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The impact of strategies on young children's saving for the future

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ABSTRACT

The ability to save resources for future use, or *saving,* begins to emerge around 3 years of age, but children show low rates of saving during the preschool years. Thus, several strategies have been used to improve preschoolers' saving, such as providing a prompt, budgeting, increasing psychological distance, and simulating the future. The current study investigated (a) the development of saving in early childhood, (b) the impact of several saving strategies on children's saving (i.e., budgeting, tracking expenses, and psychological distance), and (c) whether the effectiveness of the strategies changed with age. Here, 3- to 5-year-old Canadian children (N = 254) completed the Saving Board Game, and their parents completed the saving subscale of the Children's Future Thinking Questionnaire. In the Saving Board Game, children were randomly assigned to one of the five strategies: (a) control, (b) budgeting, (c) tracking, (d) adult perspective, or (e) child perspective. An analysis of covariance with age, strategy, and response option order (as a covariate) showed a main effect of age, with 5-year-olds saving more than 3-year-olds. There was no effect of strategy or an interaction between strategy and age on children's token saving. Parent-reported child saving was positively correlated with children's Saving Board Game performance only in the control condition. We consider why these strategies failed to increase children's saving.

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Introduction

Children, like adults, must control their spending to reach their future saving goals. For example, children must forgo buying ice cream to save money for the latest video game, or they must ration their Halloween candy to satisfy their future sugar cravings. This ability to reserve current resources for future use is known as *saving* (Metcalf & Atance, 2011; Wärneryd, 1999). Adults and children—as young as 3 years—engage in saving in their everyday lives in order to meet their future needs (e.g., Benartzi & Thaler, 2013; Mazachowsky & Mahy, 2020). However, they often struggle to save (Jerome et al., 2023; Rabinovich & Webley, 2007). Canadian families, on average, saved only 10.5% of their annual income in 2021 (Organization for Economic Cooperation and Development, 2023), and preschoolers aged 3 to 5 years save only 20% to 30% of their resources for later use (e.g., marbles; Metcalf & Atance, 2011). Despite these low saving rates, developing strong saving habits is critical to maintain well-being given that not having enough savings is linked to financial struggles as well as poor mental and physical health (e.g., Benartzi & Thaler, 2013; Ipsos Group, 2017; Richardson et al., 2013). Early childhood presents a window of opportunity to intervene to foster better saving habits. The current study investigated the early development of saving and several strategies that might facilitate children's saving.

The development of saving in childhood

Saving improves with age across the middle childhood years (e.g., Otto et al., 2006; Sonuga-Barke & Webley, 1993). For example, in a classic study, Sonuga-Barke and Webley (1993) examined 4- to 12-year-old children's saving of tokens in an economy-themed board game. In the game, children were instructed to save a certain number of tokens until the end to purchase desirable toys. However, throughout the game, children visited candy stores where they could purchase candies with their tokens and banks where they could deposit their tokens to prevent them from being spent. Children's saving and their use of the banks increased with age, suggesting that children's saving improves during the school years.

In early childhood, however, only a small body of literature has examined young children's saving, including their saving of items (*marbles and stickers;* Chernyak et al., 2017; Metcalf & Atance, 2011) and tokens (*representations of money;* Jerome et al., 2023). Young children's item saving has commonly been assessed using the *Marble Game* (Metcalf & Atance, 2011). In this game, children are given a limited number of marbles and invited to play first with a less desirable, small marble run for 3 min and then with a more desirable, larger marble run for 3 min. On average, 3- to 6-year-old children saved one or two of five marbles, and their performance remained stable with age (e.g., Kamawar et al., 2019). In another item saving task, the *Sticker Game* (Chernyak et al., 2017), young children receive five dinosaur stickers. They are told that they can put their stickers on a white sheet of paper immediately (*spending* their stickers now) or they can wait 3 min to receive a special dinosaur scene on which they can place their stickers (*saving* their stickers for later). On average, 3- to 5-year-old children saved around two of five stickers, and their saving improved with age (Chernyak et al., 2017).

Another resource that young children can save is *tokens.* In token saving paradigms, children do not save the resource itself (like saving marbles in the Marble Game) but instead save abstract representations of a value that can be used to purchase items in the future (e.g., saving tokens to buy toys). Therefore, saving tokens is similar to saving money (another abstract resource), and children gain more experience with this type of saving as they age (Jerome et al., 2023). To measure young children's token saving, Mazachowsky and Mahy (2020) adapted Sonuga-Barke and Webley's (1993) board game paradigm. The so-called *Saving Board Game* mimics economic situations and decisions that children face in their everyday lives. In the game, children receive four tokens and visit several stores (e.g., toy shop and sticker shop) and other locations (e.g., playground and pool) on the board. During the game, children can spend their tokens on small rewards in the stores (e.g., stickers, erasers) or save

their tokens until the end of the game to buy a more desirable reward that costs three tokens (e.g., a stuffed toy). Here, 3- to 7-year-old children's saving performance on the board game has shown age-related increases (Mazachowsky & Mahy, 2020).

Recently, Jerome et al. (2023) developed another token saving paradigm called the *Token Saving Game* (see also Dueck et al., 2024). In this game, children receive five tokens and are asked to indicate which prize they prefer (stickers or toys). Then, children are told that they can spend their tokens on their less preferred prize now or save their tokens to buy the more preferred prize that will be available in 3 min. On average, 3- to 5-year-old children saved only one of five tokens for the more preferred prize, and their saving did not improve with age. Overall, on behavioral tasks, preschool children show some ability to save items and tokens. However, their saving rates are quite low on average, and there are mixed findings regarding age-related improvement.

Parents can also provide information about their young children's saving skills (Dueck et al., 2024; Mazachowsky & Mahy, 2020). Mazachowsky and Mahy (2020) developed the *Children's Future Thinking Questionnaire* (CFTQ) to measure 3- to 7-year-old children's everyday saving with nine items (e.g., saving money, space, items, time, bodily energy). Parents' aggregated ratings on the items revealed that 3- to 7-year-old children save various resources in their everyday lives, and older children save more than younger children. Furthermore, parent-reported saving was positively correlated with children's token saving in the Saving Board Game, but not with item saving in the Marble Game, indicating that children's token saving in the lab resembles their saving in everyday life situations. Using another parent questionnaire, Dueck et al. (2024) measured 3- to 7-year-old children's day-to-day saving, including their saving of food, items, and money. However, parent-reported child saving was unrelated to their children's age.

Overall, preschool children can save items and tokens in behavioral paradigms and can save food, money, space, time, items, and bodily energy, according to parent reports. However, young children are often poor savers. Based on the limited number of studies, young children's item saving is low and seems to remain similar across the preschool years (e.g., Kamawar et al., 2019; Lee & Carlson, 2015; Metcalf & Atance, 2011; but see Chernyak et al., 2017). Children's token saving was also low (e.g., Jerome et al., 2023) and revealed mixed findings regarding age effects with the Saving Board Game, showing age-related improvement (Mazachowsky & Mahy, 2020), but the Token Saving Game documented no age-related change (Dueck et al., 2024; Jerome et al., 2023). Parent-report questionnaires also show mixed evidence regarding children's age-related improvements in saving (Dueck et al., 2024; Fuke et al., 2023; Mazachowsky & Mahy, 2020). One aim of the current study was to examine age-related improvement in preschoolers' saving using behavioral and parent-report measures. We used the Saving Board Game as our behavioral measure of saving because it seems to relate to children's everyday spending decisions and has the ability to detect age-related changes.

