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Children's understanding of ownership transfers

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ABSTRACT

An understanding of ownership entails the recognition that ownership can be transferred permanently and the ability to differentiate legitimate from illegitimate transfers. Two experiments explored the development of this understanding in 2-, 3-, 4- and 5-year olds, using stories about gift-giving and stealing. The possibility that children use simple biases to identify owners, such as a first possessor, current possessor or a loan bias, was also investigated. Five-year olds appropriately acknowledged a permanent transfer of ownership in the case of giving but not stealing. Four-year olds allowed permanent transfers but struggled to differentiate legitimate from illegitimate transfers. Many 4-year olds allowed adults, but not children, to keep property that had been stolen. Two- and 3-year olds exhibited a first possessor bias for both stories. We conclude that, by 5 years of age, children possess a mature understanding of ownership transfer whereas younger children are prone to biases.

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Children must learn social rules regarding private property in order to integrate into their peer groups and society at large. Understanding ownership is therefore an important part of children's development. Yet a majority of conflicts between peers from 2 to 5 years of age involves property disputes (Dawe, 1934; Hay & Ross, 1982; Ramsey, 1987), suggesting that children have difficulty adopting appropriate social norms for property. Part of the problem may be that the differences between various types of property transfer are difficult to understand. For example, when children share toys they can expect to regain possession but when they offer a gift, they should not expect to do so. Similarly, a child who finds an object should recognize that it may still belong to its original owner, depending on whether it was lost or abandoned. A mature appreciation of ownership requires, at the very least, recognition that permanent transfers of property are possible, as well as the ability to differentiate

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legitimate from illegitimate transfers of property. The research presented here investigates children's understanding of two fundamental forms of property transfers, giving and stealing, in order to determine when children attain mature understanding of ownership. Further, we assess whether, prior to a mature understanding, simple biases guide children's understanding of object transfers.

A basic recognition of owner–object associations appears early. By 2 years of age, children can identify owned objects by pointing when prompted (e.g., at *Mommy's* toothbrush) (Fasig, 2000), and they know which objects to take in order to upset their siblings (Dunn & Munn, 1985). By 2 years of age, children also begin to use possessive pronouns and phrases appropriately (Bates, 1990; Brown, 1973; Hay, 2006; Imbens-Bailey & Pan, 1998; Nelson, 1976; Rogdon & Rashman, 1976; Tomasello, 1998) and soon identify possessions by owner (e.g., Maria's necklace) even when the owner is absent (Brown, 1973; Tomasello, 1998).

This initial recognition of owner–object relationships may be based on no more than simple associations between the object and the first person seen with the object. An experiment by Friedman and Neary (2008) provides some evidence of such a “first possessor” heuristic. Three- and 4-year olds were presented stories in which one character plays with a toy and then a second character plays with the toy. When asked, “Whose is it?” both groups of children favored the first possessor. Observational studies suggest that children may learn about a first possessor's right to control a toy in the context of possessive interactions with peers. At 6 months of age, infants do not fight over toys, but when two peers touch the same toy the original possessor tends to retain it (Hay, Nash & Pedersen, 1983). By 9 months of age, infants protest when peers take, or are about to take, objects from them (Hay, 2007). Other observational studies confirm that children between the ages of 18 months and 7 years of age tend to win property disputes when in initial possession of the toy (Bakeman & Brownlee, 1982; Ramsey, 1987; Weigel, 1984). The fact that challenges to first possessors occur suggests that children do not always respect the rights of the first possessor. Nevertheless, by 44 months of age, children do seem to recognize those rights. When first possessors sought to reclaim a toy, the takers in the 44-month-old group resisted less than when a different child challenged them, whereas 18-month olds did not differentiate between challengers (Bakeman & Brownlee, 1982). In sum, we can conclude that by 4 years of age children acknowledge some rights of first possession and recognize that these rights persist even if the owner has not interacted with the object for some period of time.

Recognizing rights of first possession may serve children well in many situations but prove problematic if applied in all cases. For example, in situations in which toys have been stolen or loaned, a first possessor bias allows children to recognize the rightful owner. However, cases of gift-giving present a problem. Based on first possession, children would believe that a gift-giver retains a claim on a gift and can take it home. Indeed, strict adherence to a first possessor bias prevents understanding of permanent transfers of ownership. Some evidence for this belief comes from an experiment in which children were asked to judge stories about children's interactions with a shopkeeper (Cram & Ng, 1989). Most 5-year olds believed the children could not take home objects given as gifts, won as prizes, or even earned as payment. Admittedly, the responses in this study may have been skewed because children ordinarily only buy items from shopkeepers rather than receive them as gifts. Indeed, 65% of the 5-year olds did say that an object bought from the shopkeeper could be taken home. However, further evidence of confusion about gift-giving comes from a study of 3- and 4-year olds (Friedman & Neary, 2008, experiments 4 and 5). Here, children were unclear whether a toy given as a gift belonged to the giver (the first possessor) or the recipient (the current possessor). Admittedly, children were likely to identify the current possessor as the owner when the object in question was inside a wrapped box, but children might believe that a wrapped gift purchased for someone's birthday belongs to the recipient by default. Although these studies suggest that a first possessor bias may not apply in all situations, children's understanding of genuine transfers of ownership – in which a first owner gives his or her property to a second person – has yet to be assessed.

