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Give and take: Ownership affects how 2- and 3-year-olds allocate resources

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Abstract

In three experiments, we investigated whether 2-3-year-olds ($N = 240$) consider ownership when taking resources for themselves and allocating resources to another agent. When selecting resources for themselves, children generally avoided taking resources that belonged to another agent, and instead favored their own resources (Experiments 1 and 2). However, they did not avoid taking the agent's resources when the only other resources available were described as not belonging to the agent (Experiment 3). Children also selected fewer of the agents' resources when taking for themselves than when giving to the agent (Experiments 2 and 3). In giving to the agent, children were more likely to select the agent's resources than resources not belonging to the agent (Experiment 3). These findings show that ownership affects how 2- and 3-year-olds allocate resources. The findings also provide new evidence that 2-year-olds may respect others' ownership rights, at least to a limited degree, though we also consider an alternative explanation for the findings.

Keywords: ownership rights; resource allocation; property; toddlers; cognitive development; social cognition

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Taking other people's possessions without permission (i.e., stealing) is a straightforward violation of their ownership rights. Yet, we know little about how and when young children come to avoid violating others' ownership rights in this way. Many studies show that 2-year-olds are aware of their own ownership rights, and that 3-year-olds are aware that other people have ownership rights. But studies have not examined whether children at these ages avoid taking others' property. Exploring this may increase knowledge of how ownership affects children's actions, and may inform us about their developing awareness of other people's ownership rights.

Young Children's Understanding of Ownership Rights

Three-year-olds understand and defend other people's ownership rights. They protest when an agent attempts to take or throw away another person's property (Rossano et al., 2011; but see Kangiesser & Hood, 2014); they intervene after property is stolen by restoring it to its owner (Riedl, Jensen, Call, & Tomasello, 2015); and they defend owners' entitlements to lend their property to others (Schmidt, Rakoczy, & Tomasello, 2013). Three-year-olds also show an understanding of ownership rights when making judgments about hypothetical scenarios (e.g., Huh & Friedman, 2017; Neary & Friedman, 2014).

Two-year-olds are aware of their own ownership rights, but may not understand that others also have these rights. They assert their claims to objects when interacting with peers and siblings (e.g., "These are mine"), and react defensively (verbally and physically) when others attempt to take their property (Eisenberg-Berg, Haake, & Bartlett, 1981; Eisenberg-Berg, Haake, Hand, & Sadalla, 1979; Hay & Ross, 1982; Ross, 1996, 2013; Ross, Friedman, & Field, 2015).

However, toddlers do not defend other people's ownership rights, and do not protest when an agent threatens to take someone else's property (Rossano et al., 2011).

Some further findings suggest toddlers may recognize others' ownership rights, but these findings are inconclusive. First, 2-year-olds show empathy to owners whose property is destroyed (Vaish, Carpenter, & Tomasello, 2009), and they predict owners will be upset if their property is used without permission (Pesowski & Friedman, 2015). However, these findings could result from children grasping the emotional consequences of aggression without an awareness of ownership rights. Second, in play sessions, 2-year-olds are more likely to offer a friend a toy belonging to the friend, rather than their own toy (Ross et al., 2011). However, this could reflect an attempt by children to keep their own toy. Consistent with this, children do not reliably offer the friend's toy when it is the only toy available.

In sum, 3-year-olds are aware of other people's ownership rights, but 2-year-olds may lack this understanding. This developmental picture is consistent with claims that children's understanding of ownership begins with the self, and is then extended to other people afterwards (Goddard & Wierzbicka, 2016; Miller, 2017; Rochat, 2011).

Giving and Taking

In this paper, we examine whether 2- and 3-year-olds consider ownership when taking resources for themselves and allocating resources to someone else. This allows us to test whether young children heed others' ownership when acting on objects. In contrast, previous studies of children's ownership-related behavior (as reviewed above) primarily focused on how they responded when others' ownership rights were violated. Two further studies did examine whether children heed others' ownership when acting on objects, but did not show this ability in children aged 3 or younger. In one study, 5-year-olds recognized and respected others' claims

over objects arranged in a manner signaling that they might belong to someone, but 3-year-olds did not show this ability (Rossano, Fiedler, & Tomasello, 2015). In the other study, 4-7-year-olds were sensitive to whether objects were found or made when taking another child's objects, but not when giving their own objects to another child (Davoodi, Nelson, & Blake, in press). However, this study did not test 3-year-olds. Some other studies have examined how young children distribute objects, but without explicitly manipulating who owned them (e.g., Hamann, Warneken, Greenberg, & Tomasello, 2011; Kanngiesser & Warneken, 2012; Rochat et al., 2009; Smith, Blake, & Harris, 2013; Warneken, Lohse, Melis, & Tomasello, 2011). It is possible, though, that children's distributions in at least some studies reflected spontaneous inferences of ownership (Ulber, Hamann, & Tomasello, 2015).

