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#### **Title**

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#### **Journal**

Proceedings of the Annual Meeting of the Cognitive Science Society, 40(0)

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#### **Publication Date**

2018

# An Ownership-Advantage in Preschoolers' Future-Oriented Thinking

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## Abstract

The ability to anticipate the future improves markedly across the preschool years. One major area of improvement is in children's ability to consider their future preferences. Whereas 5-year-olds understand they will prefer adult items in the future, 3-year-olds indicate they will continue to prefer child items. In the present research, we show that preschoolers (N=120) show an ownership-advantage in their future-oriented thinking—they are better able to indicate which objects they will own as adults than to indicate what they will like. These findings are informative about the basis for children's difficulty anticipating their future preferences, and also reveal differences between how children think about ownership and preferences.

**Keywords:** episodic-future thinking; preferences; ownership; cognitive development; preschool-aged children

## Introduction

People think about the future often and use such simulations to guide their decisions in the present (Atance & O'Neill, 2001; Szpunar, Spreng, & Schacter, 2014). For example, if you are absolutely confident that Taylor Swift will continue to be your favorite singer in 20 years, you might feel it would be reasonable to have her face tattooed on your back. However, if you can anticipate that your taste in pop stars may change in the coming years, you might decide against the tattoo. Correctly anticipating the future is difficult, though, and one reason for this is that people often fail to anticipate the extent to which they will change in the future (Quoidbach, Gilbert, & Wilson, 2013).

Anticipating future change is especially difficult for young children, though their ability to do this improves markedly across the preschool years (Atance & Caza, 2018; Bélanger, Atance, Varghese, Nguyen, & Vendetti, 2014; Lee & Atance, 2016). For example, in Bélanger et al. (2014), preschoolers were asked to indicate objects they would prefer as adults, and could respond by choosing items that were either appropriate for children or for adults. At age 3, preschoolers predominantly chose the child item, but by age 5, their difficulty diminished and children succeeded in acknowledging they will like the adult item in the future. When asked instead about the current preferences of an adult, though, even the younger children's performance was significantly above chance. These findings suggest that younger preschoolers

suffer not from a lack of knowledge of adult preferences, but rather from difficulty engaging in episodic future thinking and, specifically, a limited ability to take the perspective of their future selves.

In the present experiment, we seek to better understand these age-related difficulties and improvements in preschoolers' ability to envisage the future by comparing judgments about their own future possessions and preferences. In other words, we ask whether preschoolers find it easier to reason about what they will *have* as compared to what they will *like*. Addressing this question may shed light on why preschoolers struggle to acknowledge what they will prefer as adults, and may also be informative about differences in how children reason about ownership and preferences.

## Ownership and Preferences

The prediction that children might show an ownership-advantage in imagining their futures may be surprising as owning and liking are similar in some ways, and also often co-occur. People often like the things they own: They typically decide which possessions to acquire, and therefore often have things they like (see Noles & Gelman, 2014). The act of choosing to acquire a possession also increases regard for it (e.g., Brehm, 1956). Finally, when a person is given an object, this also increases the extent to which they like and value it (e.g., Beggan, 1992; Kahneman, Knetsch, & Thaler, 1991).

Given this correlation between preferences and ownership, why might preschoolers reason differently about their future ownership and future liking? One reason is that for children, ownership and preferences are not so closely related. Unlike adults, preschoolers and young children do not consistently prefer their possessions over other objects. Some studies find they do have such preferences (Gelman, Manczak, & Noles, 2012; Harbaugh, Krause, & Vesterlund, 2001), but other studies find children do not (Hood, Weltzien, Marsh, & Kanngiesser, 2016; Lucas, Wagner, & Chow, 2008).<sup>1</sup> Moreover, preschoolers do not anticipate that other people like

<sup>1</sup>Children do consistently prefer certain possessions (e.g., stuffed animals, and attachment objects) over potential replacements (Gelman & Davidson, 2016; Hood & Bloom, 2008). However, such objects only form a small subset of the objects children own.

their own possessions over other objects (Gelman et al., 2012; Pesowski & Friedman, 2018), and they readily acknowledge that people can own things they dislike (Noles & Gelman, 2014). Finally, we might also expect differences in children's judgments about future ownership and liking because children draw on different cues and principles when inferring ownership and preferences (e.g., Malcolm, Defeyter, & Friedman, 2014; Verkuyten, Sierksma, & Thijs, 2015; Verkuyten, Sierksma, & Martinovic, 2015) and when explaining them (Nancekivell & Friedman, 2014).