Strategies to improve children's saving

Several strategies have been used to improve young children's low rates of saving, including prompts, providing prior saving experience, budgeting, psychological distance, and future thinking and simulation. There are other methods that effectively improve adults' saving that have never been examined in young children, such as tracking expenses. Next, we describe these various strategies and their effect on saving.

Prompts

Prompting individuals is one method to improve saving. Sending adults text messages about their saving goals and financial incentives (e.g., additional interest rates; Karlan et al., 2016) or having them carry a visual reminder of their saving goal (e.g., Soman & Cheema, 2011) increases their financial savings. In early childhood, Atance et al. (2017) provided 3- to 5-year-old children a verbal prompt about saving as an alternative to spending before the Marble Game ("If you want to, you can use all of your marbles in the red room [contains small marble run], or you can save some marbles for the blue room [contains big marble run]" [p. 72]). These children saved two of five marbles on average, whereas their peers who did not receive any verbal prompts saved only one marble on average (see also see Dueck

et al., 2024; Kamawar et al., 2019). Thus, verbal prompts seem to be a simple and effective technique to improve young children's saving.

Prior saving experience

Previous financial experience facilitates individuals' saving. For example, adults with better financial literacy and saving accounts save more money and have less debt than others (Erskine et al., 2006; Lusardi & Tufano, 2015). In early childhood, previous experience with saving improves children's subsequent saving (Kamawar et al., 2019; Metcalf & Atance, 2011). For example, Metcalf and Atance (2011) administered two trials of the Marble Game to 3- to 5-year-old children. When children were allowed to play the Marble Game a second time, they saved more marbles than on their first attempt. Thus, having recent experience with the consequences of not saving enough (e.g., boredom, disappointment) might lead children to save more on a second trial.

Budgeting

Budgeting is another useful tool to control expenditures (Rabinovich & Webley, 2007). Adults who divided their money into two accounts (saving vs. spending accounts) saved more than those who used a single account (Soman & Cheema, 2011). Similarly, young children who created a budget saved more than their peers who did not create a budget (Jerome et al., 2023; Kamawar et al., 2019). For example, Kamawar et al. (2019) assigned 3- to 6-year-old children to a budgeting or control condition of the Marble Game. In the budgeting condition, children were invited to budget their marbles based on how many they planned to use on the small and large marble runs. In contrast, children in the control condition were not asked to create a budget. Children in the budgeting condition saved two of five marbles on average, whereas their peers in the control condition saved only one marble on average. Furthermore, children's saving was positively related to their planning skills in the budgeting condition only. Taken together, budgeting seems to be an effective strategy for improving saving in both children and adults.

Psychological distance

Another approach to encourage optimal saving performance is mentally detaching from the immediate situation, known as *psychological distancing*. Psychological distancing produces more rational and adaptive performance in many domains, including delay of gratification (e.g., Mahy et al., 2020), executive function (e.g., White & Carlson, 2016), perseverance (e.g., White et al., 2017), and future thinking (e.g., Atance et al., 2021; Mazachowsky et al., 2019). When individuals psychologically separate themselves from their current situations and states, they can engage in reflection that is more abstract and less stimulus bound, resulting in better performance (Sigel, 2002; Trope & Liberman, 2010).

One common psychological distancing technique is taking another person's perspective. Preschool children are more likely to delay immediate rewards when asked to take the perspective of the experimenter compared with their own perspective (e.g., Prencipe & Zelazo, 2005), and they are better at reasoning about future preferences when answering for a peer compared with answering for themselves (Lee & Atance, 2016). Recently, Jerome et al. (2023) asked children to either budget for themselves or budget for a same-aged peer prior to the Token Saving Game. Children's saving in the game did not differ depending on whether they budgeted for themselves or someone else. However, budgeting on its own may have already provided children with an opportunity to distance themselves from their immediate desires, so taking the perspective of another child might not have contributed enough additional psychological distance to further improve saving. In much of the past literature on psychological distancing, children were asked to take the perspective of a more socially distant person, such as an adult (e.g., Mahy et al., 2020; Prencipe & Zelazo, 2005). Children might benefit more from taking a more distant perspective of an adult rather than the perspective of another child who might share their immediate desires to spend rather than save. We tested this hypothesis in the current study.

Future thinking and simulation

Adults who feel more connected to their future selves save more than those who feel less connected given that they are more likely to think of the future consequences of their current actions (e.g., Ersner-Hershfield et al., 2009). In early childhood, however, Tsui and Atance (2022) found no

relation between preschoolers' saving and the extent to which they thought there was continuity between their current and future selves. Yet, young children saved more in the Marble Game when they were asked to imagine a positive future outcome ("How would you feel if you save a marble") than when they imagined a negative future or neutral outcome (Zhang et al., 2023). The affective component of future thinking (positive vs. negative future outcomes) might be a critical influence on children's saving decisions even though future self continuity may be less strongly related to saving early in development compared with later in life.

Tracking

There are other unexamined strategies that might also improve young children's saving. One such strategy is asking children to track their current resources over time. With saving, individuals need to make multiple saving decisions across time (e.g., saving 10 dollars from each allowance to save up to buy a new bike). Thus, tracking expenses/spending becomes a critical financial capability in that it helps individuals to update their mental budget and remind themselves of their saving goals (e.g., Loke et al., 2015). Adults often report using various strategies to track their spending in order to increase their savings, including collecting receipts and using cash instead of credit cards (e.g., Gorham & Davis, 2003; Hernandez et al., 2017; Kaye et al., 2014). Similarly, in addition to the previously mentioned strategies, having children track their remaining resources might produce higher rates of saving.

The current study

This study was preregistered (https://aspredicted.org/qj94e.pdf) and had two main aims: (a) to investigate the development of saving in early childhood using a token saving task (i.e., the Saving Board Game) and a parent-report questionnaire (i.e., the saving subscale of the CFTQ; Mazachowsky & Mahy, 2020) and (b) to examine the impact of different saving strategies (i.e., budgeting, tracking, taking an adult's perspective, and taking another child's perspective) on a token saving task. Examining the effect of these strategies on a token saving task should allow for broader conclusions about strategy effectiveness given that most of the existing literature has used item saving tasks to investigate their effects.

We hypothesized that (a) older children would save more than younger children, (b) children in the strategy conditions would save more than children in the control condition, (c) children who took an adult perspective would save more than children who took a child perspective due to increased psychological distance, and (d) parents' ratings on the children's saving questionnaire would positively correlate with their children's performance on the token saving task. We also had a few exploratory questions, including whether there was an interaction between strategy condition and age and how children's behavioral token saving performance was related to their parent-reported saving across strategy conditions.

Method

Participants

A G*Power 3.1 (Faul et al., 2007) a priori power analysis suggested that a sample of 249 participants was required to detect a medium effect size (f^2 = .25, power = .80, α = .05) in a 5 (Strategy: control, budgeting, tracking, adult perspective, or child perspective) $\times$ 3 (Age Group: 3-year-olds, 4-year-olds, or 5-year-olds) between-participants analysis of variance (ANOVA). Thus, we aimed to collect data from 255 children to ensure equal cell sizes. To reach this goal, we collected data from 308 children. Of these children, 54 were excluded from the analysis due to (a) not completing the session (n = 8), (b) being inattentive or uncooperative (n = 9), (c) family members interfering with the study (mainly parents translating questions into another language or repeating the experimenter's questions; n = 26), (d) experimenter error (n = 1), (e) the child being outside of the target age range (n = 5), or (f) not being typically developing (n = 5). The final sample included 254 children (122 girls,

127 boys, and 5 unreported; M_{age} = 54.3 months, *SD* = 10.1, range = 35–72). The sample was ethnically diverse (28.2% White, 28.2% Asian, 16.4% mixed race, 12.1% Asian Indian, 5% Black, 4.6% Middle Eastern, 2.1% Hispanic, and 3.4% other). The majority (65.4%) of families' annual income exceeded 100,000 CAD (2.6% earned between 25,000 and 40,000 CAD, 11.2% earned between 40,000 and 75,000 CAD, 10.4% earned between 75,000 and 100,000 CAD; and 10.4% did not disclose their income). Most parents held at least a university degree (5.6% had a high school degree or less, 15.8% had some college or a 2-year degree, 40.6% had a bachelor's degree, and 38% had a graduate degree).

