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Self-efficacy and Savings Among Middle and Low Income Households

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Abstract Based on Social Cognitive Theory, this exploratory study examined the relationship between self-efficacy and saving among a sample of middle and low income households. Logistic regression was used to test the hypothesis that higher levels of self-efficacy are associated with greater likelihood of saving when controlling for age and income levels. The results show that higher self-efficacy, older age, and middle incomes are associated with a higher likelihood of savings. When controlling for age and income, respondents with low self-efficacy were only 60% as likely to save as those with high self-efficacy scores. The results confirm that saving behavior is associated with general self-efficacy. Enhancing self-efficacy for middle and low income individuals may encourage saving. Implications of this research suggest a need for additional research to further explore this relationship and how it might be used to enhance outreach aimed at improving savings behavior.

Introduction

Despite a slight increase in the US savings rate since the historic low in 2005 (Federal Reserve Bank of St. Louis 2013), the persistence of a historically low savings rate continues to concern financial educators and policy makers. In addition to life cycle theory, which has been used to understand savings behavior, economists argue that the key reason people fail to save is a lack of self-control (Benartzi and Thaler 2007; Wiener and Doescher 2008). Because traditional economic theories have failed to adequately explain individual financial behaviors, increasing attention is being paid to the role of psychological factors as an influence on financial decisions. Consumer researchers and educators recognize that simply providing more financial education is not sufficient to influence behavior (Benartzi and Thaler 2007). In addition to income constraints, institutional, structural, and environmental obstacles can inhibit financial capability and thus, savings (Birkenmaier et al. 2013; Sanders and Porterfield 2010). In addition to structural and contextual factors, some consumers may lack self-control or exhibit behavioral biases that education does not address (Benton et al. 2007; Shefrin and Thaler 1992), thus there is a need to examine psychological factors that influence financial behaviors.

According to Albert Bandura, who developed social cognitive theory, a major psychological factor influencing behavior and goal attainment is perceived self-efficacy, the

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belief in one's capability to achieve or succeed at a given task (Bandura 1977). Self-efficacy is different from self-confidence as it focuses on a person's belief that that they are capable of a designated level of performance in a specific domain and because self-efficacy is task specific (Bandura 1994). Based on social cognitive theory, people learn by observing what others do as well as do *not* do (Bandura 1989). Through numerous research studies Bandura (1989) established that learning occurs when there is a close identification between observer (learner) and the role model in conjunction with a high level of self-efficacy on the part of the learner. Self-efficacy has been widely studied to understand human behaviors, including health behaviors such as smoking cessation and physical activity, and as a successful intervention tool (Ashford et al. 2010; Conner and Norman 1996). Self-efficacy has also been defined as "optimistic self-beliefs" (Scholz et al. 2002).

Researchers have linked self-efficacy to financial management behaviors such as credit management (Wang et al. 2011) and retirement investing (Dulebohn and Murray 2007). However, there is limited information regarding a link between self-efficacy, a feeling of assurance in being able to successfully accomplish a task or goal, and savings behavior.

The hypothesis of this paper is that higher levels of self-efficacy are positively associated with savings behaviors. Understanding the relationship between self-efficacy and savings could suggest policies and programs to promote savings, particularly among middle and low income households who are most in need of the safety net that savings can provide in a volatile economic environment.

This study builds on the work conducted by the North Central (NC) 1172 multistate research project, The Complex Nature of Saving: Psychological and Economic Factors. The project was conducted with the collaboration of researchers at 12 universities who developed the questionnaire, which included several scales to measure psychological aspects of savings behavior. The participating universities supported the data collection and collaborative effort as part of their land grant mission. The five-year project focused on understanding the different factors influencing savings behavior by considering research and models from economics, psychology, and sociology. The current study contributes to this line of inquiry by specifically testing the role of self-efficacy as a determinant of savings behavior.

Theoretical Framework

The life cycle savings hypothesis is commonly used to explain savings behavior (Ando and Modigliani 1963; Chang et al. 1997; Hanna et al. 1995). The life cycle hypothesis proposes that households seek to maximize lifetime utility or satisfaction by smoothing the marginal utility of consumption. In other words, households seek to maintain an overall level of living over their lifetime. This consumption smoothing is accomplished by borrowing in periods of relatively lower income and saving in periods of relatively higher income, given their expected lifetime income patterns. In general the tradeoff between saving and spending then becomes a function of the return one would earn on savings and the rate at which one discount's future consumption. Overall, a higher return on savings should prompt one to save more and a higher discount rate should encourage one to spend more today. A key tenet of the life cycle hypothesis is that preferences affecting consumption, saving, and borrowing will change as one's lifecycle stage changes (i.e., marriage, children). This would require that households manage their resources over time.