Examining how children give and take resources might provide an especially sensitive measure of their respect for others' ownership. In allocating resources to themselves or another person, children need to only consider one person besides themselves. This may be simpler than responding to situations where one agent threatens another's property, as this requires considering two other people. Recent findings suggest toddlers are more adept at attributing knowledge to an interlocutor than to a third party (Harris, Yang, & Cui, 2017), and similar effects might arise with ownership. Also, children might be more motivated to avoid violating other people's ownership rights than to correct violations committed by third parties. Regardless, if 2-year-olds respect others' ownership when allocating resources, this would cast some doubt on claims that children's notions of ownership rights are initially egocentric, and understood for oneself before others.

The Present Experiments

We conducted three experiments. In each experiment, children saw two sets of resources and were told who owned each set. One set always belonged to another agent, and the other set belonged to children themselves (Experiments 1 and 2) or was described as not belonging to the other agent (Experiment 3). Children then selected resources for themselves (all experiments) or for the other agent (Experiments 2 and 3).

We explicitly told children about who owned the resources because our focus was on children's respect for others' ownership, and not on their ability to infer what others own. If children struggled to infer who owned the resources, this would artificially mask their respect of others' ownership. Crucially, though, we did *not* tell children which resources to select. Given this design, if children respect others' ownership, they should avoid selecting the other agents' resources when choosing resources for themselves.

Experiment 1

Method

Participants. We tested 48 children: 24 2-year-olds (2;0-2;11, $M_{\text{age}} = 2;8$, 9 boys), and 24 3-year-olds (3;0-3;10, $M_{\text{age}} = 3;6$, 14 boys). Two additional 2-year-olds were tested but not included in the analysis because they refused to participate midway through the task. Children in all experiments were tested individually in their day cares. In this experiment, we tested 24 children per age group, and in the subsequent experiments tested 24 children per condition in each age group. We based this stopping rule on previous studies that tested children in this age range (e.g., Rakoczy et al., 2008; Ulber et al., 2015).

Procedure. Children sat at a table with the experimenter to their right, and with eight foam shapes (four red, four yellow) directly in front of them. A cardboard apparatus was behind the shapes, and a teddy bear was to the right of the apparatus (see Figure 1 for sample scripts and

visual depictions of the testing arrangements for all experiments). Children were told that shapes of one color belonged to them and that shapes of the other color belonged to the teddy bear, which was referred to as “Mr. Bear”. The experimenter dropped all the shapes into a cylinder tube at the top of the apparatus.¹ The experimenter gave children a paper bag, and explained that they could take home the bag and anything in it; another paper bag was assigned to the bear. The experimenter then removed a drawer from the apparatus containing the shapes and reintroduced them (“And look, here are the shapes”).

Then, the experimenter asked children to put a shape in the bag they would take home. The experimenter then repeated this request three further times (total requests = 4). With the first request, children could choose any of the eight shapes in the drawer, and with each subsequent request they could choose any of the remaining shapes. By the end, children had placed four shapes in the bag assigned to them; the unchosen shapes remained in the drawer.

When the shapes appeared in the drawer, they were always arranged in a formation in which they were evenly distributed, while still looking potentially random. In all experiments, the color of the shapes belonging to the bear and the order in which children were told the ownership information (e.g., either the bear or the child first) was counterbalanced. Children in all experiments were also asked comprehension questions to confirm they understood the ownership information. Some children remained silent or incorrectly answered these questions. When this happened, the experimenter repeated the ownership information and the comprehension question. If children responded incorrectly a second time, the experimenter corrected them and continued with the task.

¹ We used this apparatus to introduce a delay after the experimenter assigned ownership to children and the teddy bear (i.e., before children completed the task). We had felt this might reduce the sense that the shapes belonged to the experimenter. Later pilot work led us to conclude the delay was not needed. So, it was not used in subsequent experiments.