These previous findings suggest children think about ownership and liking in quite different ways, and so they could have different expectations about what they will own as adults and what they will like and prefer. But why might children find it easier to acknowledge their future ownership? One reason is that preferring and liking an object is something we feel, but ownership is not. We crave desired objects, and may be stung with disappointment when we fail to obtain them. Ownership is different. Although it can be accompanied by feelings like possessiveness or "psychological ownership", it is not strictly tied to such feelings; people do not always feel possessive about things they own, and sometimes feel possessive of things they do not actually own (e.g., Kamleitner & Feuchtl, 2015; Kirk, Peck, & Swain, in press; Peck & Shu, 2009; Pierce, Kostova, & Dirks, 2003). Moreover, as reviewed above, there is little evidence that children generally have special feelings or regard for their possessions, outside of attachment objects and stuffed animals (Gelman & Davidson, 2016). Together, this suggests that compared with reasoning about preferences, children may reason about ownership in a more distanced manner. As such, considering future ownership may sidestep the need to imagine oneself as having different mental states in the future. Instead, children may draw on their semantic knowledge of which kinds of objects are typically owned by adults, and engage in more script-based responding.

Second, inferring future ownership may impose less executive demands than inferring future preferences. When children are shown child and adult items, they are likely to generally prefer the child items, and they can spontaneously form preferences for child items they have never seen before. As such, anticipating their future preferences likely requires them to consider conflicting desires (i.e., present versus future). Previous research suggests this can be difficult for younger preschoolers (e.g., Wright Cassidy et al., 2005; Moore et al., 1995), and that considering conflicting desires makes executive demands when children's own desires are involved in the conflict (Fizke, Barthel, Peters, & Rakoczy, 2014). However, children are unlikely to own all of the child items in a set of stimuli. A child may indeed own a children's bicycle, but it is doubtful that they will own the very same bicycle chosen for inclusion in an experiment. So, while children must almost always inhibit the present to indicate their future preferences, it is less likely that they need to do this when indicating their future ownership. Indicating ownership

should therefore require significantly less conflict inhibition than indicating preferences, which may allow children to better engage in future-oriented reasoning.

In sum, children could find it easier to anticipate their futures if asked about what they will own as adults than if asked about what they will like and prefer. We investigated this possibility in an experiment on children aged three to five years.

## Experiment

### Methods

**Participants** We tested 120 children in the main experiment: 40 3-year-olds (mean age = 3;5 [years; months], range = 3;0-3;11, 20 girls), 40 4-year-olds (mean age = 4;6, range = 4;0-4;11, 22 girls), and 40 5-year-olds (mean age = 5;6, range = 5;0-5;11, 15 girls). An additional three children gave fewer than four responses across the six test trials, and were therefore replaced. We also tested a different group of 40 3- and 4-year-olds (Mean age = 3;11, range = 3;1-4;10, 22 girls) in a preliminary study conducted to select appropriate stimuli for the main experiment. Children were individually tested in daycares and preschools in the Waterloo Region.

**Materials** All stimuli were shown in a slideshow. The first slide showed a picture of a group of children; the second slide showed a picture of a group of adults; and the next slide was blank. The remaining 6 slides each showed a pair of thematically matched images of a child object and an adult object. The pairs appeared in the following fixed order (left side, right side): piggy-bank, wallet; newspaper, book; saxophone, xylophone; child bicycle, adult bicycle; sippy cup, mug; mechanical pencils, crayons. In all pairs, the images were set against white backgrounds. In a preliminary study, we confirmed that preschoolers mostly preferred the child item over the adult item in each of these 6 items pairs (all  $ps \leq .003$ , binomial sign tests).

