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ORIGINAL PAPER

Financial Capability in Children: Effects of Participation in a School-Based Financial Education and Savings Program

Margaret Sherrard Sherraden · Lissa Johnson · Baorong Guo · William Elliott III

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Abstract A groundswell of interest in young people's ability to understand and handle financial decisions has generated keen interest in financial knowledge and effectiveness of financial education. This study examines an innovative four-year school-based financial education and savings program, called "I Can Save" (ICS). Using a quasi-experimental design, the study examines quantitative and qualitative data to analyze program effects on financial knowledge. Elementary school children who participated in ICS scored significantly higher on a financial literacy test taken in fourth grade than comparison group students in the same school, regardless of parent education and income. Results suggest that young children increase financial capability when they have access to financial education and it is accompanied by participation in meaningful financial services.

M. S. Sherraden (✉) · B. Guo
University of Missouri-St. Louis, One University Boulevard, St. Louis, MO 63121, USA
e-mail: sherraden@umsl.edu

B. Guo
e-mail: guob@umsl.edu

M. S. Sherraden · L. Johnson
Center for Social Development, Washington University, One Brookings Drive, Campus Box 1196, St. Louis, MO 63130, USA
e-mail: ejohnson@wustl.edu

W. Elliott III
School of Social Work, University of Pittsburgh, 4200 Fifth Avenue, 2226 Cathedral of Learning, Pittsburgh, PA 15260, USA
e-mail: wie1@pitt.edu

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Fueled by rising consumption among children and youth and changing perspectives on the economic lives of children, there has been a groundswell of interest in financial education aimed at young people (Greenspan 2005; U.S. Department of Treasury 2009a).[1] Childhood is no longer considered a period of life shielded from the worlds of finance and economics (Webley et al. 2001, p. 22; VanFossen 2003). Furthermore, as parents mediate fewer spending decisions, experts contend that it is becoming more important for children to understand how to make financial decisions (Lucey and Cooter 2008; Lunt 1996; Lunt and Furnham 1996; Suiter and Meszaros 2005). The current economic crisis has further intensified appeals for financial education, as the complexities—and perils—of modern financial life have come into full view. Educators propose that financial education will help prepare young people to make sound financial decisions in an increasingly complex economic environment (Lucey and Giannangelo 2006; McNeal 1987).

Federal and state policy makers have responded. At the federal level, the Office of Financial Education, National Financial Literacy and Education Commission, and the President's Advisory Council on Financial Literacy are charting a national strategy promoting financial literacy and education (U.S. Department of the Treasury 2002, 2006, 2009a). In 2009, the Departments of Treasury and Education jointly launched an initiative to enhance

[1] There is also international interest (OECD 2005; WSBI 2009), but the focus of this paper is on the US.

financial capability among youth (U.S. Department of Treasury 2009b). At the state level, policy makers are requiring school districts to include curricula on financial education. Since 1998, for example, the number of states that require personal financial education standards in public schools have more than doubled in 10 years, from 14 in 1998 to 34 in 2009, and those that require a personal finance class to graduate from high school have increased from one to 13 states (Council for Economic Education 2009).

Most financial education curricula is aimed at high school and college students, although a growing chorus of experts recommends education should begin as early as pre- or primary school (Cohen and Xiao 1992; Godsted and McCormick 2006; Holden et al. 2009; Suiter and Meszaros 2005). This paper examines one example of an elementary school-based financial education and savings program for young children called "I Can Save". We begin with a review of scholarship on development of young children's financial understanding, effectiveness of financial education with young children, and experiential approaches to teaching financial concepts to young children. Following this, we present the study's hypotheses, program description, research methods, and findings. The paper concludes with a discussion of results and implications for policy and future research.

Development of Young Children's Financial Understanding

Children develop understanding of economic and financial concepts as they progress through successive developmental stages (Berti and Bombi 1988; de Clercq 2009; John 1999; Strauss 1952). Scholars suggest that although children's financial understanding is unsophisticated, they can understand various financial concepts at a very young age, perhaps as early as 4 years or younger (Harrah and Friedman 1990; Holden et al. 2009; Lau 1998; Roos et al. 2005). By elementary school age, children are able to grasp basic economic concepts such as scarcity, production, specialization, consumption, saving, distribution, demand/supply, business, money, and barter (Buckles and Freeman 1984; Chizmar and Halinski 1983; Davidson and Kilgore 1971; Hansen 1985; Holden et al. 2009; Kourilsky 1977; Laney 1989; Larkins and Shaver 1969; NASBE 2006; Sonuga-Barke and Webley 1993; Sosin et al. 1997; Watts and Walstad 2006). These concepts form the foundation of more complex understanding as children mature (Leiser 1983; Ward 1974).

Although stages of development influence children's grasp of financial concepts, socialization and exposure are also important factors. Financial socialization is a process in which children acquire and develop "values, attitudes, standards, norms, knowledge, and behaviors that contribute to [their] financial viability and well-being" (Schuchardt et al. 2009, p. 86; see also Ward 1974). A wide range of social and cultural influences—including family, peers, teachers, media, and culture—shape children's financial socialization (Beutler and Dickson 2008; Bodnar 2005; Furnham and Argyle 1998; McNeal 1987; Roland-Levy 1990).

Families, in particular, shape economic and financial socialization of young children (Clarke et al. 2005; Danes 1994; Kourilsky 1977; Rettig 1985; Rettig and Mortenson 1986), both directly and indirectly (Ward 1974; Moschis 1985; Schuchardt et al. 2009). Some research suggests that children whose parents provide opportunities to learn about money have more understanding of money than children whose parents do not (Marshall and Magruder 1960). In a comprehensive review of financial socialization in families, Rettig and Mortenson (1986) find evidence that children learn from observation, instruction, and practice, although they note a need for longitudinal and experimental studies.

Children also develop financial and economic understanding when they have "personal economic experiences" (Schug and Birkey 1985, p. 41). For example, sources and amounts of money that children control influence their learning (Doss et al. 1995; Furnham 1999; Meeks 1998). However, social context also shapes economic beliefs, attitudes, and values, leading to different levels of knowledge and financial behavior (Bowman 2010; Leiser and Ganin 1996). Households where the family head is younger and minority and has lower wealth and less education, for example, are less likely to have transaction accounts, suggesting that children living in these households have lower exposure to financial services (Bucks et al. 2006; Hogarth and Anguelov 2005; FDIC 2009). Cross-cultural research in various countries suggests that children who participate in economic life and receive more education are knowledgeable about economic concepts at an earlier age (Furnham and Argyle 1998; Holden et al. 2009; Roland-Levy 1990).

Effectiveness of Financial Education

Evidence on financial socialization suggests that financial education may enhance young children's economic and financial understanding. In study conducted in the 1960 s, first graders participating in an economics curriculum learned economic concepts and performed significantly better on economics tests than students who did not participate in the curriculum (Larkins and Shaver 1969; Senesh 1964).[2] Marilyn Kourilsky's influential 1977 study

[2] Because there is relatively little evidence about the effectiveness of financial education curricula with young children, we also include some studies that address economics curricula in this section.

finds that five and six year olds in four classrooms who participated in *Kinder-Economy*, shows significantly greater mastery in a post-assessment of basic economic concepts, compared to students in four control classrooms (Kourilsky 1977). Another study finds that test scores of children in classrooms with teachers trained in using an economics video had higher scores than other children (Morgan 1991).

A more recent study of 25 third graders who received 20 hours of financial education, finds that the children learned and retained key concepts about banking significantly more than the 33 study controls (Berti and Monaci 1998). Positive results using a pre-post design persisted in a second post-test administered 4 months later (Berti and Monaci 1998). Another study with third graders, also using a pre-post test design, finds a positive impact on the 15 treatment children's financial literacy from reading storybooks about money compared to 16 controls (Grody et al. 2008). A pre-post study with over 300s and third grade children participating in *Money Savvy Kids*™, taught by classroom teachers trained to use the curriculum, finds positive results. Each child received a piggy bank with four slots (for saving, spending, investing, and donating) and eight financial lessons. Analysis of pre- and post-tests shows statistically significant improvements in knowledge and attitudes (Schug and Hagedorn 2005).

