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Expectations about forgiven versus rejected transgressors among preschoolers

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A B S T R A C T

Forgiveness is indispensable for restoring damaged interpersonal relationships. Research suggests that young children develop an understanding of the emotional and behavioral effects of forgiveness on victims during their preschool years. However, it remains unclear how children expect forgiven versus rejected transgressors to feel and behave. This study evaluated preschoolers' expectations about four aspects of forgiven and rejected transgressors, namely feelings of guilt and gratitude, repetition of transgression, and affiliative behavior. Four- to six-year-olds ($n = 135$, 62 boys) and adults ($n = 45$, 26 men, $M = 25.8$ years) in Japan answered questions related to stories about forgiven or rejected transgressors. While adults inferred guilt in both scenarios, children associated more guilty feelings with forgiveness than with rejection. All age groups expected increased gratitude in forgiven transgressors compared to rejected ones, with six-year-olds anticipating higher levels of gratitude than others. Adults expected forgiven (vs. rejected) transgressors to be less likely to repeat a transgression, whereas children did not differentiate between the two. Five- and six-year-olds and adults expected more affiliative behavior from forgiven transgressors than from rejected ones, while four-year-olds did not. These findings suggest that adult-like expectations about forgiven transgressors' gratitude and affiliative behavior partly emerge at age four and develop throughout preschool years. However, expectations about forgiven a transgressor's guilty feelings and future transgressions may develop later. Together, these findings clarify how early expectations about forgiveness begin to take shape and lay the groundwork for understanding the developmental foundation of forgiveness.

1. Introduction

Building cooperative relationships with others is indispensable to our social life (Tomasello et al., 2012). However, unavoidable interpersonal conflicts may damage these cooperative interactions. An essential aspect of restoring these damaged relationships involves the transgressor expressing feelings of guilt, remorse, and apology (Darby & Schlenker, 1982; Friedman, 2006; Kochanska et al., 2002). However, these constitute only the transgressor's side of the reparative process, and forgiveness from the victim is also essential. Although there are various definitions of forgiveness, and the debate about the definition has not been resolved, forgiveness is generally conceptualized as a prosocial response toward transgressors (Forster et al., 2020). For example, McCullough et al. (2000) define forgiveness as an "intraindividual, prosocial change toward a perceived transgressor" (p. 9). As many researchers have noted, forgiveness encompasses various forms, processes, and levels (e.g., Davis et al., 2015; Lawler-Row et al., 2007; Recoder et al., 2021;

Worthington, 2005). However, one of the most important aspects of forgiveness is that it promotes reconciliation and enables the reestablishment of the reciprocal relationship. A growing body of research on adults indicates that forgiveness can lead to positive emotional, behavioral, and cognitive changes, including increased benevolence, empathy, and compensation; these changes can occur in both victims and transgressors (e.g., Fourie et al., 2020; Hodgins et al., 1996; McCullough et al., 1997; Ricciardi et al., 2013; Worthington, 2013). Thus, both granting and receiving forgiveness play important roles in restoring cooperative relationships.

While forgiveness in adults has been extensively researched, developmental studies with children have more recent origins. Research shows that from around age 4, children demonstrate forgiveness in third-party perspectives, with their judgments becoming increasingly nuanced with age. Four-year-olds judge apologetic transgressors more positively, while 5-year-olds can infer remorse even without verbal apologies and show more forgiveness toward remorseful transgressors (Vaish et al., 2011). By age 5, children understand that simply apologizing is not necessarily appropriate, and they evaluate and behave more positively toward transgressors who offer different apologies for repeat offenses compared to those who repeat the same apology (Waddington et al., 2022), as well as toward those who apologize for unintentional rather than intentional transgressions and those who provide valid rather than invalid reasons for their apologies (Waddington et al., 2023). Additionally, children as young as age 4 can distinguish between accidental and intentional transgressions (Nobes et al., 2017), and by age 6, they can integrate both intentionality and remorse in their evaluations, demonstrating greater forgiveness toward unintentional and remorseful transgressors (McElroy et al., 2023). Around ages 5–6, children become capable of considering not only whether the transgression was intentional but also the transgressor's mental state, evaluating transgressors who intended to cause harm more negatively than those who caused harm intentionally based on false beliefs (Proft & Rakoczy, 2019).

Studies examining children as victims show that 4-year-olds forgive more readily when transgressors apologize, while 5-year-olds forgive remorseful transgressors even without explicit apologies (Oostenbroek & Vaish, 2019). Six- to 7-year-olds show increased forgiveness toward transgressors who offer restitution or apologize (Drell & Jaswal, 2016), and as children mature, they increasingly differentiate between accidental and intentional transgressions in their forgiveness responses (Amir et al., 2021).

Although knowledge about preschoolers' development of evaluations regarding forgiveness and forgiving behavior has accumulated, it remains unclear how young children perceive forgiveness and the emotional and behavioral changes that accompany it. One notable study by Toda et al. (2024) investigated children's understanding of forgiveness's two main functions: restoring damaged relationships (Forster et al., 2020; McCullough et al., 2000) and transforming victims' negative feelings toward transgressors into benevolence (Fincham et al., 2006; McCullough et al., 2000). Their findings revealed that only 6-year-olds demonstrated an understanding of these functions, while 4- and 5-year-olds showed incomplete comprehension. Specifically, 6-year-olds expected victims to restore relationships with transgressors and feel more positively toward them after forgiving and understood that these positive changes would not occur without forgiveness. In contrast, younger children understood that the effects on victims differed between forgiving and not forgiving but did not understand that such positive relational and emotional changes depended on forgiveness. Taken together, children begin to develop an understanding of forgiveness's effects on victims during their preschool years, with more proficient comprehension emerging by age 6.

Nevertheless, Toda et al.'s (2024) research only illuminates how children understand forgiveness's effects on victims, leaving open the question of how children at this age conceive of what happens to forgiven versus rejected transgressors. Comprehensively examining how young children view various aspects of forgiveness is crucial for revealing the development of forgiveness as a social competence essential for maintaining cooperative relationships.

To complement existing knowledge, this study examined how children expect forgiven versus rejected transgressors to feel and behave. While forgiveness influences various dimensions, this study aimed to explore aspects related to one of the most crucial functions of forgiveness: the restoration and maintenance of cooperative relationships. Accordingly, the study focused on four aspects of transgressors' emotions and behaviors relevant to this function. The first key aspect is transgressors' guilty feelings—the painful emotion of regretting transgressive actions (Tangney et al., 2014), which helps transgressors recognize damage caused and assume responsibility (Eisenberg, 2000; Hall & Fincham, 2005), thereby promoting relationship restoration (De Hooge et al., 2007; Ketelaar & Tung Au, 2003). Research indicates that forgiveness increases transgressors' feelings of guilt. In imaginary scenarios, adult participants reported feeling more guilty when forgiven than when unforgiven (Wallace et al., 2008). Similarly, when recalling past transgressions, adults experienced more guilt when victims had forgiven them (Strelan et al., 2017). Therefore, forgiven transgressors are expected to have stronger guilty feelings.

Another emotional aspect related to forgiveness is the transgressor's feelings of gratitude—a positive emotion arising when someone recognizes they have benefited from another person's deliberate, kind actions (McCullough et al., 2001). Since forgiveness is a benevolent or generous response from the victim toward the transgressor, forgiven transgressors can reasonably be expected to feel gratitude toward victims. Research with adults has confirmed this, showing that receiving forgiveness enhances transgressors' gratitude toward victims in both laboratory and real-life settings (Mooney et al., 2016; Witvliet et al., 2002). Overall, existing evidence indicates that forgiven transgressors experience feelings of gratitude.