Measures

Child measure: The Saving Board Game (Mazachowsky & Mahy, 2020)

Children were given four tokens and shown several stores on a computer screen where they could spend their tokens on small stickers or save them to buy a more appealing sticker at the end of the game. The number of tokens children saved for the end of the game was children's saving score (0–4). Children were randomly assigned to one of five strategy conditions for the game: (a) control, (b) budgeting, (c) tracking, (d) adult perspective, or (e) child perspective.

In all strategy conditions, children were first introduced to a pretend neighborhood on the computer screen and shown the locations (e.g., a toy store) that they would visit during the game (Fig. 1). The experimenter gave children four tokens and told them that when they visited a shop, they would decide whether they would like to spend a token on a small sticker or save their tokens to buy a large sticker at the end of the game. Then, the experimenter showed them three large stickers (which cost three tokens each). Children were asked to choose one of the stickers that they would like to buy at the end of the game. The chosen sticker was the target prize and was intended to motivate children to save their tokens. The experimenter asked a token rule check question to ensure that children understood the rules ("How many tokens should you save to buy the large sticker at the end of the game?"). If children did not answer the question correctly (the correct response being three tokens), they were reminded of the rule and then asked again. If children still failed to answer the rule check correctly the second time, the rule was repeated once more.

At the beginning of the game, children were given a sheet to put their stickers on and a small cup to hold their tokens. During the game, children visited eight locations in a fixed order: pet store, park, sticker shop, pool, arts and crafts store, toy store, bakery, and wildlife sanctuary (Fig. 1). In four of

Fig. 1. The Saving Board Game. Children started the game at the movie theater (the white circle) and visited each location throughout the game.

these locations (i.e., pet store, sticker shop, arts and crafts store, and toy store), children had the opportunity to either use one token to buy a small sticker or save the token by choosing not to buy the sticker. When they visited these locations, they were told, "Here, you can buy a small sticker for one token, or you can save your token. What do you want to do: spend/save your token or save/spend your token?" The order of the options (i.e., "spend" and "save") was counterbalanced. The other four locations in the game (i.e., park, pool, wildlife sanctuary, and bakery) were fillers, and no spending opportunity was provided in these locations. After children visited all the locations, they were invited to buy the large sticker. All children (whether they saved enough tokens or not) received the large sticker and any small stickers they chose not to buy.

Control condition. No strategy was implemented in this condition, and children completed the task as described above.

Budgeting condition. Children were given two plastic bowls. One bowl had a small sticker on it and was for the tokens they planned to spend during the game. The other bowl had a large sticker on it and was for the tokens they planned to save for the target prize. Children were asked to allocate their four tokens to the two bowls before the game started. After children allocated all their tokens, the experimenter administered the game as described above. Their initial budget (i.e., how many tokens were placed in each bowl) and whether they adhered to their budget were noted.

Tracking condition. In this strategy condition, the experimenter asked children how many tokens they had at three set points throughout the game (at the second [park], fourth [pool], and sixth [toy store] locations). If children did not respond, the experimenter repeated the question. If children still did not respond or had trouble in counting their tokens, the experimenter counted the tokens with them.

Adult perspective condition. At the beginning of the game, children were shown a picture of an unfamiliar, gender-neutral adult named Taylor and told, "Right now, you're 3/4/5 years old. But one day, you're going to be all grown up. You're going to be as big as this person. This is Taylor, and Taylor is as big as a mom/dad. For this game today, I want you to think about what you would do during the game if you were a grown-up just like Taylor." Children were then asked a rule check question to ensure that they understood the rule ("Who will you be pretending to be when you play this game today?"). If children did not answer the question correctly, they were reminded of the rule (i.e., that they should pretend they were an adult like Taylor) and asked again. If children still did not respond correctly, the rule was repeated one more time. During the game, the picture of Taylor remained on the table. When children visited a spending/saving location, they were told, "Here, you can buy a small sticker for one token, or you can save your token. Pretend you are a grown-up like Taylor. What would you do if you were Taylor: spend/save your token or save/spend your token?" At the end of the game, the experimenter asked a perspective-taking manipulation check question ("Who were you pretending to be when you were playing this game today?").

Child perspective condition. At the beginning of the game, children were shown a picture of an unfamiliar, gender-neutral peer named Taylor and told, "Right now, you're 3/4/5 years old, a similar age as Taylor. This is Taylor, and Taylor is as old as you. For this game today, I want you to think about what you would do during the game if you were a kid like Taylor." Next, they were asked a rule check question ("Who will you be pretending to be when you play this game today?"). If children did not answer the question correctly, they were reminded of the rule and asked again. The rule was repeated to children who failed to answer the question correctly the second time. Similar to the adult perspective condition, the picture of Taylor remained on the table during the game. In addition, when children visited a spending/saving location, they were told, "Here, you can buy a small sticker for one token, or you can save your token. Pretend you are a kid like Taylor. What would you do if you were Taylor: spend/save your token or save/spend your token?" At the end of the game, a perspective-taking manipulation check question was asked ("Who were you pretending to be when you were playing this game today?").

Parent measure: The Children's Future Thinking Questionnaire–Saving Subscale (Mazachowsky & Mahy, 2020)

The CFTQ is a reliable and valid 44-item parent-report measure of young children's future-oriented cognition. The questionnaire includes five subscales (saving, prospective memory, planning, episodic foresight, and delay of gratification), but only the saving subscale was used in the current study. Parents rated their children's everyday saving on nine items (e.g., "My child saves money in a piggy bank for future purchases") on a 6-point Likert scale (ranging from *strongly disagree* to *strongly agree*) with three non-response options (*don't know, does not apply,* and *prefer not to answer*). Their ratings were aggregated to create a parent-report score of their children's saving, where higher scores indicated better saving skills. The scale revealed acceptable internal consistency (α = .69).

Procedure

All data, analysis code, and research materials are available on the Open Science Framework (https://osf.io/8bvzd/?view_only=5355b0f348a242f2bd55c6be0e6cb684). Children were recruited at the Ontario Science Centre in Canada. Families who were interested in the study were invited to a quiet testing room in the center. After parents' consent and children's assent were obtained, children were randomly assigned to one of the five strategy conditions (i.e., control, budgeting, tracking, adult perspective, or child perspective) and played the Saving Board Game with the experimenter. Parents were asked to complete the CFTQ saving subscale and a brief demographics questionnaire about their income, education, and ethnicity in a waiting area in the same room. At the end of the session, families were thanked for their participation and children were given five stickers (the large sticker and the four small stickers they had the opportunity to buy) and a Junior Scientist Certificate. Each session took approximately 15 min. The Brock University Research Ethics Board granted clearance for study materials and procedures.

Results

Preliminary analyses

An independent-samples t test was conducted to examine the effect of response option order (save–spend vs. spend–save) on children's saving decisions in the Saving Board Game. Children whose options were ordered as "spend–save" (M_{token} = 2.54, SD = 1.35; n = 129) saved more than their peers whose option order was "save–spend" (M_{token} = 1.99, SD = 1.54; n = 125), $t(252)$ = 3.03, p = .003, d = .381. Giving the save option last led children to save more tokens on average. Response option order was controlled for in the analyses.