Three other studies focus on slightly older children. One recent study tested the *Financial Fitness for Life* (FFFL) curriculum with students in elementary, middle, and high school in Eastern Kentucky. After one year, using a pre-post test design, students in all grade levels increased financial knowledge (Harter and Harter 2007). When compared to students in comparable control groups for middle and high school grades,[3] results show a significant increase for those receiving the FFFL curriculum (Harter and Harter 2007). Junior Achievement's *Economics for Success* program, which also uses a pre-post design, show significant improvement in attitudes, knowledge, and confidence about personal finance among 300 middle school students in five states (Diem et al. n.d.).

In sum, children appear to gain financial knowledge and confidence in their ability to make financial decisions after they participate in classroom-based financial education curricula. Despite promising results, there is too little research to draw conclusions about the effectiveness of financial education programs (Fox and Bartholomae 2008). As scholars point out, studies, like the ones described above, tend to be descriptive case studies or pre-post test studies with small, non-representative and self-selected samples, non-standardized measures, and self-reported data, and many are of relatively short duration (Hathaway and Khatiwada 2008; Holden et al. 2009; Lucey 2005; Ward 1974). A recent convening of experts in the field also points out that too few studies examine effectiveness of financial education in low-income and ethnically diverse populations (Schuchardt et al. 2009). In short, despite promising findings, we still know relatively little about the effectiveness of financial education with young children.

Experiential Learning: Developing Financial Capability

Another limitation of existing studies of financial education is that they focus on changes in knowledge and attitudes, but do not assess children's ability to put new knowledge to work. Financial educators and scholars have learned that people, especially young children, are more excited by and may learn more when financial education lessons are experiential, include discovery, take advantage of teachable moments, and adjust teaching techniques for diverse groups and learning styles (Fox and Bartholomae 1999; Fry et al. 2008; Hilgert et al. 2003; Kourilsky 1977; Kourilsky and Carlson 1996; Laney 1989; Lopez-Fernandini and Murrell 2008; Lucey and Giannangelo 2006; Varcoe et al. 2002). Financial education that demonstrates relevance to students may be more effective in motivating learning and improving retention (Mandell and Klein 2007; Russell et al. 2006). It is possible, therefore, that when children have an opportunity to apply what they are learning in a real world setting they would learn more.

Participation in meaningful financial services may be a particularly effective form of experiential education. Giving students access to financial services alongside financial education may help students develop "financial capability", or the ability to act in their best financial interest (Johnson and Sherraden 2007). Education and access to meaningful financial services may give young people more motivation to learn and, as a result, may lead to a better understanding of personal finance and decision-making.[4] Financial capability not only requires knowledge, but also the ability and opportunity to act on that knowledge (Johnson and Sherraden 2007). As Lucey and Giannangelo suggest, students should be offered "both the practice and the hope necessary for success" (2006, p. 271). In other words, when young people make a tangible connection between financial education and participation in financial services they may learn and retain more (Baker and Dylla 2007; Beutler and Dickson 2008; Grody et al. 2008;

[3] Students in the control group received other financial education in the general curriculum.

[4] This is different than other uses of the term "financial capability". For example, de Clercq defines teaching financial capability as "primarily about developing appropriate attitudes towards money, as well as skills and confidence to use them, instead of learning about financial products and services" (2009, p. 4).

Johnson and Sherraden 2007; Webley et al. 2001). The idea of financial capability builds on the idea that children's social and economic environment helps to shape economic beliefs, attitudes, and values, as well as knowledge and behavior (Leiser and Ganin 1996). From the elementary to high school level, a growing number of school banking programs, many in collaboration with local credit unions, reflect the idea that if children have an account, they will learn and retain more financial knowledge and skills (Credit Union National Association 2009).

Although seriously understudied among young children, there is some evidence suggesting that inclusion in financial services may contribute to financial knowledge and positive financial behaviors among older youth. A large sample of college alumni finds that experience owning bank accounts and investment assets are associated with higher investment knowledge and rates of saving (Peng et al. 2007). Mandell finds evidence of a link between owning a savings account and higher (but not "passing") financial literacy scores, but does not find a link between students who own stocks in their own names or own credit cards (2008). Scanlon et al. (2009) find that high school students in a youth savings program believed that financial education and using a savings account "would help them become adults who know how to manage money and credit more effectively" (p. 682). Connections to financial services professionals also may reduce negative financial behaviors (Bowditch 2005). Nonetheless, Marshall and Magruder (1960) find that not all kinds of experience may have the same results. For example, children who grow up in families that encourage experience in spending and saving appear to have more effect on financial knowledge and skills than opportunities to earn money at home or a regular allowance (1960).

In sum, there is evidence that young children can learn economic and financial concepts as early as primary school, possibly before. Although the family is the principal influence in early financial socialization, children can and do learn financial concepts from instruction, including financial education in school. However, scholarship is not conclusive. Furthermore, we know less about younger children, especially children from low-income and ethnically diverse households. Finally, there is some evidence that experiential learning methods work with young children, but there is not adequate evidence to conclude that combining financial education and financial services significantly improves effectiveness of financial education and that it improves children's financial capability.

This paper aims to help fill the gap in research on children and financial capability, exploring possible links among financial education, financial participation, and financial knowledge in an elementary school-based financial education and savings demonstration called "I Can Save." Based on a review of the scholarly work on financial education, and using a quasi-experimental design, this study tests two hypotheses: (1) Young children participating in a financial education curriculum will gain more financial knowledge and understanding than young children who are not participating in a financial education program; (2) Children who are in a program with financial education and a savings account will learn more than those children without a program savings account.

Study Design and Research Methods

Program Selection

This paper is based on research conducted on the "I Can Save" (ICS) program (2003–2007). ICS was created to explore the effects of matched savings and financial education on elementary school students. It was an initiative of a university–community partnership, consisting of a public school district, a non-profit organization, and several other organizations (Sherraden et al. 2007). ICS took place in an Midwestern urban elementary school that serves a predominantly African American (85% in 2005) student body of mixed incomes (over half of students qualified for free and reduced lunch in 2005) (Missouri DESE 2010). In fall 2003, all 75 students in kindergarten and first grade were invited to join ICS, and 74 enrolled. Children in ICS received financial education, a savings account, and incentives for saving, including a $500 "seed" deposit and a one-to-one savings match for all deposits into the account up to a total of $1,500.

Financial education for ICS children included classroom-based curricula and a once-a-week voluntary afterschool "I Can Save" Club during the academic year. The goals for financial education were to (a) increase knowledge of basic financial and economic principles; (b) learn how to earn, manage, and save money; and (c) build aspirations and expectations for post-secondary education and training. In-school financial education included one half-hour lesson per week from *Financial Fitness for Life*® or *Wise Pockets World*® (Center for Entrepreneurship and Economic Education 2005). In year 1, classroom teachers handled all classroom financial education lessons. Teachers received one day of training by staff of the Center for Entrepreneurship and Economic Education at the University of Missouri—St. Louis, and ongoing support by ICS staff. In subsequent years, however, as children advanced to higher grades, teachers preferred not to teach financial concepts (except material in the regular elementary curriculum), and responsibility for financial lessons shifted to ICS staff. By year 4, ICS staff conducted all in-class sessions.

Table 1 ICS after school club participation

Academic year	Grade levels	Club curriculum sessions					Club participation	
		Total number of sessions	Money management	Income	Savings and investment	Spending	Number of participants	Number of participants who moved (cumulative)
2003–2004	K-1	15	1	7.5	4.5	2	37	–
2004–2005	1–2	27	0	14	9	4	46	4
2005–2006	2–3	28	9	5.5	4.5	9	38	9
2006–2007	3–4	28	4	3	14.5	6.5	24	21
2007–2008[a]	4–5	9	1	0	6	2	22	32
Total (%)		107	15 (14%)	30 (28%)	38.5 (36%)	23.5 (22%)		

[a] Number of students who participated in ICS through the first semester of school in this academic year. The program ended in December 2007

Source Authors' calculations based on ICS program data (October 2007)

ICS Club met for 1 h after school most weeks throughout the 4 years. Club activities included games, refreshments, and, beginning in year 2, monthly field trips to deposit savings in the bank. Children received one dollar for attending each weekly ICS Club session. Over time, participation in ICS Club declined as some children chose to participate in other after-school activities and many children (p. 32) moved out of the school (Table 1).