Additional factors influencing saving include one's ability and willingness to save (Katona 1951) which are conceptually linked to self-efficacy. Warneryd (1989) suggested researchers should consider both economic perspectives and psychological variables in their efforts to understand savings behavior. Therefore, social cognitive theory (Bandura 1977), the basis for understanding self-efficacy, is a promising basis to enhance our understanding of saving behavior.

Social cognitive theory proposes that interaction amongst observations of others, the environment, one's own behavior, and one's cognitive ability influences behavior (Bandura 1977, 1986, 1989, 1997). However, individuals are not automatically controlled by their environment, nor driven by inner forces. Instead, these factors contribute to motivation, behavior, and development within a network of reciprocal influences (Bandura 1989).

According to Bandura (1977), persons with high levels of self-efficacy (SE) are more likely to accept rather than avoid a challenge and thus more likely to succeed. "Perceived self-efficacy represents an optimistic sense of personal competence that seems to be a pervasive phenomenon accounting for motivation and accomplishments in human beings" (Scholz et al. 2002, p. 242).

Review of Literature

SE is a measure of a person's assessment of his or her ability to achieve or complete a challenging task. Because SE is related to motivation, it is clearly relevant to behavior change (Bandura 1997; Gecas 1989; Gist and Mitchell 1992). According to Bandura (1986), improving this sense of SE will lead the individual to devote more time and effort to the goal or activity. "Differences in self-efficacy are associated with bona fide differences in skill level; however, efficacy perceptions also may be influenced by

differences in personality, motivation, and the task itself" (Gist and Mitchell 1992, p. 193).

Studies have shown that a positive sense of SE is associated with better health measures, higher academic scores, enhanced physical achievement, and superior social skills (Bandura 1997; Bosscher et al. 1995; Schwarzer 1993). Zimmerman and Bandura (1994) demonstrated that SE affects accomplishment both directly and indirectly through its influence on the belief that one can achieve one's goals. According to social cognitive theory and research, SE affects how people think, feel, and act (Bandura 1997). Low SE is linked to anxiety, depression, and feelings of hopelessness and helplessness and pessimistic perceptions of one's ability to accomplish tasks and reach goals (Bandura 1977; Scholz et al. 2002; Schwarzer 1993). SE influences motivation and thus, affects accomplishments.

SE, self-worth, and self-esteem have been shown to relate to financial management (Danes et al. 1999; Grable and Joo 2001; Heckman and Grable 2011; Hira and Mugenda 1999; Sanders et al. 2007; Sherer et al. 1982). Neymotin (2010) confirmed the theoretical relationship that higher levels of self-esteem enable individuals to acknowledge negative information so they can act to alleviate the problem. A similar relationship may exist between SE and saving behaviors. In developing a framework for promoting retirement saving, Wiener and Doescher (2008) proposed that SE could affect an individual's intention to save. A few studies (Dietz et al. 2003; Dulebohn and Murray 2007) address questions related to retirement investment planning and SE, yet limited information is available regarding the role of SE as an influence in savings behavior.

According to social cognitive theory, SE can be used to understand and change saving behavior. Specifically, middle to high levels of SE can help provide motivation to save for the future and avoid overspending. The purpose of this study was to examine the relationship between SE and savings behavior.

Self-efficacy and Financial Management

Although not specifically measuring SE, personal finance studies report links between the related concepts of self-worth and self-esteem with financial management (Grable and Joo 2001; Hira and Mugenda 1999). However, SE measures one's beliefs about abilities, while self-esteem relates to self-worth, so although the concepts are related, they are not identical (Sherer et al. 1982).

A few studies addressed the link between SE and personal finances. Using a single-item financial SE scale developed by Danes and Haberman (2007) and a small college student sample, Heckman and Grable (2011)

reported that financial knowledge was significant in shaping SE. Students who were more knowledgeable about financial management had higher levels of SE. A couple of studies used financial or economic SE scales, which are more specific than a general SE measure, but the measures used lack sufficient evidence of reliability and validity.

Sanders et al. (2007) used a 5-item financial SE measure to evaluate economic education for battered women using a quasi-experimental design. Sanders et al. (2007) found the curriculum was associated with increased financial SE, which was defined as a woman's confidence in dealing with financial issues and achieving her financial goals. While the measure had a good internal consistency (Cronbach's alpha = .86), it was created as a subscale of domestic violence-related financial issues which might limit applicability to the general population. Based on a study with low income Individual Development Account participants, Lapp (2010, p. 1) concluded that financial SE was "the missing link between knowledge and effective action" because it is associated with less financial stress, fewer problems, and more savings. Research on SE and economic empowerment for abused women further confirmed the important role of SE (Postmus et al. 2012).

