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Using versus liking: Young children use ownership to predict actions, but not to infer preferences

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Abstract

Three experiments show that young children (N=384) use ownership to predict actions, but not to infer preferences. In Experiment 1, 3-6-year-olds considered ownership when predicting actions, but did not expect it to trump preferences. In Experiment 2, 4-5-year-olds, but not 3-year-olds, used ownership to predict actions, and 5-year-olds grasped that an agent would use their own property, despite preferring someone else's. This experiment also showed that relating an agent to an object interfered with 3-4-year-olds' judgments that a more attractive object is preferred. Finally, Experiment 3 found that 3-4-year-olds do not believe that owning an object increases regard for it. These findings are informative about the kinds of information children use to predict actions, and the inferences they make from ownership. The findings also reveal specificity in how children use ownership to make judgments about others, and suggest that children more closely relate ownership to people's actions than to their desires.

Using versus liking: Young children use ownership to predict actions, but not to infer preferences

Preferences and ownership conflict when we prefer and desire other people's belongings over our own. Preferring and desiring others' property is so prevalent, we are warned against it in the tenth commandment, "Thou shalt not covet". Yet, rather than acting according to our preferences, we typically act on the basis of ownership. When we prefer someone else's magazine, phone, or bicycle, we do not attempt to take it, and instead use our own. This respect for ownership matters for predicting other people's actions. If we ignored ownership, and only considered people's preferences and desires, we would erroneously expect violations of ownership to be rampant.

Although we frequently prefer others' belongings over our own, ownership may also counteract these preferences, as we typically prefer our belongings over similar objects we do not own. Increased regard for our own belongings occurs for several reasons: We typically decide what to acquire, and so we choose objects we like (Noles & Gelman, 2014); when we choose to acquire an object, the very act of choosing increases how much we like it (e.g., Brehm, 1956); and receiving an object, even without having chosen it, also increases our regard for it (e.g., Beggan, 1992; Kahneman, Knetsch, & Thaler, 1991). This increased regard for owned objects also matters for understanding other people. To correctly anticipate others' preferences, we must remember that they may have an inflated regard for their belongings.

Here we investigate whether preschoolers consider these two facts of ownership when making judgments about other people—we investigate whether they use ownership to predict actions and to infer preferences. We already know that children use information about ownership

to judge whether actions are acceptable (Kim & Kalish, 2009; Neary & Friedman, 2014; Rossano, Rakoczy, & Tomasello, 2011), to predict people's emotions (Pesowski & Friedman, 2015), and to infer history and seek historical traces (Gelman, Manczak, Was, & Noles, 2016; Nancekivell & Friedman, 2014b). If preschoolers also use ownership to predict actions and to infer desires, this will reveal further ways they use information about ownership. Also, if children use ownership in just one of these ways (e.g., to anticipate actions, but not preferences), the findings will reveal specificity in how children use ownership in their judgments about other people.

Predicting Actions

It is plausible that preschoolers use ownership to predict how others *will* act because they consider it when judging how others *should* act (e.g., Kanngiesser & Hood, 2014; Kim & Kalish, 2009; Nancekivell & Friedman, 2014a; Neary & Friedman, 2014; Rossano, Rakoczy, & Tomasello, 2011). However, some findings suggest that young children could have difficulty predicting that ownership will cause people to act against their preferences and desires. When young children consider situations where an agent's preferences and desires conflict with rules or moral principles, they are often as likely to predict the agent will act on their preferences as to predict the agent will heed the rules (Bernard, Clément, & Kaufmann, 2016, Experiment 1; Kalish & Shiverick, 2004, Experiment 2; Lagattuta, Nucci, & Bosacki, 2010).¹ Similarly, young children often deny that others can act against their desires (Kushnir, Gopnik, Chernyak, Seiver, & Wellman, 2015). Beliefs that people will (or must) act according to their desires could impede

¹ One study featuring such conflicts found that preschoolers predominantly predicted that an agent would heed norms and rules, and would act against their desires (Chernyak, Kushnir, Sullivan, & Wang, 2013). However, in this study, the agent was initially described as having always acted in accord with the norms and rules, and so it is possible that this extra information influenced their judgments. Bernard et al. (2016) also found children were more likely to predict that rules would be followed when predicting the actions of a group.

preschoolers from predicting that others will respect ownership, especially when this requires acting against desires.

