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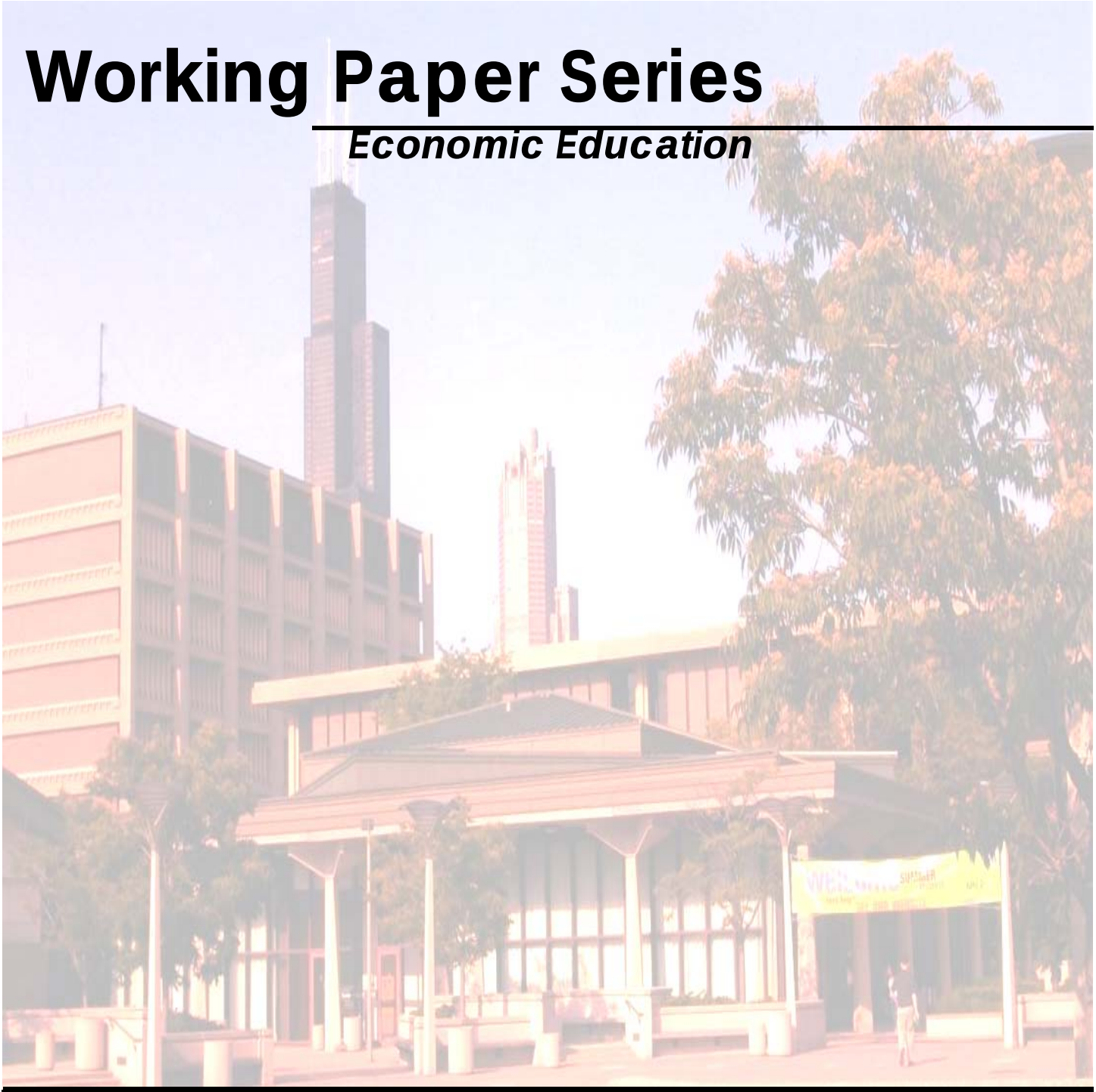

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Translating Financial Education into Behavior Change for Low-Income Populations

Corresponding Author: Angela C. Lyons, Assistant Professor
University of Illinois at Urbana-Champaign
Co-Authors: Yunhee Chang, Visiting Assistant Professor
University of Mississippi
Erik Scherpf, Research Associate
University of Illinois at Urbana-Champaign

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Center for Economic Education

Department of Economics (m/c144)
University of Illinois at Chicago
601 South Morgan Street
Chicago, Illinois 60607
Tel 312-996-2684
Fax 312-996-3344
http://cee.econ.uic.edu

Abstract

This study uses four years of data collected from a nationally-recognized financial education program to investigate the impact that education has on the financial behaviors of low-income individuals as well as the agency staff who are trained to deliver the program. Controlling for prior financial behaviors, it examines the relationship between the total number of financial education lessons completed and self-reported improvement in individuals' financial behavior. The results show that the more lessons participants complete the more likely they are to engage in positive financial behaviors. The effects, while small in magnitude, are found for both low-income participants and agency staff. The program appears to have a greater impact on participants who have lower levels of financial knowledge and skills at the onset of the program. Moreover, the program has the most significant effect on those financial behaviors that tend to be independent of an individual's financial situation. The findings suggest researchers and financial professionals may want to re-evaluate the indicators they are currently using to show how financial education translates into behavior change for low-income families. They may also want to use a wider set of program outcomes to ensure that the positive effects of the program are not underestimated.