Mewse et al. (2010) compared debtors and non-debtors, finding that debtors had lower levels of financial SE and an external locus of control. Debtors who contacted their creditors to resolve their debts scored higher on SE than debtors who avoided their creditors. However, Mewse et al.'s (2010) measure of financial SE had a low Cronbach's alpha (.48). Dulebohn and Murray (2007) studied the role of SE in retirement investing behavior among higher education employees using a four-item SE measure of confidence in choosing retirement investments. The results supported their hypothesis that high investment SE would be positively related to perceiving the task of selecting retirement investments as an opportunity, while low SE individuals would perceive the responsibility as a threat. Dulebohn and Murray (2007) concluded that there is a need to bolster SE with respect to investment choices.

For a study of gender differences in retirement planning Dietz et al. (2003) developed a 3-item financial SE scale and concluded that SE did not influence retirement planning decisions but did not report reliability and validity data for their SE measure. In contrast, Sanders et al. (2007) reported positive results in improving financial SE among battered women using a financial SE measure, the reliability and validity of which was established as reported by Weaver et al. (2009). Presenting further evidence of the importance of SE, Engleberg (2007) concluded that higher levels of *economic* SE enabled young adults to prepare to cope better with economic risk and uncertainty related to risks such as unemployment and being unable to pay a mortgage. Using a single item to measure financial SE,

Heckman and Grable ([2011](#)) reported a positive relationship with college students' financial knowledge. Although limited attempts have been made at measuring aspects of SE related to financial and economic matters, the lack of a reliable and valid scale has hampered research efforts.

A few studies examined the relationship between SE and retirement planning and credit management. In developing a framework for promoting retirement savings, Wiener and Doescher ([2008](#)) hypothesized pathways to influence the intention to save for retirement through enhancing SE. They suggested two ways to increase savings behavior by improving perceived ability, first improving the actual ability to save through structural changes such as enhancing incentives to invest through more liberal income tax policies, and second, the subjective judgment of ability to perform and complete the task through education and persuasion. However, Wiener and Doescher ([2008](#)) did not test their model with empirical data but focused on establishing a model based on persuasion and emphasizing intentions and inertia.

The role of SE in finances has been studied with respect to credit use as well as saving. In a study of consumers with credit problems, Tokunaga ([1993](#)) concluded that adding psychological variables to financial characteristics significantly increased the ability to correctly categorize individuals' credit practices. Unsuccessful credit users displayed lower SE, an external locus of control, low risk tolerance, and associated money with power and prestige (Tokunaga [1993](#)). In a study of Chinese credit users, Wang et al. ([2011](#)) found SE was negatively related to the frequency of revolving credit use.

Prawitz et al. ([2013](#)) reported that an internal locus of control was associated with lower financial distress and more hopefulness among low-income households. While locus of control is not the same as SE, the two concepts are related to self-assurance in having control over one's actions and being able to accomplish a task.

Demographics, Self-efficacy and Savings

Research reports that males generally have higher levels of global SE than females (Gecas [1989](#); Lachman [1985](#)). Males report higher levels of SE in math and technology but girls and boys have similar SE scores in language arts, despite girls' higher language achievement (Schunk and Pajares [2001](#)). In a study of SE and math ability, gifted girls performed better than gifted boys but there was no gender difference in SE (Pajares [1996](#)). However, gender differences are confounded by multiple factors such as socio-economic status (Schunk and Pajares [2001](#)). Dietz et al. ([2003](#)) reported no gender difference in the use of employer sponsored retirement plans.

Based on life cycle theory, age should be positively related to savings behavior with middle aged persons at the height of their earning power most able and motivated to save (Ando and Modigliani [1963](#); Chang et al. [1997](#)). Higher socioeconomic status and income are positively related to saving behavior and attitudes toward saving (Traut-Mattausch and Jonas [2011](#)). Education level is positively associated with savings behavior (Gutter et al. [2010](#)) and financial education positively influences savings behavior (Sherraden et al. [2011](#)).

As summarized in a comprehensive literature review by Fisher ([2010](#)), gender differences in savings behavior are well documented. Risk tolerance and gender are the primary factors affecting retirement investing decisions, with women choosing lower risk investments (Speelman et al. [2012](#); Whitaker et al. [2013](#)). However, in a of study female-headed households, Sanders and Porterfield ([2010](#)) reported that having children reduced the likelihood of accumulating assets but did not affect asset values among women who reported assets.

