

Smith Craig E. (Orcid ID: 0000-0001-6215-5161)
Rick Scott (Orcid ID: 0000-0002-0306-2376)

1

Children, Emotion, and Spending

Running Head: CHILDREN, EMOTION, AND SPENDING

Author Manuscript

Spendthrifts and Tightwads in Childhood:

Feelings about Spending Predict Children's Financial Decision-Making

WORD COUNT: 9738

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as doi: [10.1002/bdm.2071](https://doi.org/10.1002/bdm.2071)

Abstract

Adults differ in the extent to which they find spending money to be distressing; “tightwads” find spending money painful and “spendthrifts” do not find spending painful enough. This affective dimension has been reliably measured in adults, and predicts a variety of important financial behaviors and outcomes (e.g., saving behavior, credit scores). Although children’s financial behavior has also received attention, feelings about spending have not been studied in children, as they have in adults. We measured the spendthrift-tightwad (ST-TW) construct in children for the first time, with a sample of 5-to-10-year-old children ($n = 225$). Children across the entire age range were able to reliably report on their affective responses to spending and saving, and children’s ST-TW scores were related to parent reports of children’s temperament and financial behavior. Further, children’s ST-TW scores were predictive of whether they chose to save or spend money in the lab, even after controlling for age and how much they liked the offered items. Our novel findings – that children’s feelings about spending and saving can be measured from an early age and relate to their behavior with money – are discussed with regard to theoretical and practical implications.

Keywords: children, money, emotion, affect, spending, decision making, financial behavior

Spendthrifts and Tightwads in Childhood:

Feelings about Spending Predict Children's Financial Decision-Making

Many consumers over-spend and under-save. Economists estimate that over half of working Americans save too little to maintain their current lifestyle throughout retirement (Munnell, Webb, & Golub-Sass, 2012). Accordingly, there has been a surge of research aimed at understanding and improving consumer financial behavior (e.g., Lynch, 2011). This work has generally focused on improving adults' often suboptimal financial decision making. For instance, much work has aimed at understanding how consumers with different affective reactions toward spending, known as "tightwads" and "spendthrifts" (Rick, Cryder, & Loewenstein, 2008), can be situationally induced to spend and save differently than they normally do (e.g., Frederick, Novemsky, Wang, Dhar, & Nowlis, 2009; Thomas, Desai, & Seenivasan, 2011). In addition to this important research with adults, understanding when and how children come to form stable reactions toward spending and saving may also present an opportunity for improving decision making by consumers. That is, if we understand when and how children's feelings toward spending and saving develop, we may be able to generate relevant insights for parents, teachers, and policy makers interested in shaping the way children think about and behave with money. Additionally, learning about the developmental course of these attitudes may inform distinct theoretical accounts regarding their origins. The present work is designed to provide an initial, cross-sectional (rather than longitudinal) step toward addressing these important questions. The central goal of this initial step is to examine when, in the course of development, the tightwad-

spendthrift construct can be reliably measured in children, and whether it can predict children's spending behavior, above and beyond other relevant predictors.

Spendthrifts and Tightwads

Rick et al. (2008) demonstrated that adults differ in the extent to which they find spending money to be psychologically painful; they developed the Spendthrift-Tightwad (ST-TW) scale to measure these individual differences. "Tightwads" find spending money painful and generally spend less than they would ideally like to spend. "Spendthrifts" do not find spending painful enough and generally spend more than they would ideally like to spend. ST-TW scores predict credit scores (tightwads have higher credit scores than spendthrifts; Erner, Fox, Chalekian, De La Rosa, & Trepel, 2016), savings amounts (Rick et al. 2008), and the likelihood of spending in experimental settings (e.g., Raghurir & Srivastava, 2009). Differences in income between tightwads and spendthrifts cannot account for the predictive power of the ST-TW construct (the income differences were almost negligible in Rick et al. [2008], and this was not due to the presence of a curvilinear relation between ST-TW scores and income). In other words, tightwads spend more conservatively than spendthrifts, and it is not because they have less money. Situational factors can moderate the influence of ST-TW orientations, however. Contexts that temporarily reduce the pain of paying, such as payment with credit rather than cash, tend to increase spending by tightwads (Thomas et al., 2011). Contexts that temporarily increase the pain of paying, such as highlighting the opportunity costs of spending, tend to decrease spending by spendthrifts (Frederick et al., 2009). Several other studies in the consumer

decision-making literature have further explicated the nature of the spendthrift-tightwad construct (e.g., Berman, Tran, Lynch, & Zauberger, 2016; Hsee, Yang, Zheng, & Wang, 2015; Lynch, Netemeyer, Spiller, & Zammit, 2010; Reyna & Wilhelms, 2017; Rick, Small, & Finkel, 2011; Seuntjens, Zeelenberg, van de Ven, & Breugelmans, 2015).

Although much has been learned about the tightwad-spendthrift construct in adult samples, it remains unclear when and how people develop relatively stable affective responses to spending and saving money. In the present research, we investigated whether children have feelings toward spending and saving money that are comparable to those captured by the adult Spendthrift-Tightwad scale.

Existing Research on Children's Spending and Saving Behavior

Although the links between feelings and spending behavior have received attention in adult studies, little is known about whether affective factors are associated with money use and management in childhood. There is, however, a sizable body of research on children's money-related cognition and behavior, motivated by questions that are both basic (e.g., what children understand about money; Webley, 2005) and applied (e.g., how children spend and save; Webley, 2014). To provide context for the present research, we briefly review the existing literature here.

Early studies indicate that, although preschool-aged children know what money is, their knowledge is quite limited (e.g., they know that coins are money, but not how much they are worth; Berti & Bombi, 1988), and it is not until around age six that children begin to understand

that saving money is considered important (an understanding typically derived from conversations with parents; Sonuga-Barke & Webley, 1993). Children's saving strategies change with age; older children employ more sophisticated strategies that allow them to spend while keeping saving goals in mind, whereas younger children employ simpler strategies, which include not spending at all (Otto, Schots, Westerman, & Webley, 2006). Materialism, a construct that is only modestly related to the ST-TW dimension (Rick et al., 2008), has also been investigated in children (e.g., Chaplin & John, 2007; Goldberg, Gorn, Peracchio, & Bamossy, 2003; Richins & Chaplin, 2015). In a sample of 9- to 14-year-olds, Goldberg et al. (2003) found that highly materialistic “tweens” shop more frequently and are relatively less likely to have a savings account. However, no existing developmental studies have focused on the role of feelings about spending and saving, as we do here.

Other studies have tested whether early economic experiences are associated with money-related behaviors in adulthood (e.g., Griskevicius et al., 2013). Results indicate that saving in adolescence is linked to saving in adulthood; for example, those who save more at age 16 also save more at age 34 (Ashby, Schoon, & Webley, 2011). Similarly, in a sample of 18-to-21-year-olds, Kim and Chatterjee (2013) found that earlier childhood financial socialization (e.g., using savings accounts, parent-monitored spending) was positively associated with later financial asset ownership and effective money management practices, and negatively associated with financial worry.

Taken together, these studies raise the possibility that economic behaviors are shaped in childhood and that the effects of early economic experiences extend into adulthood. Even within childhood, money-related socialization experiences are associated with financial behaviors; for example, children who do not receive an allowance spend more when buying toys with a “credit card” (redeemable for cash) compared to cash, whereas children who receive an allowance spend equally with cash and credit (Abramovitch, Freedman, & Pliner, 1991). This suggests that a more sophisticated understanding of money is associated with the frequency with which children manage money. In short, such studies suggest that interactions with and about money are associated with the development of financial strategies. Here, we make a novel contribution to this body of research by testing whether another potentially early-emerging phenomenon -- children's affective stances toward spending -- is associated with financial behavior in childhood.

The Present Research

We take a developmental approach, which has the potential to reveal when in the lifespan feelings of emotional distress and pleasure in response to the prospect of spending money may be experienced and reliably measured, and what the origins of such affective stances may be. Further, research on the link between emotion and financial behavior in childhood has the potential to inform financial education efforts that are becoming more common in schools (Drever et al., 2015).

Many models of child behavior acknowledge the central role of affective processes in influencing behavior (e.g., Calkins & Bell, 2010; Lemerise & Arsenio, 2000), and empirical

work has supported such models. For example, regret and sadness experienced by 6-to-7-year-olds about a choice made on one day were associated with making a better choice the following day (O'Connor, McCormack, Beck, & Feeney, 2015). In another example, four-to-twelve-year-old children indicated being more likely to engage in a costly prosocial act when given reason to expect a positive emotion (pride) as compared to a negative emotion (sadness; Hertz & Krettenauer, 2014).

