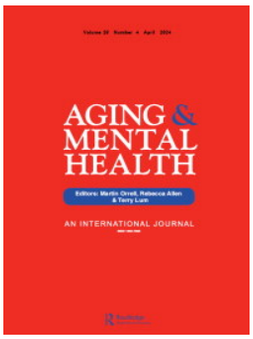

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A person-centered approach to financial capacity: early memory loss, financial management and decision-making

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ABSTRACT

Objectives: Previous research has noted that a person-centered approach to financial capacity assessment is feasible. This study of personal finance included a review of 12 months of checking account statements followed by research interviews to investigate income, spending, financial literacy, and financial decision-making. The objective of the study was to determine the convergent validity of excess spending to contextual aspects of financial decision-making, financial literacy, and early memory loss.

Method: Participants were 114 adults over the age of 60 who came primarily from two research registries; the Healthier Black Elders registry and the Michigan Alzheimer's Disease Research Center registry. After sharing their checking statements participants completed two telephone interviews. Bivariate and multivariate analyses were used to compare those with no memory loss to the memory loss group, and to determine which measures were significantly related to excess spending.

Results: There was a significant difference in excess spending between those with early memory loss and those with no memory loss. There was a significant difference in financial decision-making risk scores between the groups, as well as on a memory measure and a financial literacy measure. In a hierarchical regression analysis financial decision-making was the only measure significantly related to excess spending.

Conclusion: This study documented the convergent validity of person-centered measures of personal spending and financial decision-making with early memory loss. Early memory loss was related to both excess spending and contextual aspects of financial decision-making.

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Memory loss; financial decision-making; financial literacy; financial capacity; financial management

Introduction

Moye & Marson (2007) noted that few working models of financial capacity were available. The following year, the American Bar Association Commission on Law and Aging & American Psychological Association's (2008) *Assessment of Older Adults with Diminished Capacity* stated that, unlike clinical judgment scales for the assessment of capacity for medical treatment, no such scales existed for financial capacity. In 2016, the Institute of Medicine and the National Academy of Sciences sponsored a committee to evaluate the Social Security Administration's capability determination process for adult beneficiaries. In their final report, the committee recommended that financial capacity should be defined by and assessed as real-world performance in meeting one's basic needs and success in handling financial demands in the individual's actual environment. It is only within the last decade that new tools have been developed and introduced that use a person-centered approach to financial decision-making and financial management (see Lichtenberg et al., 2018, 2022). We define person-centered as measuring domains of financial capacity (e.g. financial management and decision-making) by examining older adults' own real-world reports and behaviors. This study will examine the convergent validity of personal financial management with financial decision making and early memory loss. We named it the Wealth Accumulation and Losses in Later Life Transitions study (WALLET).

The domains of financial capacity

Marson (2001, 2016) reviewed approaches to understanding financial capacity in older adults and such studies' research findings. In his review of conceptual frameworks for the assessment of financial capacity, Marson (2016) categorized his approach as a clinical model for financial capacity. He argued that eight domains of financial capacity are necessary for independent functioning (e.g. basic monetary skills, checkbook management, bill payment, financial judgment). In Marson's earlier (2001) clinical research with persons with dementia, he created the Financial Capacity Inventory (FCI) to measure financial capacity across these eight domains. His research provided supporting evidence that the impact of age-related dementia (e.g. Alzheimer's disease) is one of the biggest challenges to intact financial capacity—most notably, FCI scores were strongly linked to the person's stage of Alzheimer's disease. Okonkwo et al. (2009) found that even those in the early stages of cognitive decline were more likely to overestimate their cognitive skills than normal controls. Financial decision-making, however, remained an area in which those with MCI were as accurate in assessing their abilities as normal controls. Sherod et al. (2009) found that impaired cognition, even as early as MCI, impacts financial capacity. Taken together, these studies strongly suggest that financial capacity domains are highly related to cognitive functioning, and that decline is quite prevalent early in neurocognitive disorders.

