Preprint version of

Goulding, B. W., Atance, C. M., & Friedman, O. (2019). An advantage for ownership over preferences in children's future thinking. *Developmental Psychology*.
<https://dx.doi.org/10.1037/dev0000759>

This preprint may not fully correspond with the version published in the journal

An Advantage for Ownership over Preferences in Children's Future Thinking

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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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Abstract

The ability to anticipate the future improves significantly across the preschool years. Whereas 5-year-olds understand they will prefer adult items in the future, 3-year-olds indicate they will continue to prefer child items. We explore these age-related changes in future-oriented cognition by comparing children's inferences about their future preferences with judgements about their future ownership. In Experiment 1, we show that 3- to 5-year-olds ($N = 120$) exhibit an ownership-advantage in their future-thinking—they are better able to indicate which objects they will own as adults than to indicate which they will prefer. We propose two explanations for this finding. First, children may rely more heavily on their semantic knowledge when inferring ownership than when inferring preferences, allowing them to sidestep the difficult task of mentally projecting themselves into the future. Second, ownership inferences may involve less conflict than preference inferences (e.g., conflict between a child's present and future desires). In Experiment 2, we test these accounts by comparing 3-year-olds' ($N = 120$) judgements about their own future ownership and preferences with judgements about what a present adult owns and prefers. We replicate the ownership-advantage from Experiment 1, and further find that the ownership-advantage holds when reasoning about a present adult. Our findings therefore support the conflict account, suggesting children struggle to infer what they will prefer as adults because their present and future preferences are in conflict.

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

An Advantage for Ownership over Preferences in Children's Future Thinking

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 think it reasonable to have her face tattooed on your back. However, if you can anticipate that your taste in pop stars may change, 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 (Quoidbach, Gilbert, & Wilson, 2013).

Anticipating future change is especially difficult for young children, but their ability to do so improves markedly across the preschool years (Atance & Caza, 2018; Bélanger, Atance, Varghese, Nguyen, & Vendetti, 2014; Lee & Atance, 2016). For example, in Bélanger et al. preschoolers were asked to indicate objects they would prefer as adults, and could respond by choosing items that were either appropriate for children (e.g., Play-Doh) or for adults (e.g., crossword puzzles). At age 3, preschoolers predominantly chose the child items, but by age 5, their difficulty diminished and children acknowledged that although they preferred the child items now, they would prefer the adult items in the future. Interestingly, however, when asked instead about the current preferences of an adult, even the younger children's performance was significantly above chance. These findings suggest that younger preschoolers' difficulty predicting their future preferences does not stem from their lack of knowledge of adult preferences but, rather, from their limited ability to take the perspective of their future selves. The capacity to envision one's future perspective is an important aspect of what researchers refer to as episodic future thinking (Atance & O'Neill, 2001; Szpunar, Spreng, & Schacter, 2014).

In the present experiment, we seek to better understand these age-related difficulties and improvements in preschoolers' ability to envisage the future by exploring whether preschoolers find it easier to reason about what they will *own* in the future than what they will *like and prefer*. Addressing this issue may shed light on why preschoolers have difficulty acknowledging their future preferences, and may also be informative about differences in how children reason about ownership and preferences.

Ownership and Preferences

That children might show an ownership-advantage in imagining their futures may seem counter-intuitive given that owning and liking are similar in some ways, and also can 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 overlap 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. Although preschools do prefer their own possessions over other objects (Gelman, Manczak, & Noles, 2012; Harbaugh, Krause, & Vesterlund, 2001; Hartley & Fisher, 2018), they do not anticipate that other people prefer their own possessions over other objects (Gelman et al., 2012; Pesowski & Friedman, 2018), and readily acknowledge that people can own things they dislike (Goulding & Friedman, 2018; Noles & Gelman, 2014). We might also expect differences in children's judgments about future ownership and liking because children draw on different cues and principles when inferring and

explaining ownership and preferences (e.g., Malcolm, Defeyter, & Friedman, 2014; Verkuyten, Sierksma, & Martinovic, 2015; Verkuyten, Sierksma, & Thijs, 2015). For example, children often refer to an object's history when explaining why a person owns it (e.g., "He bought it"), but are more likely to refer to its characteristics when explaining why a person likes it (e.g., "It's red"; Nancekivell & Friedman, 2014).

