Translating Financial Education into Behavior Change for Low-Income Populations

Angela C. Lyons, Yunhee Chang, and Erik M. Scherpf

The impact that financial education had on the financial behaviors of (a) the agency staff who were trained to deliver the program and (b) the low-income individuals who participated in the program was investigated. Specifically, the researchers examined the relationship between total number of financial education lessons completed, prior financial experience, and improvement in individuals' financial behaviors. The results provide some evidence that financial education may result in improved financial behaviors. However, the findings suggest that prior level of financial experience may matter more than the number of lessons completed. Researchers may want to re-examine the indicators currently being used to show program impact and whether financial knowledge is the appropriate catalyst to foster behavior change.

Key Words: financial education, financial socialization, low-income populations, program evaluation

Introduction

High levels of consumer debt, low personal saving rates, and increases in personal bankruptcy filings have generated concern that consumers lack adequate financial skills (Bell & Lerman, 2005; Lyons, Palmer, Jayaratne, & Scherpf, 2006; National Endowment for Financial Education, 2004). As the financial system has grown rapidly more complex, consumers have had to become more actively involved in managing their finances. Yet, many consumers, even those who would describe themselves as "financially savvy," are having difficulty assessing their options and making sound financial decisions. The burden for low-income and disadvantaged individuals can be particularly overwhelming. In the current financial environment, it is easy for low-income and disadvantaged populations to fall victim to predatory lenders and financial scams, especially because many lack adequate financial education (Lyons & Scherpf, 2004). Basic financial management skills are important for all households, but they are particularly critical for low-income households to ensure long-term financial security.

A number of financial education programs have been developed in recent years to address the financial educa-

tion needs of low-income populations. However, research measuring the effectiveness of these programs has not kept pace. There are a number of reasons why limited research is available. First, researchers face challenges in collecting data from program participants with low financial literacy levels. Low-income participants are often difficult to track and have high program drop out rates and low survey response rates (Anderson, Zhan, & Scott, 2004; Lyons, 2005; Lyons et al., 2006; Lyons & Scherpf, 2004). These factors, coupled with their reluctance to divulge personal information, limit the amount and type of information that can be collected. The result is that survey instruments are often kept short and simple to increase response rates and reduce measurement error.

Second, researchers face challenges collecting impact data because of the nature of the organizations that deliver financial education programs. Most programs that target low-income populations are operated by small non-profit organizations with limited staff and financial resources. Relative to their operating expenses, program evaluations can be expensive to conduct, especially rigorous evaluations that use control groups and have a longitudinal component. In addition, many of the agency staff and volun-

Angela C. Lyons, Assistant Professor, University of Illinois at Urbana-Champaign, Department of Agricultural and Consumer Economics, 421 Mumford Hall, 1301 West Gregory Drive, Urbana, IL 61801, anglyons@uiuc.edu, (217) 244-2612

Yunhee Chang, Visiting Assistant Professor, University of Mississippi, 202 Lenoir Hall, P.O. Box 1848, University, MS 38677, chang@olemiss.edu, (662) 915-1352

Erik M. Scherpf, Research Associate, University of Illinois at Urbana-Champaign, Department of Economics, 330 Wohlers Hall, 1206 S. Sixth Street, Champaign, IL 61820, scherpf@uiuc.edu, (217) 333-0120

teers do not have expertise in evaluation and lack the understanding and knowledge about how to measure program impact to show that their programs are working (Lyons, 2005; Lyons et al., 2006). In the end, there are few incentives for instructors to collect data and for participants to provide information.

Most organizations currently conducting program evaluations use only a post-test or a pre- and post-test to collect impact data (Lyons et al., 2006). However, given the nature of low-income populations and the constraints facing many organizations, it may be more efficient and effective to collect impact data using a retrospective pre-test (RPT). The RPT is administered in the same way as a post-test in that participants are asked to answer questions about their level of knowledge and behavior *after* the program. They are then asked to think back to their level of knowledge and behavior *prior* to the program. Despite the potential limitations of this method, RPT can reduce response-shift biases and provide a feasible and efficient evaluation method for collecting impact data (Lamb, 2005; Lamb & Tschillard, 2005).[1]

For the current study, a RPT was used to collect 4 years of repeated cross-sectional evaluation data from a nationally recognized financial education program. The data were used to investigate the impact that education had on the financial behaviors of the agency staff that were trained to deliver the program and of the low-income individuals who participated in the program. Controlling for prior financial behaviors, we estimated a series of probit models to determine if the amount of financial education received had an impact on (a) overall financial behavior and (b) anticipated changes in five specific financial behaviors. The "treatment effect" in our models was defined by the variation in the intensity of the treatment (i.e., the number of lessons completed) instead of by whether an individual received the treatment or did not receive the treatment (i.e., participated in the program or did not participate). Although this was not a traditional control group study, we were able to examine the impact of the education conditional on some level of program participation by comparing the behavior changes of participants who received more lessons to those who received fewer lessons.

The findings presented provide insight into how financial education programs for low-income populations can be improved, especially with respect to program length and the indicators currently being used to show how financial education can translate into actual and anticipated behavior

changes. The results also provide insight into the importance of controlling for previous financial experience. Finally, the findings show how RPTs can provide useful insight into the effectiveness of financial education programs for low-income populations, underscoring the value of more traditional types of evaluation methods.

Review of Literature

Recent literature has provided general insight into the link between financial education and behavior change. Researchers typically have concluded that financial education results in positive behavior change. The majority of these studies have focused on collecting data from target populations that are readily available and willing to participate in formal evaluations, such as employees, students, and financial counseling clients. For an overview of the literature, see Bell and Lerman (2005), Braunstein and Welch (2002), Fox, Bartholomae, and Lee (2005), Hilgert, Hogarth, and Beverly (2003), Hogarth (2002), Hogarth, Beverly, and Hilgert (2003), Lyons (2005), Lyons et al. (2006), and National Endowment for Financial Education (2004).

Studies that have concentrated on the effect of financial education in the workplace have focused on increasing employees' savings and enhancing worker productivity. Bayer, Bernheim, and Scholz (1996) and Bernheim and Garrett (2003) found that employer-provided financial education increased employee participation in retirement plans and the amount saved for retirement and for general purposes. They also found that the effect of workplace financial education tended to be strongest for employees who saved little before the program. In another study, Garman, Kim, Kratzer, Brunson, and Joo (1999) found that 75% of individuals who chose to participate in employer-sponsored financial education workshops felt more confident in their ability to make investment decisions, and in turn, made better financial decisions following the workshops. Kim and Garman (2003) also found that employer-provided financial education increased the financial confidence of program participants and resulted in improved financial practices and worker productivity.

Studies that have focused on youth provide evidence that formal courses in personal finance increase financial knowledge and result in more positive financial behaviors. For example, Boyce and Danes (2004) found that a formal financial planning program had a significant and positive impact on high school students' spending habits, savings behaviors, and confidence levels in managing money, even

3 months after they completed the program. Bernheim, Garrett, and Maki (2001) found that mandated financial education during high school resulted in higher savings rates and higher net worth when students reached adulthood.