To our knowledge, only one previous study has specifically examined whether children consider ownership when predicting others' actions (Pietraszewski & Shaw, 2015), though it examined 6- to 8-year-olds and not preschoolers. In this study, children predicted that when two similarly-sized agents fight over an object, the owner of the object will prevail over an adversary who likes it. Ownership also mitigated children's predictions that a larger adversary will defeat a smaller one. However, the study only found limited evidence that ownership influences children's expectations about how long agents will search for a lost object. A few other studies have asked children to predict *whether* one agent will steal another's belongings (e.g., Lagattuta et al., 2010; Smetana, 1985; Tisak & Turiel, 1988), to judge *who* an agent stole from (Baron & Dunham, 2015; Chalik & Rhodes, 2014; Rhodes, 2012), or to judge *which* agent stole an item (Baron, Dunham, Banaji, & Carey, 2014; Dunham, Baron, & Carey, 2011). However, these studies did not specifically address whether children consider ownership when predicting behavior—the studies did not manipulate information about ownership, and in most of these studies, the analyses collapsed questions pertaining to stealing with questions about other moral violations. As such, we do not yet know whether preschoolers use ownership to predict people's actions.

Inferring Preferences

It is again plausible that preschoolers might consider ownership when inferring other people's preferences, as some findings suggest that ownership impacts their own preferences. Some experiments have found that preschoolers and young children come to prefer objects that were recently assigned to them (Gelman, Manczak, & Noles, 2012; Harbaugh, Krause, &

Vesterlund, 2001), though these effects may be fragile (Hood, Weltzien, Marsh, & Kanngiesser, 2016; Lucas, Wagner, & Chow, 2008; also see Hood & Bloom, 2008). However, dramatic evidence that ownership is linked with inflated preferences comes from findings showing that 3-year-olds prefer their own visibly-used toys over new replacements (Gelman & Davidson, 2016). Interestingly, this preference for older owned objects only occurs for sleep-objects and animate toys (e.g., stuffed animals), but not for regular inanimate toys.

To our knowledge, only one study has directly examined whether children expect others to prefer their own belongings (Gelman et al., 2012), and the findings suggested that children do not expect this. In the study, 2- and 3-year-olds preferred toys given to them over other similar toys, but they did not infer that a researcher preferred toys they assigned to themselves (Gelman et al., 2012). Broadly consistent with this, children do not make inferences about which of two people prefers an object from information that allows them to infer which person owns it (Malcolm, Defeyter, & Friedman, 2014; Verkuyten, Sierksma, & Martinovic, 2015; Verkuyten, Sierksma, & Thijs, 2015). Nonetheless, we felt the issue of whether preschoolers use ownership to infer preferences warrants further investigation. For example, although children might not expect owners to prefer objects they just acquired, children might nonetheless expect owners to prefer possessions they have owned for a while.

The Current Experiments

We conducted three experiments. In Experiment 1, children predicted which of two objects an agent would take—an unowned object or one that the agent preferred, but which either belonged to the agent or to someone else. To make it plausible that one object was unowned, the objects in these vignettes were natural kinds. In Experiment 2, children saw vignettes in which the object belonging to the agent was visibly less preferable than an object belonging to someone

else, and either predicted the agent's actions or inferred their preferences. Here we asked children about artifacts, because the vignettes did not feature un-owned objects. Finally, in Experiment 3, we investigated whether children are more likely to infer that an agent prefers an object if it belongs to the agent, rather than the agent's neighbor.