Experiment 1

The red shapes are Mr. Bear's shapes. The red shapes belong to him. And the yellow shapes are your shapes. The yellow shapes belong to you. *Which shapes are your shapes?*

All of these shapes have to go in this box. I'll put Mr. Bear's shapes in first. Next, I'll put your shapes in. And look, here is a bag. You get to take this bag home. And you get to take home anything that you put in this bag. And look, here is another bag. Mr. Bear gets to take this bag home.

And look! Here are the shapes. Get a shape to take home. Get another shape to take home. Get another shape to take home. Get another shape to take home.

Experiment 2

The red shapes are Mr. Bear's shapes. The red shapes belong to him. And the yellow shapes are your shapes. The yellow shapes belong to you. *Which shapes are Mr. bear's shapes? Which shapes are your shapes?*

First, I'll put Mr. Bear's shapes in. Next, I'll put your shapes in.

And look, here is a bag. Mr. Bear gets to take this bag home. And he gets to take home anything that goes in this bag. I'm going to stand behind you. Get some shapes to put in the bag and tell me when you're all done.

Experiment 3

The red shapes are Mr. Bear's shapes. The red shapes belong to him. And the yellow shapes are *not* Mr. Bear's shapes. The yellow shapes do not belong to him. *Which shapes are Mr. bear's shapes? Which shapes are not Mr. Bear's shapes?*

And look, here is a bag. You get to take this bag home. And you get to take home anything that goes in this bag. I'm going to stand behind you. Get some shapes to put in the bag and tell me when you're all done.

Figure 1. Testing arrangement and sample scripts from all experiments. In each experiment, the experimenter began by saying “We’re going to play a game. This is Mr. Bear. Mr Bear says ‘hi’. And look, here are some shapes”.

Our use of the teddy bear as the other agent is in keeping with previous studies on children's understanding of ownership, fairness, sharing, and norm-violations that have also used puppets and stuffed animals as agents (e.g., Aknin, Broesch, Hamlin, & Van de Vondervoort, 2015; Kanngiesser & Hood, 2014; Melis, Altrichter, & Tomasello, 2013; Rakoczy, Warneken, & Tomasello, 2008; Riedl et al., 2015; Rossano et al., 2011; Schmidt, Svetlova, Johe, & Tomasello, 2016; Vaish, Missana, & Tomasello, 2011). We felt toddlers might find the task easier to understand if the owner remained present during the entire test session, and having the bear serve as the owner allowed us to remove potential confounds that might arise if a person were used instead (e.g., changes in facial expression).

Results and Discussion

Table 1 shows the mean number of shapes children at each age selected in each experiment; see <https://osf.io/pgyjx/> to download the data from all experiments.

Table 1

Mean number of the bear's shapes (Experiments 1-3), the child's shapes (Experiments 1 and 2), and the shapes not belonging to the bear (Experiment 3) that were placed in the bag, with SDs in parentheses.

	2-year-olds		3-year-olds	
	Child-keeps	Bear-keeps	Child-keeps	Bear-keeps
Experiment 1				
Bear's shapes	1.29 (1.30)	---	.96 (1.20)	---
Child's shapes	2.71 (1.30)	---	3.04 (1.19)	---
Experiment 2				
Bear's shapes	2.08 (1.82)	3.33 (1.24)	1.33 (1.93)	3.63 (1.01)
Child's shapes	3.17 (1.44)	2.71 (1.73)	3.63 (1.01)	1.71 (1.99)
Experiment 3				
Bear's shapes	3.21 (1.59)	3.58 (1.14)	3.17 (1.66)	3.88 (.61)
Not-bear's shapes	3.71 (1)	2.75 (1.82)	3.21 (1.59)	1.5 (1.98)

We examined children's choices of their own shapes (i.e., rather than the bear's) using a

generalized estimating equation model (independent correlation matrix, binary logistic data) with the between-subjects factor of age (2 vs 3 years). The model did not reveal a significant main effect of age, $Wald \chi^2(1) = 0.87, p < .349$. A single-sample test (using an intercept-only model) confirmed that children generally avoided taking the bear's shapes, and instead mostly took their own, $Wald \chi^2(1) = 34.17, p < .001$. These findings are consistent with the possibility that 2- and 3-year-olds respect others' ownership when taking resources for themselves.