In short, children's experienced and expected feelings influence decision making in general and, in adults, feelings related to spending money influence economic decisions in particular. In the present research we predicted that, as is true for adults, children's affective reactions to spending and saving money would be associated with their financial behavior, both as reported by parents and as observed in the laboratory. We also investigated whether there might be developmental differences either in the extent to which children could report on their money-related feelings, or in the extent to which children's self-reported feelings would be associated with spending behavior. It is conceivable that all young children spend happily, without suffering the negative feelings experienced by tightwads. Alternatively, it is possible that even young children can be differentiated by both their affective stances toward spending and saving, and by the behaviors associated with those stances. If the latter is true, another intriguing question is whether, in childhood, the distribution of individuals on the spendthrift-tightwad dimension is skewed toward the tightwad orientation, as has been found in adult samples (Rick et al., 2008).

To investigate these issues, we designed and administered a Spendthrift-Tightwad (ST-TW) scale for children based on the adult scale (Rick et al., 2008). A key goal in the present research was to establish that children could report accurately on their own affect-related spending and saving tendencies. Existing research has demonstrated that even preschoolers have a basic understanding of emotion; they can accurately recognize emotions and connect them to external causes (e.g., Pons, Harris, & de Rosnay, 2004), and they can report on their own emotions in response to positive and negative events (e.g., Lagattuta, Sayfan, & Bamford, 2012; Smith & Harris, 2012; Weisberg & Beck, 2012).

To assess children's capacity to report on money-related feelings using the ST-TW scale, we attended to both reliability and validity. We examined internal consistency, and we used children's scores on the ST-TW measure to predict their spending and saving behavior, as observed in the lab and as reported by parents. We anticipated that children who scored higher on the ST-TW measure – indicating greater spendthrift tendencies – would be more likely to spend money during the study and would be rated by parents as more likely to spend.

When predicting children's observed behavior using their ST-TW scores, we considered the influence of two potentially relevant cognitive capacities: inhibitory control and number sense. We measured children's capacity for inhibitory control using the Simon Task (Bialystok, Craik, Klein, & Viswanathan, 2004; Lu & Proctor, 1995; Simon & Rudell, 1967). The goal of measuring inhibitory control was to disentangle the effects of affective processes from related processes involved in inhibiting dominant responses and enacting alternative responses. We

measured children's 'number sense' using the Panamath task; this measure allowed us to test whether children's ability to represent numbers played a role in their money-related behavior (e.g., by helping them adhere to budgets). The Panamath task assesses the capacity to make judgments about approximate quantities; this capacity is present prior to formal mathematical instruction (Libertus, Feigenson, & Halberda, 2011). Although this number sense is present early in life, children vary in their ability to distinguish between two quantities of objects, and such variation predicts future math performance in school settings (Mazzocco, Feigenson, & Halberda, 2011).

We expected that children's self-reported ST-TW scores would predict unique variance in their observed spending/saving behavior, above and beyond the variance explained by any relevant control measures. Further, as noted, a key goal was to test whether children as young as age five could report on feelings related to spending and saving, and to test when in development children's affective reports would predict their spending and saving behavior.

Methods

Participants

Child participants ($n = 225$) ranged in age from 5 to 10 years ($M = 7.76$, $SD = 1.64$). There were roughly equal numbers of boys ($n = 110$) and girls ($n = 115$), and there was no gender difference in mean age. Further, children of every age (from 5 to 10) were well represented in our sample (as can be seen in Figure 4). Children younger than five were not included out of concern that they would not have enough experience with money to be able to

answer questions about their typical feelings related to spending and saving (e.g., Webley & Plaisier, 1998). Additionally, the primary child ST-TW measure was based on a data collection procedure developed for children five years and older. Children older than ten were not included in the study out of concern that the toys used in the spending/saving task (see below) would not be attractive to children who were beyond the elementary school years. Children participated at a lab site located in a local children's museum. We did not collect data on the ethnic and socio-economic backgrounds of the families in our sample. However, the museum does collect some data on the backgrounds of those who visit; roughly three-quarters of its visitors are White, and most are from southeast Michigan.

We asked one parent of each participating child to provide data via a questionnaire; 69% ($n = 156$) of parents chose to do so (112 were female, 44 were male). Seventeen of these parents (11%) took the questionnaire at home, using a survey URL provided by the researchers; these parents were paid \$15 for completing the instrument online. There were concerns about a poor response rate using this method; only 17 out of 66 parents invited to take the survey online did so. We were particularly concerned that asking parents to complete a survey at a later time was the cause of this low response rate, so we switched to using a paper-and-pencil version of the questionnaire in the museum, which parents completed while their children took part in the study. The in-museum response rate to the paper-and-pencil survey was 87% (159 parents were invited to participate, and 139 agreed). Thus, the large majority (89%) of parents who completed a questionnaire did so in the museum; these parents received \$5 for their participation.

Thirty-six parents who completed surveys had more than one child in the study. In such cases, parents were not asked to provide information about themselves more than once, but were asked to complete questionnaire items about each of their children. In the multivariate analyses below in which parent-report data are included, we account for the nesting of some children under the same parent by using hierarchical linear models.

When more than one parent was present, parents decided between themselves who (if anyone) would complete the questionnaire. Importantly, all but one of the participating parents who completed questionnaires in the museum finished the questionnaires before their children made an observable spending/saving choice (described below). Thus, these parents' ratings of their children's money-related behavior were not influenced by seeing what their children did in the study. The small number of parents ($n = 17$) who completed surveys at home did see their children's spending/saving choices prior to reporting on their children's spending behavior.

Excluded Participants and Missing Data

Nine children participated but were not ultimately included in the final sample of 225 children. Two children were excluded because they watched another child take part in the study just before they participated; we prevented this in all other cases to ensure that one child's responses did not influence those of another. The other seven children were excluded from the sample because they did not answer all of the relevant items that made up the Spendthrift-Tightwad scale.

Due to technical problems in the computer-based mathematical cognition task (Panamath; described below), we were not able to compute a summary statistic (Weber fraction) for 16 children. Further, there were technical problems while eight children were engaged in a computer-based inhibitory control task (the Simon task; described below). As a result, these children are present in some analyses but not others.

We did not collect data on the reasons why 31% of parents chose not to complete a parent questionnaire. However, many parents who chose not to participate were explicit about the fact that they had to monitor another child in the museum (typically a participant's younger sibling), and thus could not direct their attention to the paper-and-pencil questionnaire. Parents who were in this type of situation simply chose not to start a questionnaire (i.e., missing parent data – described below – were not a result of parents starting the questionnaire and then stopping). Because we were aware that not all parents in the museum setting would be able to provide data, our approach was to conduct multivariate analyses both with and without parent data, to ensure that the sample size for such analyses was not always limited to the number of participating parents.

The 156 parents who chose to fill out a questionnaire did not differ from parents who did not with regard to most key variables (parent gender, child's gender, children's performance on inhibitory control and numerical cognition tasks, and ST-TW score; all p -values $> .31$). The main difference that emerged between parents who did and did not complete a survey was for child

age; parents who completed a questionnaire had children who were younger ($M = 7.57$) than those of parents who chose not to complete a questionnaire ($M = 8.20$), $t(223) = 2.71$, $p = .007$.

Three participating parents did not complete all survey items about their children's spending and saving tendencies, seven parents did not complete all of the survey items for two scales measuring children's inhibitory/impulse control, and one parent did not provide complete data for the adult ST-TW scale. As a result of the way these skipped items were spread across the parent questionnaires, 145 out of the 156 questionnaires had complete sets of parent responses.

Procedure

Each child participated individually after a parent provided written consent and the child verbally assented. As noted, in our initial sessions we asked parents to complete an optional questionnaire online (at home, after the study). Due to a low response rate, we then switched to asking parents to respond to a paper-and-pencil questionnaire at the museum.

Each child completed five tasks. Four of the five tasks were administered in random order. The fifth task -- an observation of real spending/saving behavior -- was always administered last.