Child's sex, family education, and parent's education were not related to children's Saving Board Game performance or parent-report CFTQ saving score[1] (ps > .08), so they were excluded from the analyses. Child's age in months did not differ across the strategy conditions, $F(4, 249)$ = 0.18, p = .950, η^2 = .003, but it was positively related to children's Saving Board Game performance, $r(251)$ = .32, p < .001, and parent-report CFTQ saving score, $r(230)$ = .23, p < .001, so child's age was included in the analyses. Descriptive statistics are presented in Table 1.

The Saving Board Game

The token rule check question

The majority of children (84.65%) correctly answered the token rule check question (Table 2A). Children who passed the token rule check (M_{age} = 55.30 months, SD = 9.80) were older than children who failed the token rule check (M_{age} = 47.10 months, SD = 9.09), $t(252)$ = 4.54, p < .001, d = .844. Moreover, a two-way analysis of covariance (ANCOVA) with token rule check (passed or failed) and

[1] A total of 22 parents did not complete the CFTQ. The other parents who filled out the CFTQ occasionally provided non-response options (8.6% of all ratings were "do not know," "does not apply," or truly missing responses). Expectation maximization was used to impute missing responses.

Table 1

A. Descriptive statistics of variables												
	3-year-olds			4-year-olds			5-year-olds			Whole sample		
	n	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*N*	*M*	*SD*
Age	82	42.5	3.30	87	54.4	3.45	85	54.5	3.45	254	54.3	10.1
CFTQ saving	73	3.50	0.70	79	3.80	0.63	80	3.96	0.59	232	3.75	0.66
Family income	71	3.68	0.77	65	3.45	0.87	71	3.51	0.83	207	3.55	0.82
Parent education	76	6.17	1.06	79	5.99	1.13	79	5.97	1.07	234	6.04	1.09
B. Saving Board Game conditions												
	3-year-olds			4-year-olds			5-year-olds			Whole sample		
Condition	*n*	*M*	*SD*	*n*	*M*	*SD*	*n*	*M*	*SD*	*N*	*M*	*SD*
Control	17	1.00	1.46	18	2.39	1.33	18	2.94	1.11	52	2.13	1.15
Budgeting	16	1.75	1.48	18	2.17	1.47	16	2.62	1.09	50	2.18	1.38
Tracking	15	2.00	1.69	17	2.18	1.47	17	2.53	1.18	49	2.24	1.44
Child perspective	17	1.65	1.69	17	1.88	1.69	17	3.06	1.09	51	2.20	1.61
Adult perspective	17	2.35	1.66	17	2.65	1.41	17	2.82	1.07	51	2.61	1.39
Total	82	1.74	1.62	87	2.25	1.46	85	2.8	1.1	254	2.27	1.47

Note. CFTQ, Children's Future Thinking Questionnaire.

Table 2

A. Saving Board Game rule check and manipulation check questions								
	3-year-olds		4-year-olds		5-year-olds		Whole sample	
	$n_{correct}$	n_{wrong}	$n_{correct}$	n_{wrong}	$n_{correct}$	n_{wrong}	$N_{correct}$	N_{wrong}
Token rule check	64	18	78	9	83	2	225	29
Adult manipulation check	4	13	7	10	8	9	19	32
Child manipulation check	7	10	10	7	11	6	28	23

B. Frequency of children's responses in the adult and child manipulation check questions		
Category	Adult manipulation check	Child manipulation check
Taylor (correct answer)	19	28
Themselves	2	3
Another adult's name (e.g., parent, firefighter)	8	2
Another child's name (e.g., friend, sibling)	3	2
Other items and beings (e.g., elephants, coins, unicorns)	6	9
No response	4	2
Don't know	9	5
Total wrong answers	32	23
Total answers	51	51

child's age in years (3-year-olds, 4-year-olds, or 5-year-olds) as between-participants variables and response option order as a covariate showed a main effect of token rule check on children's Saving Board Game performance, $F(1, 247) = 4.09$, $p = .044$, $\eta^2 = .009$. Children who passed the token rule check ($M_{token} = 2.36$, $SD = 1.45$) saved more than those who failed the token rule check ($M_{token} = 1.55$, $SD = 1.43$). However, the results of planned analyses did not change when children who failed the token rule check question were excluded, so these children were retained in our sample for the purposes of analysis.

Perspective-taking manipulation check questions

In the adult perspective condition, 37.25% of the sample correctly answered the perspective-taking manipulation check question (i.e., reporting that they were pretending to be Taylor at the end of the game; Table 2). Children who correctly answered this question and those who answered it incorrectly did not differ from each other in terms of age, $t(49) = 1.72$, $p = .091$, $d = .449$, or Saving Board Game performance, $F(1, 44) = 0.95$, $p = .335$, $\eta^2 = .023$.

In the child perspective condition, 54.90% of the sample answered the manipulation check question correctly (Table 2). Children who correctly answered the manipulation check question (M_{age} = 56.90 months, SD = 9.43) were older than their peers who failed to answer it correctly (M_{age} = 50.40 months, SD = 11), $t(49) = 2.26$, $p = .029$, $d = .635$. Moreover, those children also saved more (M_{token} = 2.75, SD = 1.55) in the Saving Board Game than their peers who failed to correctly answer the question (M_{token} = 1.52, SD = 1.44), $F(1, 44) = 6.56$, $p = .014$, $\eta^2 = .095$. However, the results of planned analyses did not change when children who failed the manipulation check were excluded, so these children were retained in the sample.

The effect of age and strategy on children's saving board game performance

To examine the effect of age and saving strategies on children's saving, a two-way ANCOVA with child's age in years (3-year-olds, 4-year-olds, or 5-year-olds) and strategy condition (control, budgeting, tracking, adult perspective, or child perspective) as between-participants variables and response option order as a covariate was performed. There were main effects of response option order, $F(1, 238) = 6.38$, $p = .012$, $\eta^2 = .023$, and age, $F(2, 238) = 10.29$, $p < .001$, $\eta^2 = .082$. The 5-year-olds saved more than the 3-year-olds ($p < .001$), but the 4-year-olds did not differ from the other age groups (Table 1B). There was neither a main effect of condition, $F(4, 238) = 0.80$, $p = .529$, $\eta^2 = .013$, nor an interaction between age and condition, $F(8, 238) = 1.20$, $p = .299$, $\eta^2 = .039$ (Fig. 2). Following our preregistered analysis, a post hoc comparison of the interaction effect was performed even though the effect was not significant. Bonferroni-corrected post hoc analysis revealed that 3-year-olds saved less than 4- and 5-year-olds in the control condition ($ps < .01$). However, in the other strategy conditions, 3-, 4-, and 5-year-olds did not differ in their saving (Table 1B).

In an exploratory analysis, children were divided into two groups based on their success in the Saving Board Game: *unsuccessful savers* (who failed to save at least three tokens for the target sticker; $n = 126$) and *successful savers* (who saved at least three tokens; $n = 128$). A logistic regression was performed to examine the predictors of successful saving. Child's age in months, strategy condition, and response option order (a covariate) were added to the model, $\chi^2(6) = 26.56$, $p < .001$, $R^2_{Nagelkerke} = .13$. Child's age, $W(1) = 20.2$, $p < .001$, odds ratio (OR) = 1.06, was an independent predictor. Older children were more likely to save enough to buy the target prize. However, there were no predictive effects of strategy condition or response option order.