Experiment 1

Methods

Participants. We tested 144 children: 36 3-year-olds (3;0-3;11, $M_{\text{age}} = 3;5$, 17 males), 36 4-year-olds (4;0-4;11, $M_{\text{age}} = 4;6$, 24 males), 36 5-year-olds (5;0-5;11, $M_{\text{age}} = 5;7$, 15 males), and 36 6-year-olds (6;0-6;11, $M_{\text{age}} = 6;6$, 18 males). In all experiments, children were individually tested at daycares and schools. Different children were tested in each experiment.

Procedure. In all experiments, condition was manipulated between-subjects, with children in each age group randomly assigned to one of two conditions. In each condition, each child saw two stories from the same condition, with pictures shown on a laptop computer, and accompanying narration provided by the experimenter.

In this experiment, each story was about an agent and two objects (a boy and two apple trees in story 1, a girl and two seashells in story 2). The agent preferred one object over the other (red apples preferred over green apples, larger seashell preferred over a smaller one). In one condition, the preferred object belonged to the agent; in the other condition, this object belonged to an adult of the opposite gender. In both conditions, the less preferred object was unowned. After hearing each story, children were asked to predict which object the agent would take (e.g., "Which tree will the boy pick an apple from?"). Following this, they were asked a comprehension question confirming they knew which object was owned. Finally, children were

asked whether it was acceptable for the agent to take the object they had indicated. See Figure 1 for a sample image and script.

Figure 1. *Experiment 1.* Sample image and script. Text varying between conditions appears in square brackets.

Children occasionally said “I don’t know” or remained silent in response to a question. When this happened for a test question, the experimenter began the scenario anew, and repeated the question; when this happened for any other question, the experimenter repeated the question only. These procedures were also used in the subsequent experiments.

Results

We examined children’s predictions that the agent would choose the preferred object (see Figure 2). See the online Supplementary Materials for means and standard deviations from all experiments, and for information about children’s responses to the follow-up “acceptability” question from this experiment; data from all experiments are available at <https://osf.io/rm3a2/>. A 2(condition: agent-owns, other-owns) X 4(age: 3, 4, 5, 6) generalized estimating equations (GEE) model for binary logistic data revealed a main effect of condition, Wald $\chi^2(1) = 26.23$, $p < .001$, a marginal effect of age, Wald $\chi^2(3) = 6.71$, $p = .082$, and no interaction, $p = .522$. The main effect of condition resulted because children were more likely to predict the agent would

choose the preferred object when it belonged to the agent, compared with when it belonged to someone else. An analysis limited to trials in which children correctly answered the comprehension question revealed the same pattern of results.

Figure 2. *Experiment 1.* Mean times children indicated the preferred object across the two test trials. Error bars show ± 1 standard errors of the means.

We also examined whether children indicated the preferred object at rates departing from chance; for these analyses, we entered responses from each condition into an intercept-only model. Children mostly indicated this object when it belonged to the agent, Wald $\chi^2(1) = 43.97$, $p < .001$, and responded at chance when it belonged to someone else, Wald $\chi^2(1) = 1.98$, $p = .160$.

Discussion

Children considered ownership when predicting people's actions, but ownership did not trump preferences. Although children predicted the agent would take the preferred object when it belonged to the agent, they generally chose between the objects at chance when it belonged to someone else.

However, certain elements of our vignettes could have limited the influence of ownership on children's predictions. Apples and seashells are readily available natural-kinds (especially in the context of apple trees and a beach), and have relatively little value (see Rhodes & Brickman, 2011 for evidence that children's social judgments are sensitive to resource abundance).

Although previous findings show that children can reason about ownership rights over such objects (Nancekivell & Friedman, 2014a, Experiment 2), children could feel that taking such objects is not *especially* wrong, leading them to give less priority to ownership when predicting actions relating to such objects. Similarly, when the preferred object belonged to an adult, some children might have assumed that the adult was the agent's caregiver, making it more permissible for the agent to take the object. Children may also have had difficulty integrating and simultaneously considering all the verbal information told to them, as this included information about the agent's preference and about who owned each object.