Spendthrift-Tightwad (ST-TW) Scale for Children. The administration format of the ST-TW scale for children was modeled after the approach used in the Berkeley Puppet Interview (e.g., Measelle, Ablow, Cowan, & Cowan, 1998; Measelle, John, Ablow, Cowan, & Cowan, 2005). Children were presented with twelve items; for each item, two characters appeared on the

computer screen, one on the left and one on the right (see Figure 1). The characters were photographs of plush animal toys (e.g., a plush bear). The experimenter told the child, "Each creature is going to say something about itself. Your job is to point to the one that's most like you." In the rare instance that a child answered that both creatures were like them, the child was cued to pick the one that was *most* like them. Using this system, children of all ages were able to make decisions without trouble. All aspects of this task were counterbalanced across participants (i.e., the side of the screen on which the statements appeared and the specific creatures making the statements), and item order was randomized for each participant.

Seven of the items were created to have high face validity related to the construct of interest: affective responses to the prospect of spending and saving money. Five other items were created with exploratory analyses in mind (e.g., *I think about my money a lot (vs.) I don't think about my money very much; I go to stores with my parents a lot (vs.) I don't go to stores with my parents very often*). These items were not tightly related, conceptually, to the construct of interest, nor were they statistically related (see Appendix A). The latter five items are not discussed further.

Table 1 displays the seven items that comprise the child ST-TW scale. For each item, a score of 1 was given for a response that was in the spendthrift direction (e.g., *Spending money makes me feel good*) and a score of 0 was given for a response that was in the tightwad direction (e.g., *Spending money makes me feel bad*). Scores across the seven items were summed to form a

ST-TW scale that had a possible range of 0-7. Internal consistency was acceptable ($\alpha = .63$)¹, and the average inter-item correlation (.20) was within the range recommended by Clark and Watson (1995).

Simon Task. The Simon task, a measure of inhibitory control, presented children with colored squares (red or blue) that were displayed, one at a time, on either the left or right of a central fixation point. On the left of the computer keypad was a blue key, and on the right there was a red key. Children were instructed to push the key that matched the color of the square on the screen, regardless of whether the square appeared on the left or right. In congruent trials, the colored square was displayed on the same side as the correct key (e.g., a red square on the right). In incongruent trials, the colored square was displayed on opposite side as the correct key (e.g., a blue square on the right). The experimental block included 10 congruent and 10 incongruent trials, presented in random order. Children's score was computed as their mean incongruent reaction time (RT) minus their mean congruent RT (i.e., the mean difference between the two trial types). Scores above zero indicate that a child performed more slowly on the incongruent compared to the congruent trials, on average; the magnitude of this positive difference indicates the extent to which a child had difficulty inhibiting the automatic tendency to react in the direction of the spatial location of the stimulus. More information about this task is presented in Appendix B.

¹ Scales with binary-response items, like ours, tend to have lower reliabilities than their continuous-item counterparts (Bernstein & Teng, 1989).

Approximate Number System Task (Panamath). The approximate number system (ANS) task required children to rapidly differentiate between arrays of dots presented on the left and right of the screen. As noted previously, ANS acuity in the preschool years is predictive of math ability (Libertus, Feigenson, & Halberda, 2013); we measured ANS acuity because it is easy to measure across a wide age range, and math-related cognition has been linked to financial understanding (e.g., understanding of pricing; Abramovitch et al., 1991).

On each trial, children saw an array of blue dots on one side of the screen, and an array of yellow dots on the other side. Children were told to press a button on the left or right, corresponding to the side of the screen that had a larger number of dots. The experimenter started the first trial once children indicated verbally that they were ready. Children completed 16 trials; no feedback was provided during the task. Performance was measured via the Weber fraction. The Weber fraction is the smallest ratio between arrays of dots that a participant can reliably distinguish; a lower Weber fraction indicates greater precision. More information about this task is presented in Appendix B.

Sensitivity to Opportunity Cost. In an exploratory test of children's sensitivity to opportunity costs, we asked participants to imagine that they had been saving for a toy they really wanted, and that someone then handed them some money for their birthday. We then asked participants to imagine that they saw some candy they really wanted. Next, in a conceptual replication of Frederick et al. (2009, Study 1A), we randomly assigned participants to one of two conditions. In a non-salient opportunity costs condition, we asked participants, "Do you think

you would buy the candy?" Participants provided a Yes or No response. In a salient opportunity costs condition, we framed the question as, "Do you think you would buy the candy or save the money for the new toy?" Participants provided a "buy the candy" or "save the money" response. Consistent with Frederick et al. (2009), we anticipated that children would be less likely to report wanting to buy when opportunity costs were made salient, and that this might be especially true among spendthrifts.

Observed Money Saving/Spending Behavior. At the end of the procedure, children were told: "This is the last part of the project! I am going to show you two bags of fun stuff. I want you to show me which one of these you like the most." The experimenter showed children two clear plastic bags; each contained a small assortment of toys that was worth roughly one dollar. The two bags had some items in common (e.g., pencils) and one bigger item that differed (e.g., a ball in one bag and a finger-operated ring-toss game in the other). After children identified the bag they liked the most, they were then asked to rate how much they liked the bag on a 5-point scale. The scale was composed of dots that increased in size; the smallest dot represented 'very little' and the largest dot represented 'a lot.' Children provided ratings by pointing to a dot. Prior to giving a rating, children were told, "We want to know how you really feel about the bag; your answer about how much you like it won't change what happens with the bag." Throughout this part of the task, the experimenter maintained possession of the favored bag of toys. On average, participants rated their preferred bag as a 3.84 on the 1-5 scale, significantly above the scale midpoint of 3.0, $t(224) = 12.54, p < .001$.

After children provided a rating, they were given a dollar bill, and were told: "This is your dollar now. It's all yours, and you can take it home with you if you want. But, you can also decide to spend your dollar to buy this bag of fun stuff." The experimenter punctuated this part of the instructions by holding up the favored bag of toys, and then said: "If you spend the dollar, you pay it to me, and you get the bag. If you save the dollar, you keep the money and the bag stays here." The experimenter checked for comprehension, and then asked the child to make a choice. If a child chose to save their dollar, the experimenter validated that choice, put the bag of toys away, and ensured that the child's dollar was put in a safe place (e.g., the parent's bag). If the child chose to spend their dollar, the bag of toys was given to the child after the child handed the dollar to the experimenter. Fifty-one percent of children chose to buy the bag of toys.

Parent Questionnaire. The parent questionnaire included three sections. The first section contained the standard four-item Spendthrift-Tightwad Scale. We administered this scale to explore whether parents' ST-TW scores were predictive of their children's ST-TW scores. The range of possible scores was 4 to 26, with higher scores representing greater spendthrift tendencies (see Rick et al., 2008).

The second section contained two 6-item scales from the short form of the Children's Behavior Questionnaire (CBQ; Putnam & Rothbart, 2006). One set of items assessed parents' perceptions of their children's capacity to exercise inhibitory control (e.g., *My child can easily stop an activity when s/he is told no*). The other six items assessed the extent to which the child exhibits impulsive behavior (e.g., *My child usually rushes into an activity without thinking about*

it). Parents responded using a scale that ranged from 1 (extremely untrue) to 7 (extremely true). Preliminary analyses indicated that the scales were correlated in the expected direction, $r(147) = -.48, p < .001$, and that each scale had acceptable internal consistency (inhibitory control $\alpha = .68$; impulsivity $\alpha = .82$). Thus, both scales were used in some of the analyses reported below.

The final section of the parent survey contained six items created for the present research; parents answered using the same seven-point scale that was used for the CBQ. The items assessed the extent to which the child, in the view of the parent, had more of a saving versus a spending tendency with his or her money (e.g., *My child refrains from spending money, even when he/she really wants to buy something like a new toy* [reverse scored]). The full scale is presented in Appendix C. Items were scored such that higher values represented a child's tendency to spend rather than save. Internal consistency for this scale was acceptable, $\alpha = .68$, with an average inter-item correlation (.26) within the range recommended by Clark and Watson (1995). A child's score on the parent-report scale was computed as the mean of the six items.

Results

Descriptive statistics for the main variables and correlations between those variables are presented in Table 2. We note that over four times as many children scored on the lower end of the ST-TW scale (0-1; 29.78%) compared to the higher end (6-7; 6.67%), indicating that the child participants were significantly skewed towards the tightwad end of the scale, $z = 3.36, p < .001$ (see Figure 2). This pattern has also been found in adult samples (e.g., Rick et al., 2008). Note, however, that our parent sample was not as skewed towards tightwadism as other adult

samples; but according to the scoring classification used in Rick et al. (2008), there were still more parents who would be considered “tightwads” ($n = 28$) than would be considered “spendthrifts” ($n = 22$). The rest were classified as “unconflicted” using the Rick et al. scoring system (see Figure 3).