If children had not been restricted to taking four shapes, though, perhaps they would have taken more of the bear's shapes. We examined this possibility in the next experiment, by allowing children to take as many resources as they wished. The next experiment also examined whether children consider ownership both when taking resources and when giving them.

Experiment 2

Method

Participants. We tested 96 children: 48 2-year-olds (2;0-2;11, $M_{\text{age}} = 2;8$, 31 boys), and 48 3-year-olds (3;1-3;11, $M_{\text{age}} = 3;6$, 22 boys).

Procedure. Children again saw four red foam shapes and four yellow ones, and were told that shapes of one color belonged to them and that shapes of the other color belonged to the teddy bear. The experimenter placed the shapes into a shallow container in a predetermined pattern, and asked children to put some shapes in a paper bag. Children were tested in one of two between-subjects conditions. In one condition, children were told that they would keep the bag and its contents; in the other condition, they were told the bear would keep these things. Equal numbers of children at each age were randomly assigned to each condition.

To avoid distracting or influencing the children, the experimenter stood behind them and pretended to work while they put shapes in the bag. If children did not touch any shapes after 3

seconds, the experimenter prompted them (“Get some shapes to put in the bag.”). Children were instructed to tell the experimenter when they were done putting shapes into the bag. If children did not do this, the experimenter asked them if they were finished 3 seconds after they last touched a shape and remained still or walked away from the table. These precautions and prompts were also used in the next experiment.

Results and Discussion

We first examined the number of shapes from each set that children selected, in a 2(ownership: bear’s shapes, child’s shapes) x 2(condition: child-keeps, bear-keeps) x 2(age: 2, 3) repeated-measures analysis of variance (ANOVA); see Figure 2. This revealed an interaction between ownership and condition, $F(1, 92) = 48.52, p < .001, \eta_p^2 = .35$, and a 3-way interaction between ownership, condition, and age, $F(1, 92) = 8.66, p = .004, \eta_p^2 = .09$. No main effects or other interactions were significant, $ps \geq .225$. We followed-up on these interactions with separate ownership by condition ANOVAs for each age group. Both ANOVAs yielded no significant main effects, $ps \geq .258$, but did reveal ownership x condition interactions: 2-year-olds, $F(1, 46) = 8.41, p = .006, \eta_p^2 = .16$; 3-year-olds, $F(1, 46) = 47.27, p < .001, \eta_p^2 = .51$. This suggests that children at each age were sensitive to information about ownership when allocating the resources. The next analyses specifically tested whether children respected others’ ownership.

To test whether children respect the bear’s ownership, we conducted two tests. First, we tested (across the child-keeps and bear-keeps conditions) whether they selected fewer of the bear’s shapes when choosing for themselves than when allocating to the bear. Children in both age groups did this: 2-year-olds, $t(46) = 2.79, p = .008$; 3-year-olds: $t(46) = 5.16, p < .001$. Second, we tested whether in the child-keeps conditions, they took fewer of the bear’s shapes

than their own shapes. Again, children in both age groups did this: 2-year-olds, $t(23) = 2.37, p = .027$; 3-year-olds, $t(23) = 4.98, p < .001$.

Figure 2. *Experiment 2.* Mean number of shapes placed in the bag. Error bars show ± 1 standard errors of the means.

A few further findings suggested that 3-year-olds were more intent in taking their own shapes than were 2-year-olds, though these findings do not speak to respect for others' ownership. Children aged 3 selected fewer of their shapes when giving to the bear than when taking for themselves, $t(46) = 4.21, p < .001$, and gave the bear more of his shapes than their own shapes, $t(23) = 4.75, p < .001$. In contrast, 2-year-olds selected their shapes at similar rates regardless of who would keep them, $t(46) = 1.00, p = .323$; and when choosing shapes for the bear to keep, they selected their shapes and the bear's shapes at similar rates, $t(23) = -1.69, p = .105$.

Together, these findings suggest that 2- and 3-year-olds respect others' ownership when allocating resources. However, in contrast with the first experiment, children's responses also varied with age and respect for others' ownership was weaker in 2-year-olds (who on average took about half the bear's resources for themselves) than in 3-year-olds.

In the next experiment, we further examine whether children show any respect for others' ownership when children themselves do not own any of the resources. To examine this, we compared how they allocated resources owned by the bear with resources simply described as not belonging to the bear. One potential benefit of this comparison is that it removes the possibility of children's responses being influenced by greater attention or preferences to their belongings.

