Chapter 10
Financial Literacy of High School Students

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Abstract Five, large-scale, biennial national surveys of high school seniors from 1997 to 2006 have been used to measure the financial literacy of young American adults. The results show a low level of ability to make age-appropriate financial decisions in their own self-interests. Low baseline results in 1997 have further deteriorated with scores on the 31-question, multiple choice exam now hovering just over 50 %. Students from families with greater financial resources tend to be substantially more financially literate than those from families that are less well-off, thereby exacerbating the inequality of economic welfare among families. Moreover, high school classes in personal finance and money management have not proven to be effective in raising levels of financial literacy.

The Jump$tart Coalition for Personal Financial Literacy was formed in 1995 in response to a dichotomy seemingly lifted from the opening of Dickens's *A Tale of Two Cities*—it was both the best of times and the worst of times. On the positive side, real personal income in the United States had never been higher. On the downside, financial distress, measured by families filing for personal bankruptcy, had also never been higher. How could this be?

The early pioneers of what came to be known as the financial literacy movement came up with a hypothesis to explain this dichotomy. Deregulation of the nation's financial services industry over the previous 20 years had encouraged the proliferation of financial products, many of them innovative and complex. The virtual elimination of interest rate restrictions (on both deposits and consumer credit) allowed banks to extend credit (and credit cards) to a wider spectrum of consumers whose incomes and/or credit ratings had hitherto made them ineligible.

While most economists posited that variety and choice are good for consumers, it was also possible that many consumers lacked the ability to evaluate the new and complex financial instruments and make informed judgments in both choice of

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instruments and extent of use that would be in their own best long-run interests. This ability was termed financial literacy.

The small group that became the Jump$tart Coalition shortly came to two additional conclusions. First, the problem was too large for any single organization to tackle and that a *consortium* of organizations with interest in financial literacy should be assembled. A second conclusion was that the current level of financial literacy should be measured as a baseline and that subsequent measures should be taken, at regular intervals, over time to measure progress in making Americans financially literate.

High school seniors were chosen as the population to measure for several reasons. First, they were adolescents on the verge of legal age for both the ownership of a variety of assets and the ability to obligate themselves to the repayment of debt. Second, they were in their last year of education whose form could be proscribed by adults acting on their behalf. Courses related to financial literacy *could* be mandated in high school, but not in college where students are allowed to choose their own course of study. Finally, from a pragmatic standpoint, the fledgling organization could not afford the cost of large-scale, detailed surveys of adults, involving paper and pencil tests of financial literacy. School-based administration of these tests was deemed to be an accurate and cost-efficient method of assessing financial literacy.

Other Studies of Financial Literacy

A number of surveys have shown that Americans of all ages lack the ability to make good financial choices (see Chen & Volpe, 1998; Volpe, Chen, & Liu, 2006, for a review). The lack of basic financial literacy has been shown to result in poor financial decision making. Nellie May's study of undergraduate college students in 2000 found that 25 % have four or more credit cards and about 10 % carried outstanding balances between $3,000 and $7,000 (Murray, 2002). Joo and Grable (2000) found that poor financial decisions also hurt productivity in the workplace. A 2001 Harris pole of graduating college seniors found that only 8 % believed that they were very knowledgeable about investing and financial planning in contrast to about half who believed they were not very or not at all knowledgeable.

For more than a decade, the Federal Reserve has focused on the importance of financial education and literacy in the functioning of the financial markets (see, for example, Braunstein & Welch, 2002; Greenspan, 2003, 2005; Hilgert, Hogarth, & Beverly, 2003).

Volpe et al. (2006) used a survey of corporate benefit administrators to identify important topics in personal finance and assess employee knowledge relating to these topics. Their survey identified basic personal finance as a critical area in which employee knowledge is deficient, particularly as it relates to retirement planning, investment and estate planning.

The Organization for Economic Co-operation and Development (2005) report *Improving Financial Literacy* found the lack of financial literacy to be widespread, affecting adults and/or high school students in Australia, Japan and Korea as well as the United States.

Jump$tart Surveys

In late 1997, the Jump$tart Coalition for Personal Financial Literacy conducted its first *Personal Financial Survey.* The results of this initial baseline survey were not reassuring. Just 10.2 % of the 1,532 high school seniors were able to answer at least three-quarters of the basic, age-relevant questions correctly. In fact, the average grade on the exam was a *failing* 57.3 %. (Mandell, 1998).