These previous findings suggest children think about ownership and liking in quite different ways, and so may also 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 can feel (i.e., it is affective), whereas ownership is not. We crave desired objects, and may be stung with disappointment when we fail to obtain them. Ownership is different. It can be accompanied by feelings like possessiveness or "psychological ownership", but it is not equivalent to those feelings.¹ As such, considering future ownership may sidestep the need to imagine oneself as having different mental states in the future. For example, a child wondering whether she will *like* magazines when she grows up may attempt to mentally project herself into an imagined future to simulate how she will feel about magazines; but such mental projection is difficult, and may only emerge later in development (Atance & O'Neill, 2001; Tulving, 2005). Conversely, a child imagining whether she will *have* magazines may merely draw on her stereotypical knowledge of whether adults usually possess magazines, without simulating what it will feel like to have one. Considering future ownership, as compared to future preferences, may therefore allow children

¹ 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, 2017; Peck & Shu, 2009; Pierce, Kostova, & Dirks, 2003).

to 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 involve less conflict than inferring future preferences. One reason for this may be that children generally prefer child items to adult items. So, when presented with pairings of child and adult items and asked which they will prefer in the *future*, they may be more likely to choose the child items because they prefer them *now*. Anticipating their future preferences therefore requires that children consider conflicting desires (i.e., present versus future). Previous research suggests this can be difficult for younger preschoolers (e.g., 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, inferences of future ownership should involve less conflict between a child's current and future self. 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 typically set aside their current preferences to consider their future ones, it is less likely that they need to set aside the present when inferring their future ownership. This is because ownership is fixed at the outset of the task and children are unlikely to own the items presented to them, whereas preferences can be held for any item and can even form during the task itself as children view stimuli for the first time.

There are other conceivable ways in which inferring preferences introduces greater conflict than inferring ownership. For example, children often decide what they prefer, but may rarely get the opportunity to decide what they own. They may therefore feel freer to choose when asked what they will prefer, but less free to do so when inferring what they will have. This, too,

would create more conflict between the child and adult items when inferring preferences versus ownership. Reducing such conflict 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 two experiments. In the first experiment, we show that children aged three to five reason significantly better when asked what they will own versus prefer as adults. In the second experiment, we focus on 3-year-olds and test between the two competing explanations outlined above for why children show an ownership-advantage: (1) reasoning about future ownership draws on semantic vs episodic reasoning, and (2) reasoning about ownership, as compared to preferences, reduces the need to overcome conflict. To distinguish between these explanations, we compare children's judgements about their future ownership and preferences with judgements about what an adult presently owns and prefers.

Experiment 1

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 this experiment, we

adhered to a stopping rule of 20 children per age per condition because this was the general stopping rule in our lab at the time this data was collected (this rule has been subsequently revised). All studies reported in this paper were approved by the Office of Research Ethics at the University of Waterloo under the project name and number “Social Understanding in Children,” ORE#20042.

Materials. All stimuli were shown in a slide show. 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 six 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 the preliminary study, we confirmed that preschoolers preferred the child item over the adult item in each of the six item 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. Within each age group, there were no significant differences in age (in months) between conditions, $ps > .641$. In each condition, children viewed the slideshow on a lap-top computer. They first saw the picture of the group of children, while 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 that the experimenter wanted to know which of the items the child would have (ownership condition) or

like best (preference condition) when they grew up. Children then completed six test trials. In each trial, children saw a slide with an adult object and a child object opposite each other, and were again asked to indicate either what they will have when they grow up (“Which one will you have?”) or what they will like (“Which one will you like?”). If a response was ambiguous (e.g., child said “bike” when presented with a child and adult bicycle), children were asked to point at their selection.

Results and Discussion

All data for both experiments are available at <https://osf.io/d7fzc/>. Figure 1 shows responses in each condition by age-in-months. Table 1 shows responses for each item-pair; to convey developmental differences, the table is partitioned by age-in-years.