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INTRODUCTION

High levels of consumer debt, low personal saving rates, and increases in personal bankruptcy filings have generated concern that consumers are inadequately prepared for today's financial marketplace. As the financial system has rapidly grown 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 this financial environment, it is easy for low-income and disadvantaged populations to fall prey to predatory lenders and financial scams, especially since many lack adequate financial education. Basic financial management skills are important for all households, but 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 education 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. On the one hand, researchers face challenges in collecting data from the program participants. Low-income

participants are often difficult to track and have high program drop out rates (Lyons and Scherpf, 2004). These factors coupled with low literacy levels limit the amount and type of information that can be collected. Survey instruments are often kept short and simple to increase response rates and reduce measurement error.

Researchers also face challenges with respect to the organizations that are delivering the program. Most programs that target low-income populations are operated by small non-profits with limited staff and financial resources. Relative to their operating expenses, program evaluations can be expensive to conduct since they often are time and labor intensive. In addition, many of the agency staff and/or volunteers 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.

In the end, there is little incentive for instructors to collect data and for participants to provide information. Yet, even with these challenges, it has become increasingly important that organizations conduct evaluations to show program impact and maintain current funding or obtain new funding.

This study uses four years of data collected from a nationally-recognized financial education program to investigate the impact that education has on the financial behaviors of low-income individuals as well as the agency staff who are trained to deliver the program. Controlling for prior financial behaviors, probit models are estimated to determine the effect that financial education has on 1) overall financial behavior and 2) five specific financial behaviors. The findings show that financial education results in an overall improvement in the financial behavior of both low-income participants and agency staff. The program appears to have a greater impact on participants who have lower levels of financial knowledge and skills prior to the program. Moreover, financial education has the most significant impact on those financial behaviors that are independent of an individual's financial situation. The results suggest that there are some behaviors that individuals may be unable to change no matter how much financial education they receive. The findings have important implications for program evaluation. Researchers, financial professionals, and community groups may want to re-evaluate the indicators they are currently using to show how financial education translates into behavior change for low-income

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

FINANCIAL LITERACY AND LOW-INCOME POPULATIONS

A growing body of literature provides general insight into the link between financial education and behavior change. This research typically concludes that financial education results in positive behavior change. The majority of these studies focus on target populations that are more readily available and willing to participate in formal evaluations such as employees, students, and financial counseling clients. For an overview of the literature, see Braunstein and Welch (2002), Fox, Bartholomae, and Lee (2005), Hilgert, Hogarth, and Beverly (2003), Hogarth (2002), and Hogarth, Beverly, and Hilgert (2003).

Studies that concentrate on the effect of financial education in the workplace focus on the ability of employees to increase savings and better prepare for retirement (i.e., Bayer, Bernheim, and Scholz 1996; Bernheim and Garett 2003; Garman et al. 1999; Kim and Garman 2003). The overall objective of these programs is to increase desirable financial attitudes and behaviors among employees and potentially enhance worker productivity. Bayer, Bernheim, and Scholz (1996) and Bernheim and Garrett (2003) found that employer-provided financial education increased employee participation and the amount saved in retirement plans. Employees who participated in these programs saved more not only for retirement but for general purposes as well, and the effect of workplace financial education tended to be strongest for employees who saved little before the program. In another study, Garman et al. (1999) found that 75% of individuals who chose to participate in employer-sponsored financial education workshops were more confident in their ability to make investment decisions, and in turn, made better financial decisions following the workshops. Kim and Garman (2003) also show that employer-provided financial education increases the financial confidence of program participants and results in improved financial practices.

Studies that focus on youth provide evidence that formal courses in personal finance can increase financial knowledge and result in more positive financial behaviors (i.e., Bernheim, Garrett, and Maki 2001; Boyce and Danes 1999). Boyce and Danes (1999) 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 show 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 by 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.

As previously mentioned, research that measures the effectiveness of financial education for low-income populations is more limited. The literature that does exist is often tied to participation in Individual Development Account (IDA) programs. The goal of IDAs is 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 up a small business. Many of these programs have a financial education component. Research from one IDA program focuses on knowledge gain and examines the levels of pre-training financial knowledge of program participants (Anderson, Zhan, and Scott 2004; Zhan, Anderson, and Scott, forthcoming). The goal of this research has been to identify gaps in financial knowledge and determine the financial education needs of low-income populations. However, this research spends little time investigating whether financial education results in positive behavior change for program participants.

Studies, which focus more on behavior change, examine how financial education affects savings outcomes. Clancy, Grinstein-Weiss, and Schreiner (2001) use data collected from the American Dream Demonstration and find that saving deposits and saving frequency in IDAs increase as hours of financial education increase from 0 to 12 hours. However, after 12 hours, they find that the effect diminishes and

levels off. A follow-up report by Schreiner, Clancy, and Sherraden (2002) finds only a small increase in savings initially with the effect leveling off after 8 to 10 hours of education.

Another study, not tied to an IDA program, investigates the impact that financial education has on the decision of unbanked individuals to open a bank account and move into mainstream financial markets. Lyons and Scherpf (2004) show that financial education can succeed in encouraging the unbanked to open a bank account. However, they also find that, even after the program, financial constraints prevent a significant proportion of unbanked participants from opening an account. According to Lyons and Scherpf (2004), no matter how much financial education some low-income individuals receive, they are still unable to change some financial behaviors because their overall financial position has not changed. They argue 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.