Given the results of this inauspicious start, the Jump$tart Coalition decided to administer a version of the *Personal Financial Survey* every 2 years to measure progress to the overall goal of universal financial literacy for all American high school graduates. Back in 1997, the Jump$tart founders optimistically forecast that by 2007, 10 years after the baseline measure, the *final* survey would document the achievement of this goal.

Results of Subsequent Surveys

In early 2000, a second nationwide survey was administered to 723 high school seniors. The results were substantially worse than those of the first survey, 2 years earlier (Mandell, 2001). During the academic year 2001–2002, the third nationwide survey was given to 4,024 twelfth graders. Overall results continued to decline from 51.9 % to a low of 50.2 % (Mandell, 2003).

The survey of 4,074 high school seniors completed in February 2004 showed the first improvement in overall scores since the surveys began in 1997. The mean rose by 2.1 percentage points from the low of 50.2 % achieved in 2000 to 52.3 %. While this result was better than the two previous surveys, it was still 4 percentage points below the baseline study of 1997, which itself has been characterized as a high flunk (Mandell, 2004). A record 5,775 twelfth grade students completed the Jump$tart survey by February 2006, achieving an average score of 52.4 %, a slight increase from 2004 (Mandell, 2006a).

The Sample

The Jump$tart survey uses a national sample of seniors in U.S. public high schools. The sample is stratified by state and clustered by school. The probability that a public high school within a state is chosen for inclusion in the sample is proportional to the number of seniors in that high school.

The universe used for school selection is all public high schools in the United States from the list provided online by the U.S. Department of Education. Since the cost of randomly selecting and testing students across every state would be prohibitive, students are clustered by high school so that the exam can be administered to entire classroom of students at one time.

The number of high school seniors sampled in each state is based on the number of public high school seniors in that state. The sampling interval is the proportion of all public high school seniors nationwide multiplied by the desired national sample size, adjusted for likely response rate. Within each state, every public high school is rank-ordered from smallest to largest by the number of twelfth grade students. Then, a random number between 1 and the sampling interval is chosen as the start number within each state. High school seniors are added up (from lowest to highest) and when the random start number is reached, that high school was chosen for inclusion in the sample. From that point on, the sampling interval is added to the cumulative number continually, until the largest high school is reached. Each time the random start plus a multiple of the sampling interval is reached, another high school is added to the sample. Each school that falls into the sample is contacted and asked if a specific class would take the Jump$tart survey.

To improve the probability that sampled school would participate in the survey, members of statewide Jump$tart Coalitions are asked to contact school principals to urge cooperation. As added incentive for the Jump$tart Coalitions, those states that want comparative state-specific results have been over-sampled (40 schools per state) since 2002 with the provision that state-specific results would be supplied if 10 or more schools within their state participated in the survey. As a result, the data used in the analysis must be weighted to insure that every school in the sample has a probability of selection proportionate to the size of its senior class size.

Letters are sent to the principals of the randomly selected schools, explaining the purpose of the study and asking for their cooperation. Principals who are personally known to members of the Jump$tart Coalition or of the state Coalitions were contacted by phone as well. They are asked to select a twelfth grade (non-honors) class in English or Social Studies (aside from economics) to participate in the survey. This was done to avoid biasing the results by specifically selecting classes in economics, business or related areas. To randomize the process further, principals were asked to select classes meeting closest to 10 a.m.

A small incentive is offered to help gain the cooperation of the schools. In 2006, the teacher who administered the survey was offered a $50 gift card from Staples to purchase school supplies. In earlier years, a small savings bond was used as an inducement. Some participating teachers decline this offer.

In 2006, 305 of the 1,733 sampled schools participated, a response rate of 17.6 %. This was an increase from the response rate of 15.8 % in 2004 but below both the 18.3 % in the 2002 survey and 21.3 % in the 2000 study; in addition, it was less than half of the 43.6 % rate that had been achieved in 1997. Conversations with school officials indicate that while they have an interest in financial literacy, the intense pressure to achieve satisfactory scores on standardized national examinations has

diverted energy and resources to core academic areas. In spite of varying response rates, however, the demographics of the five surveys were very similar, indicting that they were all reasonably representative of the population of twelfth graders in public schools.