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In a separate set of studies, other researchers used neutral financial decision-making stimuli and found links between decreased cognition and decreased financial decision-making, which is one of the domains of financial capacity. In a sample of over 400 older adults, Boyle et al. (2013) found that even subtle age-related cognitive decline (i.e. decline that would not be in the range of cognitive impairment) was related to lower financial decision-making. Financial decision-making may well be a related but separate construct from cognition (Boyle et al., 2012; Han et al., 2015). These two research programs yielded two major findings: (1) that financial capacity measured through neutral stimuli is impacted by cognitive decline and dementia and (2) both financial management and financial decision-making skills are related to declining cognition.

Cognitive decline and expenditure patterns

Mazzona & Peracchi (2018), using 9 waves of data from the Health and Retirement Survey, from 1998-2014 found that older adults with cognitive decline were more likely to experience financial losses. Further research using the Health and Retirement Study (HRS) highlights the risk of wealth loss during early cognitive impairment. Using the HRS, Hsu & Willis (2013) found that declines in financial management skills (e.g. bill paying) were largely related to an older person's cognitive skills. Angrisani & Lee (2018) examined the relationship between cognitive loss and private wealth loss using HRS data and found that significant memory loss across a 4-year period was associated with an average reduction of wealth in the memory-impaired group of more than $30,000 than the loss in the non-impaired group. Using Medicare claims data across a 19-year period, Nicholas et al. (2021) reported that subprime credit scores and missed bill payments increased significantly shortly after a diagnosis of Alzheimer's disease. These wealth loss studies describe the association between significant memory loss and wealth loss, and risk for changes in subprime credit scores. The studies did not examine the daily management of finances and thus could not identify how financial decision making and financial management behaviors impact expenditures or wealth loss. Two identified aspects of financial management include financial literacy and financial decision-making (Hall et al., 2022) It is important to investigate personal finance and spending across a continuum of decline from perceived memory impairment (PCI) to Mild Cognitive Impairment (MCI).

Broadening the criteria for early memory loss

Because early memory decline can adversely impact personal wealth, and because this decline is often undetected by a health professional, it is important to investigate measures of financial capacity across a continuum of decline from perceived cognitive impairment (PCI) to Mild Cognitive Impairment. A PCI measure was established by the Center for Disease Control (CDC) to investigate population-based issues and coordinate with each State's Behavioral Risk Factor Surveillance Survey. A study of over 220,000 respondents indicated the importance of PCI to a variety of health outcomes (Taylor et al., 2020). PCI affirmative respondents had significantly increased chronic health conditions, and a high risk of developing a dementia, and yet less than half had discussed their cognitive concerns with a health care professional. The importance of including those with perceived cognitive impairment is underscored by recent neuroimaging studies. Viviano & Damoiseaux (2020) provided a review of perceived cognitive decline and noted that it is a risk factor for the development of Alzheimer's disease.

Financial literacy

Financial literacy is defined as the 'ability to process economic information and make informed decisions about financial planning, wealth accumulation, debt, and pensions' (Lusardi & Mitchell, 2014). Lusardi & Mitchell (2011) stressed the importance of financial literacy in an era without defined pensions and with an increased burden on individual households to learn how to process economic information and make informed decisions. While the content of financial literacy measures varies somewhat, questions typically cover compound interest, inflation, and knowledge about financial investment risk. Lusardi & Mitchell (2008, 2011) found that many individuals in a community-dwelling sample of older adults lacked the ability to do simple interest rate calculations and did not understand the basic concepts of inflation and risk diversification.

Finke et al. (2017) examined the changes in financial literacy with older age. Using a unique cross-sectional sample of 3873 individuals from the Consumer Finance Monthly survey, the authors reported a linear relationship between older age and lower financial literacy performance. Most striking, however, was the finding that perceived financial literacy was unrelated to age. In this sample, older adults did not lose any confidence in their ability to manage finances and make financial decisions. While objective measures of financial literacy declined overall with age, self-assessment of literacy increased with age (Finke et al., 2017).