We entered children’s responses into a generalized estimating equations (GEE) model (binary logistic) with the following predictors: relation (ownership, preference), item type, and age in months (mean-centered and entered as a covariate). This revealed a main effect of relation, Wald $\chi^2(1) = 9.12, p = .002$, as children were more likely to select adult items when judging future ownership than future preferences. There was a main effect of item type, Wald $\chi^2(5) = 20.21, p = .001$, as children were more likely to select adult items for some item pairings. There was also a main effect of age, Wald $\chi^2(1) = 63.05, p < .001$, as older children were more likely than younger children to indicate adult items. However, these effects were qualified by interactions between relation and item type, Wald $\chi^2(5) = 12.06, p = .034$, and between item type and age, Wald $\chi^2(5) = 17.12, p = .004$. No other interactions were significant, $ps \geq .192$.

The interaction between relation and item-type occurred because the ownership-advantage was significant for three item pairs (wallet/piggy bank, newspaper/book, mug/sippy cup), $ps \leq .048$, marginal for one (adult bicycle/child bicycle), $p = .078$, and non-significant for

two (saxophone/xylophone, pencils/crayons), $ps \geq .288$. Notably, children's judgements never reflected a preference-advantage; either an ownership-advantage emerged, or future ownership and preference did not significantly differ. The interaction between item type and age occurred because children became more likely with age to select adult items in certain item pairs, but because this interaction did not feature our factor of interest (i.e., relation) we do not consider it further.

Table 1

Mean proportion of adult items chosen in Experiment 1 with SDs in bracket.

Item-pair	Relation	3-year-olds	4-year-olds	5-year-olds
wallet / piggy bank	Ownership	.37 (.50)	.68 (.48)	1.00 (.00)
	Preference	.15 (.37)	.30 (.47)	.72 (.46)
newspaper / book	Ownership	.40 (.50)	.79 (.42)	.90 (.31)
	Preference	.25 (.44)	.55 (.51)	.75 (.44)
saxophone / xylophone	Ownership	.63 (.50)	.70 (.47)	.85 (.37)
	Preference	.58 (.51)	.75 (.44)	.85 (.37)
adult bicycle / child bicycle	Ownership	.63 (.50)	.80 (.41)	.95 (.22)
	Preference	.20 (.41)	.85 (.37)	.90 (.31)
mug / sippy cup	Ownership	.75 (.44)	.85 (.37)	1.00 (.00)
	Preference	.45 (.51)	.70 (.47)	.95 (.22)
mechanical pencils / crayons	Ownership	.50 (.51)	.90 (.31)	1.00 (.00)
	Preference	.40 (.50)	.85 (.37)	.90 (.31)

Figure 1: Scatterplot showing the proportion of trials in which children chose the adult item over the child item in Experiment 1. Trendlines are for scores within each relation. Points are jittered to decrease overplotting.

We found that children reasoned more accurately about what they would own in the future than about what they would prefer. This ownership-advantage 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 (i.e., thinking about what an adult likes now and thinking about what you will own in the future), 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 episodic future thinking, an ability that develops markedly during the preschool years (Atance, 2015).² In doing so, children attempt to take the perspective of their future self, but may have difficulty imagining that their self will change over time (i.e., that they no longer prefer child items over adult items). Second, our results are also consistent with the claim that the ownership-advantage is explained by greater conflict between one's present and future when considering future preferences, as compared to future ownership.

To test between these two explanations for the ownership-advantage, we conducted another experiment using a 2x2 design in which children inferred either preferences or ownership, and did so for either their future-selves or a present adult. We know from Bélanger et al. (2014) that 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 predicts the ownership-advantage should disappear (or be greatly diminished) when children make judgments about a current adult. This is because both in the preferences and ownership conditions, children should be able to correctly respond by drawing on their semantic knowledge. In other words, neither of these conditions requires children to envision their own preferences as changing. Conversely, our "conflict" account predicts the ownership-advantage should largely remain. This account claims that even when answering questions about an adult, preference judgments should continue to make greater executive demands than ownership judgments. We limited our sample to 3-year-olds because 4- and 5-

² The possibility that anticipating future preferences requires episodic future thinking does not imply the reverse. Episodic future thinking may not always involve reflecting on future preferences or mental states.

year-olds in Experiment 1 often performed at ceiling, while this was very rare for 3-year-olds (see Figure 1).

Experiment 2

Methods

Participants. We tested 120 3-year-olds (mean age = 3;5, range = 3;0-3;11). An additional nine children gave fewer than four responses across the six test trials, and were therefore replaced. In this experiment, we adhered to a stopping rule of 30 children per cell. We increased the stopping rule for this experiment because our main question was in whether we would find a significant interaction, and so we wanted to ensure the experiment was sufficiently powered.