The Survey Instrument

The survey instrument tends to consist of approximately 50 questions, of which 31 are the core financial literacy questions. All questions use a multiple choice format.

Prior to the first survey, members of the Jump$tart Coalition identified four key areas of coverage in their Personal Finance Standards. These areas were (1) income, (2) money management, (3) saving and investing and (4) spending and credit. The test questions attempted to cover the four key areas and their major subcategories. Wherever possible, questions were put into age- and life cycle-appropriate case studies to make them relevant to the students.

Test questions were largely identical to those used in previous years, except for ordering and cosmetic changes. To discourage teachers from teaching for the exam, the ordering of questions is changed in each survey, as is the ordering of answers to each of the questions. Furthermore, cosmetic changes are made in the questions, including changing the names of persons used in mini-case questions. In addition, regulatory and market changes over a period of several years have mandated substantive changes to some questions. For example, while credit reports could formerly be accessed without charge only if a consumer was denied credit, a new law was passed guaranteeing consumers access to their credit records, without charge, once each year. This forced the modification of the question relating to free access to credit records. While this changed the comparability of the questions somewhat, great care has been taken to minimize the impact of these necessary changes.

In an assessment of the reliability and validity of the 1997 and 2000 Jump$tart surveys, Lucey (2005) found that the surveys possess moderately high overall intercorrelation consistency as well as some degree of face and content validity. However, he found less support for their construct, congruent, and predictive validity and suggested further research into the degree to which the Jump$tart surveys measure financial understanding.

Financial Literacy by Category

Test Results by Demographics

Table 10.1 summarizes the results of the five studies by demographic variables. Recently, students from families with higher incomes have tended to do better than

Table 10.1 Test results by demographics

	1997 Mean score	2000 Mean score	2002 Mean score	2004 Mean score	2006 Mean score	2006 Proportion of students	2006 % C or better	2006 % Failing
	57.3 %	51.9 %	50.2 %	52.3 %	52.4 %	100.0 %	6.9 %	62.0 %
Parents' income								
Less than $20,000	55.2	46.3	45.7	49.5	48.5	8.0	2.9	74.2
$20,000–$39,999	58.2	52.0	50.7	51.3	50.8	17.0	5.6	67.3
$40,000–$79,999	59.6	57.2	52.3	54.1	53.7	29.1	8.1	57.5
$80,000 or more	59.0	55.0	52.7	55.9	55.6	27.0	10.5	52.0
Highest level of parents' education								
Neither finished H.S.	51.4	47.0	43.7	44.6	44.5	6.4	0.4	82.7
Completed H.S.	57.1	49.7	47.5	51.5	50.6	24.6	4.5	66.7
Some college	55.8	53.8	51.7	52.6	51.8	21.0	6.4	63.2
College grad or more	59.3	55.1	53.5	55.4	55.6	43.7	10.1	53.4
Sex								
Female	57.9	51.6	50.7	52.2	52.3	53.1	4.9	62.6
Male	56.9	52.2	49.8	52.4	52.6	46.6	9.3	60.8
Race								
White	60.9	54.5	53.7	55.5	55.0	71.3	8.9	54.6
African American	50.4	47.0	42.1	44.0	44.7	10.1	1.6	79.8
Hispanic American	55.1	45.3	44.8	48.3	46.8	8.6	2.0	79.6
Asian American	55.8	53.5	50.6	48.3	49.4	4.4	2.2	71.9
Native American	48.8	38.6	45.5	46.7	44.1	1.5	5.1	86.6

others on the exam. In 2006, for example, students whose parents' income totaled less than $20,000 per year had a mean score of 48.5 % in contrast to an average of 55.6 % for students whose parents' income was more than $80,000. In 2006, for the third consecutive survey, students from families with the highest incomes did better than all others and the differential appeared to be widening.

It is important to note that students from the highest income families did not always exhibit the highest rates of financial literacy. In the first two surveys (1997 and 2000), students from families in the $40,000–$79,999 income range did *better* than students in the top family income range. We attributed this to the notion that students from more affluent homes did not have to be as financially literate as their less affluent counterparts since they were almost universally college-bound and would probably be insulated from most financial responsibilities for at least four more years.