In addition to emotional changes, forgiven transgressors are expected to exhibit behavioral changes. Since forgiveness represents a victim's effort to maintain a cooperative relationship, the most critical behavioral indicator to consider is whether forgiven transgressors refrain from repeating transgressions. Research consistently shows that forgiveness can deter future transgressions. Across various contexts—from laboratory games to real-life scenarios—adult transgressors who received forgiveness were less likely to offend the victim again (Wallace et al., 2008). Adults also demonstrate higher commitment to behavioral change toward forgiving victims (Gassin, 1996). In marital relationships specifically, forgiveness reduces the likelihood of future transgressions (Fincham & Beach, 2002; Russell et al., 2018). These findings indicate that forgiven transgressors are discouraged from repeating their transgressions, thereby promoting cooperative relationships.

Furthermore, forgiven transgressors may also engage in affiliative behaviors toward the victim, such as sharing or helping, which contribute to restoring cooperative relationships. Research across multiple studies demonstrates this: transgressors helped and complied more with victims who granted forgiveness in a simple game paradigm (Kelln & Ellard, 1999); forgiveness encouraged transgressors' pro-relational intentions and behavior (Mooney et al., 2016); and victims' forgiveness elicited affiliative conduct and repentance from transgressors (Struthers et al., 2008). Thus, forgiven transgressors are expected to engage in affiliative behaviors toward the victim, contributing to the maintenance and restoration of cooperative relationships.

Taken together, forgiven transgressors are expected to experience heightened feelings of guilt and gratitude, to refrain from repeating their transgressions, and to engage in affiliative behaviors toward victims. To date, McLaughlin et al. (2024) provides the only empirical investigation of what children expect of forgiven transgressors. This research examined how 5- to 9-year-olds, 11- to 14-year-olds, and adults understand forgiveness consequences, including those for transgressors. Their findings revealed that all age groups associated forgiveness with more positive and fewer negative outcomes. Notably, children's understanding of forgiveness consequences more closely resembled adults' understanding compared to their comprehension of punishment or inaction consequences, suggesting that basic understanding of forgiveness may develop early and remain relatively stable. However, this study combined 5- to 9-year-olds into a single group, obscuring the developmental trajectory that occurs during early childhood. Additionally, it focused on only two aspects of forgiven transgressors: their likelihood of repeating transgressions and their positive affect. Consequently, it remains unclear what young children expect of forgiven transgressors regarding other important aspects, such as heightened feelings of guilt and gratitude and increased affiliative behavior toward the victim. There remains a lack of comprehensive research examining what young children expect of forgiven versus rejected transgressors.

Building on these insights, we investigated how 4- to 6-year-old children inferred the emotions and behaviors of forgiven and rejected transgressors, as this age range marks the developmental period when children acquire understanding of forgiveness effects on victims (Toda et al., 2024). We presented children with scenarios featuring either forgiven or rejected transgressors to distinguish inferences based on forgiveness from those based merely on transgression. Children were asked to evaluate the transgressor's feelings of guilt and gratitude, likelihood of repeating a transgression, and affiliative behavior toward the victim.

This study used friendship scenarios because friendship is the most familiar and comprehensible relationship context for preschoolers. Young children typically encounter forgiveness within existing interpersonal relationships rather than between strangers. Moreover, previous studies of children's understanding of the functions and outcomes of forgiveness have also employed friendship or peer-related contexts (e.g., McLaughlin et al., 2024; Toda et al., 2024). Accordingly, we adopted a relationship of friendship to provide a socially meaningful and age-appropriate context. We also included adult participants as, to our knowledge, adults' expectations regarding the four aspects of forgiven transgressors have not been comprehensively examined. The adult data provided a developmental endpoint for our theoretical framework, as well as helping to validate that our experimental paradigm appropriately captured the intended forgiveness constructs. Our primary research aim was to examine whether developmental changes occur in children's expectations regarding the four key aspects of forgiven and rejected transgressors.

2. Method

2.1. Transparency and openness

All materials and data for this study can be found at the OSF repository:https://doi.org/10.17605/OSF.IO/92YGV. Data were analyzed using R version 4.3.0. This study's design and its analysis were not pre-registered. Informed consent was obtained from all the adult participants and parents of all the child participants. This study conformed to the ethical principles outlined in the Declaration of Helsinki, and was approved by the Ethics Review Board of XXX University.

2.2. Participants

Preschoolers aged 4–6 years and adults in Japan participated in this study. A power analysis based on a prior study following a similar procedure (Toda et al., 2024) revealed the need for 45 children per age group to obtain 80 % power to detect an interaction effect between age group and story. Thus, the sample included 45 four-year-olds (18 boys; age $M = 54.0$ months, $SD = 3.19$), 45 five-year-olds (22 boys; age $M = 64.0$ months, $SD = 2.32$), and 45 six-year-olds (22 boys; age $M = 75.2$ months, $SD = 2.17$). The experiment was conducted in kindergartens, nursery schools, and childcare centers. Parents provided written informed consent prior to the experiment. Two children (one 4-year-old and one 6-year-old) were tested but excluded from the analysis because of their unwillingness to participate.

Additionally, adult participants were included to investigate how they respond to our original vignette task. We recruited 45 adult participants ($M = 25.8$ years, $SD = 6.37$ years, 26 men) through social media platforms to match 45 child participants per age group. Prior to the experiment, adult participants read a description of the objectives and an overview of the study and provided their consent online.

2.3. Materials and procedure

The procedures and materials were adapted from Toda et al. (2024). The children participated in two tasks: a forgiveness vignette task and a picture vocabulary test (PVT-R; Nihon Bunka Kagakusha Co., Ltd.). The PVT-R was conducted to measure children's basic language abilities and consider their effect on their performance in the forgiveness vignette task. The same female experimenter (E)

tested all children. A video camera was placed behind the children to record their responses, only when their parents agreed to their children being recorded. The two tasks took approximately 15 min in total. Adults participated in the forgiveness vignette task online. They did not participate in the PVT-R as we assumed that they had sufficient linguistic abilities to understand and complete the task.

2.3.1. Forgiveness vignette task

This task consisted of two sections. In each section, the child participants were presented with a different set of one transgression story and one ending story and answered four comprehension probes and six test questions. Thus, there were two transgression stories (Tower and Picture stories) and two ending stories (Forgiving and Rejecting stories). The order of reading of the two transgression and two ending stories in the first section was counterbalanced across children. For each story, we created two versions, with female and male characters, respectively, to match the sex of the characters to that of the participants. For simplicity, stories with boy characters are used here to introduce the materials and procedures. The scripts and pictures of other stories are available in the OSF repository.

E sat in front of the children and told them that she would read new picture stories and ask questions and therefore, they should listen carefully to the stories. E then read a transgression story assigned to the child. The transgression stories featured a character who transgressed against his friend as follows:

Tower: Takashi was building a tower of blocks with his friend, Kenta, in kindergarten (Fig. 1, Scene 1). Takashi wanted to show it to his class teacher (Scene 2), but Kenta intentionally broke it (Scene 3). Takashi became very sad about it (Scene 4).

Picture: Hiroki was drawing a picture with his friend, Yuya, in kindergarten (Scene 1). Hiroki drew a beautiful flower and wanted to take the picture home (Scene 2), but Yuya intentionally tore it (Scene 3). Hiroki became very sad about it (Scene 4).