Other biases might also limit children's understanding of transfers of ownership. For example, a current possessor bias equates current physical possession with ownership, ignoring the history of the object and the way in which previous transfers took place. This bias correctly allows the recipient of a gift to keep it, but it incorrectly identifies a thief as a legitimate owner.

Finally, young children might view all property transfers as temporary loans or as equivalent to sharing. In this case, children allow the current possessor, i.e., the gift recipient or the thief, temporary

rights over the object but expect it to be returned to the first possessor. If children adopt any of these biases – a first possessor, a current possessor, or a loan bias – they should fail to differentiate basic types of property transfers. By contrast, children with a mature understanding of ownership recognize that permanent transfers are possible and clearly differentiate legitimate from illegitimate transfers.

The research presented here explores two questions. First, at what age do children demonstrate a mature understanding of ownership transfers? And, second, before they demonstrate a mature understanding, do children exhibit simple biases when identifying owners during property transfers? If evidence for simple biases does emerge, it could plausibly be interpreted in two different ways. Such biases might precede children's mature understanding of ownership transfers. Alternatively, they might mask a mature understanding. We return to this question of the exact developmental relationship between early biases and a mature understanding.

Two basic forms of transfer, gift-giving (at a birthday party) and stealing (during peer play), were introduced to probe children's understanding of ownership and to assess whether they rely on simple biases to determine ownership. Children having a mature view of ownership will recognize when legitimate transfers do and do not occur. They will acknowledge that giving at a birthday constitutes a permanent transfer of ownership and that the birthday child does not need to return the present to the gift-giver. Further, they will recognize that stealing does not constitute a legitimate transfer of ownership and that the thief cannot keep the toy. Thus, a mature understanding of ownership would be demonstrated by allowing the transfer in the gift case but not the stealing case.

The gift-giving and stealing stories should also reveal particular biases children may use to identify owners, prior to achieving a mature understanding. If children have a first possessor bias, they should correctly identify the victim of a theft as the legitimate owner of stolen property in the stealing story, but they will incorrectly identify the gift-giver as the owner in the birthday story. If they adopt a current possessor bias, the opposite will be true: they will correctly identify the birthday child as the new owner of the gift, but they will incorrectly identify the thief as the owner of the stolen toy. Lastly, if children have a loan bias, they will allow both the birthday child and the thief to take the toy home but claim that it must eventually be returned to the first possessor. Any of these response patterns would indicate that children adopt simple biases to assess property transfers.

A pilot experiment showed that the context of the stories and the origin of the toy affected children's responses. For example, if the stories were set in a school, children sometimes assumed that the toy belonged to the school. Accordingly, in order to assess whether children understood that a transfer of ownership had occurred, the toy was explicitly described as coming from the first character's bedroom, thereby identifying the first possessor as the initial owner. The pilot experiment also revealed that children would allow the second character to play with the toy in both the gift-giving and the stealing stories, but this may have been viewed as temporary sharing. To assess whether a genuine transfer of ownership had occurred, we asked questions that targeted more extended rights of ownership. Specifically, children were asked which character could take the toy home and also whether the possessor at the end of the story needed to return the toy to the first possessor.

1. Experiment 1

Children were presented two stories describing the transfer of a toy between two characters. One story described gift-giving at a birthday party and the other described stealing. In both stories, the first possessor starts at home and "looks around his/her bedroom" and sees the target toy. In the Giving stories, the first possessor wraps the toy up "like a present," brings it to a birthday party (set in a park) and gives the toy to the birthday child. In the Stealing stories, the first possessor brings the toy to a park but then leaves it to go get a drink of water; while the first possessor is away, the second character comes over and takes the toy. In both stories, the second character (the current possessor) says, "Oh boy, this is great!"

A second version of the experiment (Version B) increased the emotional content of the stories in order to further differentiate them. In the Giving story, the birthday child is excited by the present and says, "I want to play with this right now." By contrast, in the Stealing story the thief takes the toy without comment but the victim of the theft returns and says, "Oh no, where's the toy; I can't find it anywhere." (see [Appendix 1](#) for the story scripts).

Table 1
Questions and correct responses for Giving and Stealing stories.

Question	Correct response	
	Giving	Stealing
1. At the end of the story is it still [first possessor's] or is it [current possessor's]? [point]	Current	First
2. Which boy/girl can take the toy home? [point]	Current	First
3. This boy/girl [second possessor] is holding the toy at the end of the story. Does s/he need to give the toy back to [the first possessor]?	No	Yes
4. Why?		