While we have no hard data to explain why students from the highest income families suddenly appear more financially literate than others, we feel that it is likely the result of a higher level of awareness of the importance of financial literacy by these wealthier and better-educated families.Based on conversations we have had

with educators, early adopters of programs designed to address the problems of financial literacy appear to be the more affluent private and public high schools that are both more aware of the problem and less constrained by resource shortages than other schools.

Examination results are also strongly and monotonically related to parents' education. If neither parent completed high school, the average score in 2006 was 44.5 % rising to 55.6 % for those who had at least one parent who completed college. Also, while less than half of 1 % of those whose parents had less than a high school education scored a C or better on the exam (at least 75 %), 10.1 % of those in the highest education category did this well.

The surveys have found little difference in financial literacy by gender. In 2006, males did marginally better than females (52.6 versus 52.3 %) as they did in 2000 and 2004. However, in two of the five surveys (1997 and 2002), females did slightly better than males.

Performance differences were more closely related to race than any other background variable. White students have consistently outperformed all others while African Americans and Native Americans have tended to do least well. The difference of approximately 10 points in financial literacy scores representing close to a 20 % differential underscores one of the most important causes of racial inequality. Since racial groups with fewer financial resources also tend to have less ability to utilize these resources for their own best interests, overall economic well-being, which is a product of financial resources and financial literacy, is more poorly distributed than either component.

Students from the Midwest region of the United States did best on the exam with a mean score of 54.2 %. Those from the South did least well with a mean score of 49.9 %, a number unchanged from the previous survey.

Results by Aspirations

Students were asked about their educational plans and occupational aspirations as well as the full-time income they anticipated making from their first job. The results are shown in Table 10.2.

In 2006, nearly 71 % of students who participated in the survey planned to attend a 4-year college and more than half aspired to be professional workers (a sizeable proportion did not yet know what occupation they intended to undertake). Income expectations were varied, with 41.4 % expecting to begin work at $40,000 or more and an additional 20.4 % expecting to make between $30,000 and $40,000. This and previous surveys have found that educational aspiration is strongly and directly related to financial literacy while income expectation is also positively related, but not as strongly. This author concludes, in an earlier paper, that those with higher educational aspirations are relatively higher in literacy than in thriftiness (Mandell, 2005).

Table 10.2 Test results by aspirations

	1997 Mean score	2000 Mean score	2002 Mean score	2004 Mean score	2006 Mean score	2006 Proportion of students	2006 % C or better	2006 % Failing
	57.3 %	51.9 %	50.2 %	52.3 %	52.4 %	100.0 %	6.9 %	62.0 %
Educational Plans								
No further education	43.8	39.7	32.2	41.9	37.9	2.0	2.7	91.5
2-year or jr. college	53.8	43.3	46.4	48.0	47.5	14.7	1.7	76.6
4-year college	60.0	54.5	53.5	55.0	54.9	70.9	8.8	55.3
Planned occupation								
Manual work	45.5	38.7	39.4	40.0	41.0	2.7	1.4	87.9
Skilled trade	55.7	43.6	45.7	47.1	47.8	6.2	4.0	71.4
Service worker	54.4	41.3	43.3	49.0	49.5	10.6	5.6	67.4
Professional worker	59.6	55.0	53.1	55.2	54.9	50.3	8.9	54.9
Expected full-time income								
Under $15,000	47.4	40.6	39.0	45.1	42.5	2.8	1.4	82.2
$15,000–$19,999	53.3	41.7	46.6	48.8	46.4	6.1	2.4	78.8
$20,000–$29,999	58.5	53.4	50.3	51.3	51.6	13.5	5.7	63.7
$30,000 or more	59.5	54.4	52.6	53.8	53.9	20.4	6.9	58.8
$40,000 or more[a]				54.1	54.1	41.4	9.3	57.5

[a]$40,000 or more bracket was added in 2004

Results by Money Management Education

One of the strongest and most depressing findings from the Jump$tart surveys is that students who take a full-semester high school class in money management or personal finance are no more financially literate than students who have not taken such a course. Table 10.3 shows results from the four surveys (2000–2006) that