Materials. Materials were identical to those used in Experiment 1, except the photo of a group of adults was replaced with a photo of a single adult of the same gender as the participant.

Procedure. The study had a 2 (perspective: future-self, present-adult) x 2 (relation: ownership, preference) between-subjects design; assignment to condition was random, with equal numbers of children assigned to each of the four cells. There were no significant differences in age across cells, $ps > .559$. As in Experiment 1, children first saw a picture of a group of children while 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 this person”, at which point the slide changed to the photo of an adult. Children then completed six test trials. Children assigned to the future-self perspective were asked to indicate what they would like (preference relation) or have (ownership relation) when they grow up, using a script

and procedure identical to that of Experiment 1. Children assigned to the present-adult perspective were asked to indicate what the adult shown in the warm-up picture likes (preference relation) or has (ownership relation) now (e.g., “Which one does the grown-up have?”).

Results and Discussion

Figure 2 shows responses in each condition; Table 2 shows responses for each item-pair. We entered children’s responses into a GEE model (binary logistic) with the predictors perspective (future-self, present-adult), relation (ownership, preference), and item type. This revealed a main effect of relation, as children were more likely to select adult items when asked about ownership than preferences, Wald $\chi^2(1) = 4.45, p = .035$. There was a main effect of perspective, as children were more likely to select adult items when asked about an adult than when asked about themselves, Wald $\chi^2(1) = 11.44, p = .001$. Finally, there was a main effect of item type, as children were more likely to select adult items for some item pairings, Wald $\chi^2(5) = 67.94, p < .001$. All interactions were non-significant, $ps \geq .241$, except the interaction between item type and perspective was marginally significant, $p = .085$.

Table 2

Mean proportion of adult items chosen in Experiment 2 with SDs in brackets.

Adult Item	Child Item	Future-Self		Present-Adult	
		Ownership	Preference	Ownership	Preference
wallet	piggy bank	0.27 (0.45)	0.07 (0.26)	0.41 (0.50)	0.37 (0.49)
newspaper	book	0.34 (0.48)	0.43 (0.50)	0.47 (0.51)	0.36 (0.49)
saxophone	xylophone	0.63 (0.49)	0.60 (0.50)	0.80 (0.41)	0.67 (0.48)
adult bicycle	child bicycle	0.63 (0.49)	0.45 (0.51)	0.77 (0.43)	0.77 (0.43)
mug	sippy cup	0.60 (0.50)	0.33 (0.48)	0.73 (0.45)	0.67 (0.48)
mechanical pencils	crayons	0.60 (0.50)	0.47 (0.51)	0.90 (0.31)	0.70 (0.47)

Figure 2: Dotplot showing the proportion of trials in which children chose the adult item over the child item in Experiment 2. Dots and whiskers show means and 95% confidence intervals.

In sum, we found that the ownership-advantage remained when children reasoned about a present adult (i.e., there was no significant interaction between perspective and relation). These findings suggest that the ownership-advantage arises because preference judgments make greater executive demands than ownership judgments, regardless of perspective taken.

A potential concern is that the ownership-advantage emerged in 3-year-olds not because they were better able to infer what they will own in the future, but because they were ambivalent about their future ownership and therefore guessed or chose items at random. We believe this explanation is unlikely. In Experiment 1, we found that all children exhibited an ownership-advantage, and that children became more likely with age to select adult items overall. Further, we did not observe an interaction between age and relation, which suggests that the same

mechanism caused the ownership-advantage to emerge across ages. While 3-year-olds' responses about their future ownership may appear to reflect chance responding, this interpretation requires positing a different explanation for their responses than those of older children, despite observing the effect at all ages.

General Discussion

Our studies revealed an ownership-advantage in children's thinking about the future. In Experiment 1, we found that 3- to 5-year-olds were better able to infer what they will own when they grow up than what they will like. In Experiment 2, we replicated our findings from Experiment 1, and further showed that 3-year-olds exhibit this ownership-advantage even when reasoning about a present adult. Our findings suggest that children struggle to infer what they will prefer as adults partially because these future preferences conflict with their current preferences. Inferring future ownership, on the other hand, involves less conflict between children's present and future states.