Table 1 shows the total number of ICS Club sessions by topic across the four academic years. Two sets of FFFL curricula (grades K-2 and 3–5) have four thematic lessons each, including money management (13% of curriculum), income (19%), saving (19%), spending and credit (48%) (Hopkins et al. 2001; Suiter 2001).[5] ICS Club deviated from these percentages with fewer sessions on spending and credit and more on savings.

ICS also offered financial education workshops for parents, on topics such as financial values and goals, budgeting, spending, debt, credit, advocacy, taxes, and college savings. A total of 20 workshops were offered to parents over 4 years. In total, 48 parents participated in at least one of these sessions and 44 participated in more than one. Of those participating, parents attended an average of five sessions. In addition, 11 parents accompanied the children to the bank during ICS Club over the 4 years of the program. For participating in financial workshops and research surveys, ICS deposited $25 (which was matched) into their child's account.

Research Methodology

The study uses a quasi-experimental design, with a *treatment group* of students in ICS who were in kindergarten and first grade in a public elementary school in the 2003–2004 school year ($n = 72$), and a *comparison group* of students in the second and third grade at the same school in the same year ($n = 23$). Children who transferred into ICS classrooms after the 2004–2005 academic year were not invited to participate in ICS. After this time, therefore, there were increasing numbers of *non-study* children in the ICS cohorts. In addition, children transferred out of the school. By 2007, when the program ended, only 38 children in ICS remained from both the third and fourth grades. The non-study group, whose who were not part of either the treatment or comparison groups, had grown to 55.

The treatment group received in-class financial education curricula. They were also invited to participate in the weekly one-hour after-school ICS Club and they received a savings account with incentives. Students in the comparison group did not receive in-class financial education, nor did they participate in ICS Club or have an ICS savings account.

Baseline information on treatment and comparison groups reveals that the two groups are similar in children's age and parents' characteristics, such as age, race, and education and income. They differ, however, on marital status, race, and gender. The treatment group has more female and African American students; parents of comparison children are more likely to be single mothers. As the program developed, there were no other observed differences between the two groups except the ICS program.

Data Collection

The study uses several methods for data collection, including a test of financial knowledge, in-depth interviews with children, teacher focus groups, and ICS program data.[6] The Human Subjects Committees of both the University of Missouri-St. Louis and Washington University reviewed and approved the research design and instruments.

[5] Percentages are based on total number of lessons in the K-2 and 3–5 curricula because ICS used both.

[6] In addition, we used two variables from a survey conducted with parents: parent education and family income. These variables are used in the analysis of the financial test.

Financial Knowledge Test

Researchers administered the nationally normed test of the FFFL curriculum (Upper Elementary version) during the school day with assistance from classroom teachers (NCEE 2004; Walstad and Rebeck 2005). Students were in their final 2 months of fourth grade (2005–2008). The 40-min test consists of four 10-min sections of 10 questions each. It is scored by number of correct answers (raw score) and by percentile of correct answers. In total, 108 children in fourth grade took the FFFL test. This number includes three different groups: (1) ICS students in the treatment group ($n = 35$), (2) students in the comparison group ($n = 18$), and (3) students not in the study ($n = 55$). The children in the study are generally representative of the school's demographic profile. The majority of children are African American (79%), average parent educational attainment level is 11th grade, and 35% of families reported income at or below $25,000 (see Table 3).

We use quantitative and qualitative data to assess effectiveness of financial education in improving children's financial knowledge. First, we compare financial fitness scores (FFFL) across all three groups using the Kruskal–Wallis non-parametric test (given the small sample size),[7] then we compare the treatment group with the comparison group using *t*-test. We expect the treatment group to have the highest FFFL score on average, compared to the comparison and non-study groups. Second, we compare FFFL scores by children's demographics (such as race and gender) and family characteristics (parent income and education) to see if these factors play a role in children's FFFL scores. Third, Pearson Correlation tests on the treatment group assess children's FFFL scores in relation to their ICS Club attendance records, academic test results, and savings. We expect a correlation between FFFL scores and these factors.

In-Depth Interviews with Children

We conducted 49 in-depth interviews with children in ICS (in second grade and again in fourth grade) to understand their experiences and perceptions about ICS, and to explore their perspectives about what and how they learned. Recognizing that young children are susceptible to socially desirable responses (Woolley et al. 2004), and do not make abstract connections in the same ways that older children do, interviews began with a broad question. If children had difficulty responding, the interviewer asked follow up questions aimed at helping them articulate their views. Interviews were digitally recorded and transcribed. A team of researchers (authors of this paper) coded the interviews using qualitative software (ATLAS.ti). Beginning with a short code list derived from study questions and propositions, we added to and altered the code list until all researchers assigned the same main concepts in each interview. Thereafter, two researchers coded each interview, ensuring agreement on conceptual categories. In order to interpret accurately, we found it necessary to code with broader concepts and larger segments than with adult interviews. From the coded segments, we extracted themes about how children think about the key issues, which are reflected in children's quotes reported below.

Focus Groups with Teachers

A total of four focus group with teachers of students in the ICS program (one at the end of each school year) were held with 15 teachers over the 4 years.[8] Focus groups included discussion of teachers' understanding and perceptions about ICS and its goals, observations about parent and child understanding and involvement in the program, perceptions about program effects, and finally, suggestions for improvements. Two researchers coded the digitally recorded and transcribed focus group discussions using qualitative software, ATLAS.ti. Beginning with an initial code list based on study questions, propositions, and notes from the focus group, we added codes to cover issues addressed by teachers. From the coded segments, we extracted the themes and quotes discussed in this paper.

Results

Between Group Analysis

The mean of correct answers on the FFFL test across all groups is 52.2%. Results from the Kruskal–Wallis non-parametric test show significant group differences in FFFL scores ($\chi^2 = 13.16$, $p = 0.001$). Those participating in ICS (60.4%) scored significantly higher than the comparison group (49.9%) ($p < 0.05$), although the effect size is small (Cohen's $d = 0.13$). Those not involved in the study had an average score of 47.8%. Taking a closer look at differences between ICS participants and the other two groups, Table 2 shows that the treatment group scored highest on all topics. Further, *t*-tests with equal variance shows that the treatment group scored significantly higher on income questions than the comparison group ($p < 0.05$). This is consistent with results from the normed FFFL test, which found that

[7] Given the small sample size, it is possible that one or more of the assumptions for ANOVA cannot be satisfied. Therefore, we use the Kruskal–Wallis test, a nonparametric method for group comparisons.

[8] This includes a total of 12 teachers, one of whom participated all 4 years. Average participation was four teachers per focus group.

Table 2 Financial fitness for life test scores

Variable	I Can Save				Test sample ($n = 815$)[a]	
	Total ($n = 108$)	Treatment group ($n = 35$)	Comparison group ($n = 18$)	Non-study group ($n = 55$)	FFFL-normed ($n = 498$)	Without FFFL-normed ($n = 317$)
FFFL total score (raw, percentage)[b]	20.25 (52.2)	24.14 (60.4)	19.94 (49.9)	19.13 (47.8)	24.43	17.26
Income (raw)[b]	6.28	7.54	5.72	5.65	6.78	4.62
Money management (raw)[c]	6.20	7.14	5.89	5.71	5.17	3.98
Spending and credit (raw)	4.47	5.17	4.44	4.04	5.97	3.95
Saving and investing (raw)	3.30	4.29	3.89	3.73	6.50	4.72

[a] This sample is reported in FFFL: Upper Elementary Test Examiner's Manual (2005), which is the first to study the FFFL Test. *Note* It is unknown the extent to which this sample is comparable to the *I Can Save* sample

[b] Indicates the difference between the treatment and the comparison group at the 0.05 level

[c] Indicates the difference between the treatment and the comparison group at the 0.11 level

income questions reflected the greatest difference in scores between those with and without FFFL (Walstad and Rebeck 2005, p. 22).

