score was significantly positive in the Forgiving story, which stands for the main character's positive emotional change after forgiveness, but was not positive in the Rejecting story. In the Forgiving story, the emotion score was significantly positive in all the age groups (4-year-olds: *estimate* = 2.61, *SE* = 0.35, *p* < .001; 5-year-olds: *estimate* = 3.92, *SE* = 0.33, *p* < .001; 6-year-olds: *estimate* = 4.23, *SE* = 0.34, *p* < .001). Interestingly, 4- and 5-year-olds' emotion score was significantly positive even in the Rejecting story (4-year-olds: *estimate* = 0.69, *SE* = 0.35, *p* = .049; 5-year-olds: *estimate* = 0.86, *SE* = 0.33, *p* = .009), whereas 6-year-olds' score was not significantly different from zero (*estimate* = 0.052, *SE* = 0.34, *p* = .878). Hence, 6-year-olds expected that the victim's feelings toward the transgressor would be positive after the apology in the Forgiving story but

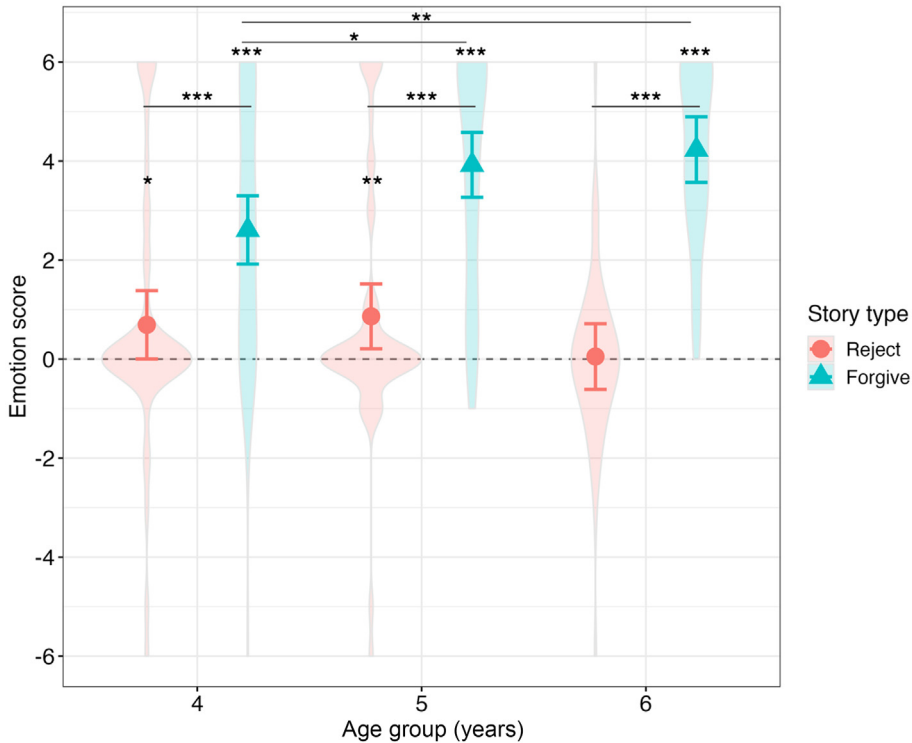


Fig. 4. Children's emotion scores in the Forgiving and Rejecting stories. A violin plot depicts the minimum (bottom of shape) and maximum (top of shape) emotion scores observed in each age group and story type. The width of the violin plot indicates the density of the value on the corresponding y-axis. The dashed line indicates zero, which represents no estimated emotional changes of the main character between pre- and post-apology. The dots indicate predicted values, and the error bars indicate confidential intervals. **p* < .05; ****p* < .01; *****p* < .001.

not in the Rejecting story, whereas 4- and 5-year-olds assumed that there would be positive emotional changes in both the Forgiving and Rejecting stories.