Experiment 3

Method

Participants. We tested 96 children: 48 2-year-olds (2;0-2;11, $M_{\text{age}} = 2;8$, 25 boys) and 48 3-year-olds (3;0-3;11, $M_{\text{age}} = 3;7$, 32 boys). Four additional 2-year-olds were tested but not included in the analysis because they refused to participate midway through the task.

Procedure. Children again saw four red shapes and four yellow ones. They were told that shapes of one color belonged to a teddy bear Mr. Bear, and that shapes of the other color did *not* belong to him. In each age group, equal numbers of children were again randomly assigned to either a "child-keeps" or "bear-keeps" condition. To simplify the testing procedure, the shapes were arranged by color instead of the arrangement used in the first two experiments. Children in both conditions were asked to put some shapes in the bag, and the number of shapes selected was not restricted.

Results and Discussion

We first examined the number of shapes children selected in a 2(ownership: bear's shapes, not-bear's shapes) x 2(condition: child-keeps, bear-keeps) x 2(age: 2, 3) repeated-measures ANOVA; see Figure 3. There was a main effect of ownership, $F(1, 92) = 10.61, p = .002, \eta_p^2 = .10$, a marginal effect of condition, $F(1, 92) = 3.11, p = .081, \eta_p^2 = .03$, a marginal effect of age, $F(1, 92) = 2.80, p = .098, \eta_p^2 = .03$. The analysis also yielded an ownership by condition interaction, $F(1, 92) = 20.98, p < .001, \eta_p^2 = .19$, and an ownership by age interaction, $F(1, 92) = 5.97, p = .016, \eta_p^2 = .061$. No other interactions were significant, $ps \geq .189$.

The ownership by condition interaction suggests that children considered ownership when allocating resources, but the findings only provide mixed support for respect for the bear's ownership. Consistent with respect for the bear's ownership, children selected fewer of the bear's shapes when taking resources for themselves ($M = 3.19, SD = 1.61$) than when allocating to the bear ($M = 3.73, SD = .92$), $t(94) = 2.03, p = .045$. However, when children took resources for themselves, they chose the bear's shapes and the not-bear's shapes at similar rates, $t(47) = -.86, p = .394$. This latter finding is inconsistent with respect for the bear's ownership.

Figure 3. *Experiment 3.* Mean number of shapes children placed in the bags. Error bars show ± 1 standard errors of the means.

Analyses following-up on the ownership x condition interaction showed that children selected more not-bear's shapes when taking resources for themselves ($M = 3.46$, $SD = 1.34$) than when allocating to the bear ($M = 2.13$, $SD = 1.99$), $t(94) = 3.86$, $p < .001$, and gave the bear more of its shapes than not-bear's shapes, $t(47) = 5.72$, $p < .001$. This finding suggests recognition that the bear was entitled to its own shapes.

Finally, the ownership by age interaction resulted because 3-year-olds showed an overall tendency to select more of the bear's shapes than the not-bear's shapes, $t(47) = 3.13$, $p = .003$, while this difference was not apparent in 2-year-olds, $t(47) = 0.65$, $p = .519$.

In sum, these findings were mixed about whether young children show any respect for others' ownership. Children selected fewer of the bear's shapes when taking for themselves than when choosing for the bear. They also gave the bear more of its shapes than non-bear shapes. But in choosing for themselves, children were as likely to take the bear's shapes as the other shapes. One explanation for this latter finding is that children assumed the not-bear's shapes must belong to *someone*. Hence, when the experimenter invited children to choose shapes to take home, they might have felt uncertain about which shapes would be more acceptable to take. We consider another explanation for this finding below.

General Discussion

Our findings show that ownership affects how 2- and 3-year-olds allocate resources. When choosing resources for themselves, children took fewer resources belonging to another agent than resources belonging to themselves (Experiments 1 and 2), though children did not avoid the other agent's resources when choosing between these and resources described as not belonging to the agent (Experiment 3). Children also showed some avoidance of the other

agent's resources when we compared how many of those resources they chose for themselves with how many they allocated to the agent (Experiments 2 and 3). Finally, in allocating resources to the agent, children were more likely to give the agent's resources than resources not owned by the agent (Experiment 3).