After reading the transgression story, E presented the picture of the transgression scene (Scene 3) and asked the first comprehension probe: "Which boy was Takashi/Hiroki? Which one was Kenta/Yuya?" If the child failed to identify each character, E again introduced the correct names for the two characters and then repeated the probe. All children successfully identified the characters at the first or second attempt; accordingly, none were excluded from the analysis. After the child correctly identified both characters' names, E proceeded to the second probe: "What did Kenta/Yuya do in this scene (Scene 3)?" This probe was used to ensure the child understood that the character had committed a transgression. If the child answered correctly ("He broke the tower" for the Tower story; "He tore Hiroki's picture" for the Picture story), E said, "That's right," and moved on to the third probe. However, if the answer lacked some part of the information about the story (e.g., "He tore a sheet of paper" in the Picture story), E asked additional questions (e.g., "Whose drawing did he tear?") to ensure that the participant fully understood the situation. If the child answered incorrectly, E said, "Are you sure? Let us read that part again and check," read the story from Scene 2, and repeated the probe. Then, E showed the picture of the scene where the victim was crying (Scene 4) and posed the third probe: "How did Takashi/ Hiroki feel?" If the child mentioned feeling sad or bad, E replied, "That's right." If the child answered incorrectly or did not respond, E said, "Let's read that part again and check," read the story from Scene 3, and asked the probe again. For each probe, children who failed to answer correctly within two attempts
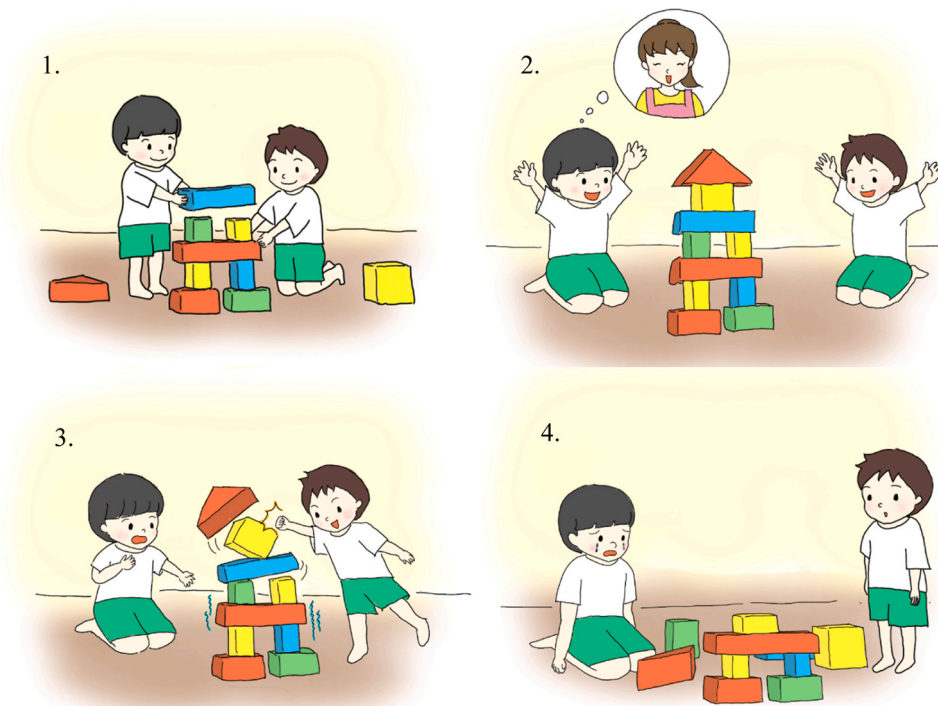

Fig. 1. Pictures of the Tower Story (Boys). Note. Takashi, the victim, is the boy on the left, Kenta, the transgressor, is on the right.

would have been excluded from the analysis; however, all participants correctly answered at their first or second attempt. Once they completed the three comprehension probes, the picture of Scene 4 was shown again and two test questions were asked about the transgressor's emotions:

1a. Guilt–pre: "When Kenta/Yuya [committed the transgression], how much do you think he felt 'sorry' to Takashi/Hiroki? Not at all? Very much? Or somewhere in the middle?" (by pointing to each picture on the evaluation sheet as described below).

2a. Gratitude–pre: "When Kenta/Yuya [committed the transgression], how much do you think he felt 'thank you' to Takashi/Hiroki? Not at all? Very much? Or somewhere in the middle?" (pointing to each picture on the evaluation sheet).

We used the terms "sorry " and "thank you" rather than more direct expressions like "guilty" or "grateful" that are complex and unfamiliar to Japanese young children. The terms we chose are more familiar to preschoolers and have been used in other studies with young children to represent the emotions of guilt and gratitude (e.g., Hasegawa, 2019; Iwata, 2015; Nakamichi, 2021; Vaish et al., 2011). Subsequently, E presented the evaluation sheets, each of which had seven face pictures ranging from "not at all" to "very much" (Supplemental Materials Figure S1), and the child answered by pointing to one of the faces. The answers were recorded as guilt–pre-score and gratitude–pre-score ranging from 0 (*not at all*) to 6 (*very much*). E responded to the child's answer by simply saying "OK," and did not give any feedback on their answer. The order of questions 1a and 2a was counterbalanced across participants.

Thereafter, E told the child to listen carefully to what would happen next, and read one of the ending stories, in which the victim either forgave or rejected the transgressor, as follows:

Forgiving: "After playtime, Takashi/Hiroki came to Kenta/Yuya and said, 'You broke my tower/tore my picture, but I will forgive you.'"

Rejecting: "After playtime, Takashi/Hiroki came to Kenta/Yuya and said, 'You broke my tower/tore my picture, and I won't forgive you.'"

Both stories were presented with the same pictures, except for the words in the bubbles (Figure S2). Since forgiveness lacks standardized behavioral or verbal patterns that children readily recognize, we used the word "forgive" to convey forgiveness in our narratives. The word "forgive" has been documented in young children's speech and in caregivers' communications with children in Japan and other countries (Gunnestad et al., 2015; Ulus & Sezgin, 2021; Wadano, 1973). Indeed, in Japanese kindergartens, the word "forgive" is commonly used in everyday interactions through phrases such as "Will you forgive me?"; "Please forgive me"; and "I will forgive you." Therefore, using the direct expression "forgive" was considered appropriate for preschoolers.

In both scenarios, we did not include scenes in which the transgressor apologized. This exclusion was intentional as we aimed to examine children's inferences based solely on whether the victim showed forgiveness or rejection, independent of whether the transgressor apologized.

After reading the forgiveness or rejection scenario, E asked the fourth comprehension probe about what the victim had said. If the child correctly mentioned forgiveness or rejection, E said, "That's right." Otherwise, E responded, "Are you sure? Let us check if it is true," and repeated the story and probe. As for the other comprehension probes, it was unnecessary to exclude any children from the analysis as they all answered correctly within two attempts. After the fourth probe, E asked two test questions about the transgressor's emotions:

1b. Guilt–post: "When Kenta/Yuya heard that Takashi/Hiroki would/would not forgive him, how much do you think he felt 'sorry' to Takashi/Hiroki? Not at all? Very much? Or somewhere in the middle?"

2b. Gratitude–post: "When Kenta/Yuya heard that Takashi/Hiroki would/would not forgive him, how much do you think he felt 'thank you' to Takashi/Hiroki? Not at all? Very much? Or somewhere in the middle?"

The child again answered the questions using the evaluation sheet and the answers were recorded as guilt–post-score and gratitude–post-score ranging from 0 (*not at all*) to 6 (*very much*). The order of questions 1b and 2b was the same as that of questions 1a and 2a. Finally, E posed two test questions regarding the transgressor's future behavior:

3. Repetition of transgression: "On the next day, Takashi built a tower with blocks again/Hiroki drew a picture again. Do you think Kenta/Yuya would break the tower/tear the picture again? Or do you think he would not?"

4. Affiliative behavior toward the victim: "On the next day, Kenta/Yuya got shiny stickers at the kindergarten. Do you think he would share this with Takashi/Hiroki? Or do you think he would not?"

E presented pictures when reading the questions and presented two choices (Figures S3 and S4). The order of the two choices (e.g., "break the tower" and "not break the tower" in question 3; "share" and "not share" in question 4) was counterbalanced, and the picture of the first choice was always presented on the child's left. The children answered by pointing to one of the pictures. The order of questions 3 and 4 was counterbalanced across the participants. Following these six test questions, E proceeded to the second section and repeated the process using the other set of stories.