Other studies have shown that financial counseling results in improved financial behaviors. Staten, Elliehausen, and Lundquist (2002) tracked credit counseling clients for 3 years and found that those who received counseling were able to reduce their debt, improve their credit card management, and lower their delinquency rates more than those who did not receive counseling. Hirad and Zorn (2001) found that borrowers who participated in pre-purchase homeownership counseling had a 19% lower 90-day delinquency rate than those who did not receive counseling. Kim, Garman, and Sorhaindo (2003) provided evidence that suggested that credit counseling may have direct effects on financial stressor events and indirect effects on individuals' perceived financial well-being and health.

Research that has measured the effectiveness of financial education for low-income populations has been more limited. Existing literature has been tied frequently to participation in Individual Development Account (IDA) programs. The goal of IDA programs has been to increase savings rates for low-income families by providing matching funds for savings toward a specific purpose such as homeownership, higher education, or to start a small business. Many of these programs have included a financial education component. Research from one IDA program focused on knowledge gain and examined the levels of pre-training financial knowledge of program participants (Anderson et al., 2004; Zhan, Anderson, & Scott, in press). The goal of the current research was to identify gaps in financial knowledge and to determine the financial education needs of low-income populations. However, this research spent little time investigating whether financial education resulted in positive behavior change for program participants.

Other studies have focused more on behavior change by examining how financial education affects spending, savings, and debt management outcomes. Clancy, Gristein-Weiss, and Schreiner (2001) used data collected from the American Dream Demonstration and found that saving deposits and saving frequency in IDAs increased as hours of financial education increased from 0 to 12 hours. However, after 12 hours, they found that the effect dimin-

ished and leveled off. A follow-up report by Schreiner, Clancy, and Sherraden (2002) showed that savings increased by only a small amount initially and then the effect leveled off after 8 to 10 hours of education.

In a more recent study, Shockey and Seiling (2004) used the Transtheoretical Model of Change (TTM) to specifically assess change in six financial behaviors over a 4-week period for individuals enrolled in an IDA financial education program. The TTM framework integrates major psychological theories into a theory of behavior change (i.e., Prochaska, 1979; Prochaska & DiClemente, 1983). The six financial behaviors examined were setting financial goals, using a spending plan, tracking spending, reducing debt, setting aside money for unplanned expenses, and saving money. Prior to the program, Shockey and Seiling found that program participants were, on average, at the stage of action with respect to reducing debt and at the stage of preparation for all other behaviors. Following the program, they found that participants experienced the smallest change for the behavior that was associated with reducing debt and the largest change for setting aside money for unplanned spending.

Another study of low-income individuals, not tied to an IDA program, investigated the impact that financial education had on the decision of unbanked individuals to open a bank account and move into mainstream financial markets. Lyons and Scherpf (2004) showed that financial education was successful in encouraging the unbanked to open a bank account. However, they also found that, even after the program, financial constraints prevented a significant proportion of unbanked participants from opening an account. According to Lyons and Scherpf, no matter how much financial education some low-income individuals received, they were still unable to change some financial behaviors, because their overall financial position had not changed. They argued that the best measure of program "success" may be related to whether the participants receive the financial skills needed to make decisions that are applicable to their specific financial circumstances.

To summarize, the literature has provided evidence that financial education can improve the financial well-being of low-income individuals and their families. Yet, studies that have focused on low-income populations have been limited in the following respects. First, most of these studies have relied on data collected solely from program participants and not from any comparison groups. They compared only the pre- and post-program knowledge and

behavior of program participants. However, in most cases, there was significant variation in the amount of financial education each participant received even within the same program, which offered an alternative to comparison group data. In addition, the administration of these programs was often varied, especially with respect to how participants were recruited and what portions of the curriculum were delivered by the instructors. Some programs offered "one-shot" workshops and seminars that focused on one or two lessons from the program, whereas others offered a more comprehensive program with multiple lessons. Only recently have researchers and financial professionals questioned whether the amount of financial education matters (Clancy et al., 2001; Schreiner et al., 2002). In other words, is more better? A few studies have used hours of education to account for the amount of financial education received by program participants. However, there are other measures that could be used, such as the number of lessons completed. Using alternative measures allows us to complement the absence of control groups by comparing the participants who completed more lessons to those who completed less. It also adds to our understanding of whether more really is better. Determining the optimal amount of education can have important implications for program delivery.

A second limitation of previous literature is that it has focused on the impact that financial education has on the knowledge and behaviors of only the program participants. Most financial education programs that have targeted low-income populations, however, have had a train-the-trainer component, where financial educators trained agency staff from non-profit organizations so that they, in turn, could effectively deliver the program to their clients. During these training programs, the agency staff actually completed the program. They also learned about effective delivery methods and received guidance on how to respond to clients' needs and how to motivate them to change their behaviors. Little, if any, research has examined the impact that financial education has on the agency staff trained to deliver the programs (Baron-Donovan, Wiener, Gross, & Block-Lieb, 2005; Shelton & Moss, 2002). These instructors play a critical role with respect to the quality of the program and whether program participants are motivated to positively change their behaviors. Instructors who go through the program themselves are likely to be more confident in their own financial management skills and in their ability to respond to participants' questions. The end result is that low-income audiences are likely to have a more meaningful learning experience and to report improvement.

This study builds upon prior research and addresses these critical gaps in the literature. Using a RPT, we controlled for prior financial behaviors and investigated the impact that the program had on both program participants and agency staff. We also used the total number of financial education lessons completed to provide additional insight into the relationship between the amount of financial education received and self-reported improvement in individuals' actual and anticipated financial behaviors.

Data Collection

Description of the Program

All My Money is a financial education program developed by University of Illinois Extension that focuses on providing financial management and consumer skills to low-income households. The curriculum consists of eight instructor-led lessons that cover a number of personal finance topics including (a) making spending choices, (b) envelope budgeting, (c) planning expenditures, (d) understanding credit, (e) handling credit problems, (f) building consumer skills, (g) taking consumer action, and (h) managing a checking account. Each lesson consists of hands-on activities and handouts as well as lesson plans and instruction guides. Also, each lesson is designed to take approximately 60 minutes to deliver.

The program was primarily designed to target two audiences: (a) staff of social service organizations and government agencies that worked directly with low-income audiences and who were trained to deliver the program to their clients and (b) low-income clientele who may have had limited financial literacy. Extension educators trained agency staff members using a series of workshops that totaled 16-20 hours of hands-on instruction in basic financial management depending on the number of lessons offered by the instructors. Roughly 95% of the agency staff were trained in the entire program and received all eight lessons. Trainings occurred over the span of a few days to a few weeks.