In another exploratory analysis, we categorized children as (a) non-savers (children who did not save any tokens; $n = 47$), (b) under-savers (children who saved fewer than three tokens; $n = 79$), (c) optimal savers (children who saved just three tokens; $n = 57$), and (d) over-savers (children who saved more than three tokens; $n = 71$). We were interested in this categorization given that over-savers saved the most tokens, but they missed out on the opportunity to spend one token despite saving three tokens to buy the target sticker. Thus, this over-saving is non-optimal even though children saved more tokens than others. A multinomial logistic regression was performed to examine the predictors of optimal saving. Child's age in months, strategy condition, and response option order (a covariate) were added to the model, $\chi^2(18) = 71.53$, $p < .001$, $R^2_{Nagelkerke} = .26$. Child's age, $\chi^2(3) = 41.37$, $p < .001$, and response option order, $\chi^2(3) = 18.43$, $p < .001$, were independent predictors. Optimal savers were used as the reference category. Relative to optimal savers, child's age was negatively associated with non-savers, $\chi^2(1) = 31.58$, $p < .001$, $OR = -0.145$, under-savers, $\chi^2(1) = 10.32$, $p = .001$, $OR = -0.063$, and over-savers, $\chi^2(1) = 4.60$, $p = .032$, $OR = -0.043$, indicating that older children tended to be optimal savers compared with younger children. There was no relation between optimal saving and strategy condition.

Next, we explored children's saving decisions at the four spending locations. Over-savers and non-savers strictly decided to save (or spend) at all four locations. However, optimal savers and under-savers showed different saving patterns (Table 3). Optimal savers' saving and spending decisions

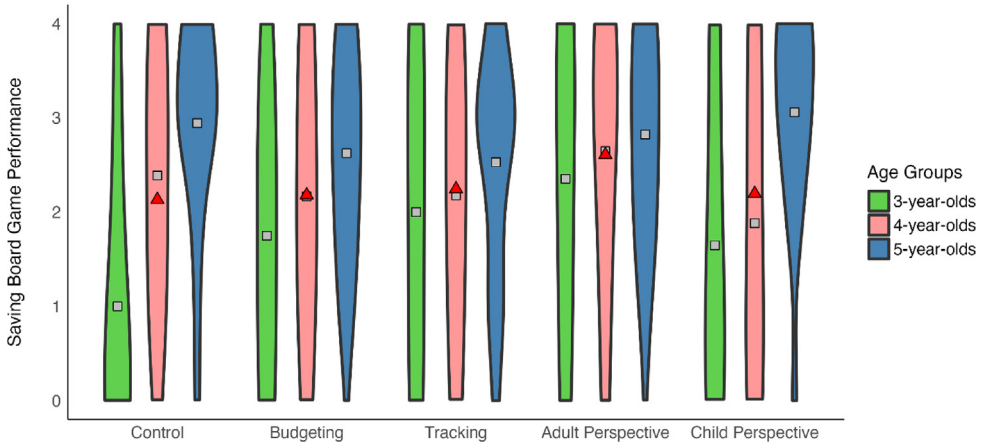

Fig. 2. Children's Saving Board Game performance across conditions. Red triangles indicate the mean saving scores of the conditions. Gray squares indicate the mean saving scores of age groups within the conditions. (For interpretation of the references to color in this figure legend, the reader is referred to the Web version of this article.)

Table 3
Children's saving decisions across locations on the Saving Board Game

	First location	Second location	Third location	Fourth location
Non-savers	0 (0%)	0 (0%)	0 (0%)	0 (0%)
Under-savers	41 (51.9%)	36 (45.6%)	19 (24.1%)	26 (32.9%)
Optimal savers	33 (57.9%)	44 (77.2%)	49 (86%)	45 (78.9%)
Over-savers	71 (100%)	71 (100%)	71 (100%)	71 (100%)

did not differ at the first location ($\chi^2 = 1.42$, $p = .233$), but these children were more likely to save at the second, third, and fourth locations (χ^2s = 16.86–29.49, ps < .001), indicating that optimal savers might have showed delayed thrift and increased their saving after the first location. On the other hand, the under-savers' decisions (spending vs. saving) did not differ at the first and second locations ($\chi^2 = 0.11$, $p = .736$ and $\chi^2 = 0.62$, $p = .431$, respectively), but these children were more likely to spend at the third and fourth locations ($\chi^2 = 21.28$, $p < .001$ and $\chi^2 = 9.23$, $p = .002$, respectively), suggesting that under-savers increased their spending in the final two locations.

The relation between children's saving performance and parent-report saving

A preregistered Pearson's correlational analysis was performed to examine the relation between the Saving Board Game and the CFTQ saving subscale. There was a medium-sized positive correlation between parent-report CFTQ saving score and children's performance on the Saving Board Game, $r(229) = .19$, $p = .006$. When correlations were examined across conditions, CFTQ saving score and Saving Board Game performance were significantly related only in the control condition, $r(44) = .32$, $p = .031$) (Fig. 3). The correlations between CFTQ saving score and Saving Board Game performance in the other strategy conditions were in the expected positive direction but failed to reach statistical significance, rs(42–45) = .08 to .23, ps > .126.

Discussion

The current study found that (a) 3- to 5-year-old children's saving improved with age, (b) older children were more likely to be successful and engage in optimal saving than younger children in the Saving Board Game, (c) there was no effect of the saving strategies on children's token saving,

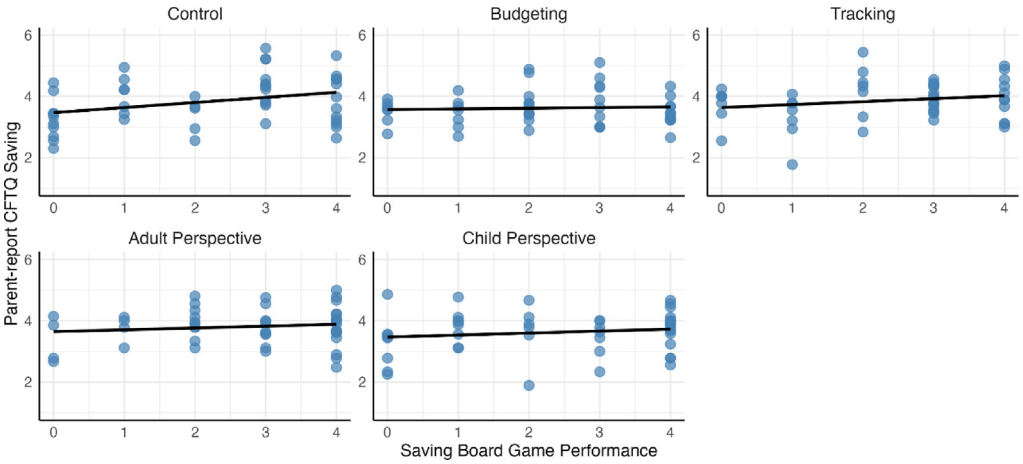

Fig. 3. Scatterplot between parent-report Children's Future Thinking Questionnaire (CFTQ) saving and Saving Board Game performance.

and (d) there was a positive, medium-sized correlation between parent-report CFTQ saving score and children's token saving in the control condition only.

Age-related improvements in children's saving

Children's token saving improved with age in the Saving Board Game and according to parent reports. These results successfully replicate Mazachowsky and Mahy (2020), who found an age-related improvement in 3- to 7-year-old children's token saving using a non-digital version of the Saving Board Game (i.e., a physical board game instead of a computerized version) and previous findings on 6- to 12-year-old children's token saving (e.g., Otto et al., 2006; Sonuga-Barke & Webley, 1993).