Financial decision-making

A person-centered approach to financial decision-making

Lichtenberg et al. (2015) proposed a new conceptual model and scale to understand financial decision-making for use in the assessment of financial capacity: the Lichtenberg Financial Decision-making Rating Scale (LFDRS). The conceptual frameworks used in creating the LFDRS were the Whole Person Dementia Assessment model (Mast, 2011) and the decision-making model of Appelbaum & Grisso (1988) which elaborates on what Lichtenberg et al. (2015) term the intellectual factors involved in capacity assessment: choice, understanding, appreciation, and reasoning. The Whole Person Assessment model is described in some depth in Lichtenberg et al. (2015) and applies person-centered principles of deep respect for individuality and personhood to the standardized psychological assessment process.

The LFDRS incorporates contextual variables (i.e. financial situational awareness, psychological vulnerability, susceptibility to undue influence and financial exploitation) into Appelbaum & Grisso (1988) decision-making model. These intellectual factors have been established as fundamental aspects of decisional abilities (American Bar Association Commission on Law and Aging & American Psychological Association, 2008). Although articulated originally for medical decision-making, the same intellectual factors apply to financial decisions. First, the older adult must be capable of clearly communicating his or her choice. Understanding is the ability to comprehend the nature of the proposed decision and provide some explanation or demonstrate awareness of its risks and benefits. Appreciation

refers to the situation and its consequences and often involves their impact on both the older adult and others.

The scale developed is an attempt to quantify financial decision-making risk—that is, the risk of not making informed financial decisions. This financial decision-making rating scale has been linked to executive functioning, cognitive decline, and risk for financial exploitation (see Lichtenberg et al., 2018; Lichtenberg, Gross, and Ficker, 2020, Flores & Lichtenberg, 2023). The use of a person-centered approach to financial decision-making is novel and the results supported the use of such an approach. While the scale can assess the quality of financial decision-making, it does not address any items related to financial management. The following hypotheses were examined:

Hypothesis 1: Participants with early memory decline will engage in excess spending at a significantly higher rate than participants without any memory decline.

Hypothesis 2: Financial literacy and financial decision-making will be significant predictors of both excess spending and the amount of excess spending.

Methods

Procedure for recruitment

People over the age of 60 who were primarily responsible for a personal checking account and were English speakers were eligible for this study. Participants were recruited from research registries through the Michigan Alzheimer's Disease Research Center (MADRC) ($n = 41$) and the Wayne State University Institute of Gerontology Healthier Black Elders Center ($n = 36$). Participants were also recruited *via* newsletters or informational lectures given by the first author (37). Of those who expressed interest in the study approximately 85% completed the study. Dropout was due to the time demands of getting checking account statements together. Prospective participants were prescreened to determine eligibility based on the following criteria: age 60 or older and no diagnosis within the last 2 years of epilepsy, stroke, traumatic brain injury, bipolar disorder, schizophrenia, or significant use of drugs or alcohol.

The study coordinator arranged with each participant to obtain copies of their main checking account statements for 12 consecutive months within the previous 2 years and, if appropriate, credit card statements. Hard copies were either mailed or hand delivered and electronic copies were emailed. All statements were de-identified and assigned a random ID number. Participants then completed a telephone interview about their finances. All participants were compensated for their participation and reimbursed for study-associated banking or mailing fees, if any. The study was approved by the Wayne State University IRB.

Interview and procedure for analyzing checking account statements

The first author reviewed account statements and conducted interviews with the participants regarding expenditures. In this study, once we verified that the participant was the primary person using this checking account. The interview about the checking account did the following (1) verifying income and probing for any income not found in the checking account, (2) identifying and verifying expenditures to be able to categorize these. For example, one account had four separate payments each month for insurance. Another account had high usage of the home shopping network. Lichtenberg et al. (2022) described the methods used for analyzing the checking account statements.