The agency staff, in turn, offered the program to their clientele. Agency staff, however, had considerable discretion over how clients were recruited and which lessons were delivered to their clients. Therefore, the number and types of lessons offered to the clientele varied significantly by instructor and location. For example, the data showed

that more than half of the clients who participated in the program were taught the budgeting, planning, and credit lessons, whereas the banking and problem-handling lessons were taught less frequently. Thus, the program lasted anywhere from a few days to a few weeks depending on how many lessons were administered to the clientele.

To date, the program has primarily been offered in the state of Illinois. Over 100 agencies and organizations in Illinois have participated in the *All My Money* program including, but not limited to welfare-to-work and other social service programs, IDA programs, consumer credit counseling services, homebuyer education programs, community and faith-based organizations, and financial institutions.

How the Evaluation Was Conducted

Between 1998 and 2002, University of Illinois Extension educators collected data in Illinois from both the agency staff and clientele. The data were gathered using a RPT, where participants were asked at the end of the program to retrospectively report their financial behaviors prior to the program and how they would change as a result of the program. Given the recent movement towards more rigorous program evaluations that include control groups and a longitudinal component (Lyons, 2005; Lyons et al., 2006), the RPT may be perceived as less rigorous, and therefore less convincing, than other approaches. One concern in using the RPT is that program participants may be more inclined to show a learning effect, especially if the participants develop a good rapport with their instructor. There are additional concerns that using a RPT could affect the validity of the data by introducing self-reporting and recall bias.

However, given the realities of program evaluation for organizations that target low-income populations, the RPT is a common and useful evaluation tool. One clear advantage is that it only has to be administered once, reducing the amount of time the participants spend as research subjects. Another advantage is that it can reduce response-shift effects, which occur when a participant's frame of reference changes significantly during the program (Howard, 1980; Lamb, 2005; Lamb & Tschillard, 2005). For example, participants may not be familiar with basic terms and concepts prior to the program. Therefore, a traditional pre-test may yield biased results if the test introduces terms and concepts before the participants are ready for them. The RPT reduces the likelihood of response-shift effects by clearing up misconceptions before

participants are asked to make assessments. Also, if the time lapse between the "before" and "after" is only a few days or a couple of weeks, the likelihood of recall bias will be lower, as was the case in the current study.

The RPT included a self-assessment of how overall financial management performance changed after the program. Information was also collected on anticipated changes in specific financial behaviors. The overall impact of the program was measured using the question, "After participating in the program, how much would you say your ability to manage money has changed?" Participants reported their changes on a 5-point scale ranging from *much worse* to *much better*. The questionnaire also asked about respondents' self-assessment with respect to the following five behavior categories: budgeting, intra-household communication, bill payment, ability to handle consumer problems, and comparison shopping. Participants indicated on a 4-point scale how often they engaged in each behavior prior to the program and how often they planned to engage in each behavior now that they have completed the program. Responses ranged from *almost always* to *almost never*. Additional information was obtained on each participant's age, gender, family size and composition, personal and household income, and educational attainment. The location and dates of the program, including number of lessons completed, were also recorded for each participant.

The process for collecting the survey information was as follows. Extension educators administered the RPT to agency personnel at the end of the train-the-trainer program. When the agents delivered the program to their clients, they had the option of administering the same RPT to those who completed the program. Agents who administered the evaluation to their clients were asked to return the surveys to the extension educator who had trained them. Of the more than 100 agencies who participated in the training, only 19 agencies chose to return surveys. Because it was optional, the agencies that returned the surveys may not have been random. In addition, their clientele may have differed in a fundamental way from the clientele from the agencies that did not return their surveys. We compared the characteristics of the agencies that returned surveys with those that did not and found that the agencies that had returned clientele surveys were fairly representative of the agencies that had not. Key characteristics that were compared included size of the organization, target audiences, types of programs offered, and services pro-

vided to clientele. The composition of the clientele also tended to be fairly representative.

In the end, a total of 763 evaluations were collected, 546 from agency staff and 217 from clientele. Due to incomplete and missing information on key survey questions, 174 observations were unusable. The final sample consisted of 589 observations (77.2% of the 763 collected surveys), where 428 were agency personnel (72.7%) and 161 were clientele (27.3%).

Sample Description
Table 1 presents demographic information on the agency personnel who participated in the training and the clientele who participated in the program. The first set of columns presents data for the pooled sample of agency personnel and clientele. The second set of columns is restricted to clientele participants only. One might question why the sample of agents and clientele were pooled. There were several reasons for this. First, recall that roughly 95% of the agents were trained in all eight lessons. This provided insufficient variation to separately measure the impact of the number of lessons on agency staff. In addition, the pooled regression findings showed that the effects of the program on participants' behaviors did not vary significantly between the agency staff and the clientele. Additional qualitative evidence suggested that the financial behaviors of the agents may not have been all that different from those of the clients. A number of the agents may have been struggling financially themselves, even though they may have been more financially knowledgeable and may have had more education and income than their clients. However, given that there was substantial variation in the number of lessons completed by the clientele, which is the ultimate target audience, we also include information in the descriptive tables on the clientele-only sample because this population may be of greater policy interest. Additional explanation for why we pooled the data is provided later in the paper.

On average, the pooled sample completed 6.7 lessons. Participants were comprised predominantly of female (86.9%) and middle-aged participants. The average age of the participants was 39 years, with 83.1% of the sample falling into the 25-54 age bracket. Only 8.2% of the entire sample did not complete high school, whereas 44.3% had received a college degree. With respect to family size and composition, 59.8% reported having at least one child living in the household, and 70.6% reported having spouses or other adult household members. Nearly half

(47.4%) of the pooled sample reported personal monthly earnings of $1,500 or more (the top income bracket in the survey), and 45.8% claimed household income from other sources besides their own earnings. Most (60.3%) of the trainings and programs were delivered in the Chicago area, the largest metropolitan area in the state.

On average, clientele participants completed 3.7 lessons. The average age was 34.5 years, with the majority (58.4%) under 35 years of age. More than a quarter did not complete high school, whereas only 11.8% had a college degree. In addition, the majority (59.1%) of clientele participants reported monthly incomes below $1,000, and nearly three-quarters (73.9%) of them did not have any other source of household income. Approximately 88% were female, and 79.5% reported having children living in the household. Only 58.4% reported living with another adult. Thus, the client sample consisted of a large number of single mothers. With respect to location, 82% were located in the Chicago metropolitan and surrounding areas.

Table 1 also provides demographic information for participants who reported and did not report a positive improvement in their overall financial behaviors following the program. Approximately 47.0% of the pooled sample reported that as a result of the program their ability to manage their money was "much better," 43.0% reported that it was "a little better," 9.9% indicated that it was "about the same," and only 0.1% indicated that it was "a little worse" or "much worse." Participants who reported that their ability to manage their money was "a little better" or "much better" were classified as having experienced a positive improvement in their overall financial behavior.

The majority of program participants reported an improvement in their financial management practices: 90.0% in the pooled sample ($n = 530$) and 85.0% in the clientele-only sample ($n = 137$). Note, however, that although clientele participants accounted for only 27.3% of the overall sample, they made up 40.7% of those reporting no improvement. This perhaps suggests that either the program was not as successful for the clientele participants or they could not accurately assess their level of improvement. Due to the small number of participants reporting no improvement, however, one must be cautious in drawing inferences from these numbers.