Discussion

This study investigated whether young children understand the two main functions of forgiveness. The results indicate that 6-year-olds understood the two significant functions of forgiveness—restoring the relationship between the victim and the transgressor when the victim forgave the transgressor, but not if the victim did not forgive. Furthermore, they understood that forgiveness would change the victim's negative feelings toward the transgressor into positive feelings, but the feelings would remain unchanged without forgiveness. On the other hand, although 4- and 5-year-olds understood the functions of forgiveness to some extent, there was a developmental difference between them and 6-year-olds in the understanding that the damaged relationship cannot be restored without forgiveness. Moreover, 4- and 5-year-olds appeared to believe that the victim would feel some positive emotion toward the transgressor even in the absence of forgiveness, although they clearly recognized that the victim would experience greater positive emotion after offering forgiveness. Previous studies state that preschoolers understand forgiveness as merely a social and verbal interaction rather than as a concept (Denham et al., 2005). Indeed, Wainryb et al. (2020) suggested that 7-year-olds understand forgiveness only as an interpersonal interaction, and it is not until mid-childhood that they focus on changes in the relationship and the victim's feelings owing to forgiveness. However, in this study 4- and 6-year-olds' inferences differed depending on the presence or absence of forgiveness. In addition, 6-year-olds understood that without forgiveness the damaged relationship remains unrepaired and emotional changes would not occur, suggesting that their inference was based on the victim's forgiveness rather than a response to apology or transgression.

This discrepancy may be explained by the fact that this study used a task with lower demands for young children. In Wainryb et al.'s (2020) study, the experimenter asked the children, "What does forgiveness mean to you?", which enabled free expression. However, it requires linguistic ability to think and explain. In contrast, instead of direct verbal questions, we asked the children to choose what would happen next and to rate the victim's feelings between pre- and post-apology. This methodological difference may explain why the participants showed an understanding of the functions of forgiveness at a younger age. Another possible explanation is that the simple concrete stories helped children to answer the questions based on empirical understanding. Previous studies posed broad and abstract questions such as "What comes to your mind when you hear the word 'forgiveness'?" and "When do you forgive someone?" (e.g., Zembylas & Michaelidou, 2013). In contrast, this study involved transgressions such as breaking a block tower (Vaish, Carpenter, et al., 2016) and tearing a drawing (Oostenbroek & Vaish, 2019b), which children might have experienced in their daily lives. This may have enabled them to think and answer what would happen after experiencing a transgression and forgiving others.

Importantly, we found developmental differences in the understanding of the functions of forgiveness. Although some understanding of the functions of forgiveness was observed in 4-year-olds, there was a developmental change between 6-year-olds and younger children. Regarding relational changes, children in all the age groups understood that the relationship between the victim and the transgressor is more likely to be restored when the victim shows forgiveness. However, 6-year-olds more distinctively expected that the damaged relationship would not be repaired without the victim's forgiveness than did younger children, suggesting that they have a more profound understanding that forgiveness is essential for the restoration of damaged relationships. Similarly, for emotional changes, 6-year-olds understood that the victim would feel more positively toward the transgressor after forgiveness; however, no such change would be induced without forgiveness. On the contrary, 4- and 5-year-olds expected some positive emotional change to occur even when the victim did not forgive the transgressor while recognizing that forgiveness would lead to a more significant positive emotional change. These results suggest that although early understanding of the functions of forgiving can already be witnessed at 4 years of age, this understanding matures at 6 years of age.

What can account for this deficient understanding seen among 4- and 5-year-olds? We consider some plausible explanations. First, the presence of apology works as a stronger cue for the restoration of relationships and the victim's emotional changes for younger children. Previous studies demonstrated that a clear apology, which is often represented by "I'm sorry," is important for younger children when making social decisions and evaluations. Oostenbroek and Vaish (2019b) showed that 4-year-olds forgave the apologetic transgressor only when there was an explicit apology, whereas 5-year-olds could forgive the remorseful transgressor even without apologetic words. Vaish et al. (2011) indicated that although 4-year-olds understand the appeasement function of apology, their understanding is linked to explicit apologetic words regardless of the remorseful emotion behind apology. In addition, previous research demonstrates that 4-year-olds favored the apologetic transgressor without considering whether the transgression was intentional or accidental, whereas 5-year-olds considered the transgressor's intent (Waddington et al., 2023). In this study's vignette task, the transgressor in both the Forgiving and Rejecting stories displayed a clear apology by saying "I'm sorry." Hence, 4- and 5-year-olds may have been strongly influenced by apologies rather than the absence of forgiveness and showed an understanding based on mere associative learning that explicit apology would bring positive relational and emotional changes to the victim. In contrast, 6-year-olds presented a distinct understanding of forgiving and not forgiving, which indicates their profound understanding of the functions rather than a simple association regarding transgressions and forgiveness.