Our results contrast with those of Jerome et al. (2023) and Dueck et al. (2024), who failed to detect an effect of age on preschool children's token saving in their Token Saving Game. Methodological differences between the Saving Board Game and the Token Saving Game might explain these opposing findings. First, the economy in the Saving Board Game is similar to spending decisions children make in everyday life. Older children might benefit more from their greater financial experience and perform better in the game than their younger peers. On the contrary, older children might not benefit from their personal spending/saving experience in the Token Saving Game given that it provides a relatively unique financial problem (e.g., saving tokens to spend them in the blue game). Second, the Saving Board Game has a clear saving goal (e.g., saving three tokens for the target prize). In contrast, there is no clear saving goal in the Token Saving Game (i.e., there is no set number of tokens that children need to save for the target prizes). Children try to *save at least some* tokens for the target prizes. These differences might make the Token Saving Game more challenging for children. Indeed, children saved only 1.43 of 5 tokens on average in the Token Saving Game, whereas they saved 2.13 of 4 tokens in the Saving Board Game (Table 1B). Low levels of saving and limited variability in the Token Saving Game might have made age-related increases difficult to detect.

Saving all of one's resources is not always the most adaptive financial decision, and in fact spending is sometimes better for well-being. For instance, when preschool children realized that a more desirable marble run was broken in the Marble Game, children with better executive function stopped saving for it and switched to spending their marbles on the less desirable marble run. However, children with lower executive function rigidly saved their marbles for the larger run even though they knew it was broken (Lee & Carlson, 2015). Similarly, saving all four tokens in the Saving Board Game is non-optimal because the target sticker costs only three tokens. In our sample, older children were more likely to save the optimal number of tokens, whereas younger children were more likely to save none

(*non-savers*), fewer than three tokens (*under-savers*), or more than three tokens (*over-savers*). The optimal savers were more likely to save after the first location. The under-savers, however, increased their spending after the second location and were more likely to spend at the third and fourth locations. The under-savers might have had lapses in self-control as the game progressed or perhaps realized that they might as well spend all their tokens given that they had fewer than three tokens remaining. Similar to our findings, Otto et al. (2006) found that 6- to 12-year-old children engaged in different saving patterns in their version of the Saving Board Game, such as *strict saving, saving until the goal was reached,* and *delayed thrift* (saving after the first three locations). As development progresses, children might not only save more but also develop different and more complex saving strategies.

The categorization of children's saving performance as non-savers, under-savers, optimal savers, and over-savers might provide a more in-depth understanding of saving and better assess age-related changes in children's saving than a raw saving score (i.e., the number of tokens saved until the end of the game). In the Saving Board Game, the optimal savers were more rational and received the most benefit in the game compared with the over-savers even though the raw saving score of over-savers (four tokens) was greater than the saving score of optimal savers (three tokens). Categorizing children's performance in these four groups might help us to capture nuanced differences in children's saving. Future work might focus on this alternative scoring of saving.

Why strategies did not improve children's saving

The current study examined the roles of budgeting, psychological distancing, and tracking in young children's saving. Although children's saving did not increase significantly after any of the strategies were implemented, the distribution of the saving scores changed (Table 1B and Fig. 2). For example, 3-year-old children's average saving scores in the strategy conditions were numerically higher than those of their peers in the control group. A statistically significant positive relation between parent-reported everyday saving and children's saving on the Saving Board Game was found in the control condition only. The correlations in the strategy conditions were positive but not statistically significant, indicating that saving strategies might have changed children's saving and thus weakened the relation between everyday saving behavior and saving in the board game.

Past literature has shown a significant effect of budgeting on young children's saving of tokens (Jerome et al., 2023) and items (Kamawar et al., 2019). However, we failed to find an effect of budgeting in our Saving Board Game. In previous item and token saving tasks, children were given two contexts in which to spend; namely, they either spent their tokens/items on a less preferred activity or prize now or they saved them for a more preferred activity or prize later (Jerome et al., 2023; Kamawar et al., 2019). Thus, budgeting resources might be more effective in this context because children can easily compare current and future spending options. However, in the Saving Board Game, children were only told that they would have opportunities to spend their tokens in some of the locations. Children did not know how many or what kind of small stickers were available and when they would be offered during the game. Although this aspect of the board game made it more similar to everyday financial decisions (i.e., spending temptations are unpredictable), it also might have made a budget harder for children to follow given that current and future spending opportunities were unclear. Furthermore, when children's initial budget allocations were explored, 44% of children budgeted one or two tokens for the large sticker even though the target sticker cost three tokens (see Table S1 in the online supplementary material). These children might have struggled to understand the purpose of budgeting or already had weaker saving intentions than their peers who budgeted three or four tokens for the large sticker. This is critical because budgeting is particularly effective when individuals have an intention to save but struggle with actual saving (e.g., Rabinovich & Webley, 2007).

The current study also examined a new saving strategy, *tracking resources.* We expected that, similar to adults, young children's saving would benefit from tracking, but we failed to find an effect. Tracking might be effective only when there are multiple expense categories (e.g., groceries, unexpected costs, personal care) and the duration is longer (e.g., Heath & Soll, 1996). Children might benefit from tracking more in cases when the temporal distance between current and future saving goals is greater and there are different spending categories.

Our psychological distance strategy also did not improve children's saving, in line with Jerome et al.'s (2023) recent findings. However, the literature more broadly shows that psychological distance strategies improve young children's performance in many domains, such as future thinking, delay of gratification, and executive function (e.g., Atance et al., 2021; Prencipe & Zelazo, 2005; White & Carlson, 2016). In these studies, children often receive props such as bracelets and capes to help remind them whose perspective they are supposed to be taking (e.g., White & Carlson, 2016) and information about the other person's preferences and attitudes (Lee & Atance, 2016; Liviatan et al., 2008). We did not provide such additional cues in the current study, which might have led to children engaging in less perspective-taking or forgetting who they were supposed to pretend to be, as suggested by the high rate of incorrect responses to our manipulation check questions (Table 2). It is worth noting, however, that children in the child perspective condition who reported that they were imagining they were Taylor saved more tokens than their peers who did not report that they were imagining being Taylor. This finding suggests that taking another child's perspective might improve children's saving, but only if children can simulate another's perspective successfully.

We also expected a difference between psychological distance conditions such that children who pretended to be an adult would save more tokens than children who pretended to be a peer because adults are more socially distant and have more financial experience than same-aged peers. Although children in the adult perspective condition numerically saved more than their peers in the child perspective condition, this difference was not statistically significant. Our manipulation in the adult perspective condition did not include any information about the specific adult's financial experience or consumption preferences, so children might have just adopted their own preferences rather than the preferences of a more financially savvy adult. Preschool children's performance seems to be influenced by the traits of others they are asked to simulate. For example, their executive skills improve more over time when they pretend to be a *wise skilled* wizard/sorceress but not a hero or a villain (Veraksa et al., 2021), and they show more perseverance on a boring task when pretending to be *Batman* than their peers who take a third-person perspective on the self (White et al., 2017). Thus, children's performance might not be affected by taking a third-person perspective on its own but might also be related to the characteristics of the person whose perspective they are simulating.

The current study showed an unexpected *response option order effect*. Children whose options were ordered as "spend–save" saved more than their peers whose option order was "save–spend." A response bias to answer with the final option presented is common in young children, especially in forced-choice and yes/no questions (e.g., Baeyer et al., 2009; Okanda & Itakura, 2011). In our sample, children showed a tendency to select the last option presented, which led them to save or spend more on average. Although unintended, the forced-choice design may have served as a verbal prompt reminding children to save (e.g., Atance et al., 2017). Providing a forced choice and, importantly, providing "saving" as the final option might be a promising strategy to increase saving that should be examined in future work.