In summary, studies have shown gender differences in SE and saving behavior while age, income, and education levels are associated with savings behavior. However, few studies have explored SE in relation to financial behavior and little is known about the roles of gender, age, income, and education in the relationship between SE and savings.

Role of Self-efficacy and Change Behaviors

The question as to whether SE is a stable personality construct or whether it is subject to change has been explored in relation to health and fitness behaviors. SE is now part of many theoretical approaches to predicting health behaviors (Conner and Norman [1996](#)). Because of similarities between health and wealth improvement (O'Neill [2004](#)), strategies to improve SE for savings behavior may be similar to those that promote healthy eating and exercise. A meta-analysis of research on the role of SE in changing health behaviors confirms that SE is subject to external manipulation (Ashford et al. [2010](#)). In a study of adherence to an exercise plan Jones et al. ([2005](#)) found that SE improved during the term of the exercise program for those who completed the program but SE declined for those who dropped out of the program, further suggesting that SE is subject to influence. While most research posits a positive relationship between SE and success at a specific task, recent research reveals that more is not always better. Too high a level of SE can be counterproductive, resulting in the failure to devote sufficient effort to the task (Ashford et al. [2010](#); Jones et al. [2005](#)). In a study of online investors, Looney et al. ([2006](#)) concluded that high SE was correlated with feelings of arrogance that lead to an expectation of unrealistically high investment returns.

Based on their study of risk-taking behavior among higher education retirement plan participants, Dulebohn and Murray (2007) concluded that the results of their study supported efforts to augment saving and investment SE "through interventions that affect peoples' awareness of their attitude development" (p. 578). Wiener and Doescher (2008) identified a number of ways to increase actual and perceived ability to save for retirement, including education and pre-commitment strategies for actual ability and persuasive communication for perceived ability. Wiener and Doescher's (2008) work suggests possible intervention strategies such as using persuasive communications to increase individual's subjective judgment of their own ability to save if the relationship between savings and SE is established. An analysis of the effectiveness of financial video games in teaching financial literacy and boosting financial SE (Maynard et al. 2012) suggests a creative new avenue for encouraging middle and low income adults to take positive financial actions. Studies of SE in relation to finances are limited in number and scope. Each study used a different measure of financial SE and small sample sizes. Although a few attempts have been made to measure financial SE, and SE research in related areas such as health and wellness indicates a potential link, no studies specifically examining the relationship between SE and savings behavior were identified. This study addresses the gap in the research literature with a middle and low income population.

Methods

The data for the study *The Complex Nature of Saving: Psychological and Economic Factors* were collected by the North Central (NC) 1172 multistate research project, which included several scales to measure psychological aspects of savings behavior. Reliability and validity of the scales were confirmed as describe in Hayhoe and Gutter (2012). Subjects were middle and low income (up to $80,000 US gross income) with a respondent (or spouse/partner) between 24 and 66 years old. Data were collected using an online survey format by Survey Sampling International LLC (SSI) in December 2010. SSI is a research company that provides sampling, data processing, and consultation to businesses and researchers worldwide. SSI provides internet service and computers to consumers who then complete surveys. An invitation and link to the survey was distributed to SSI's US panel. The link to the survey was sent to email addresses in their databases that met the selection criteria until 1,000 responses were received. Single persons older than 66, and couples where both were older than 66, were excluded because of the focus on respondents who are younger than traditional retirement age and thus in the saving stage of the

lifecycle, resulting in an analysis sample size of 826. See Hayhoe and Gutter (2012) for additional details on the scales, data collection, and sampling.

Savings behavior was measured by the question: Over the past year, did your spending exceed income, equal income, or was your spending less than income? Respondents who indicated they spent less than they earned were classified as savers (Rha et al. 2006).

SE was measured with a modified version of the 17-item General SE Scale which has a Cronbach's alpha of .86 (Sherer et al. 1982). Scores can range from 17 to 85 with higher scores indicating a higher level of SE. Data were analyzed using SAS version 9.3.

The range of SE scores in this sample was 24–85 with a mean score of 62.6; the items are listed in the Appendix. Cronbach's alpha reliability was .91. Because there are no accepted cut off points for categorizing SE scores (Bandura 2006), after examining the distribution of SE scores, the decision was made to divide respondent scores into three levels for analysis. The middle half of scores (53–70) was considered medium SE with the lowest 25 % (24–52) considered low SE and the highest 25 % (71–85) categorized as high SE.