Second, children have less experience of unforgiveness. In their interactions with friends or siblings, preschoolers are often encouraged by their caregivers and teachers to apologize and forgive (e.g., Gunnestad et al., 2015). Consequently, children encounter various scenes where they forgive or are forgiven voluntarily or promptly from an early age through which they come to grasp relational and emotional changes triggered by forgiveness. However, they are rarely told to reject others' apologies and not forgive. Accordingly, unforgiving interactions are likely to be learned gradually by undergoing certain conflicts and complicated interactions in interpersonal relationships. Relatedly, previous studies indicated that whereas children exhibit forgiving behavior at 4 years of age, selective forgiveness, which requires children to selectively decide who to forgive and who not to forgive, develops at 5 or 6 years of age (Amir et al., 2021; Cameron et al., 2022; Vaish & Oostenbroek, 2022). Hence, it is probable that an understanding of unforgiveness is acquired empirically later than that of forgiveness through various social interactions, enabling 6-year-olds to have a refined understanding of the functions of forgiveness.

Similarly, forgiveness may be considered a part of social norms by younger children. Preschoolers are known to be sensitive to social norms and prefer those who follow norms and enforce others to follow norms (Köymen et al., 2014; Schmidt et al., 2012; Vaish, Herrmann, et al., 2016). Given that preschoolers are often taught to forgive others and are scolded if they do not show forgiveness (Gunnestad et al., 2015; Haslip et al., 2019; Smith et al., 2010), they may perceive positive changes toward a transgressor as normative, common, and preferable and therefore predicted these changes to occur even in the absence of forgiveness. This is consistent with a previous study showing that young children evaluate the victim who forgave the transgressor as more likable and cooperative than the one who did not forgive (Oostenbroek & Vaish, 2019a). Their normative perception of forgiveness may have led them to expect the victim to follow the norm even if the victim once rejected the apology.

Younger children have less advanced skills in the theory of mind and understanding of emotions (Sabbagh et al., 2006; Wellman et al., 2001). Given that understanding relational and emotional changes requires an estimation of others' psychological and emotional states, 4- and 5-year-olds may have difficulty in understanding other people's complex social relationships and social emotions (Vaish & Savell, 2022) related to the presence and absence of forgiveness. Meanwhile, 6-year-olds, who have better theory of mind and emotion understanding skills, could precisely infer the relational and emotional changes in both the Forgiving and Rejecting stories, implying that they have a sophisticated understanding of the two main functions of forgiveness.

Overall, this study shows, for the first time, that children develop some understanding of the two important functions of forgiveness during the preschool years and acquire a sophisticated understanding at 6 years of age. In our initial hypothesis, the clear understanding of the functions of forgiveness