Below we present analyses related to our two key goals: (1) assessing the bivariate relations between the child-report ST-TW scale and variables we predicted would be associated with children's self-report scores, and (2) assessing the value of children's self-reported ST-TW scale in predicting children's observed spending/saving behavior.

Bivariate Relations with the Child-Report ST-TW Scale

We tested bivariate associations between the child-report ST-TW scale and child age and gender, performance on the Simon and Panamath tasks, parent-reported impulsivity, parent-reported inhibitory-control, parent-reported child spending/saving behavior, and parents' own ST-TW scores.

There was a significant, negative correlation between child-reported ST-TW and child age, $r(223) = -.18, p = .006$; older children tended to have fewer spendthrift tendencies (see Figure 4). There was no significant difference between boys ($M = 2.66$) and girls ($M = 2.52$) on the child-report ST-TW scale, $t(223) = .63, p = .53$.

Given the plausible connection between the two constructs, we predicted that children with higher self-report ST-TW scores (representing more spendthrift tendencies) would tend to have poorer inhibitory control as measured by (1) parent-reported inhibitory-control and (2)

children's performance on the Simon task. We also predicted that children with higher ST-TW scores would be more impulsive, as reported by their parents. Our predictions were partially supported: child-reported ST-TW scores were correlated in the expected direction with parent-reported inhibitory-control, $r(148) = -.19, p = .022$. However, there was no relationship between children's ST-TW scores and their Simon task scores, $r(215) = .01, p = .90$, and the relationship between child-report ST-TW and parent-reported impulsivity was also not significant, $r(151) = .05, p = .53$.

We also tested whether children could accurately report on their own emotion-related spending/saving tendencies by assessing the association between child-report ST-TW scores and parents' reports on child spending/saving behaviors. As predicted, children who scored higher on the self-report ST-TW scale also tended to be viewed by parents as having greater spendthrift tendencies, $r(151) = .19, p = .017$.

There was no association between children's ST-TW and Panamath scores, $r(207) = -.02, p = .82$. This was not due to measurement imperfections in the Panamath task (e.g., Panamath Weber fraction scores were negatively and significantly correlated with age, as one would expect).

We were also interested in whether parents' own ST-TW scores would be associated with children's self-report ST-TW scores. We provide a representation of the association between parent and child ST-TW scores in Table 3. Because some parents had more than one child in the study, this association was formally tested using a hierarchical linear model that accounted for

nested data; the association was not significant, fixed-effect estimate = 0.006, $t(133) = .15$, $p = .88$ (the random effect of parent was also not significant, $p = .22$). However, parents' ratings of their own ST-TW tendencies were associated with their ratings of their children's money-related behavior, fixed-effect estimate = 0.06, $t(128) = 2.43$, $p = .016$ (the random effect of parent was not significant, $p = .15$); higher ST-TW scores for parents tended to be associated with parent ratings of greater spending tendencies in their children. Further, parents' ratings of their own ST-TW behavior were significantly associated with their ratings of their children's impulsivity, fixed-effect estimate = 0.06, $t(150) = 2.03$, $p = .044$ (the random effect of parent could not be computed in this analysis, due to low or no variability in the random intercept); higher ST-TW scores for parents tended to be associated with parent ratings of greater impulsivity in their children. Across all other analyses involving parents' own SW-TW scores there were no significant associations (analyses examined child age, children's rating of the bag of toys, parent-reported inhibitory control, and performance on Panamath and Simon; all p -values $> .07$).

Sensitivity to Opportunity Cost

Conceptually replicating Frederick et al. (2009), we found that children were significantly less likely to anticipate buying available candy when opportunity costs were made salient than when they were not (4% vs. 12%; $\chi^2(1) = 11.64$, $p = .001$, $\phi = -.23$). Because a very small number of children (eight) anticipated buying when opportunity costs were made salient, we were unable to assess whether children's ST-TW scores moderated the influence of opportunity cost salience.

Multivariate Prediction of Children's Observed Spending/Saving

A key step in assessing the child-report ST-TW scale was to examine its relationship with children's behavior in the spending/saving task in which children could actually spend or save a dollar. We first assessed this with a simple correlation: children who chose to spend their dollar had a higher mean self-report ST-TW score compared to children who chose to save their dollar, $r(223) = .19, p = .005$. We also considered the possibility that our procedure may have created a demand effect, wherein a child who responded one way in the ST-TW interview may have felt compelled to engage in consistent responding when given the chance to save or spend the dollar at the end of the study. Prior research suggests that children do not have a strong desire to appear consistent across study tasks before Grade 2 (Eisenberg, Cialdini, McCreath, & Shell, 1987). With this in mind, we conducted a follow-up analysis and found that the child-report ST-TW scale predicted children's observed spending/saving behavior even when the sample was limited to 5-to-6-year-olds, an age range in which the desire to engage in consistent responding should be low or non-existent, $r(82) = .22, p = .044$.²

Next, a logistic regression model was used to predict whether children saved (scored as 0) or spent (scored as 1) their dollar during the final task. The following independent variables were standardized and then entered as predictors of children's spending/saving choice: child age, child-report ST-TW scores, and liking rating of the toy bag. We controlled for children's rating of the toys for two reasons: to ensure that any age effects that emerged could not simply be

² One other piece of evidence speaks against a demand effect. As reported above, we found a significant association between the child ST-TW measure and parental reports of child spending/saving behavior, something that cannot be accounted for by a demand effect.

explained by age-related differences in how the bag of toys was perceived, and to ensure that any effects of child-report ST-TW score that emerged could not be simply explained by product liking. We did not include variables that were not correlated with child ST-TW scores (child gender, Simon, and Panamath). There were no problems with multicollinearity; variance inflation factor statistics ranged from 1.03 to 1.27. The regression results are summarized in Table 4.

Children's self-reported ST-TW scores significantly predicted observed spending behavior, $B = .32$, Wald = 4.65, $p = .031$, OR = 1.38. Children who self-reported being more like spendthrifts were more likely to spend their dollar than were children who self-reported being more like tightwads, even controlling for child age and liking of the offered item. Child age ($p = .33$) was not a significant predictor of spending/saving after controlling for the other variables in the model. The extent to which children liked the bag of toys was a strong predictor of spending the dollar, $B = .65$, Wald = 14.98, $p < .001$, OR = 1.92.

We also tested a model in which an age \times child-report ST-TW interaction term was entered; the interaction term was not significant ($p = .84$), indicating that the child-report ST-TW scale predicted behavior in a similar fashion across the age range in our sample. Finally, for completeness, we tested a model that included the smaller sub-sample of participants that had complete parent-report data ($n = 145$) and found that no relevant parent-report variables (i.e., parent-reported ST-TW score, parent-reported child impulsivity and inhibitory control, or parent-

reported child spending habits) were predictive of spending choice above and beyond children's liking of the offered items and child-reported ST-TW score ($ps > .15$).

Discussion

Affective reactions to the prospect of spending money predict financial behavior in adults (Rick et al., 2008). This study provides the first evidence that the same phenomenon is present in young children. We constructed a scale that assessed children's affective reactions to spending and saving and found that children across the entire age range we tested -- 5 to 10 years of age -- were able to report coherently on their affective responses. Children who tended to fall on the spendthrift end of the child-report scale were rated by their parents as having greater spendthrift tendencies. Further, even after controlling for factors such as children's age and product rating, children's self-reported affective spending tendencies significantly predicted whether they chose to save a dollar or spend it on a bag of toys.

The present research makes a novel contribution to understanding children's financial behavior and competence. Previous studies of children's spending behavior have explored factors like gender, the receipt of an allowance, the attractiveness of available items, and the role of spending cash vs. credit (e.g., Abramovitch, et al., 1991; Pliner, Darke, Abramovitch, & Freedman, 1994). Our research indicates that although the attractiveness of available items exerts a strong influence when children are faced with spending decisions, children's affective orientations toward spending predict unique variance in financial decision-making above and beyond the influence of item desirability. In other words, some children may spend their money

on items they do not view as overly desirable simply because the pain of spending is low. This aspect of consumer behavior in childhood has not, until now, been measured, and such insight is critical for outlining both how consumer behavior develops, and how financial education efforts might be structured for children.