Control variables included demographics: gender, age, race, education, household size, and income. Age was measured in three categories: under 35, 35–54, and 55–66. Though race was determined using many racial categories, race was collapsed into White and other due to small cells. Education was divided into three categories: high school graduate or less, some college, and college graduate. Household size was categorized as 1, 2, or 3+ members. Reflecting the focus on middle and low income households, the four income categories were $0–$20,000, $20,001–$40,000, $40,001–$60,000, and $60,001–$80,000.

Extensive preliminary data analysis examined the relationships with all the demographic variables available in the data set. Individual and household characteristics such as household size, age, gender, education, and income as well as possibility of interactions with SE were tested but no significant associations were found. The results section focuses on reporting the significant relationships. Due to the limitation of sample size and missing values, including full interactions and control variables in the regression models would have resulted in losing hundreds of cases.

Results

Descriptive Statistics

Demographic characteristics are shown in Table 1. Of the 826 respondents, gender was about evenly divided between males (51.0 %) and females (49.0 %). Age groupings were approximately equally representative of young adults ages

Table 1 Demographic characteristics of respondents ($N = 826$)

	N	$\%$
Gender		
Male	421	51.0
Female	405	49.0
Race		
White	386	83.6
Other	76	16.4
Age (years)		
<35	280	33.9
35–54	289	35.0
55–66	257	31.1
Education		
High school or less	129	27.5
Some college	224	47.7
College degree	117	24.9
Household size		
One	236	28.7
Two	306	37.2
Three plus	281	34.1
Gross income/year		
$0–$20,000	201	24.5
$20,001–$40,000	289	35.2
$40,001–$60,000	215	26.2
$60,001–$80,000	117	14.2

Sample excludes all single respondents who are older than 66 and couples where both parties are older than 66. Percentages may not add to 100 due to rounding

18–35 years (30.7 %), middle age (39.0 % were 35–54 years), and seniors age 55–66 (30.3 %). The majority of the sample reporting race was White (84 %), with the remaining 16 % responding reported other races; as racial diversity was minimal and almost half the sample did not specify a race, race was not included in the analysis.

Education levels included 27.5 % of respondents with a high school education or less; 47.7 % had some college education, and 24.9 % held a college degree. About one-third of the sample reported household sizes of one (28.7 %), two (37.2 %), or three or more (34.1 %) respectively. About one-fourth (24.3 %) of the respondents earned up to $20,000. More than one-third (35.0 %) reported incomes of $20,001–$40,000 per year, 26.0 % reported earnings of $40,001–$60,000, and 14.2 % earned $60,001–$80,000 in the previous year.

Savings in Relation to Self-efficacy, Gender, Age, Income, and Education

Table 2 presents the overall relationship between savings and SE with demographics. Of the 826 respondents, 26 %

reported spending more than their income in the prior year; 40.4 % stated their spending equaled their income, and 33.5 % indicated that they spent less than their income. Due to the exploratory and sensitive nature of some questions in this self-report study, we chose not to impute missing data in order to retain maximum sample sizes for contrasts with the variables of interest rather than reduce the sample to a smaller uniform sample size across all contrasts.

In a Chi square analysis, the three categories of saving (spending less than, equal to, or more than income) were compared to the three SE groups and the four demographic categories to determine whether there was an overall relationship between the independent variables and saving. As shown in Table 2, SE was positively related to savings ($\chi^2 = 14.79$, $p = .005$) with 42.4 % of the high SE group reporting saving, followed by 35.6 % of the medium SE group, while only 23.5 % of the low SE group reported saving in the previous year.

Chi square analysis revealed no significant difference in savings behavior between the genders ($\chi^2 = .53$, $p = .77$) or among the three levels of education ($\chi^2 = 4.55$, $p = .34$) or with household size ($\chi^2 = 5.20$, $p = .27$). However, savings differed significantly based on age ($\chi^2 = 17.37$, $p = .002$). Consistent with life cycle theory, 40.9 % of respondents 55–66 indicated they saved, while about half (48.9 %) of the youngest respondents spent all their disposable income. The middle age group (35–54) was most evenly spread among the three saving categories.

In a Chi square analysis, the three categories of saving (spending less than, equal to, or more than income) were compared to the four income categories to determine whether there was an overall relationship between income and saving ($\chi^2 = 21.99$, $p = .005$). The $40,001 - $60,000 income group had the highest percentage of savers (40.9 %). The highest income group had the largest percentage (29.1 %) of non-savers where spending exceeded income, followed by the lowest income group (27.4 %).