1.1. Method

1.1.1. Participants

A total of 175 children were recruited at an exploratory learning center at a local Museum of Science. Four additional children, all in the 2-year-old group, were tested in a laboratory setting. Four age groups were tested: 32 2-year olds (mean age 2–8, range 2–5 to 3–0, 10 females), 52 3-year olds (mean age 3–7, range 3–1 to 3–11, 26 females), 55 4-year olds (mean age 4–5, range: 4–0 to 4–11, 26 females), and 40 5-year olds (mean age 5–6, range 5–0 to 6–0, 26 females). The majority of children were middle class and Caucasian.

1.1.2. Materials

The experimenter and the child sat on either side of a small table in the museum or the laboratory with the child's parent present. Using the table as a stage, the experimenter told two stories using dolls and small toys as props. For each story, either two male or two female dolls were used; all dolls were generic and easily differentiated by hair color and clothes. Four toys were used: a kitten, a horse, a school bus, and a plane.

1.1.3. Procedure

Once the child was comfortable, the experimenter introduced himself and said, "I'm going to tell you some stories and then ask you questions about the stories, ok?" The sequence of the two stories was counterbalanced as was the gender of the dolls used for each story type. Each child saw one story that used the female dolls and one that used the male dolls. The dolls and toys used were also counterbalanced across stories with the following restrictions: dolls were paired by gender and matched with specific toys. Thus, stories with the two male dolls used the plane and the bus and stories with the female dolls used the kitten and the horse.

After each story was read, a fact check question was asked: "At the beginning of the story whose toy was this?" Children were prompted to point to a character and those who failed the fact check were told the story again. If they answered incorrectly again, they were asked, "Who had the toy first?" If children failed this question, they were not included in the sample. Two of the test questions requested that the child point to a character. A third question asked whether it was necessary to return the toy to the first possessor. After the final test question, children were asked for a justification. The test questions and correct responses are shown in Table 1.

1.2. Results

We first analyze children's performance on the three test questions as a function of Story Version, Age, and Type of Transfer. We then consider the performance of individual children in relation to a criterion of near perfect performance across both stories and in relation to potential biases that they might display. Children's justifications of their replies to Question 3 are then discussed. Finally, the possibility of a "yes" bias in children's replies is considered.

The answers to each question were scored as 1 if correct and 0 if incorrect and summed into a score for each child (maximum score = 3). Fig. 1 shows children's mean scores as a function of Age and Type of Transfer.

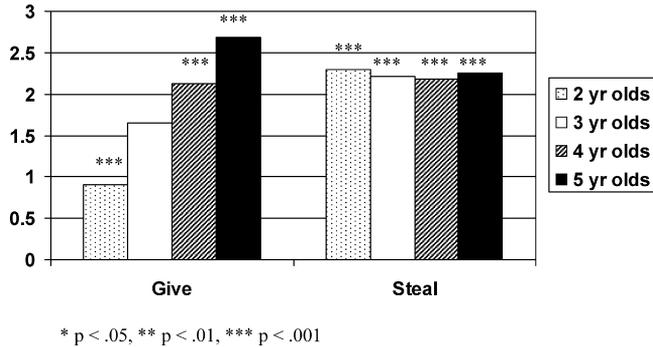


Fig. 1. Experiment 1, mean scores by Age and Type of Transfer.

A 3-way analysis of variance (ANOVA) of Story Version \times Age \times Type of Transfer revealed main effects of Story Version ($F(1, 171) = 4.29, p < .05, \eta^2 = .03$), Age ($F(3, 171) = 12.33, p < .001, \eta^2 = .18$), and Type of Transfer ($F(1, 171) = 13.26, p < .001, \eta^2 = .07$), and a significant interaction of Age \times Type of Transfer ($F(3, 171) = 9.02, p < .001, \eta^2 = .14$). The main effect of Story Version occurred because children gave more correct replies to both stories in Version B (mean correct for the Giving Story = 1.99; for the Stealing Story = 2.46) compared to Version A (mean correct for the Giving story = 1.83, for the Stealing story = 2.08). Tests of the simple effect of Age for each Type of Transfer revealed that for the Giving story, performance improved with age, $F(3, 171) = 19.62, p < .001, \eta^2 = .26$, whereas for the Stealing story, there were no differences across age groups, $F(3, 171) = .004$.

Comparing the mean scores to a chance score of 1.5 (of 3) correct revealed that all age groups performed significantly above chance on the Stealing story. By contrast, 2-year olds were significantly different from chance on the Giving story due to incorrect answers favoring the first possessor; 3-year olds were at chance and 4- and 5-year olds were each above chance. A second 4-way ANOVA of Order (Giving first or Stealing first) \times Gender \times Age \times Type of Transfer revealed no main effects or interactions for Order or Gender.

To examine the overall performance of individual children, those who answered five of six questions correctly were classified as competent. This degree of accuracy corresponds to a cumulative binomial probability of .094. The percentage of children meeting the criterion for competent performance increased with age: 19% of 2-year olds, 37% of 3-year olds, 42% of 4-year olds and 73% of 5-year olds. The improved performance with age largely reflects more accurate responses for the Giving story.