Table 10.3 Test results by money management education

	1997 Mean score	2000 Mean score	2002 Mean score	2004 Mean score	2006 Mean score	2006 Proportion of students	2006 % C or better	2006 % Failing
All students	57.3 %	51.9 %	50.2 %	52.3 %	52.4 %	100.0 %	6.9 %	62.0 %
Classes in H.S.[a]								
Entire course, money Mgt/personal finance		51.4	48.2	53.5	51.6	16.7	6.8	62.4
Portion of course, money Mgt/personal finance		52.9	49.8	52.7	53.4	29.3	7.3	59.7
Entire course, economics		51.0	49.8	53.0	53.2	38.1	7.8	59.9
Portion course, economics		52.1	51.1	53.2	53.0	27.4	7.9	60.0
Stock mkt game in class		55.1	52.4	55.8	55.0	27.7	10.0	55.0

[a]Percentages may total more than 100 %, with multiple responses possible

have included a question about courses related to financial literacy that the student may have taken. In three of the surveys, students who took a full-semester course in money management or personal finance actually did slightly *worse* than all students. In 2006, for example, 16.7 % of high school seniors who reported having had an entire course in money management or personal finance scored an average of 51.6 % on the exam in contrast to the average score of 52.4 % achieved by all students.

While the differences are not large enough to support a statistical conclusion that students who have had such a course are less financially literate than those who have not, there is no evidence to show that courses in money management or personal finance, as they are now taught, improve the financial literacy of their students.

It is also interesting to note that those students who had such a course at school were less likely than all students to achieve a C or better and were slightly more likely to have failed the exam.

It should be noted that evaluations of specific high school programs in financial literacy which used pre- and post-tests have found positive impact in both financial knowledge and financial behavior. An evaluation of the National Endowment for Financial Education's High School Financial Planning program, which could be taught in as little as 2 weeks or as long as a semester, found increased in knowledge and savings rates (Danes, 2004; Danes, Huddleston-Casas, & Boyce, 1999). Thus far, however, it has not been possible to test for specific part-semester programs as part of the Jump$tart surveys because of the number of such programs and the inability of students to recall the names of specific vendors.

Impact of State Mandates

In a well-known survey of Merrill-Lynch customers, Bernheim, Garrett, and Maki (2001) found that those who had attended high school in a state which mandated the teaching of personal finance tended in middle age to save a higher proportion of their incomes than others. However, in his analysis of the 1997 Jump$tart survey, Mandell (1998) found that students in states which mandated the teaching of consumer education or personal finance did not show higher mean financial literacy scores than those who lived in states where the mandates did not exist.

In further analysis of the 1997 Jump$tart data, Tennyson and Nguyen (2001) found no association between mandates and test scores when averaged over all forms of mandates. However, they did find that mandates requiring the teaching of a specific course were statistically associated with higher scores. This conforms to the findings of Mandell (2004) from a later Jump$tart survey of teachers, which are explained, in greater detail, immediately below.

Survey of Teachers and Schools

The, by now, well-publicized finding that high school classes in financial management or personal finance are ineffective in raising levels of financial literacy elicited a number of hypotheses to explain this phenomenon. The first hypothesis

that students who took such classes were less likely to be academically talented and college-bound was disproved by 2002 data that showed no differences in the proportions of college-bound and non-college-bound students taking such a class.

A second hypothesis was that teachers of financial management or personal finance had little or no training in this field. A third hypothesis was that many students took the course as an elective rather than as a required course and did so because it was structured to be easier than required courses and, consequently, did not teach the material with equivalent rigor.

To address the second and third hypotheses, the 2004 Jump$tart survey added a separate survey of participating schools and received responses from 130 of the 252 schools that administered the Jump$tart survey (Mandell, 2004). While more than half (57.7 %) of schools offered a full-semester course in money management or personal finance, only 10.7 % required all students to take such a class. In addition, the course is not taken primarily by seniors who could presumably gain most from it since they are current or soon-to-be legal adults. In fact, the course was taken primarily by seniors in just 21.6 % of the schools which may account for low levels of recollection by the time they took the Jump$tart test in their senior year.

Teachers who taught full time courses in money management or personal finance tended to be well-educated in the area, professional and experienced. More than 90 % of schools used the same teachers to teach these full-semester courses year after year, and nearly two-thirds of these teachers have a graduate degree in business, consumer economics or related fields and nearly all have at least an undergraduate degree in the appropriate field.

Students who took a *required* course in money management or personal finance did better than all other students (54.2 %) on the financial literacy test. Unfortunately, just 6 % of all U.S. high school students are required to take such a course.