Savings Model

The model selection process involved examining the association of savings with self-efficacy and demographic measures in a bivariate analysis discussed earlier. Significant terms formed the factors of interest in the model. Correlations of all independent variables were also tested and revealed no severe problems with multicollinearity among the variables, with weak to moderate correlations found. Multicollinearity was tested during the variable selection process through pairwise correlation analysis using Pearson's R for continuous variables and a biserial correlation when one variable was binary and one continuous. Multicollinearity was also checked during the model

Table 2 Saving in relation to self-efficacy, gender, age, education, and income (n = 826)

	Spending exceeds income		Spending equals income		Savers (spend less than income)	
Overall	N = 215	26.0 %	N = 334	40.4 %	N = 277	33.5 %
Self-efficacy score						
Low (24–52) (1st quartile)	44	28.8	73	47.7	36	23.5
Medium (53–70) (2nd and 3rd quartile)	84	27.9	110	36.5	107	35.6
High (71–85) (4th quartile)	35	20.6	63	37.1	72	42.4
Chi square	$\chi^2 = 14.79$, $p = .005$					
Gender						
Male	105	24.9	173	41.1	143	34.0
Female	110	27.2	161	39.8	134	33.1
Chi square	$\chi^2 = .53$, $p = .77$					
Age (years)						
<35	64	22.9	137	48.9	79	28.2
35–54	84	29.1	112	38.8	93	32.2
55–66	67	26.1	85	33.1	105	40.9
Chi square	$\chi^2 = 17.37$, $p = .002$					
Level of education						
High school or less	33	25.6	53	41.1	43	33.3
Some college	68	30.4	87	38.8	69	30.8
College degree	24	20.5	56	47.9	37	31.6
Chi square	$\chi^2 = 4.55$, $p = .34$					
Household size						
One	63	26.7	83	35.2	90	38.1
Two	81	26.2	118	38.5	107	35.0
Three plus	32	26.0	57	46.3	34	27.7
Chi square	$\chi^2 = 5.20$, $p = .27$					
Gross income						
$0–$20,000	55	27.4	100	49.8	46	22.9
$20,001–$40,000	72	24.9	121	41.9	96	33.2
$40,001–$60,000	52	24.2	75	34.9	88	40.9
$60,001–$80,000	34	29.1	37	31.6	46	36.3
Chi square	$\chi^2 = 21.99$, $p = .005$					

Missing data results in a reduced sample size for some contrasts

building process using the variance inflation factor, which assesses how much the variance of an estimated regression coefficient increases if the predictor variables are correlated. Additionally, possible interactions of SE with demographics of interest were assessed and indicated no significant interactions with the exception of SE with income, which was included in the models as a control variable.

Logistic regression was then used to test the selected model of independent variables shown to be related to savings in the bivariate analysis (SE, age, income), while controlling for possible effects of education, gender, household size, and the interaction of SE and income. Although the dependent variable of savings behavior was measured using three categories (spending more than income, spending equals income, and spending less than income), the category "spending less than income" was

used as the predicted outcome in the model as a measure of saving, the goal of this analysis. Spending less than one's income (i.e., saving) was modeled against the other categories (i.e., not saving), evaluating the variability associated with SE, age, and income in a forward selection stepwise model. Post-hoc contrasts of the sub-group odds ratios were performed to provide further insight into SE, age, and income differences. Logistic regression was performed using generalized estimated equations (GEE) in order to handle appropriately the correlated outcomes between husbands and wives. GEE is a form of logistic regression for correlated outcomes but it does not provide a pseudo R-squared. The initial sample N is reduced in the models as we chose not to impute subjects who did not respond to all the questions.

The first model examined the impact of SE on saving. The low SE group was significantly different from the high

Table 3 Logistic regression model for characteristics associated with saving initial $N = 826$

	Saving (spending less than income)		
	Model 1 OR (95 % CI) $n = 624$	Model 2 OR (95 % CI) $n = 624$	Model 3 OR (95 % CI) $n = 361$
Self-efficacy			
Low	.5308* (.3524–.7996)	.5855* (.3856–.8890)	.5991* (.3928–.9138)
Medium	.8687 (.6111–1.2349)	.8793 (.6173–1.2525)	.8549 (.5991–1.2199)
High	1.0	1.0	1.0
Age (years)			
18–34		.6184* (.4282–.8932)	.6219* (.4292–.9012)
35–54		.8229 (.5758–1.1760)	.8843 (.6154–1.2708)
55–66		1.0	1.0
Gross income			
$0–$20,000			.4471* (.2725–.7336)
$20,001–$40,000			.6365 (.4001–1.0126)
$40,001–$60,000			.8336 (.5139–1.3523)
$60,001–$80,000			1.0

Significant odds ratio indicated by * $p < .05$. Due to exploratory nature of this study no adjustment was made for multiple comparisons. The initial $N = 826$ but varies with each model due to missing data

(referent) SE group. Low SE respondents were only 53 % as likely to save as the high SE group.