Overall, these studies provide evidence that financial education is helping to improve the financial well-being of low-income households. Yet, they are still limited in a few respects. First, they focus on pre and post-program knowledge and behavior change and do not adequately control for the individuals' prior level of knowledge and skill. Thus, it is difficult to determine how much of the improvement is due to the program and how much is due to their existing set of knowledge and skills.

Second, these studies concentrate on the impact that financial education has on the knowledge and behaviors of program participants. Some also provide recommendations to educators and professionals about how to deliver effective financial education to low-income populations. However, little, if any, research examines the impact that financial education has on the agency staff who are trained to deliver the programs. The agency staff play a critical role with respect to the quality of the program and whether program participants are motivated to positively change their behaviors. Agency staff who go through the program themselves become 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.

Finally, there is significant variation in the administration of these programs, especially with respect to how participants are recruited and what portions of the curriculum are delivered by the instructors. Some programs offer "one-shot" workshops and seminars, while others offer extended training with multiple lessons. Only recently have researchers and financial professionals begun to question whether *the amount* of financial education matters (Clancy, Grinstein-Weiss, and Schreiner 2001; Schreiner, Clancy, and Sherraden 2002). In other words, is more better? Determining the optimal amount of education can have important implications for program delivery. Existing studies use 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 can help to add to our understanding of whether more really is better.

This study builds upon prior research and addresses these critical gaps in the literature. It controls for prior financial behaviors and investigates the impact that the program has on both program participants and agency staff. It also uses 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' financial behavior.

The remainder of this paper is structured as follows. The next section describes the data. The sections that follow present the empirical framework and discuss the findings. The final section summarizes the results, the lessons learned, and their implications for future research and educational programming.

DATA

The data for this study is taken from individuals who participated in the financial education program *All My Money,* a train-the-trainer program 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 financial topics including: 1) making spending choices, 2) envelope budgeting, 3) planning expenditures, 4) understanding credit; 5) handling credit problems, 6) building consumer skills,

7) taking consumer action, and 8) managing a checking account. Each lesson consists of activities and handouts as well as lesson plans and instruction guides.

The program has been offered since October 1997, and data on the program's impact have been collected since 1998. To date, over 100 agencies and organizations have participated in *All My Money* including, but not limited to: welfare-to-work and other social service programs; individual development account (IDAs) programs; consumer credit counseling services; homebuyer education programs, community and faith-based organizations; and financial institutions.

The curriculum was primarily designed to target two audiences: 1) staff of social service organizations and government agencies that work directly with low-income audiences and are trained to deliver the program to their clients and 2) low-income clientele who may have limited financial literacy. Financial educators train agency staff members using a series of workshops that typically total 16-20 hours of hands-on instruction in basic financial management. The agency staff, in turn, offer the program to their clientele. Agency staff have considerable discretion over how clients are recruited and how they deliver the program to their clients. Specifically, the number and types of lessons offered varies significantly by instructor and location. Typically instructors cover the first four lessons of the program. However, there is still significant variation in the number and type of lessons taught. More than half of the clients who participate in the program are taught the budgeting, planning, and credit lessons, whereas the banking and problem-handling lessons are taught less frequently.

Data Collection

For the purposes of this study, data were collected from both the agency staff and clientele using a post-evaluation survey. The questionnaire included a self-assessment of how overall financial management performance changed both before and after the program. Information was also collected on changes in specific financial behaviors. The overall impact of the program was measured using the question "How much do you think your ability to manage money has changed after the program?" Participants reported their improvements on a 5-point scale ranging from "much worse" to "much better."

The questionnaire also asked about the respondents' self-assessment with respect to the following five financial behavior categories: budgeting, intra-household communication, bill payment, ability to handle consumer problems, and comparison shopping. For these specific skill/behavior questions, the respondents were asked to rate their skill levels both before *and* after the training on a 4-point scale ranging from "poor" to "good." 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 training, including number of lessons completed, were also recorded for each participant.

Financial educators administered the survey instrument to agency personnel at the end of the training. Following the training, agents had the option of administering the same survey to clients who completed the program. Agents who opted to administer the evaluations to their clients were asked to return the surveys to their financial education trainer.

Between 1998 and 2002, a total of 763 evaluations were collected, 546 from agency staff and 217 from clientele. Of the 763 surveys, 174 were dropped from the data set primarily due to incomplete and missing information on key survey questions. In the end, 589 observations (77.2%) were determined to be complete. The final sample used in this study is comprised of 428 agency personnel (72.7%) and 161 clientele (27.3%).

Descriptive Analysis

Table 1 presents demographic information collected from agency personnel and the clientele who participated in *All My Money*. 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.

On average, the pooled sample completed 6.7 of the 8 financial education lessons. The sample was 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, while 44.3% had received a college degree. With respect to family size and composition, 59.8% reported at least one child living in the household, and 70.6%

reported 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 of the training for this program occurred in the Chicago metropolitan and surrounding areas (60.3%).