The stories and pictures used for adult participants were identical to those used for children but were presented online. Adults read instructions, stories, and questions. The character's sex was matched with that of the participant, as reported before the tasks. The order and combination of the transgression stories and ending stories were counterbalanced. The adults answered the same six test questions as the child participants. The same stories were used for both children and adults for two reasons. First, this approach allowed direct comparison of children's responses with those of adults as a developmental reference point. If different stories were used, it would be difficult to determine whether any differences between age groups reflected developmental changes or simply variations in story content (e.g., relationship type or transgression severity). Second, while adult-oriented tasks could capture more complex understandings of forgiveness, such tasks are not applicable to preschoolers. Therefore, we used child-friendly scenarios for both groups, consistent with previous developmental studies employing the same stories across age groups (e.g., Marshall et al., 2020, 2022; McLaughlin et al., 2024).

2.3.2. Picture vocabulary test

The PVT-R is a Japanese version of the Peabody Picture Vocabulary Test-Revised (Dunn & Dunn, 1981) that evaluates basic word comprehension in children aged 3–12.3 years. In each session, the children were presented with four different pictures and asked to point to the picture that showed or was related to the word told to them. Following the rules of the test, the number of sessions was determined based on the number of correct answers. The PVT-R scores were calculated based on the number of correct and incorrect responses.

2.4. Data analysis

Since we aimed to explore preschoolers' expectations about forgiven and rejected transgressors, we analyzed the data of children and adults separately. For the children, we first checked how well they understood the stories by calculating the percentage of those who answered correctly the comprehension probes at the first attempt. Next, we conducted four regression analyses to assess their expectations regarding the following four aspects of forgiven and rejected transgressors: (a) increase in the transgressor's guilty feelings, (b) gratitude toward the victim, (c) repetition of the transgression, and (d) affiliative behavior toward the victim. The dependent variables for (a) and (b) were the guilt score and gratitude score, respectively, calculated by subtracting the pre score from the post score for guilt/gratitude. Positive guilt and gratitude scores indicated that participants assumed the transgressor felt more guilty and grateful after forgiveness or rejection. Data were fitted using a linear mixed model. The dependent variables for (c) and (d) were the choice between "(the transgressor would) transgress again" and "not transgress" and "(the transgressor would) share" and "not share," respectively. The data were fitted to a generalized linear mixed model using a binomial distribution with a logit link function.

For all models predicting (a)–(d), the fixed effects included age group (4-, 5-, or 6-year-olds), story type (Forgiving or Rejecting stories), and their interaction. The children's PVT-R scores were standardized and included in the model as covariates to control for their linguistic abilities. To consider within-participant effects, our models included random intercepts of participants. We primarily tested whether children in each group distinguished between forgiven and rejected transgressors and held different expectations for each, and then focused on evaluating the age differences for each story type. Additionally, we tested whether the children's guilt and gratitude scores were significantly different from zero, which would indicate no change between pre and post-forgiveness or rejection.

To test whether the adult participants' assumptions about the transgressor's (a) guilt and (b) gratitude differed between stories, an exact Wilcoxon signed-rank test was conducted. We also assessed whether their guilt and gratitude scores differed significantly from zero. For their inferences on (c) the repetition of transgression and (d) the transgressor's affiliative behavior toward the victim, we conducted a McNemar test.

R software version 4.3.0 (R Core Team, 2023) was used for all analyses. The *lme4* package (Bates et al., 2015) was used to conduct linear and generalized linear mixed modeling. The *lmerTest* package (Kuznetsova et al., 2017) was used to obtain *p* values for the *t*-tests,
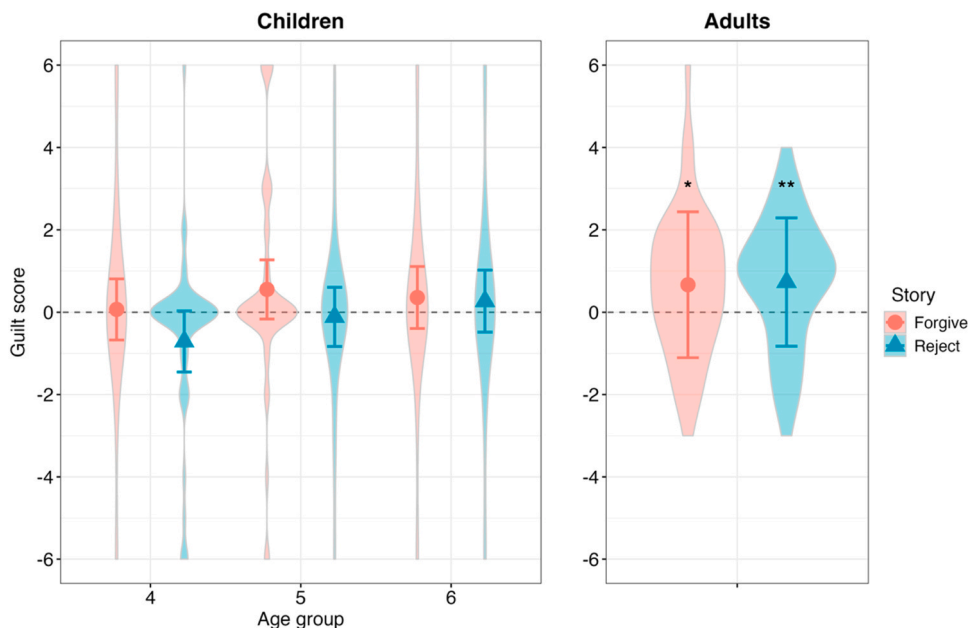

Fig. 2. Participants' Guilt Score. Note. The violin plot depicts the guilt scores observed for each age group and story type. The width of the violin plot indicates the density of the values on the y-axis. The dashed line indicates zero, which represents no estimated change in the transgressor's guilty feelings between pre- and post-forgiveness/rejection. For children, the dot indicates the predicted values, and the error bar indicates the confidence interval. For adults, the dot indicates the mean value and the error bar indicates the standard deviation. *$p < .05$. ** $p < .01$.

and the Bonferroni method was used to adjust the *p* values.

3. Results

3.1. Comprehension checks

In all age groups, most children answered the four comprehension probes correctly at the first attempt for both the Forgiving and Rejecting stories, including over 60 % for the first probe correctly (correctly name each character) and over 95 % for the second, third, and fourth probes (Table S1). Given that all children answered correctly within two attempts, the study results cannot simply be explained by participants' insufficient understanding of the stories.

3.2. Guilt

3.2.1. Adults

To assess adults' evaluation of the transgressor's guilty feelings depending on forgiveness, we analyzed their evaluated changes in guilt scores from pre- to post-forgiveness/rejection. See Table S2 for the mean values of the pre and post scores for each story. An exact Wilcoxon signed-rank test did not find a significant difference between guilt scores for the Forgiving and Rejecting stories ($V = 220.5$, $p = .593$; Fig. 2). Further analysis with a one-sample Wilcoxon signed-rank test revealed that guilt scores for both stories were significantly positive (Forgiving story, $V = 453.5$, $p = .021$; Rejecting story, $V = 611.5$, $p = .006$). In sum, the adults expected the transgressor to feel more guilty toward the victim after receiving forgiveness or rejection.

3.2.2. Children

Children's guilt scores in each age group were analyzed to examine their expectation about the guilty feelings of forgiven and rejected transgressors (see Table S2 for the mean values of the pre and post scores). A significant main effect of story type was detected ($\chi^2(1) = 3.98$, $p = .046$), but no other significant effects (age group, $\chi^2(2) = 2.36$, $p = .308$) or interaction of age group and story type ($\chi^2(1) = 1.39$, $p = .499$; Fig. 2) were found. The effect of PVT-R score was also not significant ($\chi^2(1) = 1.87$, $p = .171$). Thus, the children generally believed that forgiven transgressors would feel more guilty than rejected transgressors.