When the effect of age was added in the second model the SE patterns in the prior model were maintained. The low SE group was significantly different from the high SE group, being only 59 % as likely to save as the high SE respondents. As shown in Table 3, respondents under 35 were only 62 % as likely to save as the 55–66 respondents.

The third model added the effect of income. The lowest income category (up to $20,000) was only 45 % as likely to save as the highest income earners ($60,001–$80,000). When adjusted for age and income, respondents in the lowest SE category were only 60 % as likely to have saved in the past year compared to the highest SE group. In this final model the low and high SE groups continued to be significantly different and the youngest age category remained significantly less likely to save compared to the oldest respondents.

Characteristics within this sample associated with saving were high SE, being 55–66, and having an income between $60,001 and $80,000 per year ($80,000 was the maximum income for inclusion in the study). Specifically, in model three, this is evidenced by a significant comparison where respondents with low SE were only 60 % (OR = .5991) as likely to save as those with high SE. Also, in terms of age, the youngest members were only 62 % as likely to save (OR = .6219) compared to their older counterparts. Finally, in comparing different income groups, significant differences were found between respondents with the lowest gross incomes ($0–$20,000)

and those with the highest incomes ($60,001–80,000). Respondents with the lowest income were only 45 % (OR = .4471) as likely to save as respondents with the highest incomes.

Discussion and Implications

The data were collected in December 2010 when the country was suffering from a widespread housing fore-closure crisis, high unemployment, and the hangover from the worst recession since the Great Depression. Thus it is not surprising that 26.0 % of these middle and low income respondents spent more than they earned in the previous year. Due to the exploratory nature of this study, the results should be considered with caution. Because SE is domain specific (Bandura 2010), additional research is needed using a measure of financial SE rather than general SE. At the time of data collection, there was no reliable and valid financial SE scale. There is likely to be a reciprocal relationship between SE and savings; persons with high SE may be more likely to save and those who are successful at saving are likely to score higher on SE. However, without longitudinal data, no causality can be assumed, but the relationship merits future exploration.

Surprisingly, neither education nor gender was related to SE and savings. While the results are not shown, extensive preliminary and additional analyses were conducted to test individual and household characteristics such as household size, age, gender, education, and income as well as the

possibility of interactions with SE, but no significant association was revealed.[1] Because these findings are not consistent with prior research (Ando and Modigliani 1963; Chang et al. 1997; Fisher, 2010) the lack of relationship of these factors warrants further exploration in future savings research. Additionally, future research should include a measure of financial literacy because of the possible link between financial knowledge and financial management (Sherraden et al. 2011). While Heckman and Grable (2011) reported a link between financial SE and financial literacy, they used a single item SE measure, and their sample was small and limited to college students. Considering the economic fallout from the global financial crisis prior to when the data were collected in December 2010, it is not surprising that about one-fourth of respondents did not save in the previous year. Further, it is important to remember that this study focused on middle and low income households; the highest income group earns just barely above median household income for the US.

Although the percentage of respondents who saved during the prior year increased with age, since this is a cross sectional study, it is not clear if this is a cohort effect or the general result of improved savings with lifetime experience. Not surprisingly, respondents were more likely to save as their income increased, at least up to the middle income category. The two highest income categories, $40,001 to 60,000 and $60,001 to 80,000, were most likely to save, with about 40 % of respondents spending less than they earned. Results indicated that the lowest income group (under $20,000) was very different from the higher income groups, which is expected in a study of savings behavior. Most households earning under $20,000 are officially considered poor and thus likely to spend most of their income. Yet research (Han and Sherraden 2009; Hogarth and Anguelov 2003; Sherraden 2013) has demonstrated that the poor are capable of saving. Factors such as expectations, motivation, access to resources, among other factors, were related with increased saving by low income households.