Given these concerns, the next experiment used simpler vignettes about artifacts. In each vignette, one artifact belonged to the agent, while another artifact belonged to someone else and was visibly more attractive than the agent's. Making preferences inferable from the attractiveness of the artifacts reduced memory demands, as children were not told which object was preferred by the agent. Because our main interest was in preschoolers, and because we did not find significant effects of age in the Experiment 1, we only tested children aged 3 to 5 in this next experiment.

Experiment 2

Methods

Participants. We initially tested a sample 120 children: 40 3-year-olds (3;0-3;10, $M_{\text{age}} = 3;6$, 20 males), 40 4-year-olds (4;0-4;11, $M_{\text{age}} = 4;5$, 19 males), and 40 5-year-olds (5;0-5;11,

$M_{\text{age}} = 5;7$, 22 males). When then conducted a control condition on a further sample of 40 children: 20 3-year-olds ($3;1-3;11$, $M_{\text{age}} = 3;7$, 12 males), and 20 4-year-olds ($4;0-4;11$, $M_{\text{age}} = 4;5$, 7 males). In this experiment, and those subsequent, we tested 20 children per age per condition.

Procedure. Children saw two stories. Each was about an agent and two objects, one more attractive than the other (a girl and two wagons in story 1; a boy and two toy cars in story 2). Children were tested in one of three between-subjects conditions: action, preference, or control. In the “action” condition, the unattractive object belonged to the agent, and children were asked to predict which object the agent will take (“Which wagon will the girl take home?”). In the “preference” condition, the ownership assignments were the same, but children were asked to infer which object the agent prefers (“Which wagon does the girl like more?”). The control condition used the same slides and scripts as the preference condition, except children were not told about ownership. Including this condition allowed us to assess whether children judged that each agent preferred the more attractive object, when no other information was provided. See Figure 3 for a sample materials from these conditions.

Action. Here is a girl. She is at the park. And look! Here is a wagon. This wagon belongs to the girl. And look! Here is another wagon. This wagon belongs to someone else. *Which wagon will the girl take home?*

Preference. Here is a girl. She is at the park. And look! Here is a wagon. This wagon belongs to the girl. And look! Here is another wagon. This wagon belongs to someone else. *Which wagon does the girl like more?*

Control. Here is a girl. She is at the park. And look! Here are two wagons. *Which wagon does the girl like more?*

Figure 3. *Experiment 2.* Sample image and scripts.

Results

We first examined whether children's choices of the unattractive object, which belonged to the agent, varied between the action and preference conditions; see Figure 4. A 2(condition: action, preference) x 3(age in years: 3, 4, 5) GEE model revealed a main effect of condition, in which children were overall more likely to indicate the agent's object when predicting actions than when inferring preferences, Wald $\chi^2(1) = 21.81, p < .001$. There was no main effect of age, $p = .230$, but there was a condition by age interaction, Wald $\chi^2(1) = 7.28, p = .026$. Pairwise comparisons revealed that this interaction resulted because 4- and 5-year-olds were more likely to indicate the agent's object when predicting actions than when inferring preferences, $ps \leq .001$, whereas 3-year-olds responses did not differ across conditions, $p = .346$.

Intercept-only models showed that 4- and 5-year-olds mostly predicted actions by indicating the agent would take their own object, $ps \leq .006$, while 3-year-olds responded at chance, $p = .796$. When inferring preferences, 5-year-olds mostly judged that the agent preferred the more attractive object belonging to someone else, $p = .013$, but 3- and 4-year-olds chose between the objects at chance, both $ps \geq .284$.

Figure 4. *Experiment 2.* Mean times children indicated the agent's object in the action and preference conditions. Error bars show ± 1 standard errors of the means.