Success of Stock Market Games

One school-based educational program that is consistently related to higher financial literacy scores is playing a stock market game. Since first measured in the 2000 survey, students who play a stock market game in class do 3–4 percentage points better than all students, which translates to a 6–8 % increase in financial literacy. Although the reasons for the lone success of this activity are not clearly known, playing such an interactive game appears to stimulate interest in (at least) the investment-related aspects of personal finance.

What accounts for the failure of full-semester high school classes in money management to raise the financial literacy levels of our students? A number of interesting hypotheses have been advanced to explain this phenomenon. The success of investment games in raising financial literacy scores suggests that courses should be more interactive and fun, focusing on current real-world events. Some have suggested that many, if not most, of the subjects covered in a money management class are not relevant to high school students, and it is hard to hold their interest in subjects such as mortgages, investments and retirement. Still others have postulated that students

remember little of what they learn in *any* class, once the final exams are completed, particularly if what they have learned is not reinforced by other classes that build on the subject matter.

Motivation to be Financially Literate

It is possible that courses in money management do not improve financial literacy because students do not realize just how important this material is to their futures. To test this hypothesis, three new questions were added to the 2006 Jump$tart survey to see how young adults felt about three issues:

1. The importance of one's own actions in avoiding financial distress;
2. The degree of discomfort caused by the financial inability to pay one's bills; and
3. The perceived difficulty of retiring without a pension (other than Social Security) or savings.

Greatest Cause of Financial Distress

Slightly more than two-thirds of the students attributed personal financial difficulty to the consumer's personal actions, largely to too much credit (28.9 %) and no financial plan (also 28.9 %). An additional 9.4 % felt that the greatest cause of financial difficulty was not enough savings.

Only 8.6 % of students felt that bad luck was the greatest cause of financial difficulty and those students had average financial literacy scores of 49.1 %. Another 24 % felt that the greatest cause was too little income, and their financial literacy average was 50.6 %. The best financial literacy scores were recorded by students who felt that the greatest cause of financial distress was buying too much on credit (56 %) and those who felt that it was due to the lack of a financial plan (53.8 %).

It appears that most students are aware of the primary causes of financial difficulty and that this knowledge, by itself, does not strongly motivate students to become financially literate.

How Bad Is Insolvency?

A second hypothesis related to motivation is that some young people may not regard financial distress and insolvency as being particularly bad or unusual in today's society. Perhaps everyone they know is also from an overconsuming, credit-dependent family and that they have adjusted to unpaid bills and calls from credit collectors.

Only 8.5 % of students, however, feel that it is not so bad if you cannot pay your bills. They tend to have very low financial literacy scores, averaging just 43.2 %.

Just 42.5 % of students feel that inability to pay bills is very bad, and their financial literacy scores are actually slightly lower than those who feel that it is pretty bad.

The conclusion here is that, aside from a small percentage of students, most feel that it is bad to be financially insolvent and the intensity of negative feelings toward this state is not a major driver of financial literacy.

Motivation to Retire Comfortably

Students were asked how hard it is to live in retirement entirely on Social Security. Once again, most students answered this question reasonably. Only 7.5 % responding that one could live well on Social Security, and their financial literacy scores were extremely low, just 39.9 %.

Half the students felt that it was tough to retire on Social Security alone, and they had the highest scores (56 %). An additional 42.3 % felt that people could get by on Social Security if they were willing to cut back on expenses and their average financial literacy score was 50.4 %.

Further analysis (Mandell & Klein, 2007) found that after controlling on all other variables, such as aspiration, that had a significant impact on financial literacy, the three motivational variables had a significant and positive relationship to financial literacy. This suggests that courses in money management and personal finance keep stressing to students the importance of being financially literate to insure their own futures.

Are Thrift and Financial Literacy Related?

Many financial problems of American consumers relate to low levels of personal saving and/or high levels of debt. Therefore, one desirable outcome of financial literacy would be an enhanced proclivity toward saving or thrift. Since 2004, a question has been added to the survey to enable us to see whether a relationship exists between self-evaluated levels of thrift and financial literacy scores.

Students were asked the following question:

Some people tend to be very thrifty, saving money whenever they have the chance, while others are very spending-oriented, buying whenever they can and even borrowing to consume more. How would you classify yourself?

(a) Very thrifty, saving money whenever I can
(b) Somewhat thrifty, often saving money
(c) Neither thrifty nor spending-oriented
(d) Somewhat spending-oriented, seldom saving money
(e) Very spending-oriented, hardly ever saving money.