Measures

Cognitive status

Participants were then categorized based on their cognitive status. Through their longitudinal study, the Michigan Alzheimer's Disease Research Center used a consensus diagnosis conference process and the nationally agreed on procedures and definitions for diagnosing Mild Cognitive Impairment (MCI). For those participants who made a complaint of memory problems but did not have any deficits in cognitive testing, MADRC clinicians labeled them as having Perceived Cognitive Impairment. Other Participants were asked if their memory or problem-solving skills were worse than a year ago. Those who answered yes were categorized as perceived cognitive impairment (PCI) and those who answered no were categorized as no memory decline.

Socio-economic and demographic characteristics

Several aspects of our participants' characteristics are captured through survey instruments designed to collect data on demographic, socioeconomic, and physical and mental health factors. Demographic factors are age, based on the birthdate provided by the participant, self-reported gender, race (e.g. White, Black, Mixed Race, etc.), education, based on the highest level of education completed, and total income.

Excess spending

We defined excess spending as expenditures beyond income. We measured gross income. Income included social security, pension, tax refunds, work income, and any planned distributions from an IRA or investment account. We confirmed that this represented the amount of money individuals wished to spend during the year. The primary determination of excess spending was determined by subtracting the sum of the 12-month expenditures (from the checking account) from the total income. Negative values were categorized as excess spending. For individuals who satisfy the excess spending criteria, we calculated the loss value to the annual percentage of loss beyond income by dividing the loss value by the annual income. For example, if a participant were to expend $10,000 beyond an income base of $100,000, the loss would be 10%. The interviews were used to confirm the income figures.

Financial decision making

To assess financial decision-making capacity, we used the Lichtenberg Financial Decision Rating Scale (LFDRS) (Lichtenberg et al., 2015). This is a clinician-administered scale used to assess financial decision-making ability. The scale contains 56 items across four subscales: (1) Financial Situational Awareness, (2) Psychological Vulnerability, (3) Intellectual Factors, and (4) Susceptibility to Undue Influence and Financial Exploitation. Inter-rater reliability and factor analysis confirming the conceptual model have been documented in previous samples (see Lichtenberg et al., 2015 and Lichtenberg et al., 2018), as have concurrent validity with cognition (Lichtenberg et al.,

2018) and with financial exploitation (Lichtenberg et al., 2020). Higher scores reflect more vulnerability across the different factors (i.e. contextual and intellectual) in financial decision-making. Flores & Lichtenberg, 2023 completed a cross-validation study of the scale that provided results very similar to the original validation study.

Financial literacy

Three questions were used to determine the participants' level of financial literacy. The questions included in this measure first appeared in the 2004 HRS. This three-question scale was designed to gauge the knowledge of basic financial investment concepts, including interest rates and saving, inflation and spending, and investment decisions (Lusardi, 2012). The total score range is 0–3, higher scores indicate higher levels of financial literacy.

Rey auditory verbal learning test (RAVLT)

The RAVLT (Rey, 1958) is a measure of episodic verbal learning and memory. In this task, the examiner reads 15 nouns aloud 5 times to the examinee, who is then asked to repeat as many of those words as they can recall after each reading. There are several indices captured by the RAVLT. We chose to use the total number of words recalled across the initial 5 trials. This indice is best described as a short-term or working memory indice.

Analytic approach

Analysis of Variance was used with post-hoc comparisons to investigate whether the three cognitive groups (no memory loss, PCI, MCI) differed on RAVLT scores. Bivariate and multivariate statistical approaches were then used. Bivariate comparisons using Chi-Square analyses were used for those with early memory loss and those without early memory loss. T-tests were used to compare the groups on age, education, income, financial literacy, and financial decision-making.