Compared to the entire sample, clientele participants completed fewer lessons on average (3.7 compared to 6.7 lessons for the pooled sample). This should not be surprising since agency personnel received training in the entire curriculum. With respect to demographics, the clientele were younger and less educated. The average age of a clientele participant was 34.5 years, with the majority under 35 years of age (58.4%). More than a quarter of clientele participants did not complete high school, while only 11.8% had a college degree. Clientele participants also earned less than the sample as a whole. The majority of clientele participants reported monthly incomes below $1,000 (59.1%), and nearly three quarters of them did not have any other source of household income (73.9%). Clientele participants were slightly more likely to be female than the entire sample (88.2% versus 86.9%), considerably more likely to have children in the household (79.5% versus 59.8%), but less likely to live with another adult (58.4% versus 70.6%). These numbers indicate a stronger representation of single mothers in the clientele sample. Finally, clientele participants were more likely than the entire sample to be located in the Chicago metropolitan and surrounding areas (82.0% versus 60.3%).

Table 1 also compares demographic information for participants who reported and did not report a positive improvement in their overall financial behaviors as a result of participating in the program. Note that the majority of program participants reported an improvement in their financial management practices. In the pooled sample, 530 reported at least some improvement as a result of the program (90.0%), while only 59 participants reported no improvement (10.0%). In the clientele sample, 137 participants reported an improvement (85.0%) with 24 reporting no improvement (14.9%). While clientele participants accounted for only 27.3% of the overall sample, they made up 40.7% of those reporting no improvement. This suggests that either the program was not as successful for the clientele participants or they could not accurately assess their level of improvement. However, due to the small

number of participants reporting no improvement, one must be cautious in drawing inferences from these numbers.

It is interesting to note that participants who reported an improvement also 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.

With respect to demographics, program participants who reported an improvement were more likely than those who reported no improvement to have some college or a bachelor's degree, to have one child, and to earn in the upper income brackets. In addition, participants living in a household with other income sources were disproportionately over-represented among those who reported no improvement. These findings are consistent for both agency personnel and the clientele.

Table 2 presents evidence of program impact according to changes in specific financial behaviors. Overall, the program appears to have had a positive impact on each of the five financial behaviors. Perhaps most significantly, participants reported running out of money less frequently after the program, and this improvement is 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% following the program. Participants, and clientele participants especially, reported similar improvement in paying bills on time—another key financial management practice. For the clientele, the percentage that reported that they "almost always" do not pay bills late doubled after the program (from 29.3% to 60.7%). 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 amount of financial education received) and self-reported improvement for each of the five financial behaviors. Information is also included on pre-training behavior, where pre-training behavior is defined to be the self-reported degree to which the participant engaged in a particular financial behavior before the training. 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, 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 pre-training financial behaviors. 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 they "often" did *not* run out of money prior to training. 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-training behavior in this area was poor (i.e., they "almost never" or "sometimes" did not run out of money).

EMPIRICAL FRAMEWORK

Due to the lack of a control group (i.e., lack of access to a sample of non-participants), we assess the treatment effect of the program by looking at whether the program impact is larger for participants who completed a greater number of lessons. The relationship can be expressed as follows:[1]

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

The subscript i indexes individual participants, for $i=1, 2, \ldots, N$. In this model, Y_i^* is the improvement in financial management behaviors, which indicates the degree to which participants engage in more desirable financial behaviors as a result of the program. Y_i^* is a latent measure that is not directly

[1] We considered the possibility that the effect of the number of lessons may not be linear and explored alternative specifications by including a quadratic term for the number of lessons. The probit coefficient for the quadratic term was insignificant. We also estimated the model using dummy variables for individual lessons instead of a single variable for the *total number* of lessons. The estimation of the dummy-variable model failed to provide meaningful information, because the cell sizes were too small.

observable. Instead, a binary index, Y_i, is observed in the data such that Y_i is equal to one if the i^{th} participant reports an improvement in financial behavior following the program and zero otherwise.

Y_i* is 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** are control variables such as age, gender, education, household size and composition, personal income of the participant, and whether the household has other income sources. We also include in the model an indicator for whether the participant resides in the Chicago metropolitan or surrounding areas, because we suspect that the overall economic and financial environment households face in large metropolitan areas is considerably different from that found in more rural areas. And, since the base level of financial knowledge and experience between the clientele and agency staff is expected to vary, we also include an indicator variable to distinguish between these two groups. The vector **T** controls for overall economic performance in 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)** are obtained using the probit method.[2] The errors terms, e_i, are assumed to be random and normally distributed with mean zero. The coefficient of interest, α, is expected to be positive and significant, which means that the more lessons participants complete the more likely they are to engage in more desirable financial behaviors. Two probit models are estimated to determine the effect that financial education has on 1) overall financial behavior and 2) specific financial behaviors. The remainder of this section presents the specifics for the two models.

Model 1: Overall Program Impact

The overall program effect is measured by the question "How much do you think your ability to manage money has changed after the program?" Out of the five ordered rankings ranging from "much

[2] In addition to running probit models, we also estimated a series of ordered probits using the participant's rankings as the dependant variable. The coefficients obtained from the ordered probits were similar to those for the probits. The results from the ordered probits are available from the authors upon request.

worse" to "much better," the responses "a little better" and "much better" are considered to demonstrate positive latent effects. The probability that the program has a positive effect overall can be modeled as follows:

$$Prob(\ Y_i=1 \mid Lessons_i,\ \mathbf{X_i},\ \mathbf{T}\ ) = \Phi(\ \alpha \cdot Lessons_i + \mathbf{X_i\beta} + \mathbf{T\delta}\ ), \tag{2}$$

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

Note that this model does not control for an individual's prior financial knowledge and habits. While demographic and socio-economic control variables are included in the model to account for sample heterogeneity, prior differences in overall financial education across participants are not observed. It is important, however, to assess the program effect holding constant the participants' financial behaviors prior to completing the program. This issue is better addressed in our second model, which looks at changes in specific financial behaviors.