Children's responses to both stories were further examined to assess whether they used simple biases to identify the owners. Children who answered five of six questions in favor of the first possessor were classified as having a first possessor bias. Similarly, children who favored the current possessor for five of six questions were counted as having a current possessor bias. Lastly, children who indicated in both stories that the current possessor could take the toy home but that the toy should be returned to the first possessor were counted as having a loan bias. Table 2 shows the percentage of children in each age group who showed one of these patterns.

Inspection of Table 2 reveals that the dominant pattern is a first possessor bias for the younger children. Roughly half of the 2-year olds and a third of the 3-year olds favored the first possessor

Table 2
Percentage of children following simple patterns.

Age	First possessor bias (%)	Current possessor bias (%)	Loan bias
2	50	0	3
3	29	10	10
4	15	11	7
5	8	15	3

in both the Giving and Stealing stories. By contrast, most 4- and 5-year olds did not favor the first possessor. None of the age groups exhibited a strong current possessor bias or a loan bias.

The justifications for Question 3 (Does [the current possessor] need to return the toy to [the first possessor]?) were further analyzed to determine to what extent children distinguished between the Giving and Stealing stories on an appropriate basis. Children were given credit if, for both stories, they were able to answer Question 3 correctly and to provide an appropriate justification. For the Giving story, acceptable justifications referred to the birthday, the present or the act of giving; for the Stealing story appropriate justifications referred to first possession (“he had it first”), the act of taking, or the need to give back. All of the responses were coded by the first author and by a second coder. They agreed on 92% of the cases judged. Two-year olds were excluded because none responded to the justification questions. Using this criterion, 13% of 3-year olds, 30% of 4-year olds and 75% of 5-year olds provided justifications that properly differentiated the two stories.

Finally, a potential problem with the procedure concerns Question 3 (Does [the current possessor] need to return the toy to [the first possessor]?) which required a yes/no response. A “yes” bias for this question would diminish children’s performance on the Giving stories and inflate their performance on the Stealing stories. Indeed, an examination of the responses to Question 3 revealed that 88% of 2-year olds, 58% of 3-year olds, 44% of 4-year olds and 18% of 5-year olds answered “yes” to this question in both stories. Accordingly, a second analysis was conducted on the first two questions, excluding Question 3.

A 2-way ANOVA of Age \times Type of Transfer revealed a main effect for Age, $F(3, 175) = 5.54$, $p < .001$, $\eta^2 = .09$, and a significant interaction of Age \times Type of Transfer, $F(3, 175) = 7.29$, $p < .001$, $\eta^2 = .11$. Tests for the simple effect of Age within each Type of Transfer confirmed that performance improved with age for the Giving story, $F(3, 175) = 13.91$, $p < .001$, $\eta^2 = .19$, but not for the Stealing story, $F(3, 175) = .33$. Comparing the mean scores to a chance score of 1.0 revealed that, with the exception of 2-year olds on the Giving story, all age groups performed significantly above chance levels on both stories. Overall, these results are very similar to those obtained when replies to all three questions were analyzed, alleviating the concern that those results could be attributed to a “yes” bias for question 3.

1.3. Discussion

Four- and 5-year olds showed a mature understanding of ownership, recognizing that permanent transfers of property were possible and differentiating legitimate from illegitimate transfers. They performed significantly above chance for both stories. Thus, most 4- and 5-year olds appropriately identified either the first possessor (Stealing story) or the current possessor (Giving story) as the owner. By contrast, although 2- and 3-year olds performed significantly above chance for the Stealing story, they performed poorly on the Giving story. Adding emotional cues to the stories improved performance for all age groups, but the relative performance across age groups remained the same.

Prior to a mature understanding of ownership, only one simple bias appeared. Half of the 2-year olds and roughly a third of the 3-year olds showed a first possessor bias. The remaining children showed neither a strong current possessor bias nor a loan bias. Instead, a more common pattern among 2- and 3-year olds was to provide inconsistent answers to the questions. For example, when asked who could take the toy home in the Giving story, 2- and 3-year olds frequently identified the gift-giver and indicated that the birthday girl must give the present back. To justify this return of the toy, children said “It’s not hers [the birthday girl’s]” or “She [the first possessor] has to bring it home.” In the Stealing story, however, children allowed the thief to take the toy home as long as he or she returned it. This set of responses fits none of the hypothesized patterns.

In sum, by 4 years of age, most children allow ownership transfers under some circumstances, namely, when a gift is given for a birthday. In moving toward this mature understanding of ownership, a developmental trend appeared: 2-year olds showed a first possessor bias; 3-year olds still showed a first possessor bias but were at chance on Giving stories; 4- and 5-year olds performed above chance on both Giving and Stealing stories.