Two-tailed *t* tests were used to identify characteristics that were significantly different between those who reported an

Table 1. Description of the Sample by Overall Improvement in Financial Behavior

Variables	Pooled sample				Clientele-only sample			
	Total (N = 589)	Financial behavior after the program			Total (N =161)	Financial behavior after the program		
		No improve (n = 59)	Improve (n = 530)	$\|t\|$		No improve (n = 24)	Improve (n = 137)	$\|t\|$
Total number of lessons	6.7	5.6	6.8	4.08**	3.7	2.9	3.9	2.16**
Age	39.0	39.1	39.0	0.06	34.5	34.1	34.6	0.17
24 or less	8.7	11.9	8.3	0.92	20.5	25.0	19.7	0.59
25-34	31.1	23.7	31.9	1.28	37.9	33.3	38.7	0.50
35-44	28.2	32.2	27.7	0.72	23.6	25.0	23.4	0.17
45-54	23.9	23.7	24.0	0.04	13.7	8.3	14.6	0.82
55 or more	8.2	8.5	8.1	0.10	4.3	8.3	3.6	1.03
Female	86.9	91.5	86.4	1.10	88.2	87.5	88.3	0.11
Education								
Less than high school	8.2	10.2	7.9	0.60	26.1	25.0	26.3	0.13
High school or GED	20.5	28.8	19.6	1.66*	35.4	37.5	35.0	0.23
Some college	27.0	18.6	27.9	1.52	26.7	25.0	27.0	0.20
Bachelor's degree	27.7	23.7	28.1	0.71	8.7	8.3	8.8	0.07
Graduate degree	16.6	18.6	16.4	0.44	3.1	4.2	2.9	0.32
Number of children								
None	40.2	45.8	39.6	0.91	20.5	29.2	19.0	1.14
1	21.7	13.6	22.6	1.61	18.6	12.5	19.7	0.83
2	21.4	22.0	21.3	0.13	31.1	33.3	30.7	0.26
3 or more	16.6	18.6	16.4	0.44	29.8	25.0	30.7	0.56
Other adult members	70.6	83.1	69.2	2.21**	58.4	83.3	54.0	2.73**
Personal income								
$249 or less	3.2	1.7	3.4	0.70	9.9	4.2	10.9	1.02
$250-499	5.8	13.6	4.9	2.72**	19.3	25.0	18.2	0.77
$500-749	7.8	10.2	7.5	0.71	19.3	25.0	18.2	0.77
$750-999	8.0	6.8	8.1	0.36	10.6	16.7	9.5	1.05
$1,000-1,249	12.6	15.3	12.3	0.66	10.6	12.5	10.2	0.33
$1,250-1,499	15.3	11.9	15.7	0.77	11.2	4.2	12.4	1.18
$1,500 or more	47.4	40.7	48.1	1.08	19.3	12.5	20.4	0.91
Other income sources	45.8	57.6	44.5	1.92*	26.1	41.7	23.4	1.89*
Chicago area	60.3	62.7	60.0	0.40	82.0	79.2	82.5	0.39
Clientele	27.3	40.7	25.8	2.43**	100.0	.	.	

Note. Mean values are reported for the variables that represent total number of lessons and age.
*$p < .10$. **$p < .05$.

improvement and those who did not. Note that participants who reported an improvement completed more lessons on average than those who showed no improvement. In the pooled sample, those who reported improvement attended 6.8 lessons, compared to 5.6 for those who reported no improvement. For the clientele, the average number of lessons completed was 3.9 and 2.9, respectively. The differences between the two groups were significant at the .05 level.

Program participants who reported an improvement were also less likely than those who reported no improvement to live in a household with other adult members including a spouse or parent ($p \le .05$). In addition, they were less likely to report having other income sources besides personal income ($p \le .10$). Further evidence from the pooled sample revealed that those who reported an improvement were less likely to be a client than those who reported no improvement ($p \le .05$).

Table 2 presents evidence of program impact according to anticipated changes in specific financial behaviors. Overall, the program appears to have had a positive impact on each of the five behaviors. The most noticeable improvement was for participants who reported that they anticipated running out of money less frequently after the pro-

Table 2. Anticipated Changes in Specific Financial Behaviors

Financial behaviors	Pooled sample (%)		Clientele-only sample (%)	
	pre	post	pre	post
Do not run out of money (*n* = 549)				
1 = Almost never	10.9	1.5	26.8	1.4
2 = Sometimes	16.2	3.5	26.8	6.3
3 = Often	39.3	30.6	32.4	48.6
4 = Almost always	33.5	64.5	14.1	43.7
Talk with family about money (*n* = 555)				
1 = Almost never	19.1	7.2	28.7	12.6
2 = Sometimes	45.2	24.7	38.5	30.8
3 = Often	22.5	40.4	18.2	28.0
4 = Almost always	13.2	27.8	14.7	28.7
Do not pay bills late (*n* = 551)				
1 = Almost never	8.0	1.8	20.0	3.6
2 = Sometimes	9.6	3.3	16.4	6.4
3 = Often	35.4	17.1	34.3	29.3
4 = Almost always	47.0	77.9	29.3	60.7
Complain when having a consumer problem (*n* = 553)				
1 = Almost never	25.5	13.9	24.1	24.1
2 = Sometimes	44.7	28.0	41.8	39.7
3 = Often	16.1	28.9	20.6	20.6
4 = Almost always	13.7	29.1	13.5	15.6
Compare prices and quality before buying (*n* = 556)				
1 = Almost never	7.9	2.2	12.7	4.9
2 = Sometimes	29.5	8.3	29.6	10.6
3 = Often	25.4	23.7	20.4	23.9
4 = Almost always	37.2	65.8	37.3	60.6

Note. The number of observations varies slightly for each behavior because a few participants chose not to respond to all financial behavior questions.

gram, and this improvement was more pronounced for the clientele. Over half of the clientele reported not running out of money "almost never" or "sometimes" prior to the program, compared to only 7.8%, who anticipated not running out of money following the program.

Participants, especially clientele participants, reported similar improvement in paying bills on time. For the clientele, 29.3% reported that they "almost always" did not pay bills late prior to the program, compared to 60.7% who anticipated "almost always" paying bills on time after the program. Participants also experienced improvements in two other behavior categories—financial communication within the family and comparison shopping.

Table 3 examines the relationship between the total number of lessons completed (or the amount of financial education received) and the self-reported improvement for each of the five financial behaviors. Information is also included on pre-program behavior, where pre-program behavior is defined to be the self-reported degree to which the participant engaged in a particular financial behavior prior to the program. For each behavior, the sample excludes those who responded that they "almost always" engaged in that particular financial behavior prior to the program. For the pooled sample, improvement in each of the behaviors was associated with a higher average number of lessons completed, with the exception of the financial behavior "do not run out of money." A similar, but generally weaker trend was found for three of the five financial behaviors for the clientele sample. For the clientele-only sample, improvement in talking with the family about money, handling consumer problems, and comparison shopping were associated with more lessons on average.