Model 2: Changes in Specific Financial Behaviors

Recall that, prior to and following completion of the program, participants were asked to evaluate their financial practices in five behavioral categories using a four-point scale ranging from "poor" to "good." A binary dependant variable indicating behavioral improvement is constructed for each behavioral category. Specifically, Y_i equals one if and only if $post_i > pre_i$ and 0 otherwise. $Post_i$ and pre_i are the levels of financial practice of participant *i* before and after the program, respectively, with the higher value denoting more desirable financial behaviors.[3] Since the participants' prior skill levels can affect the probability of improvement, dummy variables that control for financial behaviors prior to the program are included in the model such that:

$$\Pr(Y_i = 1 \mid Lessons_{i,} X_i, T, pre_i) = \Phi(\alpha \cdot Lessons_i + \sum_j \theta_j I[pre_i = j] + X_i\beta + T\delta + e_i)\,. \tag{3}$$

[3] The incidences of negative changes were very few and treated as no improvement.

In this model, $j = 1$ if "poor," 2 if "moderately poor," 3 if "moderately good," and 4 if "good." $I[.]$ is an index function, which takes the value of one if its argument is true and zero otherwise. The parameters θ_j for $j=1,2,3$ represent how the likelihood of improvement depends on the participant's level of financial behavior prior to the program. The parameters are expected to decrease in j, which would imply the program is more likely to benefit those who start out at lower levels of financial knowledge (see Appendix for mathematical proof)**.** Since no improvement is possible for those already reporting the highest level of financial knowledge prior to the program ($Pre=4$), Equation (3) is estimated for the sample restricted to those with $Pre<4$. A significant and positive α would suggest that, for a given level of pre-training financial skill, an additional lesson increases the probability that participants report improved financial behaviors upon completing the program.

RESULTS

Tables 4 and 5 present the estimation results for 1) the likelihood the program has a positive impact on overall behavior and 2) the likelihood the program results in a positive change in specific financial behaviors. For both tables, coefficients and marginal effects are presented for both the pooled and clientele-only samples. Recall that for Table 5 the sample is reduced to the participants who had less-than-perfect financial management skills prior to the program. Also, note that marginal effects are calculated at the sample means.

Overall Program Impact

Table 4 shows that, while the coefficient on the total number of lessons completed is positive for both the pooled and clientele-only samples, it is only significant at conventional levels for the pooled sample. In addition, the marginal effect of an additional lesson at the mean is slightly greater for the pooled sample than for the clientele-only sample (1.5 percentage points compared to 1.1 percentage points). This suggests that in terms of overall program impact an additional lesson may result in a more positive improvement in overall financial behavior for agency personnel than for clientele, who may have

lacked the prior financial knowledge and experience needed to assimilate a large amount of information in a short time span. It should be acknowledged, however, that the magnitude of the effect of the lessons, even for the pooled sample, is not large. An additional lesson at the sample mean (6.7 lessons) increases the likelihood that participants experience an improvement in their overall financial behavior by 1.6 percent, off a baseline probability of 94.3 percent.

With respect to factors other than the number of lessons, we find that for the pooled sample females are less likely than males to report an improvement in their overall financial behavior. Given the small number of male participants in the sample, however, this finding may not be representative of the target audience as a whole. With respect to education, only the category "some college" is positive and significant (at the 5% level), suggesting the program works best for those with some college education.

Participants with children are somewhat more likely than participants without children to experience an improvement. Compared to the lowest income category (less than $499 per month), higher levels of income increase the probability of a positive program impact. However, the marginal effects do not indicate that this probability is increasing in income. Moreover, only the second highest income bracket ($1,250-1,499 per month) has a significant coefficient (at the 10% level in the pooled sample and the 5% level in 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 decrease the likelihood of participants reporting overall improvement 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 model specifications that both include and omit demographic and economic controls. The findings for the pooled sample without the controls suggest that the more lessons participants complete, the more likely they are to report improved financial behavior regardless of their initial skill level. For example, controlling for the participants' financial behaviors prior to the program, additional lessons increase: 1) the probability of more frequent communication with

family members about money by 2.8 percentage points, 2) the probability of more timely bill payments by 3.0 percentage points, 3) the probability of filing a consumer complaint by 6.5 percentage points, and 4) the probability of engaging in more comparison shopping by 2.5 percentage points. The completion of additional lessons does not appear to significantly decrease the probability of running out of money. This may be, because the budgeting lessons are completed by almost all of the participants regardless of how many lessons they have completed in total.

Once the control variables are introduced, the effect of the number of lessons becomes weaker and insignificant. One exception is for comparison shopping. Controlling for demographic and economic characteristics as well as for the level of comparison shopping before the program, additional lessons significantly increase the probability that a participant will comparison shop by 4.7 percentage points.