Results

Since we collected data on the Rey Auditory Verbal Learning Test, we were able to compare memory scores across three groups (1) those with no memory complaints, (2) those with PCI, and (3) those with MCI. Analysis of Variance found a difference across groups on the RAVLT ($F = 11.24$, $p < 0.001$). Post hoc analyses revealed that the no memory loss group scored higher than both the PCI ($t = 7.26$ (2.0), $p < 0.001$ and MCI group ($t = 11.51$ (2.8), $p < 0.001$ but there was no difference in RAVLT scores between the PCI and MCI groups ($t = 0.23$ (0.67), p=.93. We proceeded to combine the PCI and MCI groups for all further analyses and referred to them as the early memory loss group. Of the 114 participants in the study, 77% were women, 62% were Black and 38% were White. The results of the bivariate analyses can be seen in Table 1. The mean age for the sample was 73 and the mean education was nearly 16 years but there were no significant differences between the groups. There was great variability in income for our participants, though no significant difference between the memory loss and no memory loss group. Fifty-nine percent of the sample reported early memory loss, but this difference was not statistically significant from the numbers with no memory loss. Overall, 52% of the sample was engaged in excess spending. There was a significant difference in excess spending between those with early memory loss and those with no memory loss (X^2=5.8; $p < 0.01$). Sixty-one percent of participants with early memory loss were classified in the excess spending group compared to 38% in the no memory loss group. These data provided support for Hypothesis 1.

The results of bivariate analyses comparing the groups on financial literacy and financial decision-making can also be found in Table 1. The overall financial literacy score was 2.17 with a third of the sample scoring either a 0 or a 1. There was no significant difference between those with and without early memory loss on the financial literacy measure. The mean score for the no memory loss group was almost identical to the mean score on normative data using the HRS (Lusardi & Mitchell, 2011). There was a significant difference in financial decision-making risk scores between the groups, with early memory loss participants scoring significantly higher on risk scores for lacking informed decision-making ($t = 3.4$; $p < 0.001$). The early memory loss group had a 35% higher mean risk score than the no memory loss group. These results provided partial support for Hypothesis 2 with financial decision-making differences found between the groups but not financial literacy.

In Table 2, correlations among the predictor measures can be found. Income was significantly related to years of education ($r = 0.50$; $p < 0.001$), financial literacy scores ($r = 0.39$; $p < 0.001$), and financial decision-making (r=-0.19; $p < 0.05$). Income was also related to race such that black participants had less income than did white participants. Age was unrelated to any other measure. In addition to income, years of education was also significantly related to financial literacy ($r = 0.27$; $p < 0.001$). Cognitive status (memory loss or no memory loss) was related to RAVLT total scores, and it was related to financial decision-making. Financial literacy and financial decision-making were significantly related to one another (r=-0.23; $p < 0.05$) and they were both significantly correlated with cognitive status. Excess spending was significantly correlated with education, cognitive status, and financial decision-making. In this sample financial decision-making was unrelated to age or education. Overall, the relationships between the measures were as expected.

In Table 3 are the results of a multiple regression analysis used to examine multivariate relationships between predictor measures and the percentage of excess spending among all participants. The predictors were entered in steps; (1)

Table 1. Descriptive and bivariate comparisons.