Further analyses were conducted to examine whether children expected the transgressors' guilty feelings to change after experiencing forgiveness or rejection. However, the children's guilt score was not significantly different from zero in all age groups for both the Forgiving story (4-year-olds, *estimate* = 0.07, *SE* = 0.38, *p* = .858; 5-year-olds, *estimate* = 0.55, *SE* = 0.37, *p* = .131; 6-year-olds, *estimate* = 0.36, *SE* = 0.38, *p* = .351) and the Rejecting story (4-year-olds, *estimate* = −0.71, *SE* = 0.38, *p* = .061; 5-year-olds, *estimate* = −0.11, *SE* = 0.36, *p* = .756; 6-year-olds, *estimate* = 0.27, *SE* = 0.38, *p* = .483).

In summary, the children believed that the forgiven transgressor would feel more guilty than the rejected transgressor, but the
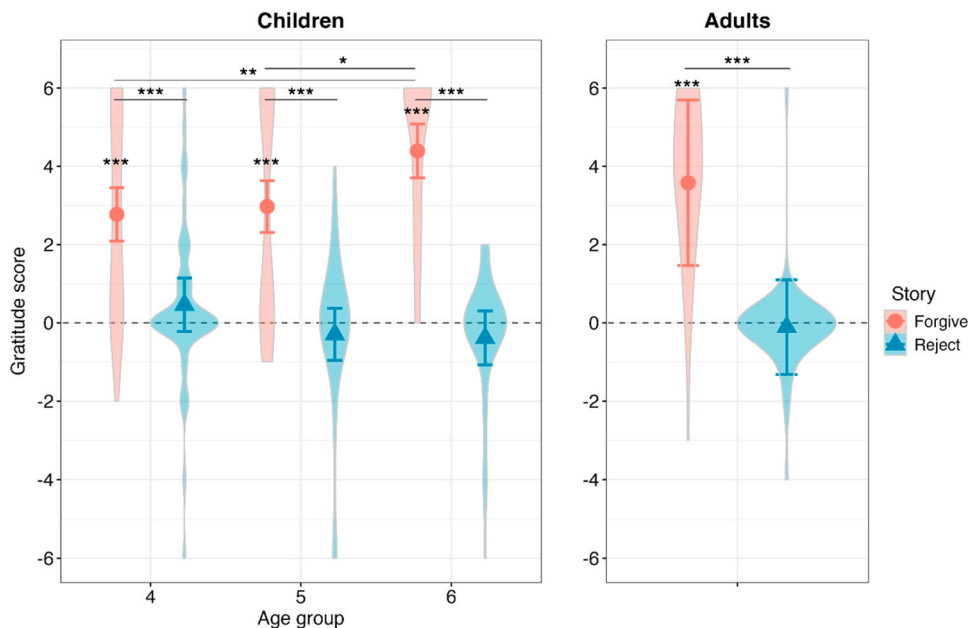

Fig. 3. Participants' Gratitude Score. Note. The violin plot depicts the observed gratitude scores for each age group and story type. The dashed line indicates zero, which represents no estimated change in the transgressor's gratitude between pre- and post-forgiveness/rejection. The other specifications are the same as those shown in Fig. 2. *$p < .05$. **$p < .01$. *** $p < .001$.

effect of forgiveness was not large enough to produce a significant change before and after forgiveness.

3.3. Gratitude

3.3.1. Adults

For the gratitude pre and post scores in the Forgiving and Rejecting stories, see the Supplemental Material (Table S3). Adults' expected changes in the transgressor's gratitude toward the victim, depending on forgiveness and rejection, were analyzed using an exact Wilcoxon signed-rank test. It revealed a significant difference between the gratitude scores in the Forgiving and Rejecting stories ($V = 900$, $p < .001$; Fig. 3). The one-sample Wilcoxon signed-rank test also showed that the gratitude score for the Forgiving story was significantly positive ($V = 930.5$, $p < .001$), whereas that for the Rejecting story did not significantly differ from zero ($V = 12$, $p = .227$). These data confirm that adults held different expectations regarding the transgressor's gratitude in the forgiveness and rejection conditions and expected the transgressor to feel more grateful to the victim after receiving forgiveness but not after being rejected.

3.3.2. Children

To examine children's expectations about the gratitude of forgiven and rejected transgressors, we analyzed their gratitude scores in each age group for each story type (see also Table S3 for the pre and post scores of children's gratitude). We found significant main effects of story type ($\chi^2(1) = 181.44$, $p < .001$) and the interaction of age group and story types ($\chi^2(2) = 15.70$, $p < .001$), but no significant main effect of age group ($\chi^2(2) = 3.14$, $p = .209$) and effect of the covariate, standardized PVT-R score, ($\chi^2(1) = 0.95$, $p = .331$).

Pairwise comparisons between story types in each age group were conducted to assess whether the children distinguished between forgiven and rejected transgressors in terms of gratitude. Significant differences were detected in all age groups (4-year-olds, *estimate* = 2.31, *SE* = 0.44, $p < .001$; 5-year-olds, *estimate* = 3.27, *SE* = 0.44, $p < .001$; 6-year-olds, *estimate* = 4.78, *SE* = 0.44, $p < .001$; Fig. 3). Pairwise comparisons focusing on age differences for each story type were also conducted to assess developmental differences in the children's evaluations. For the Forgiving story, significant pairwise differences were detected between 4- and 6-year-olds (*estimate* = −1.62, *SE* = 0.51, $p = .005$) and between 5- and 6-year-olds (*estimate* = −1.42, *SE* = 0.49, $p = .012$), but not between 4- and 5-year-olds (*estimate* = −0.20, *SE* = 0.48, $p = 1.00$; Fig. 2). For the Rejecting story, there were no significant age differences (4- and 5-year-olds, *estimate* = 0.76, *SE* = 0.48, $p = .350$; 4- and 6-year-olds, *estimate* = 0.85, *SE* = 0.51, $p = .295$; 5- and 6-year-olds, *estimate* = 0.09, *SE* = 0.49, $p = 1.00$). That is, 6-year-olds expected greater changes in the forgiven transgressor's gratitude toward the victim than 4- and 5-year-olds did, whereas no such age-related difference was found for the rejected transgressor's gratitude.