There is no statistically significant difference between treatment and comparison groups on money management questions ($p = 0.11$). Finally, although we expected the treatment group would be statistically higher in saving scores given the extra time discussing saving in the ICS Club and ownership of an ICS savings account, they were not. This finding in particular requires further study.

Participant Characteristics and Financial Fitness Score

Differences between female and male students who took the test are not significant. Although African American children scored 12 percentage points lower than others, this is not a statistically significant difference ($p = 0.10$). As shown in Table 3, children of married parents performed significantly better than children of parents who were not married (divorced or never married) ($p = 0.02$). The FFFL scores are not correlated with parents' education ($p = 0.10$) and income ($p = 0.15$), which is different from previous research findings.

To decompose the effects of parent education and family income on child financial fitness scores, a contingency table compares the treatment and comparison groups. Regarding parent's education, the treatment group scored higher than the comparison group within each level (Table 4). We observe the same pattern with regard to income. In other words, even when taking into consideration parent's education and family income, the treatment group still scored higher than the comparison group.

In focus groups, teachers underscored the positive difference in the treatment group. They observed that students in the ICS Club overall have a larger economic vocabulary,

Table 3 Parent and child characteristics in second grade ($n = 53$)

Characteristic	Parent	Child	FFFL score (raw, percentage)
Age (mean, SD, years)	37.1 (7.9)	9.75 (0.46)	
Grade (%)			
Kindergarten		26.4	
First grade		73.6	
Gender (%)			
Male	10.4	43.4	23.7 (59.3)
Female	89.6	56.6	21.9 (54.8)
Race (%)[b]			
African American	75	79.6	21.7 (54.3)
Other	25	20.5	26.5 (66.3)
Marital status (%)[a]			
Married	40		25.6 (64)
Not married	60		20.9 (52.3)
Education (%)[b]			
High school and below	24		19.4 (48.5)
Some college	40		22.6 (56.5)
BA and above	36		25.3 (63.3)
Household income (%)[c]			
$25 K and below	34.7		21 (52.5)
Above $25 K	65.3		24.1 (60.3)
Group (%)			
Treatment		66	24.1 (60.3)
Comparison		34	19.9 (49.8)

This sample only includes children in the treatment and comparison groups who participated in the FFFL test

[a] Indicates the difference between the treatment and the comparison group at the 0.05 level

[b] Indicates the difference between the treatment and the comparison group at the 0.10 level

[c] Indicates the difference between the treatment and the comparison group at the 0.15 level

Table 4 Financial fitness for life test scores by parent's education and income

	Group	FFFL score (raw, percentage)
Education		
High school and below	Treatment	20.6 (51.6)
	Comparison	17.0 (42.5)
Some college	Treatment	23.5 (58.8)
	Comparison	21.4 (53.5)
BA and above	Treatment	26.6 (66.5)
	Comparison	21.0 (52.5)
Household income		
$25 K and below	Treatment	22.1 (55.3)
	Comparison	19.0 (47.5)
Above $25 K	Treatment	25.8 (64.5)
	Comparison	21.0 (52.5)

talk more about spending and saving, and appear to have more confidence in and ability to apply economic concepts, especially in their interactions with the bank. As a third-grade teacher observed:

> We did an economics unit and I saw them pulling in concepts we hadn't talked about in class.… There is a big gap between the kids who do the program and those who don't do the program…. The kids who are in "I Can Save" seem at ease with the vocabulary…. a much better understanding of balancing and adding and things like that…. My "I Can Save" kids are a lot more confident answering questions when we talk about money.

When we asked if children had previous experience with a savings account, the teachers agreed among themselves that most children would probably not have a savings account without ICS.

Within Group Analysis

To further examine factors that might be related to children's financial test performance, we closely examine the treatment group, with a focus on ICS Club participation, academic test results, and savings performance.

ICS Participation and Financial Fitness Score

The correlation between ICS Club participation (defined as number of sessions attended across 4 years) and FFFL test scores is not significant. Even among children with high participation in ICS Club (approximately three or more per month across 4 years), there is no significant difference in scores.

Academic Test Results and Financial Fitness Score

Children with higher academic test results may have better financial fitness scores because they have better reading and math skills. We test the correlations between financial fitness scores and academic achievement test results on the standardized Stanford Achievement Test Series (Pearson Education, Inc.) reading and math scores.[9] Results show that financial fitness scores are highly correlated with reading scores ($r = 0.73$, $p < 0.0001$) and math scores ($r = 0.74$, $p < 0.0001$).

Savings and Financial Fitness Score

Children with higher savings accumulations in their ICS accounts also have higher FFFL test scores ($r = 0.34$, $p = 0.05$). Even excluding all incentives deposited as a result of program participation, there is still a significant positive correlation between test scores and saving deposits. It is possible that saving help children improve their financial knowledge and financial test scores, or that more financial knowledge may have improved saving, or some other factors. These possibilities should be explored in future studies.

Children's Perceptions about "I Can Save"

According to interviews with ICS students in second and fourth grades,[10] there is some evidence that having a savings account motivated students to learn about financial matters. When researchers asked which ICS activities students liked best, second graders reported that their favorite activities were games (40%), followed by saving (28%), snacks (26%), and bank visits (11%).[11] By fourth grade, students said they liked saving the best (48%), followed by games (28%), snacks (24%), and bank visits (14%). A few mentioned other activities, such as learning about future jobs, winning prizes, and seeing friends.

Children described ICS as a program that included a range of personal financial and financial services topics. For example, fourth grader Akelia[12] recounted:

> [Our teacher] teaches about saving accounts, deposits, withdraw, money, budget. She teaches us all about what you're gonna need when you grow up,

[9] Stanford nine academic achievement tests were given in the school 2 months prior to administration of the financial fitness test.

[10] In second grade, 13 children had moved, five were unavailable, and three refused to participate in the research. By fourth grade, 32 had moved.

[11] Adds up to more than 100% because some students mentioned more than one "favorite activity".

[12] All names are pseudonyms.

like when you're gonna need money, to have responsibility. She teaches us everything like, ATM cards, checks, credit cards, and everything else. I can't remember them by heart, but I can think of some of them…and income and stuff. And it's like you're learning about the things when you're gonna grow up. So the people who go to ICS – the "I" part – they learn a little bit more.

Children perceived financial education and their savings accounts as learning about money. They reported that financial education lessons, ICS club activities, and bank visits were ways to learn important things about money that would help them in the future. Second grader Paul said his favorite part of ICS was "when we went to the bank and we counted the money and did all the activities". Another second grader, Amy, explained that ICS is about saving for college and the teachers "help you and they'll teach you about different jobs and how to save in different ways, 'cause saving, it really helped me, 'cause before ICS, I didn't really save at all. And so, that's why I'm glad, because now I'm full of money."

Students' comments about ICS suggest enthusiasm for learning financial concepts. In second grade, for example, Amy discussed program incentives to save and attend ICS Club: "Well, in 'I Can Save', we get money each day we come and that helps us. And each day we get a snack. And sometimes we go on field trips to the bank, 'cause to see how much that we just deposited into the bank." Jamal, another second grade student, explained, "We learn how to save, and not get tempted—like if you have some place that you know where your money is—not to take it out. So you can do other stuff not to take your money out of the bank."

Interviews also suggest that by fourth grade, students in ICS were making increasingly sophisticated connections between program activities and financial concepts. Although we cannot determine if the ICS program is responsible for students' learning, their remarks suggest it had an effect. For example, Shantelle, a fourth grade student, described the "three things about ICS" she liked best: "The first one is that they teached me how to save money. It teached me what a budget is. And I learned more things about money that I didn't know before." Other students' descriptions of ICS also suggest students' experiences in ICS were contributing to their learning financial concepts. For example, Chandra explained,

We would go to the bank once a month and then there's – We played a game where [our teacher] taught us about income and bounced checks…. She teaches us how to save and not spend our money that much when we have it. And she teaches us about income and interest, depositing in the bank.