A possible source of confusion in this experiment relates to the use of child characters in the stories. Young children may not believe that children have the right to give away their toys. This belief would inhibit the understanding of transfers of property between children—even at a birthday party.

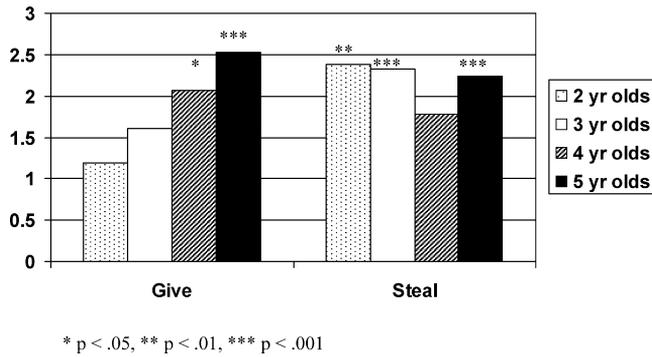


Fig. 2. Experiment 2, mean scores by Age and Type of Transfer.

Experiment 2 addressed this concern by using adult dolls in the stories. The Giving and Stealing stories were modified so that they were more consistent with adult interactions. For example, the Giving story placed the birthday party “outside” rather than in a park and the adult recipient of the gift was not described as wanting to “play” with the gift. In the Stealing story, the first possessor went over to talk to friends instead of to a water fountain and was appropriately upset at the loss of his/her property (see Appendix 2 for the story scripts). Two changes were made to the procedure to improve data collection. Question 3 was presented as two options rather than as a yes/no question—Can [the current possessor] keep the [object] or does she need to give it back to [the first possessor]? Lastly, justifications were elicited after both Questions 1 and 3.

2. Experiment 2

2.1. Participants

Ninety-six children were recruited at an exploratory learning center at a local Museum of Science. Four groups of children were tested: 16 2-year olds (mean age 2–9, range 2–6 to 3–0, 6 females), 28 3-year olds (mean age 3–6, range 3–1 to 3–10, 12 females), 27 4-year olds (mean age 4–4, range: 3–11 to 4–11, 19 females), and 25 5-year olds (mean age 5–5, range 5–0 to 6–0, 13 females). Most of the children were middle class and Caucasian.

2.2. Materials and procedure

Children heard two stories that were acted out by the experimenter, one Giving and one Stealing story. Story order was random but each session included one story with male characters and one story with female characters. Adult characters from a generic doll-house set were used, two males and two females. The characters were named by the color of their clothing, e.g., Mrs. Yellow. The following objects were used as property in the stories: a blanket, a bucket, a lamp and a stool. The same procedure as in Experiment 1 was used, with the questions modified as noted above.

2.3. Results

The answers to each question were again scored as 1 if correct and 0 if incorrect and summed into a score for each child (maximum score = 3). Fig. 2 shows children’s mean scores as a function of Age and Type of Transfer.

A 2-way ANOVA of Age \times Type of Transfer revealed a main effect for Age, $F(3, 92) = 3.52$, $p < .02$, $\eta^2 = .10$, a marginal main effect for Transfer, $F(1, 92) = 3.83$, $p = .053$, $\eta^2 = .04$, and a significant interaction of Age \times Type of Transfer, $F(3, 92) = 4.48$, $p < .01$, $\eta^2 = .13$. Tests of the simple effect of Age for each Type of Transfer confirmed that performance improved with age for the Giving story, $F(3, 92) = 6.12$, $p < .001$,

Table 3
Percentage of children following simple patterns.

Age	First possessor bias (%)	Current possessor bias (%)	Loan bias (%)
2	44	6	0
3	39	14	4
4	19	33	7
5	8	4	8

$\eta^2 = .17$, but not for the Stealing story, $F(3,92) = 1.82$. Comparing the mean scores to a chance score of 1.5 revealed that, for the Giving story, 2- and 3-year olds were at chance levels whereas 4- and 5-year olds performed significantly above chance. For the Stealing story, with the exception of 4-year olds, all children performed significantly above chance levels. A second 4-way ANOVA of Order (Giving first or Stealing first) \times Gender \times Age \times Types of Transfer revealed no main effects or interactions for Order or Gender.

To examine the overall performance of individual children, a criterion of five of six correct answers was set, with a cumulative binomial probability of .094. The percentage of children meeting this criterion of competent performance remained relatively flat for the younger children and increased for the 5-year olds. Thus, 31% of 2-year olds, 29% of 3-year olds, 26% of 4-year olds and 64% of 5-year olds met this criterion.

Responses to both stories were examined to determine if children exhibited simple biases to identify the owners in the stories. As in Experiment 1, children who answered five of six questions in favor of the first possessor or the current possessor were counted as having a bias. Again, children who indicated in both stories that the current possessor could take the toy home but that the toy should be returned to the first possessor were counted as having a loan bias. Table 3 shows the percentage of children in each age group who showed one of these patterns.