Additionally, we assessed whether children believed that the transgressor's gratitude would increase after being forgiven. Their gratitude scores were compared with zero, which represented no change in the transgressor's gratitude between pre- and post-forgiveness/rejection. For the Forgiving story, the gratitude score was significantly positive in all age groups (4-year-olds, *estimate* = 2.77, *SE* = 0.35, $p < .001$; 5-year-olds, *estimate* = 2.97, *SE* = 0.34, $p < .001$; 6-year-olds, *estimate* = 4.39, *SE* = 0.35, $p < .001$). However, the gratitude score for the Rejecting story was not significantly different from zero in all age groups (4-year-olds, *estimate* =
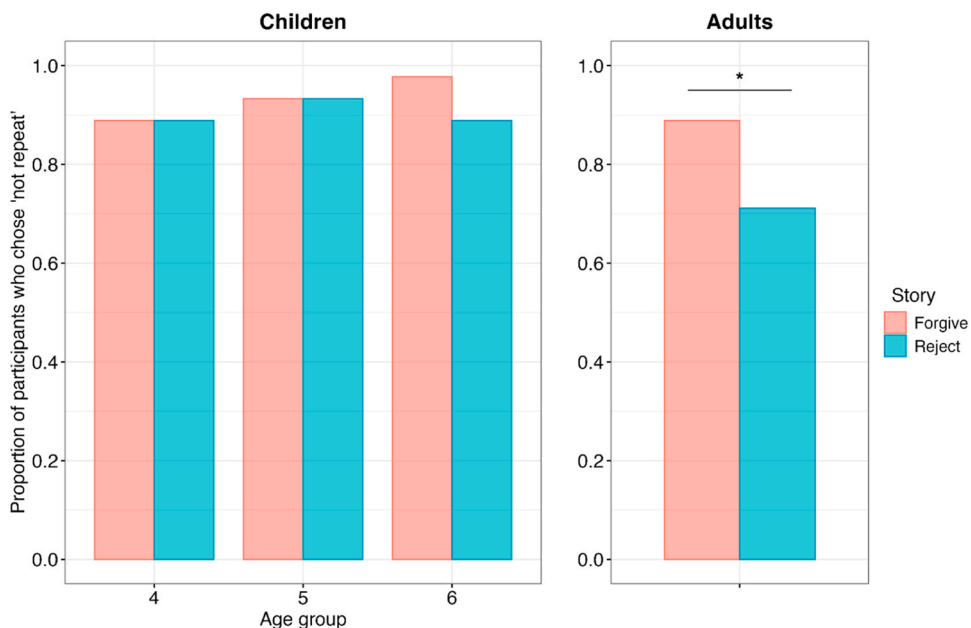

Fig. 4. *Proportion of Participants Expecting the Transgressor Not to Repeat the Transgression. Note. *p* < .05.*

0.46, *SE* = 0.35, *p* = .186; 5-year-olds, *estimate* = −0.30, *SE* = 0.34, *p* = .381; 6-year-olds, *estimate* = −0.39, *SE* = 0.35, *p* = .272). In summary, children in all age groups expected the transgressor to feel more grateful after being forgiven by the victim but not after rejection.

3.4. Repetition of transgression

3.4.1. Adults
We examined adults' expectations of the transgressor's future transgressions according to whether the transgressor was forgiven or rejected. For the Forgiving (Rejecting) story, 88.9 % (71 %) of adults answered that the transgressor would not repeat the transgression. The McNemar test detected a significant difference in their expectations based on the story type ($\chi^2(1) = 4.08$, $p = .043$; Fig. 4). Thus, adults considered the forgiven transgressor more likely than the rejected transgressor to refrain from repeating the transgression.

3.4.2. Children
We examined the differences in children's inferences about future transgressions based on the story type. However, there were no significant effects of age group ($\chi^2(2) = 0.11$, $p = .946$; Fig. 4), story type ($\chi^2(1) = 0.69$, $p = .406$), or the interaction of age group and story type ($\chi^2(2) = 5.73$, $p = .057$). The effect of standardized PVT-R score was also not significant ($\chi^2(1) = 0.46$, $p = .498$). Thus, children across all age groups expected that the transgressor would not repeat the transgression, regardless of whether the transgressor was forgiven or rejected.

3.5. Affiliative behavior

3.5.1. Adults
We explored how adults inferred the transgressor's affiliative behavior toward the victim based on forgiveness and rejection. For the Forgiving story, 82 % of adult participants expected the transgressor to act affiliatively toward the victim by sharing stickers with them. In contrast, only 40 % expected this for the Rejecting story. The McNemar test revealed a significant difference in the participants' answers between the story types ($\chi^2(1) = 14.09$, $p < .001$), with more adults expecting the transgressor to share stickers with the victim when forgiven than when rejected (Fig. 5).

3.5.2. Children
We tested whether the children's inferences about the transgressor's affiliative behavior toward the victim differed according to age group and story type. We fit the data to a generalized linear mixed model using a binomial distribution with a logit link function. However, all 6-year-olds uniformly expected the transgressor to share stickers with the victim, a statistical phenomenon known as complete separation (Rainey, 2016). As this characteristic impeded model fitting, we used Bayesian analyses instead to solve the problem (Abrahantes & Aerts, 2012; Bolker, 2023). Our Bayesian model included weakly informative Student's *t* priors ($\nu = 3$, $\mu = 0$, σ
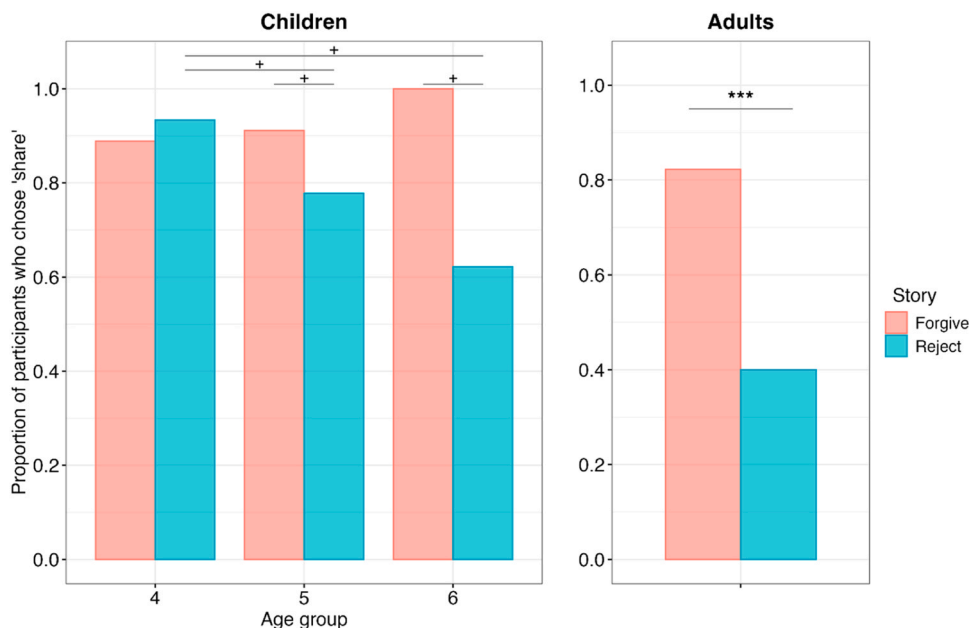

Fig. 5. *Proportion of Participants who Expected Affiliative Behavior of the Transgressor. Note.* Detected differences are shown with "+ ". *** $p < .001$.

= 2.5) on fixed effects of age groups and interaction of age group and story type. The prior distributions of other parameters were set as uniform distributions. The model was fitted using a binomial distribution and a logit link function. The data of 4-year-olds for the Forgiving story were set as the reference conditions for the analysis. Instead of *p* values, we calculated the expected values of the dependent variable (proportion) for each age group and condition, based on model fitting. We reported the posterior median (MED) and 95 % credible intervals (CI) for the pairwise differences in these values between age groups and conditions, and considered predictors as "significant" when the CI did not include zero, following methods used by Srinivasan et al. (2019). Four Markov Chain Monte Carlo with 12,000 iterations and 2000 burn-in samples were used. The model was considered to have converged adequately when all Rhat values were less than 1.1 (Gelman et al., 2013). The results of the model fitting are presented in the Supplementary Materials (Table S4).

A significant difference between the stories was found in 5-year-olds (MED = 0.04, CI[0.00, 0.19]) and 6-year-olds (MED = 0.17, CI [0.02, 0.53]), but not in 4-year-olds (MED = 0.00, CI[-0.03, 0.02]). For the Forgiving story, there were no significant differences among the age groups. However, for the Rejecting story, there was a significant difference between the choices of 4- and 5-year-olds (MED = 0.04, CI[0.00, 0.20]: Figs. 5) and 4- and 6-year-olds (MED = 0.17, CI[0.02, 0.53]), indicating that 5- and 6-year-olds were less likely than 4-year-olds to expect a rejected transgressor to act affiliatively toward the victim. No significant difference was detected between 5- and 6-year-olds (MED = 0.11, CI[-0.68, 0.48]). In sum, 5- and 6-year-olds inferred that a rejected transgressor was less likely to act affiliatively toward the victim than a forgiven transgressor.