Interviews also suggest that between second and fourth grades students improved their understanding of financial services. In second grade, for example, Carlos explained how his money was deposited in the bank, "They pass out the money…we put in our little piggy banks. And there's some kind of tube that goes from that library to the bank. So you put it in…it sucks it up…it goes right down to the bank." Others had similarly naïve observation about their accounts. Shantelle referred to her piggy bank as her bank account. Another second grader said that ICS is "all about opening money inside your account."

With several years of experience, however, students demonstrated a more sophisticated understanding of making savings deposits. Kim explained how they made bank deposits after walking a few blocks to the bank: "We just line up and when they say we can go, we go to the counter, and we put our money in the bank." She continued, "[ICS] teaches you different things about saving and spending and it also gives you a chance to save money for college….like doubling this certain amount of money you get from the bank." She likes "learning about different things about saving, so I can be a successful person when I grow up." "Filling out the checks [deposit slips]" was the most fun, according to fourth grader Mark. Another fourth grader, Cody, explained, "I give my deposit to the worker and they type something in the computer and it kind of takes a long time. Then they give me my receipt back." The interviewer asked "when you get the receipt back, what's on there?" and he replied, "Well, I think it's my balance."

Discussion

This study examines quantitative and qualitative data to analyze program effects on financial knowledge. Elementary school children who participated in ICS scored significantly higher on a financial literacy test taken in fourth grade compared to another group of students in the same school who did not participate in ICS, regardless of parent education and income. Results suggest that young children increase financial capability when they have access to financial education and a savings account.

A closer look at children's financial fitness scores reveals that the treatment group had higher scores regardless of parent education and income. Children's academic performance does not appear to be a confounding factor of program effects because the two groups are not significantly different from each other on Stanford reading and math scores in the fourth grade. All of this might suggest that the "I Can Save" program was successful in improving children's financial capability. However, there may be bias in sample selection and group assignment. As noted earlier, while the two groups are similar in some characteristics, the

baseline information reveals some group differences. It is not clear to what extent these differences affect study results.

Further analyses are not clear about which components of the ICS program explain higher scores, although within group analyses show that academic test results and higher savings are associated with higher test scores. This is in line with other research that suggests SES and socialization factors are key influences on financial knowledge and skills (Beutler and Dickson 2008; Lunt and Furnham 1996). Yet, we still know relatively little about which aspects of financial education and participation in financial services may help to explain children's motivation to learn, and their knowledge, skills, and financial behavior.

This study has several limitations. First, because the study sample is small, we cannot generalize results. As shown in the above, the effect size of the group difference is small, which is probably due to the small sample size in this study. Future research with larger randomized samples may improve effect size estimates. Second, the FFFL is only one measure of financial knowledge, which may not fully capture key financial concepts at the fourth grade level. Furthermore, the FFFL does not assess children's financial attitudes and behavior. Although there are qualitative indications that children's these changed as a result of the program, future studies should measure attitudinal and behavioral change. Third, the study follows children only from kindergarten through fourth grade. We do not know if these differences persisted past the fourth grade.

Turning to test results, there are at least three possible explanations for higher scores among ICS students. First, ICS children who participated in the ICS Club received more financial education than the other two groups. As prior research suggests, this may explain higher scores among those who received financial education (Berti and Monaci 1998; Grody et al. 2008; Harter and Harter 2007; Kourilsky 1977; Schug and Hagedorn 2005). Moreover, according to students, the lessons in ICS Club were more "fun" (experiential) than classroom lessons. Children expressed a clear preference for experiential learning and, as other studies also show, it may have increased learning and retention among ICS children (Laney 1989; Kourilsky 1977; Kourilsky and Carlson 1996). The findings suggest that even very young children enjoy and can learn economic and financial concepts if they are conveyed in an engaging manner.

Second, some parents of ICS students received financial education, and they may have encouraged and augmented their children's learning. In accord with theories of family socialization, parent knowledge and understanding could have significant influence on young children's financial knowledge (McNeal 1987; Moschis 1985; Schuchardt et al. 2009; Ward 1974). Although the number of parents who received financial education and total number of hours in workshops was low, the sample size is small enough that this could have made a difference. Most parents, including those who did not attend financial education workshops, were enthusiastic about ICS.[13] As one mother observed: "[ICS] didn't just bring [my daughter] in, it brought us as a family. It brought us as a team and taught us all things that we can use."

Third, as a possible reflection of the increased financial capability, qualitative evidence suggests that the children may have been especially motivated to learn because of the savings account and visits to the bank. Unlike most school-based financial education, which uses games and simulations, children in ICS had access to real financial services. They opened a savings account, visited the bank regularly, made savings deposits, and monitored their savings. The children talked about their interaction with the bank and the deposit process. They reminded their parents when it was "bank deposit day" so they would have something to deposit. Making their own deposits (instead of accompanying their parents on family business) may have increased children's self-efficacy and locus of control, thus increasing motivation and learning (Bandura 1997; Danes and Rettig 1993; Rotter 1966; Sumarwan and Hira 1993). Although we cannot determine the relative importance of various experiential activities, the savings accounts and visits to the bank may have made financial lessons especially relevant and memorable, and enhanced effectiveness of financial education.

This is the idea behind financial capability. In other words, children in ICS may have gained the *knowledge, skills, and confidence* to act (e.g., games, lessons), as well as the *opportunity* to act (e.g., savings account, bank visits) in their own financial interest (Johnson and Sherraden 2007). The combination—financial education and a savings account—may offer a significantly more powerful combination than education alone.

Conclusion

This study examines quantitative and qualitative data to analyze program effects on financial knowledge. Elementary school children who participated in ICS scored significantly higher on a financial literacy test taken in fourth grade compared to another group of students in the same school who did not participate in ICS, regardless of parent education and income. Results suggest that young children

[13] Qualitative and quantitative studies of IDAs have found generally positive attitudes toward matched savings programs among adults (Adams and Scanlon 2009; Han and Sherraden 2009; Sherraden et al. 2010).

increase financial capability when they have access to financial education and a savings account.

This study suggests the potential importance of financial capability in helping children gain a foothold in the economy through increased knowledge and direct participation in financial services. Primary school children participating in a financial education and college savings account program scored significantly higher on a financial knowledge test than children who did not participate. Although this study cannot determine the relative importance of financial education and a savings account, qualitative evidence suggests that the savings account was an important feature of the program. It drew children's attention and provided opportunities for learning, as well as saving. The opportunity to own a savings account may be especially important for children in unbanked families, who have less opportunity for exposure to financial services. Active participation promotes greater understanding, according to several experts in the field (Furnham and Argyle 1998). As Webley et al. (2001) write, "…experience obtained through economic participation, as opposed to experience derived from passive observation or information that is merely inferred, can enhance the child's economic understanding" (p. 42).

Future research should explore the possible links, relationships, and causality between financial education and access to financial services, and the mechanisms that explain how and why access to a savings account might enhance financial education. In addition, future research should assess whether cognitive gains in elementary school translate into better financial understanding and more optimal financial attitudes and actions in high school and beyond. In order to generate evidence of causality and permit generalization to broader populations, future studies should use large randomized samples with control groups that follow children for a longer time.

The study's findings have implications for policy. Partnerships among schools, non profits, and banks can operate small innovative programs like ICS, but they are labor intensive and expensive. Moreover, as we observe in ICS, children transfer in and out of the school, making continuity impossible. In addition, most community-based programs cannot afford to provide a matched savings incentive, a major attraction for both children and parents in ICS. If research confirms that financial education and financial inclusion (through a savings account) help to make children financially capable, at least two policy innovations may be useful.

The first is formal financial education for all children. Schools are an ideal platform because most children attend school (at least until at least age 16). Moreover, schools have an education mission, they are accessible to children of all ages and income levels, and they employ teachers who are likely to be effective financial educators (Beverly and Burkhalter 2005). In fact, states have already begun to require financial education at the high school level; and there is increasing interest in expanding formal financial education in elementary school (CEE 2009).