**Procedure** Children were tested in one of two between-subjects conditions, ownership or preference; assignment to condition was random, with equal numbers of children at each age assigned to each condition. In each condition, children viewed the slideshow on a laptop computer. They first saw the picture of the group of children as the experimenter introduced the idea of different people having (ownership condition) or liking (preference condition) different things. The experimenter then pointed to the picture and said, "Right now you're a kid, but one day you'll be all grown up like these people", at which point the slide changed to the picture of adults. Children were told that they would see some items, and then completed a series of six test trials. In each trial, children saw a slide showing an adult object and a child object, and they were either asked to indicate which item they would have when they grow up (ownership condition) or which item they would like when they grow up (preference condition). If a response was ambiguous (e.g., if a child said "bike" when presented with a child and adult bicycle), children were asked to point at their selection.

## Results

We entered children’s responses into a generalized estimating equations (GEE) model (binary logistic) with the predictors condition (ownership, preference), item type, and age (3, 4, or 5 years; entered as a covariate, and transformed to correspond with the values 0, 1, and 2); see Table 1. This revealed a main effect of condition, Wald  $\chi^2(1) = 4.69, p = .030$ , in which children were more likely to select adult items when judging future ownership than future preferences. There was a main effect of item type, Wald  $\chi^2(5) = 24.28, p < .001$ , as children were more likely to select adult items for some item pairings. There was also a main effect of age, Wald  $\chi^2(1) = 46.71, p < .001$ , in which older children were overall more likely than younger children to indicate adult items. All interactions were non-significant,  $ps \geq .259$ , except the interaction between item type and age was marginally significant,  $p = .053$ .

Table 1: Mean proportion of adult items chosen with SDs in brackets.

| Age     | Item               | Ownership   | Preference  |
|---------|--------------------|-------------|-------------|
| 3 years | wallet             | 0.37 (0.50) | 0.15 (0.37) |
|         | newspaper          | 0.40 (0.50) | 0.25 (0.44) |
|         | saxophone          | 0.63 (0.50) | 0.58 (0.51) |
|         | adult bicycle      | 0.63 (0.50) | 0.20 (0.41) |
|         | mug                | 0.75 (0.44) | 0.45 (0.51) |
| 4 years | mechanical pencils | 0.50 (0.51) | 0.40 (0.50) |
|         | wallet             | 0.68 (0.48) | 0.30 (0.47) |
|         | newspaper          | 0.79 (0.42) | 0.55 (0.51) |
|         | saxophone          | 0.70 (0.47) | 0.75 (0.44) |
|         | adult bicycle      | 0.80 (0.41) | 0.85 (0.37) |
| 5 years | mug                | 0.85 (0.37) | 0.70 (0.47) |
|         | mechanical pencils | 0.90 (0.31) | 0.85 (0.37) |
|         | wallet             | 1.00 (0.00) | 0.72 (0.46) |
|         | newspaper          | 0.90 (0.31) | 0.75 (0.44) |
|         | saxophone          | 0.85 (0.37) | 0.85 (0.37) |
|         | adult bicycle      | 0.95 (0.22) | 0.90 (0.31) |
|         | mug                | 1.00 (0.00) | 0.95 (0.22) |
|         | mechanical pencils | 1.00 (0.00) | 0.90 (0.31) |

We also examined whether children in each age group and condition mostly chose adult items (GEE, intercept-only model); see Figure 1. When judging what they will own in the future, children mostly chose the adult items at ages 4 and 5,  $ps \leq .001$ , while 3-year-olds chose adult items at chance rates,  $p = .527$ . When judging what they will like in the future, children mostly chose the adult items at ages 4 and 5,  $ps \leq .017$ , while 3-year-olds mostly chose child items,  $p = .001$ .

## Discussion

We found that preschoolers are better able to predict which objects they will own and have as adults than to predict which objects they will prefer. Children often succeeded in anticipating they would own age-appropriate items as adults, but

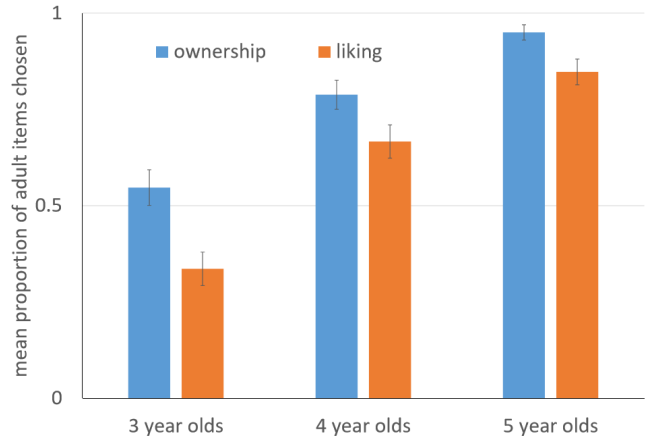


Figure 1: Mean proportion of trials where children chose the adult item over the child item; vertical lines show  $\pm 1$  standard error of the mean.