4. Discussion

This study examined preschoolers' and adults' expectations about forgiven and rejected transgressors. We focused on four aspects of the transgressor's response to being forgiven or rejected: (a) guilty feelings, (b) gratitude, (c) refraining from repeating the transgression, and (d) engaging in affiliative behavior toward the victim. Each aspect is discussed below.

Regarding the transgressor's guilty feelings, we hypothesized it would increase only with forgiveness. However, adults in our study expected transgressors to feel guilty after both forgiveness and rejection. This discrepancy may stem from adults distinguishing between different types of guilt. Yamagishi (2014) classified guilt into four types based on whether it arises with/without direct interaction and whether one focuses on their own acts or on imbalances between their and others' behaviors or situations. These types comprise: (a) guilt without interaction, focusing on one's act (e.g., norm violations); (b) guilt after interaction, focusing on impact of one's behavior (e.g., hurting others); (c) guilt after interaction, focusing on imbalance (e.g., inability to reciprocate others' good deeds); and (d) guilt without interaction, from situational imbalances (e.g., survivor's guilt). The guilt enhanced by forgiveness aligns with Yamagishi's third type—arising when one transgresses against someone who responds prosocially. On the other hand, the guilt adults expected in the Rejecting scenario likely corresponds to the second type—focusing on harm caused through interpersonal interaction. Prior research on forgiveness–guilt connections, which informed our hypothesis, primarily addressed the third type focusing on reciprocity (e.g., Wallace et al., 2008). While our task did not differentiate between guilt types as it was not our objective, adults may have considered different types when evaluating transgressors' guilty feelings.

Another possibility is that the adults expected the transgressor's guilt to be promoted in the case of a transgression occurring in close relationships, regardless of the victim's responses. In our stories, the transgressors committed transgressions against their friends in the same kindergarten. Studies with adult participants have shown that people experience greater guilt for transgressions in close relationships (Ghorbani et al., 2013; Kubany & Watson, 2003). Ghorbani et al. (2013) explain this result by focusing on the influence of people close to us (i.e., significant others) on normative beliefs. According to them, normative beliefs are formed based on behaviors accepted by significant others. Hence, when significant others are involved in the transgression, the discrepancies between normative beliefs and actual behavior are emphasized, inducing stronger emotions compared to when a stranger is involved. Similarly, in the present study, our story of transgressing against a close friend may have emphasized this discrepancy, leading the adults to expect that the transgressor would feel guilty even when not forgiven.

In contrast, children across all age groups consistently judged that transgressors felt more guilty when forgiven than when rejected. This may reflect children making simpler inferences about transgressor guilt based solely on forgiveness presence. While adults likely considered various guilt types, children may have relied on a straightforward causal relationship: if forgiven, they feel sorry. In fact, several studies suggest that although young children understand basic guilt scenarios, more complex understanding develops throughout childhood and adolescence (Lagattuta & Thompson, 2007; Mascolo & Fischer, 1995). Alternatively, children as young as 4 may have already acquired an understanding of Yamagishi's (2014) third type of guilt, suggesting early comprehension that transgressors feel more guilt when forgiven than rejected. However, unlike for adults, the effect of forgiveness was not large enough for children to significantly change the expected degree of transgressor guilt before and after forgiveness or rejection (i.e., significantly positive guilt scores). One explanation may be that children's pre-forgiveness guilt score was relatively high compared to adults' (children, *M* = 4.38 out of 6; adults, *M* = 3.06), indicating that children inferred strong immediate post-transgression guilty feelings. Interestingly, this result differs from previous findings on the happy victimizer effect. The happy victimizer effect, in which positive emotions are attributed to intentional moral violators, typically emerges in children around ages 4–5 and diminishes with age (Nunner-Winkler & Sodian, 1988; Smith et al., 2010). However, in our study, children rather than adults attributed higher guilty feelings to transgressors immediately after the transgression, and the happy victimizer phenomenon was not observed. Previous research on children's conceptual understanding of guilt shows that 5- to 6-year-olds define guilt as an emotion directly connected to transgression (Berti et al., 2000), suggesting that the transgression itself led children to attribute strong guilty feelings to transgressors. Overall, while children inferred that transgressors would feel guiltier after forgiveness than rejection, their inferences about transgressors' guilty feelings were different from those of adults.

Regarding transgressor's gratitude, both 4- to 6-year-olds and adults expected forgiven transgressors to feel gratitude, but not rejected ones. This expectation emerged as early as age 4, with 6-year-olds expecting higher levels of gratitude than 4- and 5-year-olds. Research shows that children as young as 4 comprehend the definition of gratitude and contexts where it arises (Gordon et al., 2004; Nelson et al., 2013; Noles & McDermott, 2023; Russell & Paris, 1994; Vorkapić & Šikić, 2019). For instance, 4- to 7-year-olds define gratitude using terms like "thankful" and "appreciation," and recognize that people feel grateful when receiving benefits from others (Vorkapić & Šikić, 2019). Additionally, since children are frequently told from an early age by their caregivers and teachers to forgive others (Gunnestad et al., 2015; Haslip et al., 2019), they experience many situations where they forgive others and are forgiven in their daily lives. This repeated experience, combined with their early understanding of gratitude, may foster expectations—similar to those of adults—that forgiven transgressors would feel grateful toward their victims from early childhood onward. Interestingly, 6-year-olds expected the forgiven transgressor to feel more grateful than did 4- and 5-year-olds. This age difference may be explained by older children's increased sensitivity to internal conflicts associated with forgiveness. During the preschool years, children develop an understanding of internal conflicts that arise when they take morally-desirable actions (i.e., forgiving others) (Oppenheim et al., 1997). Thus, 6-year-olds may have understood the conflict between the victim's hurt feelings and the desire to behave generously, which arises when forgiving others. Additionally, the ability to control negative emotions, which is necessary for overcoming transgression and forgiving, develop gradually between ages 3–6 (Sala et al., 2014). Therefore, 6-year-olds likely better understand the emotional conflict in forgiveness and may estimate higher emotional costs for victims granting forgiveness. Since gratitude correlates with perceived benefactor costs (Forster et al., 2017; McCullough, 2008), 6-year-olds may expect transgressors to experience greater gratitude in recognition of these emotional costs.

Regarding future transgressions, adults expected forgiven transgressors to be significantly less likely to repeat offenses than rejected ones, aligning with our hypothesis that adults view forgiveness as a deterrent to repeated transgressions. However, children across all age groups showed no differentiation in their expectations of future transgressions based on forgiveness or rejection conditions. One possible explanation for this finding lies in the friendship context of the stories. Because the transgressor and victim were depicted as friends, children may have assumed that the transgressor would try to maintain their relationship and therefore refrain from repeating the offense, regardless of whether forgiveness was explicitly granted. In other words, the presence of an ongoing friendship might have overridden the distinction between forgiveness and rejection, leading children to expect reconciliation in both cases. Another possible explanation involves preschoolers' positivity bias in their evaluations of others' traits. Positivity bias—the tendency to hold optimistic perspectives toward one's own and others' traits—emerges around age 3 (Boseovski & Lee, 2006) and peaks around ages 6–8 (Benenson & Dweck, 1986; Heyman & Giles, 2004). Research indicates that preschoolers with this bias tend to perceive positive traits as fixed and negative traits as malleable (Boseovski, 2010). For instance, Lockhart et al. (2002) demonstrated that 5- and 6-year-olds, unlike older children and adults, predict that negative traits will transform into positive ones while positive traits remain stable. Children in our study likely assumed the transgressor's negative behavior (committing a transgression) would not persist, believing the transgressor would avoid repeating the offense regardless of forgiveness or rejection. As development progresses, children may begin to expect, as adults do, that transgressors are less likely to repeat their wrongdoing when they are forgiven than when they are rejected.