Table 3 also shows that the greatest improvement occurred among participants who reported the poorest financial behaviors prior to the program. In both samples, over 80.0% (88.5% in the pooled sample and 83.9% in the clientele sample) of those reporting no improvement in the "do not run out of money" category indicated that they "often" did not run out of money prior to the program. In addition, it should not be surprising that, for the clientele sample, 78.1% of those who reported an improvement in the "do not run out of money" category indicated that their pre-program behavior in this area was poor (i.e., they "almost never" or "sometimes" did not run out of money). It should be noted, however, that some of these descriptive differences disappeared when we controlled for other factors in the multivariate analysis.

Empirical Framework

Although we did not have access to a traditional control group (i.e., a sample of non-participants), we were able to assess the treatment effect of the program by looking at whether the program impact was larger for participants who completed a greater number of lessons. The relationship was expressed as follows:

$$Y_i^* = \alpha \cdot Lessons_i + X_i\beta + T\delta + e_i, \qquad (1)$$
$$\text{where } Y_i = 1 \text{ iff } Y_i^* > 0 \text{ and } 0 \text{ otherwise.}$$

The subscript i indexed individual participants, for $i = 1, 2, ..., N$. In this model, Y_i^* was the improvement in financial management behaviors, that indicated the degree to which participants anticipated that they would engage in more desirable financial behaviors as a result of the program. Y_i^* was a latent measure that was not directly observable. Instead, a binary index, Y_i, was observed in the data such that Y_i was equal to one if the ith participant reported any positive change in his/her financial behavior following the program and zero otherwise.

Y_i^* was modeled as a function of the total number of lessons completed by each program participant (*Lessons*), a vector of demographic and economic characteristics of the participant (X), and a vector of fiscal year dummies (T). Included in X were control variables such as age, gender, education, household size and composition, personal income of the participant, and whether the household had other income sources. We also included in the model an indicator for whether the participant resided in the Chicago metropolitan or surrounding areas, because we suspected that the overall economic and financial environment that households faced in large metropolitan areas was considerably different from that found in more rural areas. One might question why the model did not control for race/ethnicity, marital status, employment patterns, and some measure of asset holdings or net worth. Unfortunately, the data set did not include this information. Our task was to gain as much information as possible from the available data that had been collected.

To determine if the base level of financial knowledge and experience varied between the clientele and agency staff, we also included an indicator variable that identified whether the participant was a client or agent. The significance of this dummy variable determined whether there were differences in the parameters (α, β, and δ) between those who showed improvement and those who did not, which in turn indicated whether separate models should be

Table 3. Anticipated Changes in Specific Financial Behaviors by Total Number of Lessons and Pre-Program Financial Behaviors, Reduced Sample

	Do not run out of money		Talk with family about money		Do not pay bills late		Complain when problem		Compare prices and quality	
	No improve	Improve	No improve	Improve	No improve	Improve	No improve	Improve	No improve	Improve
Pooled sample										
n	104	261	221	261	70	222	216	261	90	259
Total number of lessons completed	6.6	6.5	6.7	7.1*	6.1	6.6*	6.3	7.4**	6.6	7.1*
Pre-program behavior (%)										
1 = Almost never	2.9	21.8**	13.6	29.1**	4.3	18.5**	19.9	37.5**	3.3	15.8**
2 = Sometimes	8.7	30.7**	46.2	57.1*	10.0	20.7*	52.8	51.0	40.0	49.4
3 = Often	88.5	47.5**	40.3	13.8**	85.7	60.8**	27.3	11.5**	56.7	34.8**
Clientele-only sample										
n	31	91	63	59	29	70	84	38	26	63
Total number of lessons completed	3.8	3.7	3.7	3.8	4.1	3.6	3.8	4.1	3.6	4.2
Pre-program behavior (%)										
1 = Almost never	6.5	39.6**	20.6	47.5**	10.3	35.7*	22.6	39.5*	7.7	25.4*
2 = Sometimes	9.7	38.5**	46.0	44.1	13.8	27.1	47.6	50.0	38.5	50.8
3 = Often	83.9	22.0**	33.3	8.5**	75.9	37.1**	29.8	10.5**	53.8	23.8**

Note. The sample was reduced to those who did not respond "almost always" for their pre-program behavior, and thus the category "almost always" is excluded from the table. The breakdown of other sample characteristics by behavior and level of improvement is available upon request.

p < .10. ***p* < .05.

estimated for the agency staff and the clientele. The vector T controlled for economic conditions specific to each survey year, as well as for yearly variation in audience makeup, program budgets, resources available for training, and the ease of participants' behavioral adjustments.

For each model, the unknown parameters (α, β, and δ) were obtained using the probit method. The error terms, e_i, were assumed to be random and normally distributed with a mean of zero. The coefficient of interest, α, was expected to be positive and significant, which meant that the more lessons participants completed, the more likely they were to engage in more desirable financial behaviors. Two probit models were estimated to determine the effect that financial education had on (a) overall financial behavior and (b) anticipated change in specific financial behaviors.

The remainder of this section presents the specifics for the two models.

Model 1: Overall Program Impact
Recall that the overall program effect was measured by the question, "After participating in the program, how much would you say your ability to manage money has changed?" Out of the five ordered categories ranging from *much worse* to *much better*, the responses "a little better" and "much better" were considered to demonstrate positive latent effects. The probability that the program had a positive effect overall was modeled as follows:

$$Pr(Y_i = 1 \mid Lessons_i, X_i, T) = \Phi(\alpha \cdot Lessons_i + X_i\beta + T\delta), \quad (2)$$

where $\Phi(.)$ was the standard normal distribution function.

Note that this model did not control for an individual's prior financial knowledge and habits. Although demographic and socio-economic control variables were included in the model to account for sample heterogeneity, prior differences in overall financial education across participants were not observed. It was important, however, to assess the program effect holding constant the participants' financial habits and practices prior to the program. We addressed this issue by estimating a second model that looked at anticipated changes in specific financial behaviors.

In addition to running the probit models, we estimated a series of ordered probit models. Using the participants' responses to the 5-point scale, we created a three-category dependent variable that was equal to 1 if "much better," 2 if "a little better," and 3 if "about the same or worse." The coefficients obtained from the ordered probit were similar to those for the probit. The probit, however, was found to be a better fit for the distribution of the data. The findings from the probit models are presented in the results section; the findings from the ordered probits are available from the authors upon request.