performed more poorly when anticipating which items they would like as adults. Although the ownership-advantage was not limited to one age group, its effect was particularly notable in 3-year-olds. Children aged 4 and 5 mostly indicated they would both prefer and own adult items in the future. However, 3-year-olds mostly indicated they would prefer child items in the future, but indicated future ownership of adult and child items equally often.

Our findings build on previous studies in revealing a novel way in which children’s understanding of ownership differs from their understanding of preferences. Moreover, our findings provide insight into the reasons that preschoolers often have difficulty imagining their future preferences. This difficulty does not stem from a failure to anticipate their future as adults—after all, even the youngest children showed some ability to anticipate what they would own in the future. As such, the findings suggest that children’s difficulty shows some specificity to predicting their future preferences.

The ownership advantage we detected is consistent with both explanations put forth in our Introduction. First, thinking about what we will own in the future may draw predominantly on our semantic knowledge about the world, thus circumventing the need to mentally project oneself into the future. This is consistent with Bélanger et al.’s (2014) finding that preschoolers could more readily predict what an adult liked now than what they, themselves, would like in the future. Presumably, in both of these facilitative contexts, children need only draw on their semantic knowledge of adulthood. In contrast, thinking about one’s own future preferences may require children to engage in “mental time travel”, an ability that develops markedly during the preschool years (Atance, 2015).

Second, our results are consistent with the claim that the ownership-advantage might be explained by differential executive demands between considering future preferences and ownership. When inferring future preferences, children likely

had to inhibit a response based on their current preference for child objects, while also imagining a shift in preference towards adult items they did not like. However, inferences of future ownership may be less demanding, as children are less likely to own any of the objects, and so may not need to inhibit a dominant response. Further, they do not need to overcome an internal state to infer what they will own; they need only know that they will probably have the adult item in the future. Although the developmental trajectory in our results gives credence to this account, as 3-year-olds have more difficulty with inhibition tasks than 4- and 5-year-olds (Carlson, 2005; Garon, Bryson, & Smith, 2008), future research is needed to directly test this link.

These two explanations for the ownership-advantage in children's future-oriented thinking are not mutually exclusive. One way to provide more clarity regarding the cause of the ownership-advantage would be to perform a further study with an added condition, in which children indicate the items they think an adult currently owns and likes. Based on the findings of Bélanger et al. (2014), children are more successful in judging what a current adult likes than in judging what they themselves will like as adults. However, it is unknown whether a similar difference would be observed in children's ownership judgments, and whether the ownership-advantage would disappear or remain when children's judgments concern another adult.

Our "semantic knowledge" explanation for the ownership-advantage predicts it should disappear (or be greatly diminished) when children make judgments about a current adult, as children should be able to infer an adult's preferences by drawing on their semantic knowledge, and without needing to envision their *own* preferences as changing. Conversely, our "executive demands" account predicts the ownership-advantage should largely remain. Asking children about an adult (rather than their future selves) will not change the fact that children generally prefer child items, but do not own them. So even when answering questions about an adult, preference judgments could continue to make greater executive demands than ownership judgments. Finally, our results suggest a potential method for improving young children's predictions about their future preferences. Children might find it easier to acknowledge that they will prefer adult items if they are first asked to think about what they might own in the future. Although some research suggests that young children do not necessarily link owning with liking when they consider *other* people (Gelman et al., 2012; Pesowski & Friedman, 2018), it is nonetheless possible that a bootstrapping effect may occur when children consider their future selves. For instance, if inferences about children's future ownership rely largely on semantic knowledge, then priming children with considerations of ownership may lead them to also draw on this knowledge in their preference judgments as well.

## Acknowledgments

This research was supported by a grant from the Natural Sciences and Engineering Research Council of Canada awarded to OF, and by a grant from the Natural Sciences and Engineering Research Council of Canada awarded to CA.

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