The significance of the coefficients for the pre-program status (θ_1 and θ_2) confirms our hypothesis that the probability of improvement is larger for participants who start out with poorer financial practices. For instance, participants who almost always run out of money before the program are 44.1 percentage points more likely to improve their budgeting after they attend the lessons than those who have similar demographic and economic characteristics but seldom run out of money. Similar results are found for communicating with family members about money, paying bills on time, filing consumer complaints, and comparison shopping, which implies that participants who lack financial skills are more likely to gain from the program.

When the estimation is limited to clientele participants, the number of lessons does not appear to play a significant role in improving financial management behaviors. We suspect this is because the number of lessons completed by the clientele may be determined endogenously with the unobserved traits underlying their ability to improve behaviors (i.e., those who are the least likely to improve financial behaviors may choose to complete more lessons, when the prior level is held constant). If this is the case, the program impact (as measured by the number of lessons completed) may be absorbed in the θ's and therefore may not appear in α. It could also be the case that low-income audiences get the most benefit from a few basic lessons and do not benefit much from additional, more advanced lessons. As with the

pooled sample, the coefficients for low pre-program status (θ_1 and θ_2) are in general positive and significant, indicating that the program is likely to have a greater impact on participants who have lower levels of pre-training financial knowledge and skills.

DISCUSSION

An encouraging finding from this study is that significant impacts were observed for participants with poor pre-training behaviors. This suggests that the program was effective in reaching participants who were most in need of financial education. Moreover, we find evidence that the program also had a significant effect on agency staff who reported poor pre-training behaviors. Although the same self-reported characterization of pre-training behavior by agency staff and clientele (i.e., the same θ_i) may have represented different levels of actual behavior, the program appears to have been of benefit to all participants, especially agency staff who likely had higher levels of pre-training skills and knowledge.

The results also indicate that the program had the largest impact on those financial behaviors that could most readily be altered in the short run. For instance, once a full set of explanatory variables was introduced, the impact of the number of lessons was only significant for comparison shopping—a behavior participants could immediately improve regardless of their current financial circumstances. Moreover, the largest marginal effects for pre-training knowledge 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-training behavior had a significant impact on clientele participants paying their bills on time, after controlling for other factors. However, for the pooled sample, poor pre-training behavior did result in a significant increase in paying bills on time. A plausible explanation is that the clientele may have been worse off financially than the agency staff since their actual financial position probably did not change as a result of the program. Thus, even though clientele may have learned from the program the costs associated with late payments, 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.

It is also interesting to note that running out of money is a behavior for which the pre-training level was highly significant for both the pooled and clientele-only samples. However, the marginal effect was lower for the clientele-only sample, where one might expect to find a larger marginal effect for the clientele since 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 more 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.

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. The programs may not need to have numerous and complicated financial lessons. As the findings from this study suggest, a few general lessons in basic financial education are likely to result in positive outcomes.

Limitations

As with most program evaluations, one needs to be somewhat cautious in regarding these findings as conclusive. The 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. However, it is

important to put this into perspective. The overall sample size is adequate and larger than for most program evaluations that target low-income audiences. Also, keep in mind that *All My Money* was one of the first comprehensive financial education programs to be developed for limited-resource audiences. It was also among the first to include a formal evaluation component and to collect impact data from *both* the trainers *and* the program participants. The data for this program also spans a period of five years that began in 1998. In the late 1990s, conducting program evaluation within financial education was still fairly new and did not have the level of importance and attention that it has today.

In addition to sample size, there are other potential limitations with respect to sample selection. The measured impacts may be biased upward due to self-selection into the program and non-random attrition during the course of the program. For example, it may be that only those who were motivated to change their behaviors participated in the program and did not drop out. Since we do not have data on individuals who chose not to participants and those who did not complete the program, it is impossible to control for this potential bias. Thus, the findings may not be representative of the general low-income population. However, the findings are consistent with other studies that have found similar results using self-selected samples (i.e., Clancy, Grinstein-Weiss, and Schreiner 2001; Lyons and Scherpf 2004; Schreiner, Clancy, and Sherraden 2002).

There may also be self-selection with respect to the agencies that returned clientele surveys. Of the more than 100 agencies who participated in the training, only 12 agencies returned evaluations. Selection may not be an issue if the agencies that returned the surveys were random. However, our estimated impacts could be biased upward if the agencies that submitted surveys were more effective in teaching the curriculum than the agencies that did not submit their surveys. Our estimates could also be biased in an indeterminate direction if the characteristics of the participants from these 12 agencies differed in a fundamental way from the participants from the agencies that did not return their surveys.

Aside from issues of self-selection, the impact measures are based on self-reported assessments made by the participants. It is unclear how well these self-reported measures of improvement may reflect actual changes in behavior. The impacts were reported shortly after participants completed the program

and therefore do not capture long-term, or permanent, changes in behavior, which are generally regarded as the ultimate measure of program success. It is also unclear whether participants were responsible for financial management in their household and whether they had the opportunity to put into practice what they had learned in the program. This may be less of a problem for the clientele sample, since a greater proportion appeared to be single mothers (and likely household heads). Regardless, we believe that the self-assessed impacts, though imperfect measures of actual 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.

Finally, we must acknowledge that 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). As a result, the effect of the number of lessons is not a 'true' treatment effect but is a marginal effect conditional on some level of participation in the program. Ideally, we would have liked to have had a control group to determine the extent to which self-selection was an issue. In particular, it would have been of interest to examine whether changes in financial behavior would have occurred even without the program. Future research that focuses on random assignment experiments, with one group receiving financial education and the other not receiving financial education, are needed to separate out the effect of selection from the effect of financial education.