Model 2: Changes in Specific Financial Behaviors

As previously mentioned, participants were asked to evaluate their financial practices in five behavioral categories using a 4-point scale to indicate how often they engaged in each behavior prior to the program and how often they planned to engage in each behavior following the program. Responses ranged from *almost always* to *almost never*. Using this information, we constructed a binary dependant variable to indicate improvement for each behavioral category. Specifically, Y_i equaled one if $post_i > pre_i$ and 0 otherwise. Pre_i and $post_i$ were the self-reported levels of financial practice of the ith participant before the program and the anticipated level of financial practice after the program, with the higher value denoting more desirable financial behaviors.[2] Because the participant's prior skill levels could affect the program's impact, dummy variables that controlled for financial behaviors prior to the program were included in the model such that

$$Pr(Y_i = 1 \mid Lessons_i, \mathrm{X}_i, \mathrm{T}, pre_i) = \qquad (3)$$
$$\Phi(\alpha \cdot Lessons_i + \sum_j \theta_j I\,[pre_i = j] + \mathrm{X}_i\beta + \mathrm{T}\delta),$$

where $\Phi(.)$ was the standard normal distribution function.

In this model, j was equal to 1 for "poor improvement," 2 for "moderately poor improvement," 3 for "moderately good improvement," and 4 for "good improvement." $I[.]$ was an index function that took the value of one if its argument was true and zero otherwise. The parameters θ_j for $j = 1, 2, 3$ represented how the likelihood of improvement depended on the participant's level of financial behavior prior to the program. The parameters were expected to decrease in j, which implied that the program was more likely to benefit those who started out at lower levels of financial knowledge (see the Appendix for mathematical proof). Because no improvement was possible for those who reported the highest level of financial knowledge prior to the program ($pre_i = 4$), Equation 3 was estimated for the sample restricted to those with $pre_i < 4$. A significant and positive α would suggest that, for a given level of prior financial skill, an additional lesson would increase the probability that participants anticipated an improvement in their financial behaviors upon completing the program.

Results

Tables 4 and 5 present the estimation results for (a) the likelihood that the program had a positive impact on overall behavior and (b) the likelihood that the program resulted in improvement in specific financial behaviors. Coefficients, standard errors, and marginal effects are presented in both tables. Marginal effects were calculated at the sample means. Recall that we were unable to run separate regressions for the agents and clientele due to data constraints related to the limited variation in the number of lessons completed by the agents. For this reason, models were estimated for (a) the pooled sample of agency staff and clientele and (b) the clientele-only sample. Note that for the pooled regression in Table 4 the dummy variable for clientele was insignificant. This finding suggested that the impact of the program on the behaviors of the clientele was not significantly different from that of the agents, providing empirical support for the pooled model. Also, recall that for Table 5 the sample was reduced to the participants who had less-than-perfect financial management skills prior to the program ($pre_i < 4$).

Overall Program Impact

Table 4 shows that, although the coefficient on the total number of lessons completed was positive for both the pooled and clientele-only samples, it was only significant at conventional levels for the pooled sample. The marginal effect of an additional lesson at the mean for the pooled sample was 1.5 percentage points. This suggested that, in

Table 4. Probit Regressions for the Positive Overall Program Effect

Variables	Pooled sample (n = 589)			Clientele-only sample (n = 161)		
	Coeff	(SE)	dY/dX	Coeff	(SE)	dY/dX
Total number of lessons	0.135	(0.053)**	0.015	0.191	(0.188)	0.011
Age						
25-34	0.430	(0.315)	0.044	0.786	(0.566)	0.039
35-44	-0.048	(0.310)	-0.006	0.182	(0.554)	0.009
45-54	0.232	(0.332)	0.024	0.932	(0.771)	0.029
55 or more	0.199	(0.413)	0.020	-0.062	(0.846)	-0.004
Female	-0.486	(0.291)*	-0.042	-0.913	(0.687)	-0.027
Education						
Less than high school	0.100	(0.326)	0.011	-0.002	(0.469)	-0.000
Some college	0.513	(0.251)**	0.049	0.656	(0.549)	0.028
Bachelor's degree	0.160	(0.250)	0.017	0.239	(0.891)	0.011
Graduate degree	-0.208	(0.281)	-0.026	-0.354	(1.025)	-0.027
Number of children						
1	0.456	(0.251)*	0.043	0.960	(0.643)	0.032
2	0.250	(0.235)	0.026	1.132	(0.578)*	0.048
3 or more	0.044	(0.253)	0.005	0.916	(0.563)	0.039
Other adult members	-0.355	(0.228)	-0.036	-0.553	(0.490)	-0.029
Personal monthly income						
$500-749	0.159	(0.363)	0.016	-0.174	(0.510)	-0.011
$750-999	0.631	(0.405)	0.048	0.059	(0.650)	0.003
$1,000-1,249	0.120	(0.355)	0.013	0.110	(0.714)	0.006
$1,250-1,499	0.707	(0.371)*	0.056	2.354	(0.964)**	0.042
$1,500 or more	0.306	(0.331)	0.035	1.097	(0.693)	0.036
Other income sources	-0.405	(0.193)**	-0.048	-0.851	(0.449)*	-0.073
Chicago area	-0.419	(0.206)**	-0.045	-1.462	(0.718)**	-0.042
Clientele	0.176	(0.341)	0.019	…	…	…
Year dummies (1998-2000)	Yes			Yes		
Constant	1.228	(0.686)*		2.980	(1.320)**	
Predicted probability at X-bar		0.943			0.977	
Pseudo R-squared	.182			.434		
Log likelihood	-156.800			-38.357		

Note. We also estimated ordered probits using the dependent variable in three categorical responses, and the coefficients were very similar to the findings for the probits. Base categories include age (24 or less), high school or GED, no children, and personal income ($499 or less). In the clientele-only regression, a dummy variable for 1998 is dropped from the regression to avoid perfect collinearity. Robust standard errors are reported, and marginal effects are calculated at the mean values.

p < .10. **p* < .05.

terms of overall program impact, an additional lesson may have resulted in a more positive improvement in overall financial behavior for agency personnel than for clientele. However, the magnitude of the effect of the lessons for the pooled sample was not large. An additional lesson at the sample mean (6.7 lessons) increased the likelihood that participants experienced an improvement in their overall financial behavior by 1.6%, off a baseline probability of 94.3%.

We considered the possibility that the effect of the number of lessons may not have been linear and explored alternative specifications by including a quadratic term for the number of lessons. The probit coefficient for the quadratic term was insignificant. To determine if the specific lessons that the participant completed had an impact on his/her behaviors, we also estimated the model using dummy variables for individual lessons instead of a single variable for the total number of lessons. The results showed that the quantity of lessons received was more important than the specific type of lesson. In fact, there was little evidence that specific types of lesson resulted in improved financial behaviors.

With respect to factors other than the number of lessons, we found that for the pooled sample females were significantly less likely than males to report an improvement in their overall financial behavior ($p \leq .10$). Given the small number of male participants in the sample, however, this finding may not have been representative of the low-income male population as a whole. With respect to education, only the category "some college" was positive and significant ($p \leq .05$), suggesting the program effect was greatest for those with some college education.