The current study examined the effectiveness of saving strategies in children's token saving. Saving strategies previously have been found to robustly improve children's item saving (e.g., verbal prompts, prior experience, budgeting; Atance et al., 2017; Kamawar et al., 2019; Zhang et al., 2023). However, we failed to find any effect of our saving strategies on children's token saving (but see Jerome et al., 2023, for an effect of budgeting). It is possible that token saving, compared with item saving, is more resistant to improvement by the use of strategies in early childhood. For example, the literature has linked money saving to certain personality traits (e.g., Rick et al., 2008), and children even as young as 5 years demonstrate psychological reactions to spending money (i.e., spendthrift–tightwad tendency; Smith et al., 2018). Furthermore, spendthrift children (*who do not experience pain when spending*) are more likely to spend money, whereas tightwads (*who experience pain when spending*) are more likely to save money (Smith et al., 2018). Thus, one possibility is that token saving is more strongly related to aspects of personality than item saving and hence is less malleable.

In addition, financial socialization and experience play a powerful role in saving money (e.g., Gudmunson & Danes, 2011; Otto, 2013). When parents' responses on the CFTQ money-saving item ("My child saves money in a piggy bank for future purchases") were explored, 54% of parents of 3-year-olds, 39% of parents of 4-year-olds, and 22% of parents of 5-year-olds disagreed with this item (i.e., *strongly disagree, disagree,* or *somewhat disagree*), suggesting that the young children in our sam-

ple might have had little experience with money in their everyday lives. This lack of experience with money might be a potential reason why saving strategies were not effective. Our strategies aimed to help children to better budget, track resources, and be more rational in their saving decisions, but these interventions might be ineffective if one has little experience with money and financial transactions.

The token economy of the Saving Board Game might have hindered the effects of strategies. The board game provided flexibility in that children did not need to save all their resources for the future. Children knew that they were allowed to spend one of their tokens, which might have increased the temptation of spending compared with a situation where children had just a single token to spend or save. Thus, children might have struggled to balance saving and spending, which is even more challenging for those with high spendthrift tendencies. Overall, we might have failed to improve children's saving because token saving is more strongly linked to children's economic socialization, noncognitive, temperamental, or personality traits that are difficult to change, and the flexible saving options in the board game might have decreased the impact of our selected strategies.

Limitations and future directions

The current study had some limitations. First, the tasks were not administered in a lab environment but rather were administered in a relatively quiet room at a science center. Given that children were in an exciting and unfamiliar environment, they might not have been listening carefully to the strategy instructions, as suggested by the high rate of incorrect responses to the perspective-taking manipulation check (Table 2). In addition, we did not ask children to indicate their preference between small and large stickers. We only asked children to choose a target sticker among several large stickers. Thus, some children might have been more motivated to buy the small stickers and did not save for the large sticker for this reason.

Conclusion

The current study examined 3- to 5-year-old children's saving with the Saving Board Game (a behavioral measure) and the saving subscale of CFTQ (a parent-report questionnaire) and investigated the effects of several saving strategies: budgeting, tracking, and psychological distancing. Children's saving improved with age in both behavioral and parent-report measures, but strategies did not improve children's token saving. Thus, children's saving skills develop throughout the preschool years; however, the saving strategies we targeted were not effective in improving their token saving. Young children's token saving might be closely linked to trait-like tendencies, which has yet to be thoroughly investigated. Future research should continue to explore early childhood saving, its association with cognitive and social factors to better understand its development, and interventions that can promote children's early saving behavior.

CRediT authorship contribution statement

Ege Kamber: Writing – review & editing, Writing – original draft, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Madi K. Maguire:** Writing – review & editing, Project administration, Methodology, Investigation, Data curation. **Edyta K. Tehrani:** Writing – review & editing, Project administration, Methodology, Investigation, Data curation. **Tessa R. Mazachowsky:** Writing – review & editing, Methodology, Conceptualization. **Caitlin E.V. Mahy:** Writing – review & editing, Supervision, Resources, Project administration, Methodology, Funding acquisition, Conceptualization.

Data availability

All data, analysis code, and research materials are available at https://osf.io/8bvzd/?view_only=5355b0f348a242f2bd55c6be0e6cb684.

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Appendix A. Supplementary material

Supplementary material to this article can be found online at https://doi.org/10.1016/j.jecp.2024.105995.

References

Atance, C. M., Metcalf, J. L., & Thiessen, A. J. (2017). How can we help children save? Tell them they can (if they want to). *Cognitive Development, 43*, 67–79. https://doi.org/10.1016/j.cogdev.2017.02.009.

Atance, C. M., Rutt, J. L., Cassidy, K., & Mahy, C. E. V. (2021). Young children's future-oriented reasoning for self and other: Effects of conflict and perspective. *Journal of Experimental Child Psychology, 209*, 105172. https://doi.org/10.1016/j.jecp.2021.105172.

Baeyer, C. L. V., Forsyth, S. J., Stanford, E. A., Watson, M., & Chambers, C. T. (2009). Response biases in preschool children's ratings of pain in hypothetical situations. *European Journal of Pain, 13*(2), 209–213. https://doi.org/10.1016/j.ejpain.2008.03.017.

Benartzi, S., & Thaler, R. H. (2013). Behavioral economics and the retirement savings crisis. *Science, 339*(6124), 1152–1153. https://doi.org/10.1126/science.1231320.

Chernyak, N., Leech, K. A., & Rowe, M. L. (2017). Training preschoolers' prospective abilities through conversation about the extended self. *Developmental Psychology, 53*(4), 652–661. https://doi.org/10.1037/dev0000283.

Dueck, K., Castro, A. W., Kamawar, D., Milyavskaya, M., Gallitto, E., & Atance, C. M. (2024). The effects of cognitive and environmental factors on children's early saving. *Cognitive Development, 70*, 101447. https://doi.org/10.1016/j.cogdev.2024.101447.

Erskine, M., Kier, C., Leung, A., & Sproule, R. (2006). Peer crowds, work experience, and financial saving behaviour of young Canadians. *Journal of Economic Psychology, 27*(2), 262–284. https://doi.org/10.1016/j.joep.2005.05.005.

Ersner-Hershfield, H., Garton, M. T., Ballard, K., Samanez-Larkin, G. R., & Knutson, B. (2009). Don't stop thinking about tomorrow: Individual differences in future self-continuity account for saving. *Judgment and Decision Making, 4*(4), 280–286. https://doi.org/10.1017/S1930297500003855.

Faul, F., Erdfelder, E., Lang, A.-G., & Buchner, A. (2007). G*Power 3: A flexible statistical power analysis program for the social, behavioral, and biomedical sciences. *Behavior Research Methods, 39*, 175–191. https://doi.org/10.3758/BF03193146.

Fuke, T. S. S., Kamber, E., Alunni, M., & Mahy, C. E. V. (2023). The emergence of procrastination in early childhood: Relations with executive control and future-oriented cognition. *Developmental Psychology, 59*(3), 579–593. https://doi.org/10.1037/dev0001502.

Gorham, L., & Davis, J. (2003). Getting control of your money #1: Tracking your income and expenses. *SDSU Extension Extra Archives,* Article 461. (South Dakota State University) http://openprairie.sdstate.edu/extension_extra/461.

Gudmunson, C. G., & Danes, S. M. (2011). Family financial socialization: Theory and critical review. *Journal of Family and Economic Issues, 32*(4), 644–667. https://doi.org/10.1007/s10834-011-9275-y.

Heath, C., & Soll, J. B. (1996). Mental budgeting and consumer decisions. *Journal of Consumer Research, 23*(1), 40–52. https://doi.org/10.1086/209465.