Importantly, we found that the relation between ST-TW orientation and spending behavior held across the age range of 5 to 10. This suggests that young children are not universally happy-go-lucky consumers, a view that could be intuited from reports on how children view spending when their parents' money is at stake (e.g., Singletary, 2013; White, 2013). On the contrary, even young children experience a range of feelings related to spending and saving when the focus is on their own money, and these early-emerging individual differences relate to what they do with their money, as reported by parents and as observed in the lab. We also found that children's responses to questions about spending and saving were sensitive to context with respect to the salience of opportunity costs. This result provides additional support for our overall conclusion that even young children can provide coherent reports on their spending and saving tendencies. Future work could explore whether children are sensitive to other contextual factors. One factor of interest may include how consumption goals are framed (e.g., hedonic vs. utilitarian), as work on this topic with adults has revealed important differences between tightwads and spendthrifts (Rick et al., 2008).

Below we discuss the developmental implications of our findings, we note how the results relate to existing studies, and we touch on important future directions.

Developmental Implications and Connections to Existing Research

We first note that there are clear parallels between the results presented here and the adult findings from Rick et al. (2008). Chief among them is the finding that children's self-reported ST-TW scores predicted observed financial behavior; children with greater spendthrift tendencies were more likely to spend their money. Further, our child sample included far more tightwads than spendthrifts, which resembles the skewed proportion of tightwads to spendthrifts seen in the large adult sample assessed by Rick et al. (2008).

The similarities between the present study and Rick et al. (2008) raise the intriguing question of how much continuity exists from childhood to adulthood in ST-TW orientations; perhaps individuals who report tightwad tendencies in early childhood also retain tightwad tendencies in adulthood. Given clear associations between other emotion-related childhood traits (e.g., temperament) and comparable constructs in adulthood (personality; e.g., Caspi & Silva, 1995), it is plausible that early ST-TW tendencies may similarly be associated with later ST-TW tendencies. However, the present study captured children's emotion-related spending and saving tendencies at a single point in time for each child, and thus cannot shed light on if and when in development a child's stance becomes relatively stable. We did, however, find a negative correlation between ST-TW tendencies and child age in our cross-sectional analyses; with increasing age children tended to report tendencies that were closer to the tightwad end of the spectrum. Longitudinal research is needed to shed additional light on this connection between age and ST-TW tendencies. Beyond providing insight into issues such as stability, another

advantage of longitudinal research is the ability to assess more carefully some potentially intriguing relations between income and ST-TW orientations. For example, although Rick et al. (2008) did not find meaningful differences in income between tightwads and spendthrifts, it is nevertheless possible that *changes* in income over time could induce changes in ST-TW orientation.

Importantly, how individual differences in ST-TW orientations emerge at such a young age is also an open question. In the present research, we did not find an association between child and parent ST-TW tendencies, but such a link could have been obscured by the fact that the parent and child measures were not the same. In future studies, this particular concern can be addressed by administering the child ST-TW scale to parents, along with the established adult ST-TW scale. It is possible that early economic experiences (e.g., having a saving account, receiving an allowance) influence the development of ST-TW orientations, and children's exposure to these economic experiences may be influenced by their parents' own economic orientations and tendencies (e.g., financial attitudes and ST-TW tendencies). Further, child temperamental factors, including impulsivity, risk taking, and conscientiousness, are likely influences on the development of children's economic orientations, and these types of traits are known to have genetic components shared with parents (Loehlin, 1992). Given this potential complexity, an in-depth inquiry into the origins of children's ST-TW tendencies is required, and should involve a consideration of the interplay among various levels of the child's ecosystem (Bronfenbrenner & Morris, 2006).

Limitations and Additional Directions for Future Research

Although the present research represents a novel approach to addressing financial behavior in childhood, we note some limitations and suggest additional directions for future research. First, although five of the seven items in the child-report measure were affect-focused - using words such as *fun*, *boring*, *happy*, and *feel good* -- two of the items in the measure were more focused on impulsive or careless spending (e.g., *I buy things without thinking too much*). We chose to include two such items because we presumed that buying without reflection involves affective components, and we wanted to capture this phenomenon. Ideally, future studies of this topic will differentiate emotion-focused and impulsivity-focused items, perhaps in an expanded or refined child-report ST-TW scale, to assess the relative predictive value of each. We do note, however, that our follow-up multivariate model controlled for parent-reported impulsivity and inhibitory control, and the affect-focused child-report scale remained a significant predictor of children's observed spending.

Second, as noted above, a critical question related to children's ST-TW tendencies is the extent to which children share their spendthrift, tightwad, or unconflicted characteristics with family members, with parents being of particular interest. Although we attempted to address this question, many of the parents in the present study opted not to fill out a questionnaire about their own money-related tendencies (mostly due to practical constraints, such as the need to watch another child in the museum-based lab area). We suggest that future studies of this topic address this question more thoroughly by obtaining ST-TW data from all parents with which each child

lives, something that may be accomplished more easily via a combination of meeting with families in a traditional lab setting and the use of online surveys for parents who cannot be present. Gathering additional data on how parents talk with their children about money and financial matters would also be a valuable future direction.

Third, we worked under the assumption that children in the age range we tested had experience using money. Prior research indicates that this is a fairly safe assumption; by age 5 many children are given money to spend (e.g., Webley & Plaisier, 1998). Further, during the study no parent raised concerns that their child lacked experience with money, nor did any child express confusion when presented with questions about money or actual money to spend/save. Nevertheless, future studies in this area of research should ask both parents and children some basic questions about children's experience with and knowledge about money.

Finally, we acknowledge the limitations that come with conducting this type of research in a museum setting. First, the museum that housed the lab site for this study charges admission; because of this our sample did not include many lower-income families. In addition, the majority of visiting families are White; thus, the majority of the families that participated were White. Future research on this topic should involve a more diverse group of children and parents. This would allow for important analyses of the effects of culture and socioeconomic background. Second, museum visitors tend to spend fewer than 20 minutes at any one exhibit (Serrell, 1997). Thus, in the museum-based lab space we used, guidelines limit all study procedures to 12-15 minutes in order to ensure that participating families enjoy their research experiences and do not

feel frustrated by overly long studies. This constraint limited the number of measures and tasks we were able to use. Nonetheless, we have obtained initial evidence that even young children can report meaningfully on their affect-related reactions to spending, and future studies can elaborate on these findings with attention to other factors such as numerical cognition (e.g., symbolic math tasks), delay of gratification, understanding of money (e.g., ranking tasks), receipt of an allowance, measures of materialism, parent-child discussions about money, and assessments of future planning skills.

Conclusion

An important and novel finding of the present study is that affect-related associations with spending and saving influence financial behavior in children as young as age 5. Our findings pave the way for further investigations into when in development ST-TW orientations emerge, the stability of these individual differences across contexts and time, and the factors that may sway children toward either the tightwad or the spendthrift orientation. These results may also have practical implications for how financial education efforts are designed for children. For example, children may benefit from explicit training on how emotions influence spending and saving behaviors across different contexts. Research testing this type of intervention would be a logical and exciting extension of this line of inquiry. Further, results from work in this area may also identify optimal times during development for providing financial education to children, such as when certain aspects of knowledge about money are present, and when ST-TW tendencies are relatively identifiable and stable.

Author Manuscript

References

- Ashby, J., Schoon, I., & Webley, P. (2011). Save now, save later? Linkages between saving behavior in adolescence and adulthood. *European Psychologist, 16*, 227-237. doi: 10.1027/1016-9040/a000067
- Abramovitch, R., Freedman, J. L., & Pliner, P. (1991). Children and money: Getting an allowance, credit versus cash, and knowledge of pricing. *Journal of Economic Psychology, 12*(1), 27-45. doi:10.1016/0167-4870(91)90042-R
- Berman, J. Z., Tran, A. T. K., Lynch, J. G., & Zauberan, G. (2016). Expense neglect in forecasting personal finances. *Journal of Marketing Research, 53*(4), 535-550. doi:10.1509/jmr.15.0101.
- Bernstein, I. H., & Teng, G. (1989). Factoring items and factoring scales are different: Spurious evidence for multidimensionality due to item categorization. *Psychological Bulletin, 105*(3), 467-477. doi:10.1037/0033-2909.105.3.467
- Berti, A. E., Bombi, A. S., & Duveen, G. T. (1988). *The child's construction of economics*. European Monographs in Social Psychology. New York, NY: Cambridge University Press.
- Bialystok, E., Craik, F. M., Klein, R., & Viswanathan, M. (2004). Bilingualism, aging, and cognitive control: Evidence from the Simon task. *Psychology and Aging, 19*(2), 290-303. doi:10.1037/0882-7974.19.2.290