What Have We Learned?

Despite the limitations of this study, the results have useful implications for practice, policy and future research, especially for researchers and financial professionals who are evaluating financial education programs that target low-income populations. This study shows that financial education plays a key role in changing the financial behaviors of *both* the participants and the instructors of programs that target low-income households. However, to better understand this relationship, researchers need to more

carefully assess how knowledge translates into behavior change for low-income populations. As program evaluations continue to be conducted for low-income audiences, it is critical that researchers carefully select the indicators that will be used to measure behavior change and demonstrate program effectiveness. It may be that certain individuals, because of their particular financial situation, are unable to change their behaviors no matter how much financial education they receive.

Also, as researchers and financial professionals continue to conduct program evaluations, they must be cautious when interpreting the results. If financial education does not result in behavior change, it may *not* be that the program is ineffective. Instead, it may be that the participants are unable to change particular behaviors no matter how much financial education they receive. Thus, evaluations that focus on a narrowly defined set of program outcomes may risk underestimating the positive effects of the program. And, as Lyons and Scherpf (2004) also point out, the best measures of program success for low-income audiences may be those that capture whether program participants have the knowledge and skills to change behaviors that are relevant to their particular financial situation. When evaluating programs for low-income populations, researchers may want to focus more on examining outcomes that are tied less to individuals' financial situations and more to whether individuals are able to make sound financial decisions regardless of their financial situation.

Overall, this study provides a better understanding of how financial education programs such as *All My Money* can more effectively measure program impact for low-income populations. This study also lays a foundation that other researchers can build upon as they evaluate programs that have the same goal of moving low-income families into the economic mainstream and improving their overall financial well-being and that of their communities. Yet, our understanding is far from complete. Additional research is needed to identify which survey measures are the most appropriate for audiences with limited financial literacy. More extensive research in this area will help to provide a better understanding of the implications that future policies related to financial education are likely to have for the poor.

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 (or *post*)	=1	if $z^*<\lambda_1$
	=2	if $\lambda_1 \leq z^*<\lambda_2$
	=3	if $\lambda_2 \leq z^*<\lambda_3$
	=4	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.

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Table 1
Description of the Sample by Overall Outcome

Variables	Pooled Sample			Clientele Only		
	Total (n=589)	Financial Behavior after the Program[A]		Total (n=161)	Financial Behavior after the Program[A]	
		Improve=0 (n=59)	Improve=1 (n=530)		Improve=0 (n=24)	Improve=1 (n=137)
Total Number of Lessons[†]	6.7	5.6	6.8	3.7	2.9	3.9
Age[†]	39.0	39.1	39.0	34.5	34.1	34.6
24 or less	8.7	11.9	8.3	20.5	25.0	19.7
25-34	31.1	23.7	31.9	37.9	33.3	38.7
35-44	28.2	32.2	27.7	23.6	25.0	23.4
45-54	23.9	23.7	24.0	13.7	8.3	14.6
55 or more	8.2	8.5	8.1	4.3	8.3	3.6
Female	86.9	91.5	86.4	88.2	87.5	88.3
Education:						
Less than high school	8.2	10.2	7.9	26.1	25.0	26.3
High school or GED	20.5	28.8	19.6	35.4	37.5	35.0
Some college	27.0	18.6	27.9	26.7	25.0	27.0
Bachelor's degree	27.7	23.7	28.1	8.7	8.3	8.8
Graduate degree	16.6	18.6	16.4	3.1	4.2	2.9
Number of Children:						
None	40.2	45.8	39.6	20.5	29.2	19.0
1	21.7	13.6	22.6	18.6	12.5	19.7
2	21.4	22.0	21.3	31.1	33.3	30.7
3 or more	16.6	18.6	16.4	29.8	25.0	30.7
Other Adult Members	70.6	83.1	69.2	58.4	83.3	54.0
Personal Income:						
$249 or less	3.2	1.7	3.4	9.9	4.2	10.9
$250-499	5.8	13.6	4.9	19.3	25.0	18.2
$500-749	7.8	10.2	7.5	19.3	25.0	18.2
$750-999	8.0	6.8	8.1	10.6	16.7	9.5
$1,000-1,249	12.6	15.3	12.3	10.6	12.5	10.2
$1,250-1,499	15.3	11.9	15.7	11.2	4.2	12.4
$1,500 or more	47.4	40.7	48.1	19.3	12.5	20.4
Other Income Sources	45.8	57.6	44.5	26.1	41.7	23.4
Chicago Area	60.3	62.7	60.0	82.0	79.2	82.5
Clientele	27.3	40.7	25.8	100.0	100.0	100.0

[†] Mean values are reported.
[A] Improve=0 if participants reported no improvement in their financial management practices after the program.
=1 if participants reported some improvement in their financial management practices after the program.

Table 2
Changes in Specific Financial Behaviors (%)

	Pooled Sample		Clientele	
	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

***** The number of observations varies slightly for each statement since a few participants choose not to respond to all of the financial behavior questions.