was expected to be seen from 5 years of age because forgiveness among 4-year-olds is known to be less sophisticated and less dependent on social factors regarding transgressions (Oostenbroek & Vaish, 2019b) and they do not consistently distinguish between forgiving and unforgiving victims (Oostenbroek & Vaish, 2019a). Congruent with the findings of prior work, our results indicate that a certain degree of understanding of the functions of forgiveness is already acquired at 4 years of age, and this becomes more mature by 6 years of age. By using our original vignette task, we revealed the emerging understanding of the functions of forgiveness and its developmental changes during the preschool years. Specifically, whereas prior studies used forced-choice questions between the transgressor and the victim, this study asked children to independently answer questions for each story. Despite the apparent lower task demands of the forced-choice paradigm, prior work showed that 4-year-olds did not clearly distinguish between forgiveness and unforgiveness (Oostenbroek & Vaish, 2019a). However, we found, based on individual evaluations, that even 4-year-olds showed some degree of understanding of the functions of forgiveness. This raises the possibility that children in previous studies (Oostenbroek & Vaish, 2019a) may have been confused by unforgiveness, leading to their failure to demonstrate emerging understanding of forgiveness. By allowing children to evaluate the changes brought about by forgiveness and unforgiveness, our study could reveal the early understanding of forgiveness and its developmental changes, highlighting that children's understanding becomes more sophisticated from 4 to 6 years of age. In addition, the findings from this study on the increased understanding of forgiveness, combined with insights from prior research on the development of forgiving behaviors, may suggest a perspective on the development of forgiveness in early childhood. Whereas several previous research indicates that children begin to show matured forgiving behavior, considering various social information, by 5 years of age (Amir et al., 2021; McElroy et al., 2023; Oostenbroek & Vaish, 2019b), the sophisticated understanding of the main functions of forgiveness might be acquired later than their forgiving behavior. Specifically, young children first experience many situations where they forgive and are forgiven either voluntarily or with prompts. However, as they engage in more complex social interactions in daily life, they encounter scenes where they cannot forgive the transgressors or are not forgiven by others. Through these experiences, they learn what can occur after a non-forgiving behavior, which improves their understanding of the functions of forgiveness. Therefore, their understanding of the functions may mature alongside the development of forgiving behavior.

Despite this study's contributions to the literature on the development of forgiveness, several questions remain. First, to assess the understanding of the functions of forgiveness among preschoolers, this study used the simplified situation of transgressions. It is important to note that although common transgressions that occur among children were used, they might not be enough for capturing broad situations where forgiveness arises. Children's inferences regarding the functions of forgiveness may vary in different situations and transgressions. However, to test the understanding of the functions among younger children compared with those investigated in previous studies (Scobie & Scobie, 2003; Wainryb et al., 2020; Zembylas & Michaelidou, 2013), we needed to adopt a simple transgression and forgiveness scenario and lower the task demand to a level that preschoolers could comprehend and answer. Now that it has been demonstrated that 6-year-olds can show a robust understanding of the two main functions of forgiveness; however, researchers should test whether they can understand these functions in different types of transgressional scenarios. Second, the effect of the understanding of these functions on children's behavior is unclear. A study on 5- to 9-year-olds showed that children's understanding of the emotional consequences of prosocial and antisocial behavior was positively related to their prosocial behavior (Christner et al., 2020). Hence, children with an understanding of the functions of forgiveness may be more likely to forgive others. Further research is needed to clarify how the development of the understanding of the functions of forgiveness affects children's actual forgiving behavior. Finally, the effect of understanding the two main functions of forgiveness on children's social relationships and skills needs to be examined. A study on young adolescents showed that having a better understanding of forgiveness is related to better peer status and relationships (Coleman & Byrd, 2003). However, it remains unclear whether there are similar relationships between preschoolers' understanding of the functions of forgiveness and their peer status.

Conclusion

By using a less verbally demanding method, this study showed that 6-year-olds clearly understood how forgiveness changes the relationship between a transgressor and a victim and the victim's emotional state. Although 4- and 5-year-olds showed an early understanding of the functions, it was less mature. Therefore, the understanding of the two main functions of forgiveness develops during the preschool years, and by 6 years of age children become proficient in understanding these functions. Understanding the functions of forgiveness may contribute to regulating social relationships among young children.

Data availability

All materials and data are available at the Open Science Framework (<https://www.doi.org/10.17605/OSF.IO/6GJ8H>). Data were analyzed using R Version 4.3.0. This study's design and its analysis were not preregistered.

CRediT authorship contribution statement

Rizu Toda: Conceptualization, Methodology, Formal analysis, Investigation, Data Curation, Writing – original draft & editing, Visualization. **Nazu Toda:** Methodology, Investigation, Writing – review & editing. **Hiromichi Hagihara:** Conceptualization, Methodology, Formal analysis, Data Curation, Writing – review & editing. **Yasuhiro Kanakogi:** Conceptualization, Methodology, Resources, Writing – review & editing, Supervision, Funding acquisition.

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Appendix A. Supplementary material

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