Variable Type	Total	Early Memory Loss	No Memory Loss	χ2
Nominal				
Cognitive Status	114	67 (58.8%)	47 (41.2%)	2.62
Excess Spending		41 (61.2%)	18 (38.3%)	5.80*
Gender (%/n)				
Female	77.2% ($n = 88$)	59.1% ($n = 52$)	40.9% ($n = 36$)	.784
Male	21.9% ($n = 25$)	56.0% ($n = 14$)	44.0% ($n = 11$)	
Race (%/n)				
White	37.7% ($n = 43$)	60.5% ($n = 26$)	39.5% ($n = 17$)	.082
Black	62.3% ($n = 71$)	57.7% ($n = 41$)	42.3% ($n = 30$)	
Ordinal	*M (SD)*			*t*
Age	73.10 (8.16)	72.30 (7.85)	73.67 (8.38)	−0.89
Education	15.71 (2.41)	15.66 (2.39)	15.74 (2.44)	−0.18
Income	45808.34 (30275.70)	42758.11 (26256.13)	47948.06 (32826.93)	−0.94
Financial literacy	2.17 (.88)	2.06 (.94)	2.32 (.78)	1.61
LFDRS	12.54 (8.20)	14.66 (9.23)	9.53 (5.20)	−3.44**
RAVLT Total	43.73 (10.39)	40.16 (9.12)	48.45 (10.17)	4.47**

*$p < 0.05$.
**$p < 0.001$.

Table 2. Correlation between LFDRS, cognitive measures, and demographic variables.

Variable	% Excess Spending	Age	Education	Race	Income	Gender	Cog. Status	Financial Literacy	LFDRS
Excess Spending	1								
Age	−0.079	1							
Education	.187*	.075	1						
Race	−0.022	−0.096	−0.240*	1					
Income	.094	.085	.506**	−0.282*	1				
Gender	−0.067	.013	.111	−0.375**	.304**	1			
Cognitive Status	.195*	.072	.028	−0.013	.108	−0.011	1		
Financial Literacy	.103	.063	.276*	−0.344**	.396**	.136	−0.160*	1	
LFDRS	.244*	−0.149	−0.069	.208*	−0.187*	−0.228*	.327**	−0.273*	1
RAVLT Total	−0.018	−0.052	.076	.055	−0.103	−0.247*	−0.384**	.124	−0.087

Note. LFDRS = Lichtenberg Financial Decision Rating Scale.
* $p < 0.05$.
** $p < 0.001$.

Table 3. Regression predicting excess spending.

					Model		
	β	t	Δ R^2	ΔF	R^2	F	p
Model							
Step 1					.04	1.17	.33
Age	−0.09	−0.95					
Education	.19	1.71					
Income	.01	.09					
Race	.02	.18					
Step 2			.08	2.91*	.12	1.95	.04
Age	−0.06	−0.63					
Education	.17	1.52					
Income	.01	.09					
Financial Literacy	.14	1.25					
LFDRS Total	.28**	2.82**					
RAVLT Total	−0.03	.80					

*$p < 0.05$.**$p < 0.01$.

Table 4. Frequencies for the total sample.

	Response One	Response Two	Response Three
How worried are you about having enough money to pay for things	*Not at all worried* 61(53.5%)	*Somewhat worried* 43(37.7%)	*Very worried* 10(8.8%)
Overall, how satisfied are you with your finances?	*Satisfied* 62(54.4%)	*Neither satisfied or dissatisfied* 34(29.8%)	*Dissatisfied* 18(15.8%)
How confident are you in making big financial decisions?	*Confident* 78(68.4%)	*Unsure* 31(27.2%)	*Not Confident* 5(4.4%)
How often do you worry about financial decisions you've recently made?	*No worries* 88(77.25)	*Sometimes* 14(12.3%)	*Often* 10(8.8%)
Are you financially helping anyone on a regular basis?	*No* 76(66.7%)	*Yes* 38(33.3%)	– –
How comfortable have you been in the past with taking financial risks?	*Not at all comfortable taking risks* 57(50.0%)	*Somewhat comfortable taking risks* 46(40.4%)	*Quite comfortable taking risks* 11(9.6%)
How often do you wish that you had someone to talk to about financial decisions, transactions, or plans?	*None of the time* 47(41.2%)	*Some of the time* 50(43.9%)	*A lot of the time* 17(14.9%)
How often do you feel anxious about your financial decisions?	*Never or rarely* 67(58.8%)	*Sometimes* 35(30.7%)	*Often* 12(10.5%)
When it comes to making financial decisions and transactions, how often are you treated with less courtesy and respect than other people?	*None of the time* 88(77.2%)	*Some of the time* 22(19.3%)	*Most of the time* 4(3.5%)
Has a relationship with a family member or friend become strained due to finances as you have grown older?	*No* 89(78.1%)	*Yes* 25 (21.9%)	– –