Participants with children were somewhat more likely than participants without children to experience an overall improvement ($p \leq .10$), which implied that financial education program for adults may indirectly help children in poor families. Compared to the lowest income category (less than $499 per month), higher levels of income increased the probability of a positive program impact. However, the income bracket ($1,250-1,499 per month) had a significant coefficient ($p \leq .10$ for the pooled sample and $p \leq .05$ for the clientele-only sample). For both the pooled and clientele-only samples, access to other household income sources as well as residing in the Chicago metropolitan or surrounding areas significantly decreased the likelihood that participants reported overall improve-

ment in their financial behaviors, suggesting difficulties in financial education for the working poor in urban settings.

Changes in Specific Financial Behaviors

Table 5 presents the regression results for the five financial behaviors. The coefficients and marginal effects are presented for the number of lessons (α) and the indicator variables that control for levels of pre-program behavior (θ_1 and θ_2). θ_3 was the omitted base category and is therefore not included in the table. The findings showed that the effect of the number of lessons was insignificant for all of the behaviors except comparison shopping. Controlling for demographic and economic characteristics, as well as for the level of comparison shopping before the program, additional lessons significantly increased the probability that a participant reported an improvement in comparison shopping by 4.7 percentage points. Thus, the number of lessons did not appear to play a significant role in improving specific financial management behaviors. We suspect this was because the number of lessons completed may have been determined endogenously with the unobserved traits underlying participants' ability to improve behaviors. That is, the number of lessons may have been negatively correlated with self-perceived pre-program behaviors. Also, once prior level was held constant, those who were the least likely to be able to improve their financial behaviors may have been more likely to be taught more lessons. If this was the case, the program impact (as measured by the number of lessons completed) may have been absorbed in θ and, therefore, may not have appeared in α.

The significance of the coefficients for pre-program behavior levels (θ_1 and θ_2) showed that the probability of improvement was larger for participants who started out with poorer financial practices. This result was consistent with existing findings from evaluations of employer-provided financial education programs (Bayer et al., 1996; Bernheim & Garrett, 2003). For instance, participants who almost always ran out of money before the program were 44.1 percentage points more likely to improve their budgeting after they attended the lessons than those who had similar demographic and economic characteristics but seldom ran out of money. Similar results were found for communicating with family members about money, paying bills on time, filing consumer complaints, and comparison shopping, which suggests that participants who lacked financial skills prior to the program may have been more likely to gain from the program. As with the pooled sample, the coefficients for low pre-program status (θ_1 and θ_2)

Table 5. Improvements in Specific Financial Behaviors, Reduced Sample

Behaviors	Pooled sample			Clientele-only sample		
	Coeff	(SE)	dF/dX	Coeff	(SE)	dF/dX
Do not run out of money						
α	-0.014	(0.062)	-0.004	-0.081	(0.187)	-0.010
θ_1	1.483	(0.340)***	0.441	2.462	(0.794)***	0.288
θ_2	1.201	(0.222)***	0.357	2.434	(0.714)***	0.285
n	365			122		
lnL	-171.929			-28.742		
Talk with family about money						
α	0.010	(0.054)	0.004	-0.172	(0.122)	-0.069
θ_1	1.430	(0.199)***	0.566	1.632	(0.445)***	0.650
θ_2	0.861	(0.153)***	0.341	0.869	(0.395)**	0.346
n	482			122		
lnL	-283.685			-63.074		
Do not pay bills late						
α	0.028	(0.070)	0.008	-0.003	(0.147)	-0.001
θ_1	1.296	(0.363)***	0.358	0.649	(0.497)	0.183
θ_2	0.880	(0.276)***	0.243	0.745	(0.494)	0.210
n	292			99[a]		
lnL	-133.379			-38.831		
Complain when having consumer problems						
α	0.094	(0.058)	0.037	-0.001	(0.109)	-0.000
θ_1	1.095	(0.197)***	0.434	0.942	(0.444)**	0.311
θ_2	0.551	(0.174)***	0.218	0.453	(0.390)	0.149
n	477			122		
lnL	-278.658			-58.478		
Compare prices and quality before buying						
α	0.160	(0.077)**	0.047	0.171	(0.150)	0.044
θ_1	1.451	(0.361)***	0.426	1.663	(0.589)***	0.423
θ_2	0.399	(0.169)**	0.117	0.811	(0.448)*	0.207
n	349			89[b]		
lnL	-170.208			-34.721		

Note. The sample was reduced to those who did not respond "almost always" for their pre-program behavior. The omitted category for θ's was $pre_i = 3$ (θ_3). Coefficients were obtained by controlling for age, gender, education, number of children, presence of other adult members, personal income, Chicago area indicator, clientele indicator, and the year fixed effects. Estimated coefficients and marginal effects for the control variables are available upon request.
[a]Two control variables (personal income $1,000-$1,249 and the year dummy for 1998) were dropped from the regression to avoid perfect collinearity. [b]Two control variables (age 55 or more and the year dummy for 1998) were dropped from the regression to avoid perfect collinearity.
*$p < .10$. **$p < .05$. ***$p < .01$.

were positive for the clientele-only sample, but the results tended to be somewhat less significant.

Discussion
The results of this study have useful implications for financial professionals and educators who are evaluating financial education programs that target low-income populations. The results of this study provide some evidence that the amount of financial education received (i.e., number of lessons) may result in an overall improvement in financial behavior. However, the findings seem to indicate that the prior level of financial experience may matter more than the number of lessons completed. Significantly greater impacts on behavior were observed for participants with lower levels of financial behaviors prior to the program, suggesting that the program was effective in reaching participants who were most in need of financial education, including agency staff who reported poor pre-program behaviors. Note, however, that the same self-reported characterization of pre-program behavior by agency staff and clientele (i.e., the same pre_i) may have represented different levels of actual behavior, especially if agents had higher levels of pre-program skills and knowledge than clients.

The results of this study also suggest that the program had the largest impact on those financial behaviors that could most readily be altered in the short run. For instance, the impact of the number of lessons was significant for comparison shopping—a behavior participants could immediately improve regardless of their current financial circumstances. Moreover, the largest marginal effects for pre-program behavior of the clients were found for those behaviors that could most readily be changed after the program (i.e., comparison shopping and talking with family about money), instead of those behaviors that were dependent on the participant's financial situation (running out of money and paying bills on time) or personal circumstances (dealing with consumer problems).

Interestingly, neither the number of lessons nor the level of pre-program behavior had a significant impact on clientele participants paying their bills on time. However, for the pooled sample, poor pre-program behavior did result in a significant increase in paying bills on time. A plausible explanation is that, on average, the clientele may have been worse off financially than the agency staff because their actual financial position probably did not change as an immediate result of the program. Thus, even though clientele may have learned of the costs associated with late payments from the program, they were less likely than agency staff to be in a financial position that would allow them to alter their ability to pay their bills on time. In other words, agency staff that missed bill payments may have just been lacking financial management skills, whereas clients who missed payments may have been more likely to be financially destitute.