These findings reveal a novel way that ownership affects young children's actions. Previous studies show that young children protest agents who violate the ownership rights of third parties (Rossano et al., 2011; also see Schmidt et al., 2013) and restore illegitimately taken objects to their rightful owners (Riedl et al., 2015). The present findings show that ownership also affects how young children give and take resources (but see Davoodi et al., 2017 for a related study on slightly older children).

Why did ownership affect young children's giving and taking? One possibility is that children's allocations reflect respect for others' ownership rights. Children may have shown some avoidance of the teddy bear's resources because they recognized that the teddy bear had specific rights over its resources and was entitled to make decisions about them. Or perhaps children simply remembered the simple rule that taking others' property is unacceptable.

Regardless, the possibility that children as young as age two considered others' ownership rights is noteworthy. As reviewed, previous studies found that 3-year-olds are aware of others' ownership rights, but did not find this with 2-year-olds. Toddlers succeed in acknowledging that other people own objects (e.g., Blake, Ganea, & Harris, 2012; Blake & Harris, 2009; Brownell, Iesue, Nichols, & Svetlova, 2013; Fasig, 2000; Friedman & Neary, 2008; Ross et al., 2015). But previous findings suggest they are unaware of others' ownership rights (Rossano et al., 2011) or only provide ambiguous evidence for this awareness (e.g., Pesowski & Friedman, 2015; Ross et al., 2015). Such previous findings are in line with the view

that children first recognize their own ownership rights, and only later appreciate these rights in others (Goddard & Wierzbicka, 2016; Miller, 2017; Rochat, 2011). Hence, if 2-year-olds in our study recognized the bear's ownership rights, this may change our understanding of how ownership develops.

A potential difficulty for this "ownership rights" account, though, is that children only showed weak respect for ownership. They avoided taking the bear's resources to some extent but took many of the bear's resources nevertheless. Respect for ownership was especially limited in the third experiment, which only found mixed evidence for respect for the bear's ownership. In all of our experiments, performance factors could have weakened children's ability or inclination to respect the bear's ownership. An adult authority essentially invited children to take resources the bear's resources, and so children may have felt they had tacit permission to take them. Also, when children allocate resources, they may have had difficulty overcoming a strong drive to self-maximize and take as many resources as possible for themselves (e.g., Rochat et al., 2009; Smith et al., 2013).

Alternative explanations for the effects of ownership may be possible. When a person is granted ownership of an object, this increases how much they like it (mere ownership effect; e.g., Beggan, 1992). This effect of ownership on preferences has been found in children as young as age two (e.g., Gelman, Manczak, & Noles, 2012). So, perhaps our participants took more of their own shapes compared with shapes belonging to the bear simply because they preferred them (i.e., and not because of respect for the bear's ownership rights). This preference-based account may explain why children in the final experiment were as likely to take the bear's shapes as shapes described as not belonging to the bear—children may have chosen these shapes at similar rates because they liked them equally (i.e., as neither set of shapes belonged to children

themselves). However, the preference-based account does not fit as well with other findings. For example, it cannot readily explain why ownership had *any* effect in the third experiment. If children's allocations only depended on their preferences for their property, then there should be no effects of ownership when children do not own any of the resources.

It will be helpful for future research to more directly test why ownership affects young children's resource allocations—perhaps concern for others' ownership rights and preference-driven actions both contribute. One approach to teasing apart these accounts may be to manipulate the desirability of the objects to be allocated. For example, if resources belonging to children are less desirable than those belonging to the other agent, it would be less plausible for more ownership to explain their decisions about what to take. Examining allocations for more desirable objects might also be interesting in other ways. As noted above, young children often self-maximize when distributing resources, and keep all resources for themselves (e.g., Rochat et al., 2009; Smith et al., 2013). Some studies have identified factors that counteract this tendency (e.g., Hamann et al., 2011; Kanngiesser & Warneken, 2012; Ulber et al., 2015; Warneken et al., 2011). Investigating how ownership affects allocations of desirable resources might reveal that it is another factor that limits self-maximizing tendencies.