Table 3
Changes in Specific Financial Behaviors by Total Number of Lessons and Pre-Training Financial Behaviors (Reduced Sample)

	Do not run out of money		Talk with family about money		Do not pay bills late		Complain when having a consumer problem		Compare prices and quality before buying	
	Improve=0	*Improve=1*	*Improve=0*	*Improve=1*	*Improve=0*	*Improve=1*	*Improve=0*	*Improve=1*	*Improve=0*	*Improve=1*
Pooled Sample										
Number of Observations	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-Training 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
4 = Almost Always	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Clientele Only										
Number of Observations	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-Training 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
4 = Almost Always	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Notes: *Improve=1* if *post>pre* and 0 otherwise. Sample is reduced to those who did *not* respond "almost always" for their pre-training behavior. The breakdown of other sample characteristics by the changes in behaviors is available upon request.

Table 4
Probit Regressions for the Positive Overall Program Effect

	Pooled Sample			Clientele Only		
Variables	Coeff	(S.E.)	dY/dX	Coeff	(S.E.)	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[A]	
Constant	1.228	(0.686)*		2.980	(1.320)**	
Predicted Probability at X-Bar		0.943			0.977	
Number of Observations		589			161	
Pseudo R-squared		.182			.434	
Log Likelihood		-156.8			-38.4	

* p<.10, ** p<.05, *** p<.01
[A] Dummy for 1998 was dropped from the regression to avoid perfect collinearity.
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. Omitted categories include: age (24 or less), high school or GED, no children, and personal income ($499 or less). Robust standard errors are reported, and marginal effects are calculated at the mean values.

Table 5
Selected Probit Coefficients and Marginal Effects of Improvements in Financial Behaviors, Reduced Sample

		Pooled Sample						Clientele Only					
		Without controls†			With controls†			Without controls†			With controls†		
Behaviors		Coeff	S.E	dF/dX	Coeff	S.E	dF/dX	Coeff	S.E.	dF/dX	Coeff	S.E.	dF/dX
Do not run out of money	α	0.051	(0.033)	0.016	-0.014	(0.062)	-0.004	-0.023	(0.071)	-0.006	-0.081	(0.187)	-0.010
	θ_1	1.534	(0.291)***	0.481	1.483	(0.340)***	0.441	1.797	(0.389)***	0.485	2.462	(0.794)***	0.288
	θ_2	1.138	(0.203)***	0.357	1.201	(0.222)***	0.357	1.569	(0.351)***	0.423	2.434	(0.714)***	0.285
	θ_3 (omitted)	…	…	…	…	…	…	…	…	…	…	…	…
	N		365			365			122			122	
	lnL		-187.218			-171.929			-49.770			-28.742	
Talk with family about money	α	0.071	(0.028)**	0.028	0.010	(0.054)	0.004	0.016	(0.054)	0.006	-0.172	(0.122)	-0.069
	θ_1	1.191	(0.178)***	0.473	1.430	(0.199)***	0.566	1.343	(0.349)***	0.535	1.632	(0.445)***	0.650
	θ_2	0.806	(0.144)***	0.320	0.861	(0.153)***	0.341	0.799	(0.330)**	0.318	0.869	(0.395)**	0.346
	θ_3 (omitted)	…	…	…	…	…	…	…	…	…	…	…	…
	N		482			482			122			122	
	lnL		-304.401			-283.685			-76.336			-63.074	
Do not pay bills late	α	0.103	(0.036)***	0.030	0.028	(0.070)	0.008	-0.059	(0.067)	-0.019	-0.003	(0.147)	-0.001
	θ_1	1.225	(0.324)***	0.359	1.296	(0.363)***	0.358	1.122	(0.367)***	0.368	0.649	(0.497)	0.183
	θ_2	0.715	(0.245)***	0.209	0.880	(0.276)***	0.243	0.861	(0.360)**	0.282	0.745	(0.494)	0.210
	θ_3 (omitted)	…	…	…	…	…	…	…	…	…	…	…	…
	N		292			292			99			99[A]	
	lnL		-147.792			-133.379			-52.874			-38.831	
Complain when having consumer problems	α	0.165	(0.029)***	0.065	0.094	(0.058)	0.037	0.036	(0.056)	0.012	-0.001	(0.109)	-0.000
	θ_1	0.913	(0.181)***	0.361	1.10	(0.197)***	0.434	0.928	(0.362)**	0.323	0.942	(0.444)**	0.311
	θ_2	0.458	(0.163)***	0.181	0.551	(0.174)***	0.218	0.605	(0.337)*	0.211	0.453	(0.390)	0.149
	θ_3 (omitted)	…	…	…	…	…	…	…	…	…	…	…	…
	N		477			477			122			122	
	lnL		-297.057			-278.658			-71.835			-58.478	
Compare prices and quality before buying	α	0.080	(0.035)**	0.025	0.160	(0.077)**	0.047	0.074	(0.070)	0.025	0.171	(0.150)	0.044
	θ_1	1.225	(0.318)***	0.381	1.451	(0.361)***	0.426	1.187	(0.460)**	0.394	1.663	(0.589)***	0.423
	θ_2	0.425	(0.155)***	0.132	0.399	(0.169)**	0.117	0.654	(0.317)**	0.217	0.811	(0.448)*	0.207
	θ_3 (omitted)	…	…	…	…	…	…	…	…	…	…	…	…
	N		349			349			89			89[B]	
	lnL		-186.9			-170.2			-48.8			-48.8	

Notes: * p<.10, ** p<.05, *** p<.01. Sample is reduced to those who did not respond "almost always" for their pre-training behavior.
†Control variables are 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.