The experience of ICS, however, suggests that teachers may not be prepared to teach or have time to teach financial education (Schug 1983; Suiter and Meszaros 2005). ICS teachers were enthusiastic about the program generally, but they expressed qualms about teaching financial concepts. In the ICS demonstration, staff at a local community-based organization took over financial education, but this would be too expensive to implement in all schools. It may be more effective to train teachers to incorporate financial concepts into existing lessons (e.g., math, reading) (Grody et al. 2008; Morgan 1991; Suiter and Meszaros 2005).

The second policy innovation is access to financial services through a savings account for all children. There are policy discussions about universal Children's Savings Accounts, Children's Development Accounts, and/or progressive college savings programs that potentially could provide every child with a savings account (Butrica et al. 2008; Clancy et al. 2005; Goldberg 2005; Lindsey 2003; Sherraden 1991). There are several demonstrations of child savings in the US and elsewhere (CFED 2006; Sherraden and Clancy 2008), although the preeminent example worldwide, the Children's Trust Fund in the UK, is slated for elimination due to political developments and budgetary constraints (Kempson et al. 2006; Kramer 2010). Nonetheless, the CTF and other children's saving programs can provide valuable direction for policies of financial inclusion for children.

Together school-based financial education and children's savings accounts could provide all children with access to a program similar to ICS (Sherraden et al. 2008). Individual school districts, schools, teachers, staff from nonprofits, and local financial institutions could build on these policy instruments to make their programs meet the needs of the student body.

Although these policies will confront significant political and funding challenges, it is important to recall the importance of children growing up understanding their personal finances, and having access to the financial tools for building a solid financial future. Scholars point out understanding financial concepts is a cumulative process; and it is important to begin early (Jacob et al. 2000; Ward 1974; Webley et al. 2001). This is something that ICS fourth grader, Olivia, understands. She points out that it is a good idea to learn early: "What I like best about [ICS] is you get to learn about money when you're young, so you don't have to do it like, in high school. You already know it." Elementary school is not too early for children to learn about and start practicing money management rather than

falling into debt as young adults (Russell et al. 2006). Through policy and program innovations, there is reason to believe that young children can grow up to be financially capable teens and adults.

References

Adams, D., & Scanlon, E. (2009). Do assets affect well-being?: Perceptions of youth in a matched savings program. *Journal of Social Service Research, 35*(1), 33–46.

Baker, C., & Dylla, D. (2007). *Analyzing the relationship between account ownership and financial education.* New America Foundation. September. Retrieved November 30, 2009, from http://www.newamerica.net/files/Microsoft%20Word%20-%20Account%20Ownership%20and%20Financial%20Education-Elec.pdf.

Bandura, A. (1997). *Self-efficacy: The exercise of control*. New York: Freeman.

Berti, A. E., & Bombi, A. S. (1988). *The child's construction of economics* (G. Duveen, Trans.). Cambridge: Cambridge University Press.

Berti, A. E., & Monaci, M. G. (1998). Third graders' acquisition of knowledge of banking: Restructuring or accretion? *British Journal of Educational Psychology, 68*, 357–371.

Beutler, I., & Dickson, L. (2008). Consumer economic socialization. In J. J. Xiao (Ed.), *Handbook of consumer finance research* (pp. 83–102). New York: Springer.

Beverly, S. G., & Burkhalter, E. (2005). Improving the financial literacy and practices of youth. *Children and Schools, 27*(2), 121–124.

Bodnar, J. (2005). *Raising money-smart kids: What they need to know about money and how to tell them*. Chicago: Kaplan Business.

Bowditch, D. (2005). NEFE Think tank provides insight on motivating clients to improve financial behavior. *Journal of Financial Planning, 18*(7), 54–59.

Bowman, S. W. (2010). Multigenerational interactions in Black middle class wealth and asset decision making. *Journal of Family and Economic Issues*, Online First. doi:10.1007/s10834-101-9204-5.

Buckles, S., & Freeman, V. (1984). A longitudinal analysis of a developmental economic education program. *Journal of Economic Education, 15*(1), 5–10.

Bucks, B. K., Kennickell, A. B., & Moore, K. B. (2006). Recent changes in U.S. family finances: Evidence from the 2001 and 2004 Survey of Consumer Finances. *Federal Reserve Bulletin, 92*(February), A1–A38.

Butrica, B., Carasso, A., Steuerle, C. E., & Toohey, D. (2008). *Children's savings accounts: Why design matters*. Washington, DC: Urban Institute. Retrieved September 1, 2009, from http://www.urban.org/publications/411677.html.

Center for Entrepreneurship and Economic Education (CEEE). (2005). Wise pockets world. St. Louis: University of Missouri, CEEE. Retrieved February 26, 2006, from http://www.umsl.edu/~wpockets/.

CFED. (2006). *The Saving for Education, Entrepreneurship, and Downpayment (SEED) Policy and practice initiative: Children's savings accounts*. Washington, DC: CFED. Retrieved July 26, 2009, from http://www.cfed.org/focus.m?parentid=2&siteid=288&id=288.

Chizmar, J., & Halinski, R. (1983). Performance in the Basic Economic Test (BET) and "trade-offs". *Journal of Economic Education, 14*, 18–29.

Clancy, M., Cramer, R., & Parrish, L. (2005). *Section 529 savings plans, access to post-secondary education, and universal asset building*. Washington, DC: New America Foundation. Retrieved July 10, 2008, from http://www.newamerica.net/publications/policy/section_529_savings_plans_access_to_post_secondary_education_and_universal_asset_building.

Clarke, M. D., Heaton, M. B., Israelsen, C. L., & Eggett, D. L. (2005). The acquisition of family financial roles and responsibilities. *Family and Consumer Sciences Research Journal, 33*, 321–340.

Cohen, S., & Xiao, J. (1992). Consumer socialization: Children and money. *Childhood Education, 69*(1), 43–44.

Council for Economic Education. (2009). *NCEE survey of the states: Economic, personal finance and entrepreneurship education in our nation's schools*. New York: NCEE. Retrieved July 29, 2009, from http://www.councilforeconed.org/about/survey2009/.

Credit Union National Association. (2009). *Credit unions with in-school and/or youth center branches*. Retrieved December 2, 2009, from http://finlit.cuna.org/youth/youth_inschool.html.

Danes, S. M. (1994). Parental perceptions of children's financial socialization. *Financial Counseling and Planning, 5*, 127–149.

Danes, S. M., & Rettig, K. D. (1993). The role of perception in the intention to change the family financial situation. *Journal of Family and Economic Issues, 14*, 343–364.

Davidson, O., & Kilgore, J. (1971). A model for evaluating the effectiveness of economic education in primary grades. *Journal of Economic Education, 3*, 17–25.

de Clercq, B. (2009). Do our children know anything about money? An exploratory study. *Meditari Accountancy Research, 17*(1), 1–13.

Diem, J., Burke, M., Bessell, A. G., & Coyne, T. (n.d.). *JA economics for Success program evaluation: Final report*. Retrieved April 26, 2009, from http://www.ja.org/files/eval_JAEconomicsforSuccess06.pdf.

Doss, V. S., Marlowe, J., & Godwin, D. D. (1995). Middle school children's sources and uses of money. *The Journal of Consumer Affairs, 29*(1), 219–241.

Federal Deposit Insurance Corporation (FDIC). (2009, December). FDIC National Survey of Unbanked and Underbanked Households, Washington DC. Retrieved January 8, 2010, from http://www.fdic.gov/householdsurvey/full_report.pdf.

Fox, J., & Bartholomae, S. (1999). Student learning styles and educational outcomes: Evidence from a family financial management course. *Financial Services Review, 8*(4), 235–251.

Fox, J., & Bartholomae, S. (2008). Financial education and program evaluation. In J. J. Xiao (Ed.), *Handbook of consumer finance research* (pp. 47–68). New York: Springer.

Fry, T. R. L., Mihajilo, S., Russell, R., & Brooks, R. (2008). The factors influencing saving in a matched savings program: Goals, knowledge of payment instruments, and other behavior. *Journal of Family and Economic Issues, 29*, 34–250.

Furnham, A. (1999). The saving and spending habits of young people. *Journal of Economic Psychology, 20*, 677–697.

Furnham, A., & Argyle, M. (1998). *The psychology of money*. London: Routledge.