demographic measures and (2) demographic measures plus financial literacy, RAVLT, and financial decision-making scores. Measures of age, education, and income were not significantly related to the percentage of excess spending in the sample. In the second step, only financial decision-making was related to percentage of excess spending ($B = 0.37$; $p < 0.001$). This analysis also provided more support for the financial decision-making aspect of Hypothesis 2. Even when other demographic, memory, and financial measures were included, financial decision-making was independently related to the amount of excess spending.

Given the finding that financial decision-making was significantly related to the amount of excess spending, we conducted some post hoc descriptive and bivariate analyses to better understand the elements of financial decision-making that are related to excess spending. These analyses can be found in Tables 4 and 5. In Table 4, we provide the full sample responses across 10 contextual items in the financial decision-making measure. In Table 5, we provide the t-tests that compare the individual item risk score across the cognitive status groups. Nearly 70% of the full sample reported that they feel confident about making financial decisions, and yet just over half stated that they are satisfied with their finances and just over half stated that they never worried about having enough money to pay for things. Fifty percent reported feeling not at all comfortable taking financial risks when they were younger, and only 10% reported feeling quite comfortable taking financial risks. Nearly 60% reported that they wished they had someone to talk to about their finances and financial decisions, and over 40% reported anxiety about their personal finances and financial decisions. In addition, one in five reported that they are treated with less courtesy and respect than others during financial transactions. One-third of the sample reported that they are helping someone financially on a regular basis, and just over 21% stated that a relationship with a family member or friend has become strained due specifically to finances as they got

Table 5. Comparison between excess spending and no excess spending in a subset of LFDRS items.

LFDRS Items	Excess Spending *M*(*SD*)	No Excess Spending *M*(*SD*)	*t*
#2 Worry	.76(.70)	.33(.51)	−3.76*
#3 Satisfied	.93(.81)	.27(.49)	−5.23**
#6 Confident	.47(.60)	.24(.51)	−2.29*
#7 Recent decision worry	.51(7.8)	.09(.29)	−3.72**
#9 helping others	.49(.50)	.16(.37)	−3.92**
#17 taking risk	.47(.65)	.73(.65)	2.07
#20 wish to talk	.95(.73)	.51(.61)	−3.52
#21 Anxious	.69(.75)	.33(.55)	−2.98**
#28 courtesy	.39(.62)	.13(.34)	−2.85**
#47 relationship strain	.29(.46)	.15(.36)	−1.85**

older. These findings underscore that there is a lot of financial uncertainty and angst among participants in this study.

In Table 5 are the bivariate comparisons between the early memory loss and no memory loss group for the 10 items in Table 5. Only two of the items were not significantly different across the groups; worrying about recent financial decisions and wishing there was someone to talk with about finances. The other items were significantly different including whether there was relationship strain around finances, and whether the participant was helping another person(s) financially on a regular basis. In both cases, and in the other 6 items that differentiated the groups, the higher risk score was in those with early memory loss. Those with early memory loss were less likely to be satisfied with their finances, feel they are being treated with less courtesy than others more often and experience more anxiety about their finances.

Discussion

This study had four significant findings. First, the use of and review of personal spending through checking account statements led to new insights and has the potential to enhance our understanding of older adult personal finance in many other ways that were beyond the scope of this study. In this study we demonstrated that initial review efficiently led to measuring income and expenditures. Although tempting to think this could simply be done by adding up inputs and outputs, there are some significant nuances that require input from the account holder. It is noteworthy that income as measured by checking account review and interview was significantly related to other measures in the ways one would expect. Higher income was related to years of education, better financial literacy, and more informed financial decision-making.