- Bronfenbrenner, U., & Morris, P. A. (2006). The bioecological model of human development. In R. M. Lerner (Ed.), *Handbook of child development: Vol. 1. Theoretical models of human development* (6th ed., pp. 793–828). Hoboken, NJ: Wiley.
- Calkins, S. D., & Bell, M. A. (2010). *Child development at the intersection of emotion and cognition*. Washington, DC: American Psychological Association. doi:10.1037/12059-000
- Caspi, A., & Silva, P. A. (1995). Temperamental qualities at age three predict personality traits in young adulthood: Longitudinal evidence from a birth cohort. *Child Development*, 66(2), 486-498. doi: 10.2307/1131592
- Chaplin, L. N., & John, D. R. (2007). Growing up in a material world: Age differences in materialism in children and adolescents. *Journal of Consumer Research*, 34, 480-493. doi: <http://dx.doi.org/10.1086/518546>
- Clark, L. A., & Watson, D. (1995). Constructing validity: Basic issues in objective scale development. *Psychological Assessment*, 7(3), 309-319. doi:10.1037/1040-3590.7.3.309
- Drever, A. I., Odders-White, E., Kalish, C. W., Else-Quest, N. M., Hoagland, E. M., & Nelms, E. N. (2015). Foundations of financial well-being: Insights into the role of executive function, financial socialization, and experience-based learning in childhood and youth. *Journal of Consumer Affairs*, 49(1), 13-38. doi:10.1111/joca.12068

- Eisenberg, N., Cialdini, R. B., McCreath, H., & Shell, R. (1987). Consistency-based compliance: When and why do children become vulnerable?. *Journal of Personality and Social Psychology*, 52(6), 1174-1181. doi:10.1037/0022-3514.52.6.1174
- Erner, C., Fox, C. R., Chalekian, J. S., De La Rosa, G. & Trepel, C. (2016). *Individual differences in objective and subjective consumer financial well-being*. Working paper.
- Frederick, S., Novemsky, N., Wang, J., Dhar, R., & Nowlis, S. (2009). Opportunity cost neglect. *Journal of Consumer Research*, 36(4), 553-561. doi:10.1086/599764
- Goldberg, M. E., Gorn, J. G., Peracchio, L. A., & Bamossy, G. (2003). Understanding materialism among youth. *Journal of Consumer Psychology*, 13(3), 278-288. doi:10.1207/S15327663JCP1303_09
- Griskevicius, V., Ackerman, J. M., Cantu, S. M., Delton, A. W., Robertson, T. E., Simpson, J. A., Thompson, M. E., & Tybur, J. M. (2013). When the economy falters, do people spend or save? Responses to resource scarcity depend on childhood environments. *Psychological Science*, 24(2), 197-205.
- Hertz, S. G., & Krettenauer, T. (2014). Children's utilization of emotion expectancies in moral decision-making. *British Journal of Developmental Psychology*, 32(3), 367-373. doi:10.1111/bjdp.12052
- Hsee, C. K., Yang, Y., Zheng, X., & Wang, H. (2015). Lay rationalism: Individual differences in using reason versus feelings to guide decisions. *Journal of Marketing Research*, 52(1), 134-146. doi:10.1509/jmr.13.0532

- Lagattuta, K. H., Sayfan, L., & Bamford, C. (2012). Do you know how I feel? Parents underestimate worry and overestimate optimism compared to child self-report. *Journal of Experimental Child Psychology, 113*(2), 211-232. doi:10.1016/j.jecp.2012.04.001
- Lemerise, E. A., & Arsenio, W. F. (2000). An integrated model of emotion processes and cognition in social information processing. *Child Development, 71*(1), 107-118. doi:10.1111/1467-8624.00124
- Libertus, M. E., Feigenson, L., & Halberda, J. (2013). Is approximate number precision a stable predictor of math ability? *Learning and Individual Differences, 25*, 126-133. doi:10.1016/j.lindif.2013.02.001
- Libertus, M. E., Feigenson, L., & Halberda, J. (2011). Preschool acuity of the approximate number system correlates with school math ability. *Developmental Science, 14*(6), 1292-1300. doi:10.1111/j.1467-7687.2011.01080.x
- Loehlin, J. C. (1992). *Genes and environment in personality development*. Newbury Park, CA: Sage.
- Lu, C., & Proctor, R. W. (1995). The influence of irrelevant location information on performance: A review of the Simon and spatial Stroop effects. *Psychonomic Bulletin & Review, 2*(2), 174-207. doi:10.3758/BF03210959
- Lynch, J. J., Netemeyer, R. G., Spiller, S. A., & Zammit, A. (2010). A generalizable scale of propensity to plan: The long and the short of planning for time and for money. *Journal of Consumer Research, 37*(1), 108-128. doi:10.1086/649907

- Lynch, J. G. (2011). Introduction to the Journal of Marketing Research Special Interdisciplinary Issue on Consumer Financial Decision Making. *Journal of Marketing Research*, 48(SPL), Siv-Sviii. doi:10.1509/jmkr.48.SPL.Siv
- Mazzocco, M. M., Feigenson, L., & Halberda, J. (2011). Preschoolers' precision of the Approximate Number System predicts later school mathematics performance. *PLoS ONE*, 6(9), doi:10.1371/journal.pone.0023749
- Measelle, J. R., John, O. P., Ablow, J. C., Cowan, P. A., & Cowan, C. P. (2005). Can children provide coherent, stable, and valid self-reports on the big five dimensions? A longitudinal study from ages 5 to 7. *Journal of Personality and Social Psychology*, 89(1), 90-106. doi:10.1037/0022-3514.89.1.90
- Measelle, J. R., Ablow, J. C., Cowan, P. A., & Cowan, C. P. (1998). Assessing young children's views of their academic, social, and emotional lives: An evaluation of the self-perception scales of the Berkeley Puppet Interview. *Child Development*, 69(6), 1556-1576. doi:10.2307/1132132
- Munnell, A. H., Webb, A., & Golub-Sass, F. N. (2012). *The national risk retirement index: An update*. Center for Retirement Research at Boston College, Chestnut Hill, MA. Retrieved from http://crr.bc.edu/wp-content/uploads/2012/11/IB_12-20-508.pdf
- O'Connor, E., McCormack, T., Beck, S. R., & Feeney, A. (2015). Regret and adaptive decision making in young children. *Journal of Experimental Child Psychology*, 135, 86-92. doi:10.1016/j.jecp.2015.03.003

- Otto, A., Schots, P., Westerman, J., & Webley, P. (2006). Children's use of saving strategies: An experimental approach. *Journal of Economic Psychology*, *27*, 57-72. doi: 10.1016/j.joep.2005.06.013
- Pliner, P., Darke, P., Abramovitch, R., & Freedman, J. L. (1994). Children's consumer behavior in a store with unattractive merchandise: The 'caveat emptorium'. *Journal of Economic Psychology*, *15*(3), 449-465. doi:10.1016/0167-4870(94)90024-8
- Poarch, G. J., & van Hell, J. G. (2012). Executive functions and inhibitory control in multilingual children: Evidence from second-language learners, bilinguals, and trilinguals. *Journal of Experimental Child Psychology*, *113*(4), 535-551. doi:10.1016/j.jecp.2012.06.013
- Pons, F., Harris, P. L., & de Rosnay, M. (2004). Emotion comprehension between 3 and 11 years: Developmental periods and hierarchical organization. *European Journal of Developmental Psychology*, *1*(2), 127-152. doi:10.1080/17405620344000022
- Putnam, S. P., & Rothbart, M. K. (2006). Development of short and very short forms of the children's behavior questionnaire. *Journal of Personality Assessment*, *87*(1), 102-112. doi:10.1207/s15327752jpa8701_09
- Psychology Software Tools, Inc. [E-Prime 2.0]. (2012). Retrieved from <http://www.pstnet.com>.
- Raghubir, P., & Srivastava, J. (2009). The denomination effect. *Journal of Consumer Research*, *36*(4), 701-713. doi: 10.1086/599222