Hernandez, L., Jonker, N., & Kosse, A. (2017). Cash versus debit card: The role of budget control. *Journal of Consumer Affairs, 51*(1), 91–112.

Ipsos Group (2017). *One in five Americans could not afford to pay an unexpected medical bill without accumulating some debt.* https://www.ipsos.com/en-us/news-polls/one-in-five-could-not-pay-unexpected-medical-bill.

Jerome, E., Kamawar, D., Milyavskaya, M., & Atance, C. (2023). Preschoolers' saving: The role of budgeting and psychological distance on a novel token savings task. *Cognitive Development, 66*, 101315. https://doi.org/10.1016/j.cogdev.2023.101315.

Kamawar, D., Connolly, K., Astle-Rahim, A., Smygwaty, S., & Vendetti, C. (2019). Preschoolers' saving behavior: The role of planning and self-control. *Child Development, 90*(4), e407–e420. https://doi.org/10.1111/cdev.13037.

Karlan, D., McConnell, M., Mullainathan, S., & Zinman, J. (2016). Getting to the top of mind: How reminders increase saving. *Management Science, 62*(12), 3393–3411. https://doi.org/10.1287/mnsc.2015.2296.

Kaye, J. J., McCuistion, M., Gulotta, R., & Shamma, D. A. (2014). Money talks: Tracking personal finances. In *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 521–530). https://doi.org/10.1145/2556288.2556975.

Lee, W. S., & Atance, C. M. (2016). The effect of psychological distance on children's reasoning about future preferences. *PLoS One, 11*(10)e164382. https://doi.org/10.1371/journal.pone.0164382.

Lee, W. S. C., & Carlson, S. M. (2015). Knowing when to be "rational": Flexible economic decision making and executive function in preschool children. *Child Development, 86*(5), 1434–1448. https://doi.org/10.1111/cdev.12401.

Liviatan, I., Trope, Y., & Liberman, N. (2008). Interpersonal similarity as a social distance dimension: Implications for perception of others' actions. *Journal of Experimental Social Psychology, 44*(5), 1256–1269. https://doi.org/10.1016/j.jesp.2008.04.007.

Loke, V., Choi, L., & Libby, M. (2015). Increasing youth financial capability: An evaluation of the MyPath savings initiative. *Journal of Consumer Affairs, 49*(1), 97–126.

Lusardi, A., & Tufano, P. (2015). Debt literacy, financial experiences, and overindebtedness. *Journal of Pension Economics & Finance, 14*(4), 332–368. https://doi.org/10.1017/S1474747215000232.

Mahy, C. E. V., Moses, L. J., O'Brien, B., Castro, A. W., Kopp, L., & Atance, C. M. (2020). The roles of perspective and language in children's ability to delay gratification. *Journal of Experimental Child Psychology, 192*, 104767. https://doi.org/10.1016/j.jecp.2019.104767.

Mazachowsky, T. R., Koktavy, C., & Mahy, C. E. V. (2019). The effect of psychological distance on young children's future predictions. *Infant and Child Development, 28*(4)e2133. https://doi.org/10.1002/icd.2133.

Mazachowsky, T. R., & Mahy, C. E. V. (2020). Constructing the Children's Future Thinking Questionnaire: A reliable and valid measure of children's future-oriented cognition. *Developmental Psychology, 56*(4), 756–772. https://doi.org/10.1037/dev0000885.

Metcalf, J. L., & Atance, C. M. (2011). Do preschoolers save to benefit their future selves? *Cognitive Development, 26*(4), 371–382. https://doi.org/10.1016/j.cogdev.2011.09.003.

Organization for Economic Cooperation and Developments (2023). *Household savings.* https://doi.org/10.1787/cfc6f499-en.

Okanda, M., & Itakura, S. (2011). Do young and old preschoolers exhibit response bias due to different mechanisms? Investigating children's response time. *Journal of Experimental Child Psychology, 110*(3), 453–460. https://doi.org/10.1016/j.jecp.2011.04.012.

Otto, A. (2013). Saving in childhood and adolescence: Insights from developmental psychology. *Economics of Education Review, 33*, 8–18. https://doi.org/10.1016/j.econedurev.2012.09.005.

Otto, A. M. C., Schots, P. A. M., Westerman, J. A. J., & Webley, P. (2006). Children's use of saving strategies: An experimental approach. *Journal of Economic Psychology, 27*, 57–72. https://doi.org/10.1016/j.joep.2005.06.013.

Prencipe, A., & Zelazo, P. D. (2005). Development of affective decision making for self and other: Evidence for the integration of first- and third-person perspectives. *Psychological Science, 16*(7), 501–505. https://doi.org/10.1111/j.0956-7976.2005.01564.x.

Rabinovich, A., & Webley, P. (2007). Filling the gap between planning and doing: Psychological factors involved in the successful implementation of saving intention. *Journal of Economic Psychology, 28*(4), 444–461. https://doi.org/10.1016/j.joep.2006.09.002.

Richardson, T., Elliott, P., & Roberts, R. (2013). The relationship between personal unsecured debt and mental and physical health: A systematic review and meta-analysis. *Clinical Psychology Review, 33*(8), 1148–1162. https://doi.org/10.1016/j.cpr.2013.08.009.

Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research, 34*(6), 767–782. https://doi.org/10.1086/523285.

Sigel, I. E. (2002). The psychological distancing model: A study of the socialization of cognition. *Culture & Psychology, 8*(2), 189–214. https://doi.org/10.1177/1354067X02008002438.

Smith, C. E., Echelbarger, M., Gelman, S. A., & Rick, S. I. (2018). Spendthrifts and tightwads in childhood: Feelings about spending predict children's financial decision making. *Journal of Behavioral Decision Making, 31*(3), 446–460. https://doi.org/10.1002/bdm.2071.

Soman, D., & Cheema, A. (2011). Earmarking and partitioning: Increasing saving by low-income households. *Journal of Marketing Research, 48*(Suppl), S14–S22. https://doi.org/10.1509/jmkr.48.SPL.S.

Sonuga-Barke, E. J. S., & Webley, P. (1993). *Children's saving: A study in the development of economic behaviour.* Lawrence Erlbaum.

Trope, Y., & Liberman, N. (2010). Construal-level theory of psychological distance. *Psychological Review, 117*(2), 440–463. https://doi.org/10.1037/a0018963.

Tsui, A. S. M., & Atance, C. M. (2022). Young children's saving and their episodic future thinking. *Journal of Cognition and Development, 24*(3), 438–457. https://doi.org/10.1080/15248372.2022.2156516.

Veraksa, A. N., Gavrilova, M. N., Bukhalenkova, D. A., Almazova, O., Veraksa, N. E., & Colliver, Y. (2021). Does Batman affect EF because he is benevolent or skilful? The effect of different pretend roles on pre-schoolers' executive functions. *Early Child Development and Care, 191*(10), 1567–1576. https://doi.org/10.1080/03004430.2019.1658091.

White, R. E., & Carlson, S. M. (2016). What would Batman do? Self-distancing improves executive function in young children. *Developmental Science, 19*(3), 419–426. https://doi.org/10.1111/desc.12314.

White, R. E., Prager, E. O., Schaefer, C., Kross, E., Duckworth, A. L., & Carlson, S. M. (2017). The "Batman effect": Improving perseverance in young children. *Child Development, 88*(5), 1563–1571. https://doi.org/10.1111/cdev.12695.

Wärneryd, K. E. (1999). *The psychology of saving.* Edward Elgar Publishing.

Zhang, J., Vohs, K., & Carlson, M. S. (2023). *Imagining the future improves self-control in preschoolers.* Poster presented at Society for Research in Child Development Biennial Meeting, Salt Lake City, UT.