The second major finding of this study was that there was significantly more excess spending among those with early memory loss. Over 60% of those with early memory loss engaged in excess spending while a little over a third of those with no memory loss did so. This finding is in line with the broader financial literature which used different methods to measure wealth loss and decline in credit. Angrisani & Lee (2018) were able to use the wealth measures in the HRS to examine how wealth loss correlates with memory decline on testing, while Nicholas et al. (2021) used credit scores and specifically subprime credit scores in their research. Three very different samples, and different methods of measuring finance, but all finding that those with early decline had poorer financial management scores than did those older adults without any decline. This represents a significant public health concern since financial well-being is so closely tied to physical, functional, and mental health (Lichtenberg et al., 2020). Excess spending is one of the behaviors that can lead directly to wealth loss and subprime credit. Financial decision-making is another set of behaviors that can help us understand the phenomenon of poor financial management during early cognitive decline.

Our third major finding was that person-centered financial decision-making measurement was significantly related to the amount of excess spending. The LFDRS was the only significant multivariate predictor of excess spending. In the regression analysis, demographic, income, memory, and financial literacy measures were not significantly related to how much excess spending was present. The intersection of financial decision-making deficits and poorer financial management is not a new phenomenon. Marson (2001) demonstrated that participants with Mild Stage Alzheimer's Disease, made poorer financial decisions on vignette-based tasks compared to participants who were cognitively intact. This study furthers the field of financial decision-making and financial management by using person-centered decision-making measures and real-world financial management (i.e. participant's own checking account) measures. The use of person-centered financial decision-making and real-world financial management measures enables the fourth major finding to be realized; some specific financial behaviors and experiences, as well as contextual items that relate to perceived financial vulnerability, were identified as being related to excess spending.

The fourth major finding was that two specific financial behaviors and experiences and six other contextual experiences were identified as items capturing increased financial vulnerability in those who engaged in excess spending. Most striking was the relationship between regularly helping others financially and excess spending. In the overall sample one-third of participants reported financially helping an adult child or grandchild on a regular basis. This item was also significantly related to excess spending in that those who were helping others financially were significantly more likely to spend beyond their income. The second financial experience was that of experiencing relationship strain with a family member or friend specifically due to finances and to the aging process. One-fifth of respondents reported that as they got older, they experienced financial strain with a family member. This experience of strain was also related to excess spending. The other financial vulnerability items that differentiated those who spent beyond their income from those who didn't include financial self-efficacy, financial satisfaction, financial worry (both general worry and specific worry about recent decisions), and anxiety and feelings of discrimination (treated with less courtesy and respect than others). These latter findings indicate the importance of measuring perceived financial vulnerability.

There are several weaknesses to acknowledge in this study. First, the sample was non-random. Thus, the generalizability of the findings is limited. The study was cross-sectional in that the interview data occurred at one point in time. We did not have checking account data that occurred later after the interviews; all checking statements were from periods earlier than the interviews. Our outcome measure was based on one primary checking account and not a more complete picture of the participant's income and wealth. Finally, we had a modest sample size and firmer conclusions will only be possible when several larger samples can be used. Despite these weaknesses, this study makes a valuable contribution to the literature. We

introduced a new method of assessing personal finance and relating it to financial decision-making and financial literacy. We demonstrated that despite the reservations about sharing personal finance data, it is possible to collect this real-world information, and to have an inclusive sample. A major strength of the study was the significant number of older black adults who participated. Finally, the study hypotheses, two of the three elements were supported by the data, were identified a priori during our grant proposal, and enhanced the issue of rigor and the likelihood of reproducibility.

Disclosure statement

The authors have no conflicts to disclose.

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Data availability statement

Distribution of data will be limited due to the sensitive nature of the data. Please contact the first author for requests to use the data.

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