Godsted, D., & McCormick, M. H. (2006, December). *Learning your monetary ABCs: The link between emergent literacy and early childhood financial literacy*. NFI Report. Retrieved May 22, 2009, from http://www.networksfinancialinstitute.org/Lists/Publication%20Library/Attachments/4/2006-NFI-03_Godsted-McCormick.pdf.

Goldberg, F. (2005). The universal piggy bank: Designing and implementing a system of savings accounts for children. In M. Sherraden (Ed.), *Inclusion in the American dream: Assets, poverty, and public policy* (pp. 303–322). New York: Oxford University Press.

Greenspan, A. (2005). The importance of financial education today. *Social Education, 69*, 64–65.

Grody, A. D., Grody, D., Kromann, E., & Sutliff, J. (2008). *A financial literacy and financial services program for elementary school grades—Results of a pilot study*. Retrieved May 22, 2009, from http://ssrn.com/abstract=1132388.

Han, C. K., & Sherraden, M. (2009). Attitudes and saving in individual development accounts: Latent class analysis. *Journal of Family and Economic Issues, 30*(3), 226–236.

Hansen, H. (1985). The economics of early childhood education in Minnesota. *Journal of Economic Education, 16*, 219–224.

Harrah, J., & Friedman, M. (1990). Economic socialization in children in a midwestern American community. *Journal of Economic Psychology, 11*, 495–513.

Harter, C. L., & Harter, J. F. R. (2007). *Assessing the effectiveness of Financial Fitness for Life in Eastern Kentucky*. Retrieved May 22, 2009, from http://www.aeaweb.org/annual_mtg_papers/2007/0105_1015_1204.pdf.

Hathaway, I., & Khatiwada, S. (2008). *Do financial education programs work?* Federal Reserve Bank of Cleveland Working Paper No. 08-03. Retrieved May 22, 2009, from http://www.clevelandfed.org/research/workpaper/2008/wp0803.pdf.

Hilgert, M. A., Hogarth, J. M., & Beverly, S. G. (2003). Household financial management: The connection between knowledge and behavior. *Federal Reserve Bulletin, 89*(July), 309–322.

Hogarth, J. M., & Anguelov, C. E. (2005). Who has a bank account? Exploring changes over time, 1989–2001. *Journal of Family and Economic Issues, 26*(1), 7–25.

Holden, K., Kalish, C., Scheinholtz, L., Dietrich, D., & Novak, B. (2009). *Financial literacy programs targeted on pre-school children: Development and evaluation*. Credit Union National Association (CUNA). Retrieved December 10, 2009 from http://www.cunapfi.org/download/168_CUNA_Report_PHASE_ONE_FINAL_4-28-9.pdf.

Hopkins, M. C., Suiter, M. C., & Wright, D. K. (2001). *Financial fitness for life: Talking to your kids about personal finance, grades k-5*. New York: National Council on Economic Education.

Jacob, K., Hudson, S., & Bush, M. (2000). *Tools for survival: An analysis of financial literacy programs for lower-income families*. Woodstock Institute. Retrieved September 10, 2005, from http://woodstockinst.org/document/toolsforsurvival.pdf.

John, D. (1999). Consumer socialization of children: A retrospective look at twenty-five years of research. *The Journal of Consumer Research, 26*(3), 183–213.

Johnson, E., & Sherraden, M. S. (2007). From financial literacy to financial capability among youth. *Journal of Sociology and Social Welfare, 34*(3), 119–145.

Kempson, E., Atkinson, A., & Collard, S. (2006). *Saving for children: A baseline survey at the inception of the Child Trust Fund*. HM Revenue and Customs Research Report 18. Retrieved July 25, 2009, from http://www.pfrc.bris.ac.uk/publications/pensions_savings/saving_for_children.html.

Kourilsky, M. (1977). The kinder-economy: A case study of kindergarten pupils' acquisition of economic concepts. *The Elementary School Journal, 77*(3), 182–191.

Kourilsky, M. L., & Carlson, S. R. (1996). Mini-society and YESS! Learning theory in action. *Children's Social and Economics Education, 1*(2). Retrieved July 1, 2009, from http://www.ifdep.pt/actividades/estudos/kauffman/RE-009.pdf.

Kramer, R. (2010). *Asset-based welfare and savings policy in the United Kingdom*. In: Presentation, 2010 Welfare research and evaluation conference, Department of Health and Human Services, June 4, 2010. Retrieved July 12, 2010, from http://assets.newamerica.net/sites/newamerica.net/files/profiles/attachments/UK_Asset_based_Policy_PPT_6_10.pdf.

Laney, J. D. (1989). Experience- and concept-label-type effects on first graders' learning, retention of economic concepts. *Journal of Educational Research, 82*, 231–236.

Larkins, A. G., & Shaver, J. P. (1969). Economics learning in grade one: The USU assessment studies. *Social Education, 33*, 958–963.

Lau, S. (1998). Money: What it means to children and adults. *Social Behavior and Personality, 26*(3), 297–306.

Leiser, D. (1983). Children's conceptions of economics—The constitution of a cognitive domain. *Journal of Economic Psychology, 4*, 297–317.

Leiser, D., & Ganin, M. (1996). Economic participation and economic socialization. In P. Lunt & A. Furnham (Eds.), *Economic socialization: The economic beliefs and behaviours of young people* (pp. 93–109). Cheltenham, UK: Edward Elgar.

Lindsey, D. (2003). *The welfare of children* (2nd ed.). Oxford: Oxford University Press.

Lopez-Fernandini, A., & Murrell, K. (2008). *The effectiveness of youth financial education: Summary of a convening held July 15–16, 2008*. Retrieved January 10, 2009, from www.newamerica.net/publications/policy/effectiveness_youth_financial_education_1.

Lucey, T. A. (2005). Assessing the reliability and validity of Jump$tart survey of financial literacy. *Journal of Family and Economic Issues, 26*(2), 283–294.

Lucey, T. A., & Cooter, K. S. (Eds.). (2008). *Financial literacy for children and youth*. Athens, GA: Digital Textbooks.

Lucey, T. A., & Giannangelo, D. M. (2006). Short changed: The importance of facilitating equitable financial education in urban society. *Education and Urban Society, 38*(3), 268–287.

Lunt, P. (1996). Introduction: Social aspects of young people's understanding of the economy. In P. Lunt & A. Furnham (Eds.), *Economic socialization: The economic beliefs and behaviours of young people* (pp. 1–9). Cheltenham, UK: Edward Elgar.

Lunt, P., & Furnham, A. (1996). *Economic socialization: The economic beliefs and behaviours of young people*. Cheltenham, UK: Edward Elgar.

Mandell, L. (2008). Financial education in high school. In A. Lusardi (Ed.), *Overcoming the savings slump: How to increase the effectiveness of financial education and saving programs* (pp. 257–279). Chicago: University of Chicago Press.

Mandell, L., & Klein, L. (2007). Motivation and financial literacy. *Financial Services Review, 16*, 105–116.

Marshall, H. R., & Magruder, L. (1960). Relations between parent money education practices and children's knowledge and use of money. *Child Development, 31*(2), 253–284.

McNeal, J. V. (1987). *Children as consumers: Insights and implications*. Lexington, MA: Lexington Books.

Meeks, C. B. (1998). Factors influencing adolescents' income and expenditures. *Journal of Family and Economic Issues, 19*(2), 131–150.

Missouri Department of Elementary and Secondary Education. (2010). *Demographic data, 2005–2009*. Retrieved January 12, 2010, from http://dese.mo.gov/planning/profile/building/demo0961124080.html.

Morgan, J. C. (1991). Using *Econ and Me* to teach economics to children in primary grades. *Social Studies, 82*(5), 195–197.

Moschis, G. P. (1985). The role of family communication in consumer socialization of children and adolescents. *Journal of Consumer Research, 11*, 898–913.

National Association for State Boards of Education (NASBE). (2006). *Who will own our children: The need for financial literacy standards*. Alexandria, VA: NASBE.

National Council for Economic Education (NCEE). (2004). *Financial fitness for life theme tests: Entire assessment for the upper elementary level*. New York: National Council on Economic Education.