References

- Aknin, L. B., Broesch, T., Hamlin, J. K., & Van de Vondervoort, J. W. (2015). Prosocial behavior leads to happiness in a small-scale rural society. *Journal of Experimental Psychology: General*, 144, 788-795. doi:10.1037/xge0000082
- Beggan, J. K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, 62(2), 229-237. doi:10.1037/0022-3514.62.2.229
- Blake, P. R., Ganea, P. A., & Harris, P. L. (2012). Possession is not always the law: With age, preschoolers increasingly use verbal information to identify who owns what. *Journal of Experimental Child Psychology*, 113, 259-272. doi:10.1016/j.jecp.2012.06.008
- Blake, P. R., & Harris, P. L. (2009). Children's understanding of ownership transfers. *Cognitive Development*, 24, 133-145. doi:10.1016/j.cogdev.2009.01.002
- Blake, P. R., McAuliffe, K., & Warneken, F. (2014). The developmental origins of fairness: The knowledge–behavior gap. *Trends in Cognitive Sciences*, 18, 559-561. doi:10.1016/j.tics.2014.08.003
- Brownell, C. A., Iesue, S.S., Nichols, S. R., & Svetlova, M. (2013). Mine or yours? Development of sharing in toddlers in relation to ownership understanding. *Child Development*, 84, 906-920. doi:10.1111/cdev.12009
- Davoodi, T., Nelson, L. J., & Blake, P. R. (in press). Children's conceptions of ownership for self and other: Categorical ownership versus strength of claim. *Child Development*. doi:10.1111/cdev.13163

- Eisenberg-Berg, N., Haake, R., & Bartlett, K. (1981). The effects of possession and ownership on the sharing and proprietary behaviors of preschool children. *Merrill-Palmer Quarterly of Behavior and Development*, 27, 61-68.
- Eisenberg-Berg, N., Haake, R., Hand, M., & Sadalla, E. (1979). Effects of instructions concerning ownership of a toy on preschoolers' sharing and defensive behaviors. *Developmental Psychology*, 15, 460-461. doi:10.1037/0012-1649.15.4.460
- Fasig, L. G. (2000). Toddlers' understanding of ownership: Implications for self-concept development. *Social Development*, 9, 370-382. doi:10.1111/1467-9507.00131
- Friedman, O., & Neary, K. R. (2008). Determining who owns what: Do children infer ownership from first possession? *Cognition*, 107, 829-849. doi:10.1016/j.cognition.2007.12.002
- Gelman, S. A., Manczak, E. M., & Noles, N. S. (2012). The nonobvious basis of ownership: Preschool children trace the history and value of owned objects. *Child Development*, 83, 1732-1747. doi:10.1111/j.1467-8624.2012.01806.x
- Goddard, C., & Wierzbicka, A. (2016). "It's mine!" Re-thinking the conceptual semantics of "possession" through NSM. *Language Sciences*, 56, 93–104. doi: 10.1016/j.langsci.2016.03.002
- Hamann, K., Warneken, F., Greenberg, J. R., & Tomasello, M. (2011). Collaboration encourages equal sharing in children but not in chimpanzees. *Nature*, 476, 328-331. doi:10.1038/nature10278
- Harris, P. L., Yang, B., & Cui, Y. (2017). 'I don't know': Children's early talk about knowledge. *Mind & Language*, 32, 283-307. doi:10.1111/mila.12143
- Hay, D.H. (2006). Yours and mine: Toddlers' talk about possessions with familiar peers. *British Journal of Developmental Psychology*, 24, 39-52. doi:10.1348/026151005X68880

- Hay, D. F., & Ross, H. S. (1982). The social nature of early conflict. *Child Development*, 53, 105-113. doi:10.2307/1129642
- Huh, M., & Friedman, O. (2017). Young children's understanding of the limits and benefits of group ownership. *Developmental Psychology*, 53(4), 686-697. doi:10.1037/dev0000284
- Kanngiesser, P., & Hood, B. M. (2014). Young children's understanding of ownership rights for newly made objects. *Cognitive Development*, 29, 30-40. doi:10.1016/j.cogdev.2013.09.003
- Kanngiesser, P., & Warneken, F. (2012). Young children consider merit when sharing resources with others. *PloS ONE*, 7, e43979. doi:10.1371/journal.pone.0043979
- Melis, A.P., Altrichter, K., & Tomasello, M. (2013). Allocation of resources to collaborators and free-riders in 3-year-olds. *Journal of Experimental Child Psychology*, 114, 364-370. doi:10.1016/j.jecp.2012.08.006
- Miller, S.A. (2017). Ages & Stages: Working through that "It's mine" feeling. *Early Childhood Today*. Retrieved from: <https://www.scholastic.com/teachers/articles/teaching-content/ages-stages-working-through-its-mine-feeling/>
- Neary, K. R., & Friedman, O. (2014). Young children give priority to ownership when judging who should use an object. *Child Development*, 85, 326-337. doi:10.1111/cdev.12120
- Pesowski, M. L., & Friedman, O. (2015). Preschoolers and toddlers use ownership to predict basic emotions. *Emotion*, 15, 104-108. doi:10.1037/emo0000027
- Rakoczy, H., Warneken, F., & Tomasello, M. (2008). The sources of normativity: Young children's awareness of the normative structure of games. *Developmental Psychology*, 44, 875-881. doi:10.1037/0012-1649.44.3.875