- Reyna, V. F., & Wilhelms, E. A. (2017). The gist of delay of gratification: Understanding and predicting problem behaviors. *Journal of Behavioral Decision Making*, *30*(2), 610-625. doi:10.1002/bdm.1977
- Richins, M. L., & Chaplin, L. N. (2015). Material parenting: How the use of goods in parenting fosters materialism in the next generation. *Journal of Consumer Research*, *41*(6), 1333-1357. doi: 10.1086/680087
- Rick, S. I., Cryder, C. E., & Loewenstein, G. (2008). Tightwads and spendthrifts. *Journal of Consumer Research*, *34*(6), 767-782. doi:10.1086/523285
- Rick, S. I., Small, D. A., & Finkel, E. J. (2011). Fatal (fiscal) attraction: Spendthrifts and tightwads in marriage. *Journal of Marketing Research*, *48*(2), 228-237. doi:10.1509/jmkr.48.2.228
- Serrell, B. (1997). Paying attention: The duration and allocation of visitors' time in museum exhibitions. *Curator: The Museum Journal*, *40*(2), 108–125. doi:10.1111/j.2151-6952.1997.tb01292.x
- Seuntjens, T. G., Zeelenberg, M., van de Ven, N., & Breugelmans, S. M. (2015). Dispositional greed. *Journal of Personality and Social Psychology*, *108*(6), 917-933. doi:10.1037/pspp0000031
- Simon, J. R., & Rudell, A. P. (1967). Auditory S-R compatibility: The effect of an irrelevant cue on information processing. *Journal of Applied Psychology*, *51*(3), 300-304. doi:10.1037/h0020586

- Singletary, M. (2013, March 11). Teach children not to consume. Retrieved August 28, 2016, <http://www.nytimes.com/roomfordebate/2012/12/20/how-should-children-learn-to-shop/teach-children-not-to-consume/>
- Smith, C. E., & Harris, P. L. (2012). He didn't want me to feel sad: Children's reactions to disappointment and apology. *Social Development, 21*(2), 215-228. doi:10.1111/j.1467-9507.2011.00606.x
- Sonuga-Barke, E. J. S., & Webley, P. (1993). *Children's saving*. Hove, UK: Erlbaum.
- Thomas, M., Desai, K. K., & Seenivasan, S. (2011). How credit card payments increase unhealthy food purchases: visceral regulation of vices. *Journal of Consumer Research, 38*(1), 126-139. doi:10.1086/657331
- Webley, P. (2014). The development of saving. In S. D. Preston, M. L. Kringelbach, B. Knutson, S. D. Preston, M. L. Kringelbach, B. Knutson (Eds.), *The interdisciplinary science of consumption* (pp. 243-261). Cambridge, MA: MIT Press.
- Webley, P., & Plaisier, Z. (1998). Mental accounting in children. *Citizenship, Social and Economics Education, 3*(2), 55-64. doi:10.2304/csee.1998.3.2.55
- Webley, P. (2005). Children's understanding of economics. In M. Barrett & E. Buchanan-Barrow (Eds.), *Children's understanding of society* (pp. 43-65). New York, NY: Psychology Press.
- Weisberg, D. P., & Beck, S. R. (2012). The development of children's regret and relief. *Cognition and Emotion, 26*(5), 820-835. doi:10.1080/02699931.2011.621933

White, M. C. (2013, April 11). American families increasingly let kids make buying decisions.

Retrieved August 28, 2016, from <http://business.time.com/2013/04/11/american-families-increasingly-let-kids-make-buying-decisions/>

Author Manuscript

Table 1. Child Spendthrift-Tightwad scale items.

Puppet A says:	Puppet B says:
I like saving money.	I like buying new things.
I spend money as soon as I get it.	I wait to spend my money.
Saving money is boring.	Saving money is fun.
Saving money makes me feel good.	Saving money makes me feel bad.
Spending money makes me feel good.	Spending money makes me feel bad.
I think carefully before spending my money.	I buy things without thinking too much.
I'm always looking for new toys.	I'm happy with the toys I have.

Note. For each pair of statements, each child was asked to point to the puppet that was most like him/her. The experimenter read each puppet's statement aloud. All aspects of scale administration were counterbalanced (e.g., sometimes Puppet B said "I like saving money").

Author Manuscript

Table 2. Descriptive statistics and intercorrelations.

Variable	Mean	SD	2	3	4	5	6	7	8	9	10
1. Child ST-TW Score (Child Report)	2.59	1.69	-.18**	-.04	.19*	-.19*	.05	-.02	.01	.13*	.19**
2. Age	7.76	1.64	--	.11	.12	.07	-.11	-.20**	-.02	-.44***	-.22***
3. Gender (0 = boy; 1 = girl)	0.51	--	--	--	-.02	.03	.03	-.12	.05	.02	.08
4. Child Spending Behavior (Parent Report)	3.87	0.96			--	-.41***	.39***	.07	-.13	-.07	-.05
5. Inhibitory Control (Parent Report)	4.75	1.05				--	-.48***	-.13	.14	-.01	.02
6. Impulsivity (Parent Report)	4.25	1.21					--	.18*	-.17*	.01	-.02
7. Panamath Weber Fraction	0.29	0.62						--	-.11	.16*	.08
8. Simon Task (Incong. RT minus Cong. RT)	48.73	95.27							--	.07	.19**
9. Toy Bag Rating	3.84	1.01								--	.34***
10. Spending decision (0 = save; 1 = spend)	0.51	--									--

Note. * $p \leq .05$. ** $p \leq .01$. *** $p \leq .001$. The mean for gender can be interpreted as proportion of girls and the mean for spending decision can be interpreted as proportion of children who spent their money; *SDs* are not reported for these binary variables. Parent ST-TW measure could not be included in the correlation analysis because some children were nested under parents (see results of HLM analyses in text).

Table 3. Percentages of children with each of eight possible scores on child ST-TW measure, within each of the three parent ST-TW classifications

Child ST-TW Score	Children w/ Tightwad Parent (n = 28)	Children w/ Unconflicted Parent (n = 105)	Children w/ Spendthrift Parent (n = 22)
0	14%	7%	9%
1	25%	21%	9%
2	14%	22%	27%
3	14%	24%	27%
4	7%	11%	14%
5	14%	8%	14%
6	4%	6%	0%
7	7%	2%	0%

Note. In this analysis, following Rick et al. (2008), we classified parents with ST-TW scores from 4 to 11 as tightwads, 12 to 18 as unconflicted consumers, and 19 to 26 as spendthrifts. Percentages were computed within each parent ST-TW classification (i.e., each column sums to 100%).

Table 4. Results of logistic regression predicting children's observed spending/saving decision

Variable	<i>B</i>	SE	Wald	<i>p</i>	OR
Child ST-TW Score (Child Report)	.32	.15	4.65	.03	1.38
Age	-.16	.17	0.93	.33	0.85
Toy Bag Rating	.65	.17	14.95	.000	1.92

Note. All independent variables were standardized. The dependent variable was coded as spend = 1, save = 0.

Author Manuscript

Figure Captions

Figure 1. Sample question from the child ST-TW scale. Each child was asked to indicate which of the two puppets was most like her/him. (Note: Puppets were displayed in color in study.)

Figure 2. Histogram depicting the distribution of children across all points on the ST-TW self-report scale for children.

Figure 3. Histogram depicting the distribution of parents across all points on the ST-TW self-report scale for adults (and cut points for categories from Rick et al., 2008).

Figure 4. Mean score on ST-TW scale as a function of child age.

Author Manuscript

Author Manuscript

Appendix A

Correlations between Five Exploratory Child-Report Items and Self-Report ST-TW Scale

Table A1. Correlations between Exploratory Child-Report Items and Self-Report ST-TW Scale

Item	Correlation with Child-Report ST-TW Scale
1. I don't keep track of or count how much money I have at home (0); vs. I count my money and know about how much money I have at home (1)	$r(223) = .06, p = .387$
2. I don't think about my money very much (0); vs. I think about my money a lot (1)	$r(223) = -.04, p = .539$
3. If I lost a dollar it wouldn't bother me very much (0); vs. If I lost a dollar it would bother me a lot (1)	$r(223) = -.03, p = .675$
4. I love it more when I get toys or other stuff for my birthday (0); vs. I love it more when I get money for my birthday (1)	$r(222) = .12, p = .074$
5. My parents sometimes tell me I should save my money (0); vs. My parents do not talk to me about saving money (1)	$r(223) = -.03, p = .622$

Note. Items scored dichotomously (0 vs. 1), as indicated in parentheses above. Correlations computed between each dichotomous variable and child-report ST-TW scale as way to summarize relations between the variables.

Author Manuscript

Appendix B

Additional Methodological Information

Simon Task

The Simon task was run in E-Prime software (Psychology Software Tools, Pittsburgh, PA), and E-Prime was used to record response times on all trials. The Simon program used in the present study was adapted from a version created for E-Prime by Poarch and van Hell (2012). All trials began with the presentation of a central fixation cross, visible for 350ms, followed by a blank screen for 150ms. After this, a red or blue square was presented on the left or right; the square was visible for 2000ms or until a key was pressed. Response-time recording was initiated at stimulus onset, and ended when a child pressed a response key or failed to respond within the 2000ms in which the square was visible. Prior to the next trial, children saw a blank screen for 850ms. When a child pressed an incorrect response key, feedback was given in the form of a 'frowny face' that appeared for 1500ms.