Inspection of Table 3 reveals that for the younger children the dominant pattern was a first possessor bias. Approximately, 44% of 2-year olds and 39% of 3-year olds favored the first possessor in both the Giving and Stealing stories. By contrast, the vast majority of 4- and 5-year olds did not favor the first possessor. Interestingly, about 14% of 3-year olds and 33% of 4-year olds showed a current possessor bias. None of the age groups exhibited a loan bias.

The justification questions for each story were examined to determine if children distinguished between the Giving and Stealing stories on an appropriate basis. The justifications elicited after Question 1 – At the end of the story is [the toy] still [the first possessor's] or is it [the current possessor's]? Why? – did not differ materially from the justifications for Question 3 – Can [the current possessor] keep the [object] or does she need to give it back to [the first possessor]? Why? Children who responded to both justification questions tended to provide the same answers to both. To allow a direct comparison to Experiment 1, only children's responses to Question 3 for both the Giving and Stealing stories were examined. Children were given credit if they answered Question 3 correctly and provided an appropriate justification as defined in the first experiment. All of the responses were coded by the first author and a second coder. They agreed on 88% of the cases. Two-year olds were again excluded due to a lack of justification responses. Using this criterion, 7% of 3-year olds, 11% of 4-year olds and 40% of 5-year olds provided justifications that properly differentiated the two stories. Thus, older children were again more likely to offer distinct and appropriate justifications but the overall rate was less frequent than in Experiment 1.

2.4. Discussion

Experiment 2 replicated several patterns seen in Experiment 1 as well as showing some unexpected findings. For the Giving story, there was a significant increase with age in correct judgments. Two- and 3-year olds performed at chance levels, whereas 4- and 5-year olds performed above chance. Thus, using adult characters in the Giving story did not make the younger children more willing to allow the permanent transfer of a gift. For the Stealing story, no significant age change in correct judgments was found. In addition, all children, with the exception of 4-year olds, performed above

chance. Children's justifications for their answers in both the Giving and Stealing stories reflected these patterns of results.

The 4-year olds appeared more willing to allow adults to retain control over property not only after receiving it as a gift but also after stealing it. The analysis of children's biases supports this finding. While many 2- and 3-year olds continued to show a first possessor bias, 44% and 39%, respectively, 33% of 4-year olds showed a current possessor bias. As in Experiment 1, none of the age groups showed a strong loan bias. By 5 years of age, again reproducing the pattern found in Experiment 1, the majority of children correctly identified the owners in both stories and did not show any simple biases.

In sum, in the context of transfers between adults, children seem to attain a mature understanding of ownership transfers only by 5 years of age. By this age, children clearly differentiate giving from stealing, only allowing a permanent transfer of property in the case of giving. By contrast, 4-year olds allow permanent transfers of ownership but do not necessarily differentiate legitimate from illegitimate transfers. Specifically, some 4-year olds appear to allow adults, but not children, to take property from each other without permission and to keep it. Consistent with Experiment 1, 2- and 3-year olds tend to favor the first possessor of an object as the owner.

3. General discussion

The results from the two experiments contribute to our understanding of how children's understandings about ownership develop. A mature understanding of ownership requires an appreciation that permanent transfers of property are possible as well as the ability to differentiate legitimate from illegitimate transfers. Not until 5 years of age do children attain this mature view. Five-year olds recognize that ownership is permanently transferred when a gift is given but not when property is stolen. Prior to this mature understanding, a developmental trend is apparent. Two- and 3-year olds tend to identify the first possessor of an object as the owner, no matter what kind of transfer occurs and no matter whether the transfer takes place between children or adults. This first possessor bias prevents young children from recognizing that permanent transfers of ownership are possible. By contrast, 4-year olds do acknowledge that permanent transfers of property are possible, but many 4-year olds struggle to differentiate legitimate from illegitimate transactions. Specifically, they are confused about adult interactions when stealing occurs.

The current findings present robust evidence for an early first possessor bias. These results build on earlier findings by [Friedman and Neary \(2008\)](#) showing that young children inferred ownership using a first possessor "heuristic" in the absence of other information about an interaction between children. Indeed, that bias proved even more robust in the present studies. Whereas [Friedman and Neary \(2008\)](#) report that simple cues such as a wrapped gift induced children to abandon the first possessor bias, the current results show that 2- and 3-year olds were reluctant to allow transfers of property even in the case of a birthday party. Two differences between the two sets of studies may account for the discrepant results. First, [Friedman and Neary \(2008\)](#) used a wrapped gift whereas the gift in the current studies was only described as being wrapped. A visibly wrapped gift may signal more effectively that an object is intended for the recipient and, therefore, in a sense, already owned by her. Second, and more importantly, [Friedman and Neary \(2008\)](#) did not specify an initial owner whereas the object's origin in the home of the first possessor was emphasized in both of the present studies. Children might reason that a wrapped gift with no original owner must belong to the birthday recipient. By contrast, the current study examined transfers that called for recognition of a first, and then a second, owner. It is striking that 2- and 3-year olds resist this transfer even in the highly scripted case of a birthday.