It is also interesting to note that running out of money is a behavior for which the pre-program level was highly significant for both the pooled and clientele-only samples. However, where one might expect to find a larger marginal effect, the marginal effect was lower for the clientele-only sample because they were more likely to start with lower levels of financial knowledge and thus had more room to improve. However, like paying bills on time, an individual's ability to not run out of money is also related to the financial situation of the participant. In this case, the agency staff were likely to be better off financially than the clientele, and thus in a better position to change behaviors related to their financial holdings.

Overall, these findings suggest that financial education programs may want to distinguish between behaviors that can more easily be changed in the short run and behaviors that require more fundamental changes in other aspects of participants' lives before they can be realized. Financial education programs that focus solely on behavioral goals that participants have little chance of implementing in the short term may run the risk of becoming irrelevant to their target audience. Participants may view the goals of the program as unattainable; some may even become discouraged and not take any action to change their behaviors.

Given our findings, financial professionals and educators need to more carefully assess how knowledge translates into behavior change for low-income populations and the instructors who deliver the programs. It is critical that researchers select outcomes and indicators that are appropriate to the financial capabilities of their target audiences. It may be that some individuals, because of their particular financial situation, are unable to change certain financial behaviors no matter how much financial education they receive. Thus, if financial education does not result in behavior change, it may not be that the program is ineffective. It may be that inappropriate outcomes and indicators were selected. Researchers may want to focus less on outcomes tied to individuals' financial situations and more on whether individuals are able to make sound financial decisions regardless of their financial situation. They may

also want to use a wider set of program outcomes to ensure that the positive effects of these programs are not underestimated.

In addition, financial professionals and educators may want to re-examine the link between financial knowledge and behavior change, especially for program instructors. One might assume that instructors delivering programs to low-income audiences are knowledgeable and experienced financial educators. However, informal interviews conducted with extension educators, who trained the agents for this particular program, seem to reveal that this may not exactly be the case. It was reported that levels of financial knowledge and experience varied significantly for the agents—from having no financial education experience to several years of experience. Extension educators reported that for some agents the training sessions served as a "refresher course" or as a "reinforcement" of basic financial concepts. However, others were seeing some of the information for the first time. One extension educator commented:

We thought they knew this stuff when they came in, but we got agents who wrote in the comments that they felt they learned something from the program. They said they could use this information for themselves as much as for their clients.

At the end of the program, agents were asked to comment on what they learned from the program and how they planned to use the information and materials they received. In general, several reported that they felt "more familiar" and "more comfortable" with the information, especially related to budgeting, savings, and credit management. One agent commented:

I learned new avenues to save money personally and also new techniques and strategies to help my clients budget and learn new skills to save money and start savings or checking accounts.

Another stated:

I learned principles of effective money management that will help me to become more organized in developing a system that I am comfortable with (a) in tracking my expenditures and (b) investing wisely, consistently, and enthusiastically. The info on credit card smarts. I will use this with clients as well as in my personal life.

Extension educators also noted that there were agents who were experiencing financial problems and having difficulty managing their own finances. One extension educator commented:

A number of the agency staff who deal with low-income clients are low paid and money is tight for them, and many are struggling financially themselves.

Thus, the agents and clientele in our sample were more similar than one might initially think. In light of these informal interviews, our finding of no significant difference in overall financial behavior between agents and clients for the pooled model may not be that surprising (i.e., recall that in Table 4 the dummy variable for clientele was found to be statistically insignificant). Although the agents may have been more financially knowledgeable than the clients on average, a significant number of the agents may have been struggling financially, even though they had more education and income than their clients. Thus, one must consider the possibility that providing more educational knowledge ("number of lessons") may not necessarily be the appropriate catalyst to motivate individuals to change their financial behaviors. It may be that the level of financial experience matters more, as participants with the poorest pre-program behaviors generally reported the greatest improvement.

As with most program evaluations, one needs to be cautious in regarding these findings as conclusive. First, our clientele-only sample is somewhat small for making inferences about the program's impact on the financial behaviors of the low-income population as a whole. Recall, however, that the clientele sample is fairly representative of the clientele as a whole for all the agencies that participated in a train-the-trainer program. Second, the treatment effect in our model is identified not by variation in the outcomes of those who underwent the treatment versus those who did not (i.e., participants versus non-participants), but rather by the variation in the outcomes of participants who underwent varying treatment intensities (measured by the number of lessons) and who started out with different pre-program behaviors. As a result, the effects we found may not reflect *true* treatment effects but rather marginal effects conditional on some level of experience and participation in the program.

Ideally, we would have liked to have had a control group and a larger sample size so we would not have had to pool the data. It would have been of particular interest to exam-

ine whether changes in financial behavior would have occurred even without the program. Unfortunately, because of resource constraints, this level of "rigor" is not feasible for most non-profit organizations. As researchers and funders push for more rigorous evaluations, it is important that the profession continue to recognize the value of more traditional evaluation methods such as RPTs, pre- and post-tests, and qualitative surveys that collect best practices and success stories. The value of these types of methods should not be overlooked. As this study has shown, RPTs can still provide useful insight into the effectiveness of financial education. The self-reported, retrospective measures used in this study, though imperfect indicators of actual and anticipated changes in behavior, may still serve as good indicators of the program's impact. These indicators reflect changes not only in participants' level of knowledge but also in participants' confidence in their skills and in their ability to shape their future behaviors. If participants are feeling better about their financial situation at the end of the program, this is a positive reflection of what the program is trying to achieve.

From a program delivery standpoint, programs that focus on more basic and fundamental decision-making skills may give participants the confidence they need to take the first step towards behavior change. These types of programs may not need to have numerous and complicated financial lessons. A few general lessons in basic financial education are likely to result in positive outcomes.

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Endnotes

[1] The advantages and disadvantages of using a retrospective pre-test are discussed in the section on data collection.
[2] The incidences of negative changes were very few and treated as no improvement.

Appendix

Let z^*, a random variable signifying the latent financial effectiveness of an individual, be distributed with the cumulative distribution function $G(z)$. Although z^* is unobservable, we observe its ordered ratings, *pre* and *post*, which are defined as

$$pre \text{ (or } post) = 1, \text{ if } z^* < \lambda_1$$
$$= 2, \text{ if } \lambda_1 \leq z^* < \lambda_2$$
$$= 3, \text{ if } \lambda_2 \leq z^* < \lambda_3$$
$$= 4, \text{ if } z^* \geq \lambda_3$$

where $\lambda_1 < \lambda_2 < \lambda_3$. For simplicity, assume *pre* $\perp$ *post* (it can also be shown that the implication does not change when the two are correlated). The probability of improvement, conditional on the financial effectiveness, can be shown as

$$\Pr(post - pre > 0 \mid pre = j) = 1 - g(\lambda_j)$$

for *j = 1, 2, 3*, and *0* for *j = 4*. Since $G(.)$ increases in *j*,

$$\frac{\partial \Pr(post - pre > 0)}{\partial pre} < 0$$

In other words, the chances of improvement decline as pre-program status increases, other things being equal.