We outlined two possible explanations for the ownership-advantage found in Experiment 1. Our "semantic knowledge" account predicted that the ownership-advantage should diminish or disappear when inferring what an adult currently owns or prefers because children can rely on their learned, or script-based knowledge of what adults usually own and prefer. Conversely, our "conflict" account predicted that the ownership-advantage should remain regardless of perspective because children may still struggle to infer that another person has a preference that directly conflicts with their own.

The results of Experiment 2 support the "conflict" account. Children were more likely to choose child items when asked about preferences than ownership, regardless of whether they were thinking about their future-selves or another adult. Thus the observed ownership-advantage

is not specific to children's future thinking, and may arise because reasoning about ownership allows children to sidestep the difficult task of reasoning about desires that conflict with their own (e.g., Atance, Bélanger, & Meltzoff, 2010; Cassidy et al., 2005; Moore et al., 1995). Note that our findings do not rule out the potentially important role of other mechanisms for anticipating the future, such as semantic knowledge and episodic future thinking, but rather demonstrate that reasoning about future preferences may be especially difficult for children due to potent conflict between the present and likely future.

We also found that children were more likely to select adult items when making inferences about a present adult than when making inferences about their "grown-up" selves. This effect cut across judgments of preferences and ownership, and may reflect a poor understanding of the future in general. This suggestion is consistent with previous findings showing that 3-year-olds often fail to acknowledge that both themselves and a same-age peer will prefer adult items in the future; though it is important to note that children nonetheless have less difficulty making these judgments for a same-age peer than they do for themselves (Bélanger et al., 2014; Lee & Atance, 2016).

It is also worth emphasizing that the aforementioned accounts are not meant to be exhaustive. While the findings support our executive "conflict" account, other accounts are plausible. For instance, a conceptual account for our findings is that the ownership-advantage stems from differences in children's beliefs about the stability of ownership and preferences. Children may view ownership as changing over time, whereas preferences may be viewed as subjective and more stable. Children may therefore believe that they will retain their preferences for child items into adulthood, despite no longer owning the items. This account meshes well with the findings of our first experiment.

However, on this view, we should have observed an interaction in the second experiment. Children did not have to consider temporal stability when inferring the ownership and preferences of a present adult, so the “stability” account should predict similar responses across both relations. Instead, we found that the ownership-advantage emerged regardless of perspective taken, which lends support to our “conflict” account. Perhaps children also believe that adults retain preferences from childhood, but present and previous findings suggest that this is beyond the ability of 3-year-olds (Atance, 2015). However, the present findings raise pertinent questions about children’s beliefs about the stability of ownership and preferences, and we believe this to be an open and exciting avenue for future research.

We close by considering the broader implication of our work for children’s understanding of ownership. Previous research has found that children link property to likely owners by relying on age stereotypes (Malcolm, Defeyter, & Friedman, 2014). The present study extends this by suggesting that children also rely on these stereotypes when inferring what *they* will own in the future. These findings not only tell us that preschoolers have some conception of future change, but that they potentially view ownership as transient and changing predictably over time. One could question whether stereotype-based reasoning truly counts as reasoning about the future. We believe it does. For example, when a young adult anticipates they will have worse vision in the future based on stereotypes about the elderly, they are considering their future (though they are not necessarily engaging in episodic-future thinking and mentally projecting themselves into the future).

Our findings also speak to how children's understanding of ownership differs from their understanding of preferences (Nancekivell & Friedman 2014; Noles & Gelman, 2014; Pesowski & Friedman, 2018). Although we can spontaneously form preferences for any object, including objects never before encountered, ownership depends on each object's specific history. For example, a person could see a car and decide instantly that they *like* it, but *owning* it would require that the person take possession of it via legitimate means. Our results further demonstrate children's grasp of this distinction, as children clearly did not conflate ownership with preference. More specifically, we found that their inferences about their own future-ownership were not entirely guided by their feelings about the objects, showing that children reasoned differently about these two aspects of their futures. Moreover, our findings provide insight into the reasons that preschoolers have difficulty imagining their future preferences. Specifically, children may struggle to infer what they will prefer as adults because their present and future preferences are in conflict.