- Riedl, K., Jensen, K., Call, J., & Tomasello, M. (2015). Restorative justice in children. *Current Biology*, 25, 1731-1735. doi:10.1016/j.cub.2015.05.014
- Rochat, P. (2011). Possession and morality in early development. In H. Ross & O. Friedman (Eds.), *Origins of ownership of property. New Directions for Child and Adolescent Development*, 132, 23–38. doi:10.1002/cd.294
- Rochat, P., Dias, M. D., Liping, G., Broesch, T., Passos-Ferreira, C., Winning, A., & Berg, B. (2009). Fairness in distributive justice by 3- and 5-year-olds across seven cultures. *Journal of Cross-Cultural Psychology*, 40, 416-442. doi:10.1177/0022022109332844
- Ross, H. S. (1996). Negotiating principles of entitlement in sibling property disputes. *Developmental Psychology*, 32, 90-101. doi:10.1037/0012-1649.32.1.90
- Ross, H. S. (2013). Effects of ownership rights on conflicts between toddler peers. *Infancy*, 18, 256-275. doi:10.1111/j.1532-7078.2012.00121.x
- Ross, H., Friedman, O., & Field, A. (2015). Toddlers assert and acknowledge ownership rights. *Social Development*, 24, 341-356. doi:10.1111/sode.12101
- Rossano, F., Fiedler, L., & Tomasello, M. (2015). Preschoolers' understanding of the role of communication and cooperation in establishing property rights. *Developmental Psychology*, 51(2), 176-184. doi:10.1037/a0038493
- Rossano, F., Rakoczy, H., & Tomasello, M. (2011). Young children's understanding of violations of property rights. *Cognition*, 121, 219-227. doi:10.1016/j.cognition.2011.06.007

- Schmidt, M. F. H., Rakoczy, H., & Tomasello, M. (2013). Young children understand and defend the entitlements of others. *Journal of Experimental Child Psychology*, 116, 930-944. doi:10.1016/j.jecp.2013.06.013
- Schmidt, M. F.H., Svetlova, M., Johe, J., & Tomasello, M. (2016). Children's developing understanding of legitimate reasons for allocating resources unequally. *Cognitive Development*, 37, 42-52. doi:10.1016/j.cogdev.2015.11.001
- Smith, C. E., Blake, P. R., & Harris, P. L. (2013). I should but I won't: Why young children endorse norms of fair sharing but do not follow them. *PloS ONE*, 8, e59510. doi:10.1371/journal.pone.0059510
- Snare, F. (1972). The concept of property. *American Philosophical Quarterly*, 9, 200-206.
- Tomasello, M. (1998). One child's early talk about possession. *Typological Studies in Language*, 36, 349-373. doi:10.1075/tsl.36.13tom
- Ulber, J., Hamann, K., & Tomasello, M. (2015). How 18- and 24-month-old peers divide resources among themselves. *Journal of Experimental Child Psychology*, 140, 228-244. doi:10.1016/j.jecp.2015.07.009
- Vaish, A., Carpenter, M., & Tomasello, M. (2009). Sympathy through affective perspective taking and its relation to prosocial behavior in toddlers. *Developmental Psychology*, 45, 534-543. doi:10.1037/a0014322
- Vaish, A., Missana, M., & Tomasello, M. (2011). Three-year-old children intervene in third-party moral transgressions. *British Journal of Developmental Psychology*, 29, 124-130. doi:10.1348/026151010X532888
- Warneken, F., Lohse, K., Melis, A. P., & Tomasello, M. (2011). Young children share the spoils after collaboration. *Psychological Science*, 22, 267-273. doi:10.1177/0956797610395392