Why do young children show a first possessor bias even if it can sometimes be circumvented? We consider three possible reasons. First, in the face of complex feedback about who owns what, young children may conclude that the outcome of a transfer is inherently uncertain. Children receive much feedback from parents, caregivers and peers about their interactions with property. Mothers request that children as young as 13 months protect personal property and respect other children by not taking their toys ([Gralinski & Kopp, 1993](#)). Children also receive feedback concerning property transactions from peers and caregivers. In an observational study, [Smetana \(1984\)](#) found that

at both 20 and 30 months of age children responded negatively to moral transgressions including the taking of property. These early experiences may sensitize children to interactions with property, but they do not always clearly mark a distinction between legitimate and illegitimate transfers of property. In sibling disputes over toys, parents provide inconsistent feedback concerning ownership rights (Ross, 1996). Observations of families with both a 2- and a 4-year-old child showed that parents supported first possessors and current possessors about equally, regardless of the situation giving rise to the dispute. Given early awareness that property is important and inconsistent feedback about the rights of owners, a first possessor bias that bars all transfers of property may reflect a safe default.

A second possibility is that the early first possessor bias reflects an evolutionary inheritance. Several theorists (Ellis, 1985; Gintis, 2007; Stake, 2004) argue that species as diverse as butterflies (Davies, 1978), horses (Stevens, 1988) and primates (Sigg & Falett, 1985) display evolutionary precursors to human forms of ownership. Indeed, some support exists for a “right of first possession” in other species (Stake, 2004). These findings are consistent with studies showing that children tend to win disputes over property when they are the first possessors of the property (Bakeman & Brownlee, 1982; Weigel, 1984). However, caution is warranted in drawing too strong a conclusion from species far removed from our taxa. In fact, for our more immediate primate ancestors, dominance supersedes first possession during property disputes (Kummer, 1991; Kummer & Cords, 1991). Until there are convincing demonstrations of primates deferring to first possessors, an evolutionary explanation of children’s first possessor bias must be viewed with caution.

A third factor that may affect children’s assessments of property transactions is development of the ability to represent an invisible change in an object’s attributes. Unlike physical attributes such as color or shape, ownership is not available to direct perception. To recognize ownership at all, children must be able to represent an invisible attribute and bind it to the representation of a specific object. In the stealing stories, even the youngest children were able to represent the initial owner–object relationship and to keep track of that attribute when the second character took the toy. However, in order to recognize a transfer of ownership as in the case of gift-giving, children must acknowledge an invisible change.

In a recent study (Ganea, Shutts, Spelke, & DeLoache, 2007), 19- and 22-month olds were introduced to stuffed animals, a frog named Lucy and a pig. Then, with the toys in a different room, an experimenter came to tell the child that she had spilled water on Lucy so that Lucy was now all wet. When asked to retrieve Lucy from the other room, the 22-month olds, but not the 19-month olds, selected the correct wet toy from three possible choices: a wet frog, an identical but dry frog, and a wet pig. The 19-month olds succeeded at a simplified task in which the new information about Lucy was given in front of the toys. These experiments demonstrate a developing capacity to update a mental representation of physical attributes such as wetness when the object itself is absent.

Arguably, updating an invisible attribute such as ownership presents a further challenge for children because a change to the object occurs that is not directly verifiable by perception even when the object is visible. Instead, children must infer a change of ownership either from verbal information provided by others or by witnessing relevant social interactions. Lacking the support provided by direct observation, children may struggle to overwrite the initial ownership. In this sense, mental representations of ownership and other invisible attributes may be more resistant to change than physical attributes. More research is necessary to determine if ownership is unique in this regard or similar to other non-obvious properties.

By 4 years of age, children recognize permanent transfers of property between two characters. However, many 4-year olds still struggle to differentiate legitimate from illegitimate transfers when adults are involved in the transfers. When children transfer toys, 4-year olds appropriately recognize that permanent transfers can occur when there is a birthday but not when the toy has been taken without permission. These findings are consistent with children’s recognition of moral violations. When presented with scenarios in which a child takes a desirable object from another child, older 3- and 4-year olds recognize that these actions are morally wrong whereas younger children do not (Smetana, 1981). In keeping with these results, 4-year olds in Experiment 1 referred to the act of taking without permission when they identified the first possessor (the victim of theft) as the owner in the Stealing story. However, hearing the same stories with adult characters in Experiment 2, a third of

the 4-year olds judged that a permanent transfer had occurred in the case of stealing. These children recognized that property had been taken as opposed to given, yet they still claimed that the thief could keep the object.

Caution is needed in interpreting these results, given the differences between the stories with children and those with adults. A more direct comparison is required before concluding that children accord a special moral status to adults. Still, it is plausible that children's everyday experience in property disputes leads them to misconstrue adults' rights. By 4 years of age, children have likely learned that they do not have complete rights over their property. Parents and caregivers can intervene and remove particular items. Children have also likely experienced or witnessed punishment when objects are taken from other children without permission but they will rarely, if ever, observe adults being punished for stealing. Thus, children have various grounds for inferring that adults have the right to take an object from its original owner.