References

- Atance, C. M. (2015). Young children's thinking about the future. *Child Development Perspectives*, 9(3), 178–182. <https://doi.org/10.1111/cdep.12128>
- Atance, C. M., Bélanger, M., & Meltzoff, A. N. (2010). Preschoolers' understanding of others' desires: Fulfilling mine enhances my understanding of yours. *Developmental Psychology*, 46(6), 1505-1513. <https://doi.org/10.1037/a0020374>
- Atance, C. M., & Caza, J. S. (2018). "Will I know more in the future than I know now?" Preschoolers' judgments about changes in general knowledge. *Developmental Psychology*, 54(5), 857-865. <https://doi.org/10.1037/dev0000480>
- Atance, C. M., & O'Neill, D. K. (2001). Episodic future thinking. *Trends in Cognitive Sciences*, 5(12), 533–539. [https://doi.org/10.1016/S1364-6613\(00\)01804-0](https://doi.org/10.1016/S1364-6613(00)01804-0)
- Beggs, J. K. (1992). On the social nature of nonsocial perception: The mere ownership effect. *Journal of Personality and Social Psychology*, 62(2), 229-237. <https://doi.org/10.1037/0022-3514.62.2.229>
- Bélanger, M. J., Atance, C. M., Varghese, A. L., Nguyen, V., & Vendetti, C. (2014). What will I like best when I'm all grown up? Preschoolers' understanding of future preferences. *Child Development*, 85(6), 2419-2431. <https://doi.org/10.1111/cdev.12282>
- Brehm, J. W. (1956). Postdecision changes in the desirability of alternatives. *The Journal of Abnormal and Social Psychology*, 52(3), 384-389. <https://doi.org/10.1037/h0041006>
- Carlson, S. M. (2005). Developmentally sensitive measures of executive function in preschool children. *Developmental Neuropsychology*, 28(2), 595–616. https://doi.org/10.1207/s15326942dn2802_3

- Cassidy, K. W., Cosetti, M., Jones, R., Kelton, E., Meier Rafal, V., Richman, L., & Stanhaus, H. (2005). Preschool children's understanding of conflicting desires. *Journal of Cognition and Development*, 6(3), 427-454. https://doi.org/10.1207/s15327647jcd0603_6
- Fizke, E., Barthel, D., Peters, T., & Rakoczy, H. (2014). Executive function plays a role in coordinating different perspectives, particularly when one's own perspective is involved. *Cognition*, 130(3), 315–334. <https://doi.org/10.1016/j.cognition.2013.11.017>
- Garon, N., Bryson, S. E., & Smith, I. M. (2008). Executive function in preschoolers: A review using an integrative framework. *Psychological Bulletin*, 134(1), 31-60. <https://doi.org/10.1037/0033-2909.134.1.31>
- Gelman, S. A., & Davidson, N. S. (2016). Young children's preference for unique owned objects. *Cognition*, 155, 146-154. <https://doi.org/10.1016/j.cognition.2016.06.016>
- 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(5), 1732-1747. <https://doi.org/10.1111/j.1467-8624.2012.01806.x>
- Goulding, B. W., & Friedman, O. (2018). The development of territory-based inferences of ownership. *Cognition*, 177, 142-149. <https://doi.org/10.1016/j.cognition.2018.04.013>
- Harbaugh, W. T., Krause, K., & Vesterlund, L. (2001). Are adults better behaved than children? Age, experience, and the endowment effect. *Economics Letters*, 70(2), 175–181. [https://doi.org/10.1016/S0165-1765\(00\)00359-1](https://doi.org/10.1016/S0165-1765(00)00359-1)
- Hartley, C., & Fisher, S. (2018). Mine is better than yours: Investigating the ownership effect in children with autism spectrum disorder and typically developing children. *Cognition*, 172, 26-36. <https://doi.org/10.1016/j.cognition.2017.11.009>