The present study finds a relationship between general SE and savings behavior, suggesting avenues for additional research. Clearly, there is a need for a valid and reliable financial SE scale to focus on the specific domain of financial management. Perhaps the impact of financial SE will be stronger in relation to savings than the general SE scale used in this study. One of the limitations of the study is that only one question was used to categorize

respondents as savers or non-savers; future studies should use more than one measure to accurately assess savings behavior, including measures beyond self-report. Another limitation was having only the past year's spending compared to income as a means to categorize respondents as savers. Missing data from failure to respond to every question was also a problem. Due to the high unemployment and financial turmoil in the economy at the time of data collection, people who normally save may have ended up in the non-saver category due to a pay cut or unemployment. The global financial crisis could have influenced feelings of SE due to the pervasive economic gloom gripping the nation and the world at this unusual point in history. Even people who did not lose their jobs or their homes likely suffered from a feeling of helplessness as the world's financial markets were reeling and all the economic news was negative. Missing data on race and education were a problem as well. Yet the results do provide a good indication of the relationship between savings and SE for these middle and low income respondents. The current study did not include all socio-demographic variables in the regression model as this was an exploratory study with missing variables. However, additional bivariate and multiple regression results did not find any significant relationship between various demographic characteristics such as household size, age, gender, education, and income with SE. Future studies should include these variables. The small sample size and missing values limit more extensive analyses to control the issue of endogeniety that may arise from control variables in the full regression model.

The study has strengths as well as limitations. As described by Hayhoe and Gutter (2012), this sample of middle and low income Americans is a robust counterpart to the widely used Survey of Consumer Finances (SCF), which oversamples higher income respondents. During the worst recession since the Great Depression, the current economic problems have been especially harsh for low and middle income Americans. This financial demographic is and should be the focus for most financial educators and counselors. Heavy reliance on the SCF for research on financial management may focus too much on upper income and wealthy Americans when the low and middle income groups are most in need of attention to their circumstances. Due to the relationship between SE and savings behavior, the results of this study suggest the need to develop and incorporate strategies, exercises, and activities that enhance SE to supplement financial education, in a manner similar to health and wellness practitioners. In the 21st century financial educators are recognizing the potentially powerful impact of psychological and behavioral variables on financial behavior. Financial educators need to incorporate activities and strategies in their programs that facilitate exploration of these non-financial

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[1] Regression models including all independent variables of household size, age, gender, education, and income were tested to control for the effects. There was no significant difference found in the association between self-efficacy and savings. However, the total number in the analysis dropped from n = 826 to 273. Results are available upon request.

components of behavior and decision-making. The results of this study revealed a relationship between SE and savings, suggesting a need for additional research with middle and low income households.

In sum, in addition to providing evidence of the life cycle theory of savings, the results of this exploratory study suggest that SE is a relevant variable when it comes to saving. Just as Mandell and Klein (2007) documented that motivation matters in financial education and behavior of teens, SE is another important component of the financial capability equation. With the low savings rate in America, it is critical to help low and middle income families establish and maintain emergency savings funds and invest to achieve goals and financial security in old age. Thus, educators and counselors should incorporate activities, exercises, and financial video games (Maynard et al. 2012) to help students and clients acknowledge their feelings of SE and to enhance SE. Opportunities for future research on financial SE abound, beginning with the development of a valid and reliable instrument.

Lack of access to financial services or opportunities to save are barriers to asset building for middle and low income households. Financial capability initiatives incorporate financial education and access to financial products and services so that people can transform their knowledge into behavior change (Sherraden 2013). Enhancing financial capability could improve financial SE of middle and low income families (Sanders et al. 2007) and enhance their savings behavior.

Appendix

General Self-efficacy Scale (Sherer et al. 1982)

1 = strongly disagree;   2 = disagree,   3 = mixed, 4 = agree, 5 = strongly agree

(1) One of my problems is that I am not motivated to do work when I should.
(2) I give up on things before completing them.
(3) When trying to learn something new, I soon give up if I am not initially successful.
(4) Failure just makes me try harder.
(5) If I can't do a job the first time, I keep trying until I can.
(6) When I set important goals for myself, I rarely achieve them.
(7) I avoid facing difficulties.
(8) I am a self-reliant person.
(9) I do not seem capable of dealing with most problems that come up in life.
(10) When I decide to do something, I go right to work on it.

(11) When I make plans, I am certain I can make them work.
(12) When unexpected problems occur, I don't handle them well.
(13) I avoid trying to learn new things when they look too difficult for me.
(14) If something looks too complicated, I will not even bother to try it.
(15) I feel insecure about my ability to do things.
(16) When I have something unpleasant to do, I stick to it until I finish.
(17) I give up easily.

Reverse scored items: 1, 2, 3, 6, 7, 9, 12–15, 17

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