Lastly, it is interesting to note that no loan bias appeared at any age. Parents and preschool teachers continually encourage children to share their toys. This ethos of sharing could send mixed signals about what rights owners have over objects and when gift giving is permanent. Children might plausibly conclude that all property transfers are temporary loans (Hook, 1993). However, in the current studies, we rarely saw a pattern of responses in which children allowed current possessors to keep the object provided that they returned it. Instead, other simple biases predominated at the younger ages. In future studies, it will be informative to examine the possibility that children permit temporary use, such as playing with a toy in the presence of the owner.

The two studies provide strong evidence that by 5 years of age, children possess a mature understanding of ownership in several important respects. First, they recognize that ownership can be permanently transferred from one person to another. Second, they distinguish legitimate transfers, like giving, from illegitimate transfers, like stealing. Finally, they recognize that this distinction applies to both children and adults. Their mature understanding of giving and stealing provides a firm foundation for learning about more complex interactions with property.

Future research is needed to further explore young children's understanding of ownership transfers. Two- and 3-year olds may apply other basic heuristics that were not assessed here when interpreting transfers of property. For instance, simple norms of politeness may be violated when people take things without asking or fail to thank a gift-giver. Similarly, younger children may empathize with the loser of property in all cases and, therefore, side with the first possessor. Other avenues for future research include investigating other forms of transfer such as non-birthday giving, purchases and trades. Children may also apply different rules to different kinds of objects. For example, they may resist the idea that someone can give away a car or a house. More generally, it is important to note that research on children's understanding of ownership has primarily focused on the transfer of single objects. It remains to be seen how children conceptualize ownership in cases where they are invited to consider the distribution of a large set of items rather than single or unique items.

Finally, it remains to be seen how children progress from a first possessor bias to a mature understanding of ownership. One possibility is that this early bias masks a deeper understanding of the difference between giving and stealing. On this interpretation, we would expect children to show a better understanding of the difference between the two types of transfer, and more specifically a better understanding of gift giving, in circumstances in which the first possessor bias is weakened. Suppose that the donor has a large supply of a given resource—for example, more stickers or candy than he or she needs. If the donor gives one or two items from this large supply, it is conceivable that the first possessor bias will be attenuated, so that even 2- and 3-year olds will grasp that the recipient now owns the donated items. A different possibility is that young children lack a genuine understanding of ownership transfer and would continue to display that lack of understanding even in cases where the first possessor bias is weakened. Further research is needed to distinguish these possibilities.

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Appendix A. Story scripts for Experiment 1

A.1. Giving

This is Sarah and today is her birthday and she's having a party in the park. This is Jill. She's at home right now but she's going to the party and she wants to bring a present. So she looks around her bedroom and she sees this toy horse. So Jill wraps the horse up like a present, brings it to the party and gives it to Sarah. Now Sarah is very excited. She unwraps the present, sees that its this toy horse and says, "Oh boy, this is great!"

[Alternate ending: "Oh boy, this is great! I want to play with it right now!"]

A.2. Stealing

This is John and he's playing in the park today. This is Billy. He's at home right now but he's going to the park and he wants to bring a toy. So he looks around his bedroom and he sees this toy bus. So Billy brings the bus to the park. Then Billy wants a drink of water, so he leaves the bus and goes over here to the water fountain. Now while Billy's gone, John comes over and takes the bus and brings it over to the side and says, "Oh boy, this is great." Now when Billy comes back, he can't find the bus anywhere.

[Alternate ending: Now while Billy's gone, John comes over and takes the bus and brings it over to the side. Now when Billy comes back, he says, "Oh no, where's the bus, I can't find it anywhere!"]

Appendix B. Story scripts for Experiment 2

B.1. Giving

This is Mrs. Yellow and today is her birthday and she's having a party outside. This is Mrs. Blue. She's at home right now but she's going to the party and she wants to bring a present. So she looks around her house and she sees this lamp. So Mrs. Blue wraps the lamp up like a present, brings it to the party and gives it to Mrs. Yellow. Now Mrs. Yellow is very excited. She unwraps the present, sees that its this lamp and says, "Oh boy, this is great!"

B.2. Stealing

This is Mr. Green and he's at the park today. This is Mr. Brown. He's at home right now but he's going to the park and he wants to bring something. So he looks around his house and he sees this blanket. So Mr. Brown brings the blanket to the park. Then Mr. Brown sees some friends, so he leaves the blanket and goes over here to talk to them. Now while Mr. Brown's gone, Mr. Green comes over and takes the blanket and brings it over to the side and says, "Oh boy, this is great." Now when Mr. Brown comes back, he says, "Oh no, where's the blanket, I can't find it anywhere!"

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