- Hood, B. M., & Bloom, P. (2008). Children prefer certain individuals over perfect duplicates. *Cognition*, 106, 455-62. <https://doi.org/10.1016/j.cognition.2007.01.012>
- Hood, B. M., Weltzien, S., Marsh, L. E., & Kanngiesser, P. (2016). Picture yourself: Self-focus and the endowment effect in preschool children. *Cognition*, 152, 70-77. <https://doi.org/10.1016/j.cognition.2016.03.019>
- Kahneman, D., Knetsch, J. L., & Thaler, R. H. (1991). Anomalies: The endowment effect, loss aversion, and status quo bias. *Journal of Economic Perspectives*, 5(1), 193-206. <https://doi.org/10.1257/jep.5.1.193>
- Kamleitner, B., & Feuchtl, S. (2015). “As if it were mine”: imagery works by inducing psychological ownership. *Journal of Marketing Theory and Practice*, 23(2), 208-223. <https://doi.org/10.1080/10696679.2015.1002337>
- Kirk, C. P., Peck, J., & Swain, S. D. (2017). Property lines in the mind: Consumers’ psychological ownership and their territorial responses. *Journal of Consumer Research*, 45(1), 148-168. <https://doi.org/10.1093/jcr/ucx111>
- Lee, W. S., & Atance, C. M. (2016). The effect of psychological distance on children’s reasoning about future preferences. *PloS ONE*, 11(10), e0164382. <https://doi.org/10.1371/journal.pone.0164382>
- Lucas, M. M., Wagner, L., & Chow, C. (2008). Fair game: The intuitive economics of resource exchange in four-year olds. *Journal of Social, Evolutionary, and Cultural Psychology*, 2(3), 74–88. <https://doi.org/10.1037/h0099353>
- Malcolm, S., Defeyter, M. A., & Friedman, O. (2014). Children and adults use gender and age stereotypes in ownership judgments. *Journal of Cognition and Development*, 15(1), 123-135. <https://doi.org/10.1080/15248372.2012.728545>

- Moore, C., Jarrold, C., Russell, J., Lumb, A., Sapp, F., & MacCallum, F. (1995). Conflicting desire and the child's theory of mind. *Cognitive Development, 10*(4), 467-482.
[https://doi.org/10.1016/0885-2014\(95\)90023-3](https://doi.org/10.1016/0885-2014(95)90023-3)
- Nancekivell, S. E., & Friedman, O. (2014). Preschoolers selectively infer history when explaining outcomes: Evidence from explanations of ownership, liking, and use. *Child Development, 85*(3), 1236–1247. <https://doi.org/10.1111/cdev.12170>
- Noles, N. S., & Gelman, S. A. (2014). You can't always want what you get: Children's intuitions about ownership and desire. *Cognitive Development, 31*, 59-68.
<https://doi.org/10.1016/j.cogdev.2014.02.002>
- Peck, J., & Shu, S. B. (2009). The effect of mere touch on perceived ownership. *Journal of Consumer Research, 36*(3), 434-447. <https://doi.org/10.1086/598614>
- Pesowski, M. L., & Friedman, O. (2018). Using versus liking: Young children use ownership to predict actions but not to infer preferences. *Journal of Experimental Child Psychology, 169*, 19–29. <https://doi.org/10.1016/j.jecp.2017.12.007>
- Pierce, J. L., Kostova, T., & Dirks, K. T. (2003). The state of psychological ownership: Integrating and extending a century of research. *Review of General Psychology, 7*(1), 84-107. <https://doi.org/10.1037/1089-2680.7.1.84>
- Quoidbach, J., Gilbert, D. T., & Wilson, T. D. (2013). The end of history illusion. *Science, 339*(6115), 96-98. <https://doi.org/10.1126/science.1229294>
- Szpunar, K. K., Spreng, R. N., & Schacter, D. L. (2014). A taxonomy of prospection: Introducing an organizational framework for future-oriented cognition. *Proceedings of the National Academy of Sciences, 111*(52), 18414-18421.
<https://doi.org/10.1073/pnas.1417144111>

Tulving, E. (2005). Episodic memory and autonoesis: Uniquely human? In H. S. Terrace & J.

Metcalfe (Eds.), *The missing link in cognition: Origins of self-reflective consciousness*

(pp. 3–56). New York, NY: Oxford University Press.

Verkuyten, M., Sierksma, J., & Martinovic, B. (2015). First arrival and collective land

ownership: How children reason about who owns the land. *Social Development*, 24(4),

868-882. <https://doi.org/10.1111/sode.12128>

Verkuyten, M., Sierksma, J., & Thijs, J. (2015). First arrival and owning the land: How children

reason about ownership of territory. *Journal of Environmental Psychology*, 41, 58-64.

<https://doi.org/10.1016/j.jenvp.2014.11.007>