In 2006, more than half the students thought of themselves as very or somewhat thrifty while only a quarter felt that they are somewhat or very spending-oriented. Thrift appears to have little or no relationship to financial literacy, however! Those who are very spending-oriented or very thrifty do worse on the test than others with more moderate savings behavior.

Results by Money Management Experience

All five Jump$tart surveys have clearly demonstrated that experience in managing one's finances does little if anything to raise a young person's overall level of financial literacy.

Credit Card Use

In 2006, 31.7 % of high school seniors used a credit card. More than half of these students (presumably those over the age of 18) used their own card while about two-thirds used a card in the name of their parents. The overlap is due to the finding that 4.8 % used both their own card and the card of their parents.

The 67.7 % of students who did *not* use a credit card had an average score of 53.4 % in contrast to 50.2 % for those who used a credit card. The fact that non-credit card users were more financially literate than those who used credit cards is similar to results found in every survey except for 2000.

ATM Card Use

In 2004, for the first time, students were asked whether they used an ATM card and also whether they used it to make point of sale purchases directly as well as for obtaining cash. In 2006, 47.9 % of students used an ATM card, a large increase from 42.4 % in the 2004 survey. Nearly two-thirds of the ATM-using students employed the cards for direct purchases at point of sale as well as for obtaining cash.

Students who used an ATM card for both cash and purchases did better on the financial literacy test in both years than did those who used the card only for getting cash or who did not use it at all.

Paying for Car Insurance

The 2006 survey shows that nearly 80 % of high school seniors have the use of an automobile and more than 60 % of all seniors own their own cars. Of those who owned their own cars, nearly half paid (or helped pay) for their auto insurance. Students who owned their own car and paid for the insurance tended, over the five surveys, to be no more financially literate than those students who owned a car and had the insurance on it paid for by someone else.

Ownership of Financial Assets

Students with bank accounts do tend to be more financially literate than those without such accounts, although this could reflect differences in income. Sixty-four percent of students included in the 2006 survey owned no securities, either in their own name or in the name of their parents. There were few differences in literacy scores that were related to security ownership, whether in their names or in the names of their parents.

Employment History

Students who have also worked in the paid labor force have proven to be more financially literate than those who have not worked. This finding has been consistent in all Jump$tart surveys in which the question of work experience has been asked. This may relate to the finding by Alhabeeb (1999) that teenagers who are employed tend to spend more on consumption categories other than time-consumptive entertainment and transportation and, by inference, be more financially experienced than those teens who are not employed.

Parental Home Ownership

Most students (84.3 %) came from families that owned their own homes. These students had significantly higher scores in financial literacy (53.1 %) than did students whose parents rented their homes (48.5 %). This difference could well be related to the higher socioeconomic status of students from home-owning families.

Financial Literacy by Subject Category

Thus far, we have looked at overall test results by categories relating to various student characteristics and demographics. It is possible, however, that different types of students vary in their performance by subject category. To test this, we divide the questions into four categories of income, money management, savings and investing, and spending and scored the results of each subject. A subset of the spending questions relating to credit was broken out separately as well. In all surveys, students scored best on the income questions and worst in savings and investing.

Students in the highest-income category did better than others in *every* category in 2006, the first time that they had done so. This lends additional credibility to the hypothesis that families of students from higher income, better-educated families are starting to get serious about financial literacy. The difference between whites and African Americans was the largest in the income category, a difference of 13.3 percentage points.

Subject Expertise by Money Management Experience

It is reasonable to expect that money market experience in a particular area affects financial literacy in that area. For example, one might assume that students who use their own credit card would score higher in the credit area than other students. The results, though, show just the opposite, with students who *do not* use a credit card answering credit questions far more accurately than students who use credit cards. This finding has been consistent over time.

On the other hand, students with savings accounts (Savings Only or Savings and Checking) do better on the savings questions than do students without savings account, but they also tend to do better on all categories besides Income. The 2006 survey results tend to continue a trend showing more of a connection between experience and knowledge in related subject areas. The relationship is not yet, however, either strong or consistent.