Each participant received a block of 10 practice trials (5 congruent and 5 incongruent). During this time, the experimenter provided verbal feedback if a child seemed confused, and also provided verbal encouragement as children gained familiarity with the task. After the practice block, participants were given a break of roughly 15 seconds. The experimenter explained that there would be one more round. This next round contained the experimental trials, which are detailed further in the Methods section.

Panamath Task

At the start of each Panamath trial, a central fixation cross appeared. After each trial, a backward mask was displayed for 200ms, and then the next trial automatically started. The dot arrays in each trial were presented for 1500ms, followed by a blank screen that persisted until the child responded. The number of dots in the blue and yellow arrays ranged from 5 to 21. The ratio of the two arrays in each trial was randomly selected from one of four numerical ratio bins; each bin constituted 25% of the trials. The ratio bins were varied slightly for children based on their age, to make the task roughly equal in difficulty for children of all ages. The four ratio bins were computed using the following formulae, where w represents the Weber fraction for Panamath experiments, and was computed as $\text{child age}^{-.55}$:

- Ratio bin 1 = $(.75*w) + 1$
- Ratio bin 2 = $(1.25*w) + 1$
- Ratio bin 3 = $(2*w) + 1$
- Ratio bin 4 = $2*(w + 1)$

For more information, see the Panamath software manual

(www.panamath.org/wiki/index.php?title=Panamath_Software_Manual).

On half of the trials there were more yellow dots, and on the other half there were more blue dots. On 50% of the trials, the average diameters of the yellow and blue dots were the same, and on 50% of the trials the total surface area of the yellow and blue dots was the same.

Appendix C

Items in the Parent-Report Measure of Child Spending/Saving

How true are the following statements about your child? Check off a number for each statement about your child.

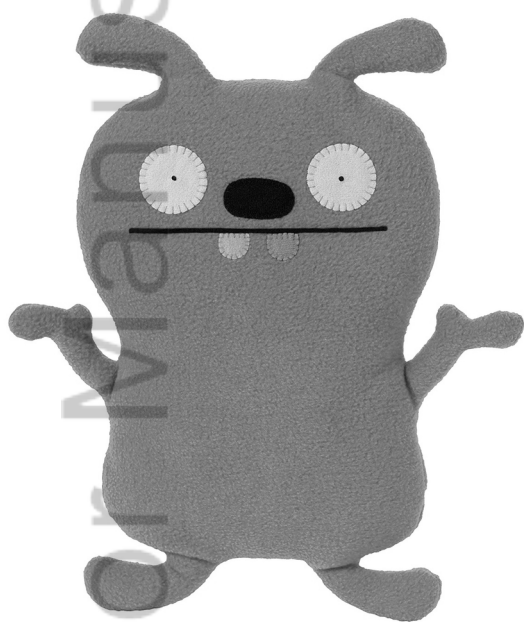
- A. My child refrains from spending money, even when he/she really wants to buy something like a new toy.
- B. My child spends money as soon as he/she gets it.
- C. My child tries to save money, and ends up feeling sad that he/she spends it quickly.
- D. My child wants to buy new things for him/herself, but ends up saving his/her money instead of spending it.
- E. My child sometimes gets sad when he/she spends his/her money too quickly, and doesn't have enough saved up for a nicer item.
- F. My child expresses genuine pleasure at saving his/her money.

Note: All responses were provided using a scale that ranged from 1 (extremely untrue) to 7 (extremely true).

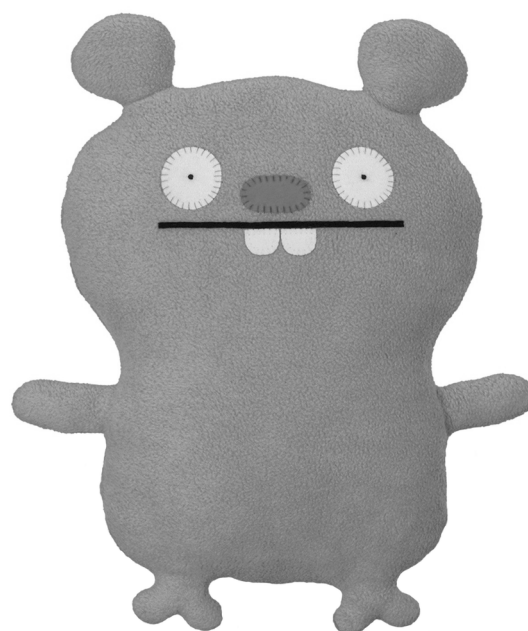
Author Manuscript

Author Manuscript

Which one is most like you?

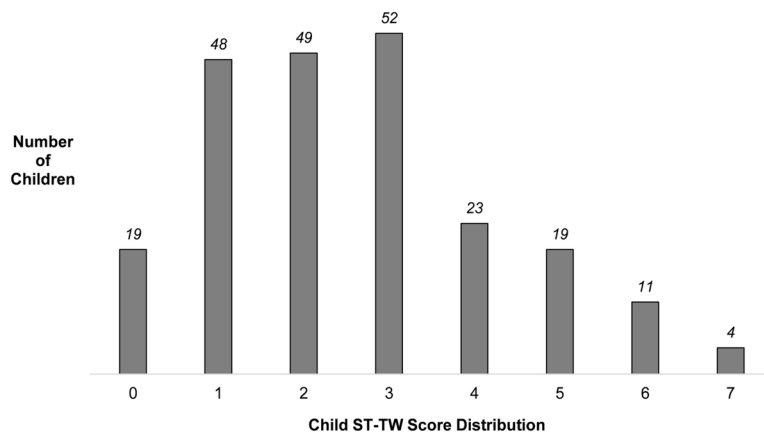


"I feel mostly good when I spend money."

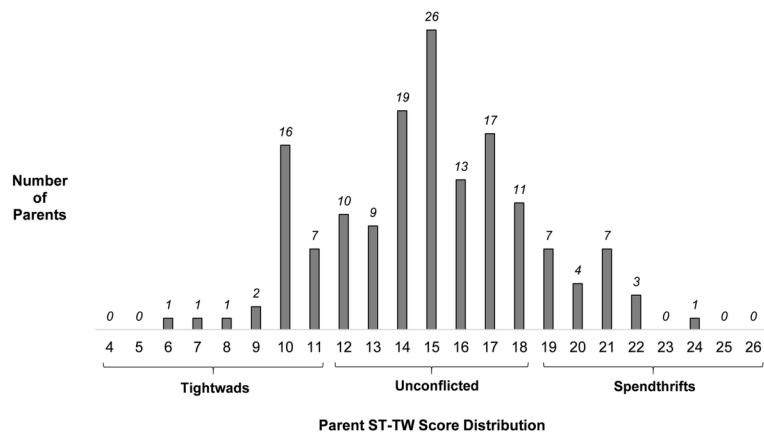


"I feel mostly bad when I spend money."

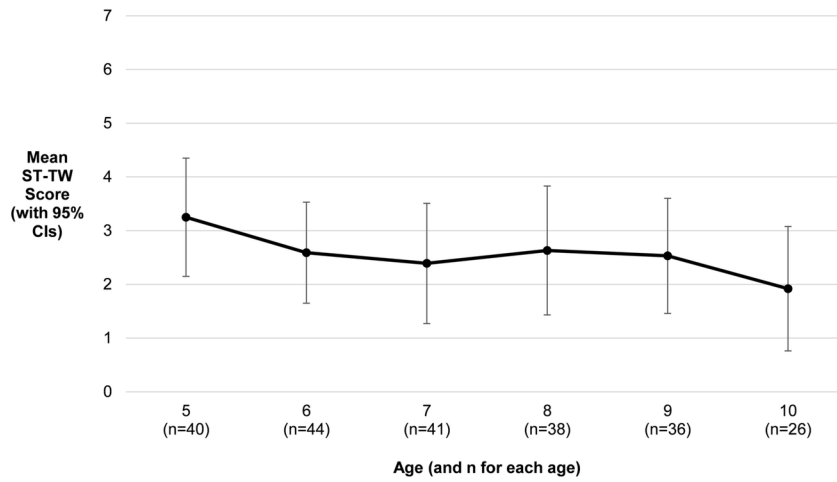
BDM_2071_F1.tif



BDM_2071_F2.tif



BDM_2071_F3.tif



BDM_2071_F4.tif