Organization for Economic Cooperation Development (OECD). (2005). *Improving financial literacy: Analysis of issues and policies*. Paris: OECD.

Peng, T. M., Bartholomae, S., Fox, J. J., & Cravener, G. (2007). The impact of personal finance education delivered in high school and college courses. *Journal of Family and Economic Issues, 28*(2), 265–284.

Rettig, K. D. (1985). Consumer socialization in the family. *Journal of Consumer Education, 3*, 1–7.

Rettig, K. D., & Mortenson, M. (1986). Household production of family management competencies. In R. Deacon & W. Huffman (Eds.), *Human resources research 1887–1987* (pp. 137–145). Ames, IA: Iowa State University.

Roland-Levy, C. (1990). Economic socialization: Basis for international comparisons. *Journal of Economic Psychology, 11*, 469–482.

Roos, V., Chiroro, P., van Coppenhagen, C., Smith, I., van Heerden, E., Abdoola, R. E., et al. (2005). Money adventures: Introducing economic concepts to preschool children in the South African context. *Journal of Economic Psychology, 5*, 243–254.

Rotter, J. B. (1966). Generalized expectancies for internal versus external control of reinforcement. *Psychological Monographs, 80*(1), 1–28.

Russell, R., Brooks, R., & Nair, A. (2006). *Evaluation of the youth financial literacy trial program*. Melbourne, Australia: RMIT University.

Scanlon, E., Buford, A., & Dawn, K. (2009). Matched savings accounts: A study of youths' perceptions of program and account design. *Children and Youth Services Review, 3*, 680–687.

Schuchardt, J., Hanna, S. D., Hira, T. K., Lyons, A. C., Palmer, L., & Xiao, J. J. (2009). Financial literacy and education research priorities. *Journal of Financial Counseling and Planning, 20*(1), 84–95.

Schug, M. C. (1983). Elementary teachers' views on economic issues. *Theory and Research in Social Education, 11*, 55–64.

Schug, M. C., & Birkey, J. (1985). The development of children's economic reasoning. *Theory and Research in Social Education, 13*(1), 31–42.

Schug, M. C., & Hagedorn, E. A. (2005). The Money Savvy Pig™ goes to the big city: Testing the effectiveness of an economics curriculum for young children. *The Social Studies, 96*(2), 268–271.

Senesh, L. (1964). *Our working world: Families at work*. Chicago, IL: Science Research Associates.

Sherraden, M. (1991). *Assets and the poor: A new American welfare policy*. Armonk, NY: M.E. Sharpe.

Sherraden, M. S., Boshara, R., Clancy, M., Ferguson, M., Gasen, K., Hoagland, C., et al. (2008, September). *Financial services, asset building, and college for urban youth*. Paper presented at the New Urban Policy Approaches: National Urban Initiatives Competition conference, Clark University, Worcester, MA.

Sherraden, M., & Clancy, M. (2008). *SEED for Oklahoma kids: Demonstrating child development accounts for all newborns*. St. Louis, MO: Washington University, Center for Social Development. Retrieved July 30, 2009, from http://csd.wustl.edu/Publications/Documents/SEED_demonstrating_CDAs.pdf.

Sherraden, M. S., Johnson, E., Elliott, W., Porterfield, S., & Rainford, W. (2007). The *I Can Save* Program: School-based children's saving accounts for college. *Children and Youth Services Review, 29*(3), 294–312.

Sherraden, M. S., McBride, A. M., & Beverly, S. G. (2010). *Striving to save: Creating policies for financial security of low-income families*. Ann Arbor: University of Michigan Press.

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

Sosin, K., Dick, J., & Reiser, M. L. (1997). Determinants of achievement of economic concepts by elementary school students. *Journal of Economic Education, 28*(2), 100–121.

Strauss, A. L. (1952). The development and transformation of monetary meanings in the child. *American Sociological Review, 17*, 275–286.

Suiter, M. (2001). *Financial Fitness for Life: Teacher guide grades 3–5*. New York: National Council on Economic Education.

Suiter, M., & Meszaros, B. (2005). Teaching about saving and investing in the elementary and middle school grades. *Social Education, 69*(2), 92–95.

Sumarwan, U., & Hira, T. K. (1993). The effects of perceived locus of control and perceived income adequacy on satisfaction with financial status of rural households. *Journal of Family and Economic Issues, 14*, 343–364.

U.S. Department of the Treasury. (2002). *Integrating financial education into school curricula: Giving America's youth the educational foundation for making effective financial decisions throughout their lives by teaching financial concepts as part of math and reading curricula in elementary, middle, and high schools*. White Paper prepared by the United States Department of the Treasury Office of Financial Education, October 2002. Retrieved April 3, 2006, from http://www.treas.gov/press/releases/docs/white.pdf.

U.S. Department of Treasury (2009a). *2008 Annual Report to the President*, President's Advisory Council on Financial Literacy. Retrieved July 29, 2009, from http://www.treasury.gov/offices/domestic-finance/financial-institution/fin-education/docs/PACFL_ANNUAL_REPORT_1-16-09.pdf.

U.S. Department of Treasury. (2009b). *Press Release: Administration officials promote enhanced financial capability among America's youth*. Retrieved December 15, 2009, from http://www.treas.gov/news/index1.html.

U.S. Department of the Treasury, Financial Literacy and Education Commission. (2006). *Taking ownership of the future: The national strategy for financial literacy*. Retrieved April 3, 2006, from http://www.mymoney.gov/ownership.pdf.

VanFossen, P. J. (2003). Best practice economic education for young children? It's elementary! *Social Education, 67*(2), 90–94.

Varcoe, K., Peterson, S., Go, C., Johns, M., Rene-Fitch, P., Powell, C., et al. (2002). Teen financial literacy evaluated to develop outreach materials. *California Agriculture, 56*(2), 65–68.

Walstad, W. B., & Rebeck, K. (2005). *Financial Fitness for Life upper elementary test examiner's manual: Grades 3–5*. New York: National Council on Economic Education.

Ward, S. (1974). Consumer socialization. *Journal of Consumer Research, 1*(9), 1–14.

Watts, M., & Walstad, W. B. (2006). Research on economic education in the schools: A review of findings and a new agenda. In Watts (Ed.), *What works: A review of research on outcomes and effective program delivery in precollege economic education* (pp. 11–17). New York: National Council on Economic Education.

Webley, P., Burgoyne, C. B., Lea, S. E. G., & Young, B. M. (2001). *The economic psychology of everyday life*. Philadelphia, PA: Taylor & Francis.

Woolley, M. E., Bowen, G. L., & Bowen, N. K. (2004). Cognitive pretesting and the developmental validity of child self-report instruments: Theory and applications. *Research on Social Work Practice, 14*(3), 191–200.

World Savings Banks Institute (WSBI). (2009). *The contribution of financial education to the enlargement of access to finance: WSBI involvement, views and proposals*. Retrieved July 29, 2009, from http://www.wsbi.org/uploadedFiles/Position_papers/0064.pdf.

Author Biographies

Margaret Sherrard Sherraden is Professor, University of Missouri in St. Louis, and Research Professor, Washington University in St. Louis. Her most recent book, *Striving to Save: Creating Policies for Financial Security of Low-Income Families* (co-authored with AM McBride and S Beverly), was published in 2010 by University of Michigan Press. She earned a doctorate in sociology from Washington University in St. Louis.

Elizabeth Johnson is Director of Administration and a Project Director at the Center for Social Development, Washington University in St. Louis where she also received her MSW in social work. Her areas of interest include asset building and financial capability with a focus on marginalized children and youth.

Baorong Guo is currently an Assistant Professor at the University of Missouri-St. Louis School of Social Work. She received her Ph.D. in social work from Washington University in St. Louis. Her areas of interest include asset building among the poor, family well-being and human service nonprofits. She has been conducting research projects to evaluate asset-based programs and policies in the US and in China.

William Elliott III is Assistant Professor in the Department of Social Work, University of Pittsburgh. He received his Ph.D. at the George Warren Brown School of Social Work, Washington University in St. Louis. His research areas include asset poverty, educational disparities, and asset effects on children, families, and communities.