In the preference condition, 5-year-olds inferred that the agent preferred the more attractive object, but 3- and 4-year-olds did not. One possibility is that this could stem from younger children being insensitive to the differences between the objects (i.e., 3- and 4-year-olds might have found the objects equally attractive). Alternatively, some 3-4-year-olds could have been swayed to choose the less attractive object by the information that the agent owned it. To examine this possibility, we compared 3-4-year-olds' responses between the preference and control conditions, as these conditions only differed in whether children were told about ownership. A 2(age: 3, 4) x 2(condition: preference, control) GEE model revealed a main effect of condition, Wald $\chi^2(1) = 4.67, p < .031$, but no main effect of age and no condition by age interaction, both $ps = .279$. The main effect of condition resulted because children were more likely to infer that the agent preferred the unattractive object when told it belonged to the agent than when not told this. With no information about ownership provided, children mostly inferred

that the agent preferred the more attractive object, intercept-only model, Wald $\chi^2(1) = 18.27, p < .001$.

Discussion

The results show that 4- and 5-year-olds use ownership to predict actions, and that 5-year-olds understand that ownership can trump an agent's preferences. It is unclear whether 4-year-olds understand this because, like 3-year-olds, they did not infer that the agent preferred the more attractive object. The comparison of the preference and control conditions also suggests that 3- and 4-year-olds may believe that owning an object increases preference for it, as they were more likely to judge that the agent liked the unattractive object when told it belonged to the agent. However, the findings do not show that 3- and 4-year-olds were influenced by the agent's ownership *per se*; their preference attributions could be swayed by any information relating the agent to one of the objects. In our final experiment, we *directly* tested whether children at these ages believe that owning an object increases preference for it.

Experiment 3

Methods

Participants. We tested 80 children: 40 3-year-olds (3;0-3;11, $M_{\text{age}} = 3;5$, 20 males), and 40 4-year-olds (4;0-4;11, $M_{\text{age}} = 4;4$, 23 males). Two additional 3-year-olds were tested but replaced because they did not provide meaningful responses to the test question.

Procedure. Children were told two stories using the slides from Experiment 2. In one condition, the less attractive object belonged to the agent; in the other condition, the less attractive object belonged to the agent's neighbor. The attractive object always belonged to someone else. After hearing each story, children were asked which object the agent liked more.

Results

We examined how often children inferred that the agent preferred the less attractive object using a 2(owner: agent, neighbor) x 2(age: 3, 4) GEE model. This model revealed no significant effects, all $ps \geq .206$. To examine whether this null effect truly indicates no effect of condition (i.e., rather than a failure to detect a small effect), we also ran a Bayesian independent samples t-test in JASP (downloaded from <https://jasp-stats.org/>) to compare the mean scores in each condition (collapsing across trials). The BF01 was 4.21 suggesting that the data were over four times more likely to be observed under the null hypothesis (i.e., responses do not vary by condition) than under the hypothesis that responses varied by condition. We also found that children indicated that the agent preferred the less attractive object at chance rates (44% of responses), intercept-only model, $p = .204$, and this was also observed when separately examining children in each condition, $ps \geq .256$.

Discussion

Children's responses did not vary based on whether the less attractive object belonged to the agent or to the agent's neighbor. These findings suggest that children do not believe that owning an object increases one's preference for it. To integrate this finding with those from Study 2: Overall it appears that children's inferences of an agent's preferences are influenced by information about information ownership. However, they are no more influenced by information that the agent owns the object than by information that someone related to the agent owns it, and such findings raise the possibility that we would similar effects if children were told other information connecting the agent to the object.

General Discussion

We investigated whether preschoolers use ownership to predict actions and to infer preferences. Regarding actions, we found that preschoolers do use ownership to predict what

other people will do. In our first experiment, children were sensitive to ownership when predicting whether an agent would take owned or non-owned natural kinds, though they did not anticipate that it would trump the agent's preferences. Children aged 4 and 5 were also sensitive to ownership when predicting which artifact an agent would take, and here 5-year-olds did judge that ownership would trump preferences. Regarding preferences, we found that children do not specifically link owning an object with increased regard for it (see Gelman et al., 2012 for previous evidence of this). For example, 3- and 4-year-olds were no more likely to infer that an agent preferred an object they owned than to prefer one belonging to a neighbor, and 5-year-olds acknowledged that the agent preferred a more attractive object that belonged to someone else.