Regarding the forgiven transgressor's affiliative behavior toward the victim, adults believed transgressors were more likely to behave affiliatively toward victims when forgiven than when rejected. Among children, 5- and 6-year-olds showed similar belief, while 4-year-olds did not differentiate transgressor's future affiliative behavior based on forgiveness or rejection. This developmental change may reflect growing sensitivity to reciprocity induced by forgiveness during the preschool years. While young children generally behave affiliatively toward others, their affiliative behavior becomes more selective and strategic with age. Research with 4- to 6-year-olds found that 6-year-olds shared more resources only when recipients had previously allocated resources altruistically, suggesting selective resource allocation based on reciprocity emerges around age 6 (Lu & Chang, 2018). Similarly, another study with 3- and 5-year-olds demonstrated that potential reciprocity influenced sharing behavior of 5-year-olds but not 3-year-olds (Lenz & Paulus, 2021). Therefore, 5- and 6-year-olds may perceive forgiveness-induced reciprocity as an important cue for selective affiliative behavior, leading them to form different expectations of transgressors' affiliative actions.

The acquisition of expectations on how forgiveness affects transgressors' gratitude and affiliative behavior aligns with previous findings that understanding of the functions of forgiveness emerges around age 4 and becomes more sophisticated by age 6 (Toda et al., 2024). Several studies of adults have indicated that gratitude promotes affiliative behavior (Ma et al., 2017). Hence, through their own experiences of being forgiven in interpersonal relationships, children likely feel increased gratitude and a tendency toward affiliative behavior, enabling them to infer these forgiveness-associated changes during approximately the same developmental period. In contrast, adult-like expectations regarding guilty feelings and future transgressions of forgiven versus rejected transgressors appear to develop later in childhood. Research on adults has shown that feelings of guilt reduce the likelihood of repeated transgressions (Leach & Cidam, 2015). However, guilt is a higher-order and more complex emotion and is difficult for children to describe compared to other emotions (Berti et al., 2000). Thus, young children may struggle to infer the guilty feelings that arise from forgiveness and, consequently, to anticipate the deterrent effect of such feelings on future transgressions. Moreover, regarding these two aspects, children's expectations for rejected transgressors differed from those of adults and were similar to their expectations for forgiven transgressors. In everyday life, preschoolers are often encouraged to forgive (e.g., Gunnestad et al., 2015). Consequently, experiencing a transgression followed by forgiveness is commonplace for children. In contrast, experiences of rejection following a transgression are less frequent than experiences of forgiveness, which may contribute to difficulty in making predictions about aspects that are somewhat challenging to understand, such as guilty feelings and future behavior. Through exposure to various transgression scenarios and their accompanying outcomes of forgiveness or rejection in actual interpersonal contexts, children may gradually develop adult-like expectations regarding these aspects of transgressors' psychological states and behaviors.

5. Limitations and future directions

Although our study deepens insight into preschoolers' expectations about forgiven versus rejected transgressors, several questions remain. First, although our results suggest that young children share, at least partially, expectations similar to those of adults, the developmental stage at which they acquire adult-like expectations is unclear. In particular, adult-like expectations about the forgiven transgressor's guilty feelings and future transgressions was not acquired, even at age 6. It is necessary to conduct similar studies with elementary school and older students to clarify the process through which an adult-like expectations develop.

Second, we independently focused on four aspects of forgiven and rejected transgressors: guilty feelings, gratitude, future transgressions, and affiliative behavior toward the victim. However, it is unclear how children's expectations about these four aspects are related. Because our indicators differed in format (i.e., continuous scores and binary choices), direct analyses of their interrelationships were not feasible. To address this, we conducted an exploratory pattern analysis by dividing guilt and gratitude scores into positive (i. e., increased after forgiveness or rejection) versus zero or negative values. The results showed that, for forgiven transgressors, predictions about refraining from transgressions and affiliative behavior were already coherent at age 4 (Figure S5). By age 5, coherence extended to gratitude, whereas predictions about rejected transgressors were more random and less coherent. These findings suggest that children's expectations about the consequences of forgiveness gradually become integrated and internally consistent during preschool years, particularly for forgiven transgressors. Future studies should examine the interrelations among these aspects more directly using comparable indicators.

Third, there might have been age-related differences in how children understood the expression "I will forgive you." We used this direct verbal cue to clearly depict forgiveness and rejection, and clear distinctions between conditions were observed in children's responses about transgressors' gratitude and affiliative behavior. However, it is possible that 4- to 6-year-olds interpreted the phrase differently, with younger children understanding it as simply "being nice again" but older children perceiving it as an act of moral repair or reconciliation. Such developmental variation may have influenced children's expectations.

Another limitation concerns the relational context used in the task. The stories depicted forgiveness and rejection only between friends. We chose this context because it is most familiar and comprehensible to preschoolers, and because previous studies of children's understanding of forgiveness have also used peer scenarios (e.g., McLaughlin et al., 2024; Toda et al., 2024). However, forgiveness can occur in various relationships, such as between siblings, parents and children, or even strangers. The nature of the relationship may influence expectations about transgressors' behavior following forgiveness or rejection. Accordingly, future research should examine how relationship type influences expectations about forgiven versus rejected transgressors to determine whether the developmental patterns generalize beyond friendship contexts.

A separate but related limitation concerns the use of child-oriented stories for adult participants. We employed the same stories across all age groups to allow direct developmental comparison and ensure consistency in the scenarios presented. However, adults' reasoning about forgiveness in real-world situations likely involves more complex social and contextual considerations than those captured in our simplified scenarios. Future studies could address this by using age-appropriate scenarios for adults while maintaining conceptual equivalence with children's tasks, or by employing multiple scenario types to assess whether developmental patterns hold across varying levels of contextual complexity.

Finally, the relationship between children's expectations about transgressors and their own forgiving behaviors is not clear. We used stories to explore how preschoolers form expectations about forgiven versus rejected transgressors, but it remains unknown whether children hold similar expectations when they are the victims and grant forgiveness. For example, do 6-year-olds grant forgiveness in the expectation that the transgressor will behave affiliatively? In other words, do they use forgiveness to induce reciprocal responses from transgressors? To answer these questions, future studies should use a paradigm in which young children are victims of transgressions. Such explorations would provide insights into children's early motivations for choosing forgiveness as a response strategy.

6. Conclusion

Although previous studies have revealed how preschoolers understand the effects of forgiveness on victims (Toda et al., 2024), there is little evidence regarding what they expect of forgiven transgressors. Our findings revealed that preschool children gradually develop the expectation that forgiven transgressors will feel grateful and behave affiliatively toward their victims. However, adult-like expectations concerning transgressors' guilty feelings and the likelihood of repeated transgressions appear to emerge at later developmental stages. Together, these findings clarify how early expectations about forgiveness begin to take shape and lay the groundwork for understanding the developmental foundation of forgiveness.

Author note

CRediT authorship contribution statement

Rizu Toda: Conceptualization, Methodology, Formal analysis, Investigation, Data Curation, Writing – Original Draft, Writing – Review & Editing, Visualization. **Nazu Toda:** Methodology, Investigation, Writing – Review & Editing. **Hiromichi Hagihara:** Conceptualization, Methodology, Formal analysis, Data Curation, Writing – Review & Editing. **Yasuhiro Kanakogi:** Conceptualization, Methodology, Supervision, Writing – Review & Editing, Resources, Funding acquisition.

Appendix A. Supporting information

Supplementary data associated with this article can be found in the online version at doi:10.1016/j.cogdev.2025.101645.

Data availability

I have shared the link to my data in the manuscript.

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