Together, these findings increase knowledge of how children use information about ownership and how they predict others' actions. Our findings show that children use ownership to predict actions, and three aspects of the findings suggest this is a robust means by which they make these predictions. First, they did not just respond to questions by following an associative strategy, and simply choose whichever object had been related to the agent in each story. For instance, if children had done this in the second experiment, they would have responded identically when inferring preferences and predicting actions. Second, children based predictions on ownership even though they were provided with other information relevant for predicting actions (i.e., information about, or relevant to, the agent's desires). Third, children often predicted the agent would not use someone else's property, even though that person was absent and the agent could plausibly have used it without being punished. The robustness of children's ownership-based action predictions is especially striking given that children often have difficulty predicting that people will heed rules and moral principles when these conflict with preferences and desires (e.g., Kalish & Shiverick, 2004; Lagattuta et al., 2010), and given that preschoolers

sometimes deny that people can act against their desires (Kushnir, Gopnik, Chernyak, Seiver, & Wellman, 2015).

The findings also reveal *specificity* in how children use ownership to make inferences about others, and suggest that children more closely relate ownership to people's actions than to their desires and preferences. Why might this be? One possibility is that this difference simply reflects children's experiences. Children might be exposed to more instances where people respect others' ownership than instances where they show strong or inflated preferences for their belongings. This might also be true when children reflect on their own actions and preferences. Children may predominantly respect others' ownership rights, but may have limited awareness that they prefer their own belonging over other objects. It is especially likely that children may lack awareness that ownership affects their preferences given that these effects may be fragile for most objects (Gelman et al., 2012; Harbaugh, Krause, & Vesterlund, 2001; Hood et al., 2016; Lucas et al., 2008), and only robust for stuffed animals and sleep-objects (Gelman & Davidson, 2016). As such, it might be interesting to explore whether children would be more likely to appreciate that others will prefer their belongings over other items if asked about such objects.

Alternatively, actions may be more central to children's conception of ownership than are preferences or desires. Ownership rights specifically concern people's actions, as they make prescriptions about who is permitted to use an object (e.g., Snare, 1972). These rights protect owners' control over their belongings, and likely function to reduce conflicts and competition over objects and resources (e.g., Stake, 2004). Moreover, ownership can only serve these purposes if people respect it most of the time—the ownership status of objects would become essentially meaningless if most people freely used objects without considering whether they belong to someone else. In contrast, the link between ownership and desires is more tenuous—

desiring or liking an object does not make it yours, nor does disliking an object suffice to disown it (see Noles & Gelman, 2014 for evidence that children are aware of this latter point). As such, the nature and functions of ownership may make it more reasonable to predict that people will respect ownership than to infer that they like their belongings.

We close by considering a question that follows from our findings. Our findings show that children use ownership to predict others' actions, and that by age five they understand that ownership can trump preferences and desires. However, our studies do not address *how* children integrate information about ownership and preferences when predicting actions. On one approach, we could imagine that ownership and preferences differ in salience, or in the weight they are given in children's decisions. Viewed this way, we might explain development in children's responses by positing age-related changes in the relative salience of each factor, or in the weight they are given in children's judgments. For example, we might posit that compared with younger children, older children give relatively more weight to desires and preferences, and relatively less attention to ownership (for related discussion see Pesowski & Friedman, 2016).

Alternatively, children might integrate information about ownership and preferences by *reasoning* about how likely a particular agent would be to give in to temptation, and act on their preferences and desires, instead of respecting ownership. If children engage in this kind of reasoning, their judgments may depend on myriad factors, including the nature of the agent they are considering (e.g., an adult, a child, someone with a history of misdeeds), how much the agent likes each object, and how bad it would be for the agent to use someone else's property without permission. Some support for this form of reasoning is provided by the difference in 5-year-olds' performance across the experiments, as they appeared to give less weight to ownership for the natural kinds in first experiment than for the artifacts in the second. In this reasoning-based

approach, development in children's judgments could stem from age-related changes in children's knowledge about how different factors are likely to affect people's actions, and from improvements in their ability to consider many kinds of information at once.

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