Experience and Specific Knowledge

While experience in managing one's finances does little, if anything, to raise the overall level of financial literacy, certain types of experience have been shown to increase financial literacy related to that experience. In the 2006 survey, it was found, for example, that students who have never worked for pay are far less likely than those who have worked full- or part-time to know that income tax, Social Security and Medicare are deducted from an employee's paycheck.

In addition, those who own a car and pay for their own insurance are much more likely to know that collision insurance covers damage to a car than those who own a car and do not pay for their own insurance. Similarly, those who owned a car were more likely than other drivers to know that a car generally serves as collateral for a loan used to finance its purchase.

Along the same lines, students who own stocks or mutual funds, either in their own name or in their parents' name, are much more likely to know that an investment in stocks over an 18-year holding period is likely to earn a higher return than savings bonds, savings accounts or checking accounts. However, those who own stocks or mutual funds in their own names were slightly less likely to know this than those who own them in their parents' name casting doubt on the teaching value of owning stocks in one's own name (unaccompanied by other types of teaching).

Those whose folks are homeowners are more likely than the children of renters to know that money invested in the downpayment in a home is illiquid and may be difficult to access in the event of an emergency, but this difference may reflect the greater income of homeowners. Children of homeowners were also much more likely to know that a house financed with a fixed-rate mortgage is a good protection for sudden inflation.

Those who had a bank account were more likely to know that interest on savings accounts was taxable, but checking account holders (who presumably earned no interest on their accounts) was much more likely to know this than savings account holders. Those who used an ATM card were more likely than non-users to know that you cannot take money from *every* ATM without a fee.

Most surprising was the finding that students who did *not* have a credit card were more likely than credit card holders to know the consequences of paying only the minimum amount on credit card monthly statements. They were also more likely, than credit card users, to know that credit card companies often start young people with small credit lines to reduce their own risk of lending the money. Furthermore, the non-credit card users were more likely than users to know that banks share the credit history of borrowers with each other through credit reporting services and also to know that consumers can now check their credit records for free once a year. Finally, non-card users were also more likely to know what credit counseling services could and could not do for overextended borrowers. It should be noted, however, that among credit card users, those who held the card in their own name tended to be more knowledgeable about credit cards than those who used cards in the name of their parents. In some questions, they were more knowledgeable than students who did not use credit cards.

Just-in-Time Education

Given the lapse in time between a high school course in money management or personal finance and the bulk of financial decisions that must be made by young adults, it has been suggested that these courses focus exclusively on decisions that high school students are making currently or are likely to make in the near future. To see whether this is likely to be effective, 11 of the 31 Jump$tart questions which related to actual financial products used by some high school students (credit cards, bank accounts, auto insurance, etc.) were cross-tabulated by actual use of such products and by whether students had taken a high school course in money management or personal finance. Results showed that students who had taken such a course and who had actually purchased a financial product were no more knowledgeable about the financial product they had just purchased than those students who had not had a formal course of this type. This finding provides little support for a just-in-time focus that would concentrate on imminent financial decisions (Mandell, 2006c).

This does not imply that just-in-time education is not useful for adults who are about to make an important financial decision, particularly education delivered at the point of sale or that obtained by highly motivated consumers. It does however offer little support for changing the focus of courses offered at the high school level to become more relevant. The positive results experienced by students who play a real-time stock market game (with synthetic money) would point us more in the direction of high levels of interaction (and perhaps fun) than in immediate relevancy.

Parents and Allowances

Many parents are justifiably concerned that school-based education is doing little to prepare their children to handle finances efficiently. Attempts to teach by experience, such as giving children credit cards and stocks and mutual funds in their own name, have proven to be unsuccessful in promoting financial literacy, as previously mentioned. Two additional attempts at intergenerational transfer of financial prowess include the use of an allowance and the frank discussion of family finances.

Proponents of a regular allowance point to the budgetary skills generated by regular, but periodic infusions of income which necessarily engender disciplined spending to make the allowance last until it is received again. In the 2004 survey, however, it was found that students who received a regular allowance (that did not require the completion of chores to earn it) had a financial literacy score of just 50 % in contrast to those who received a regular allowance in return for chores (53.2 %) and even those who did not receive a regular allowance, receiving money only when they needed it (52.4 %). This was not the first such finding that giving an allowance to a child is not useful in improving a child's financial literacy. Nearly 50 years ago, it was found that the practice of giving an allowance does not deserve its present prominence in recommendations for money education (Marshall, 1960).

In addition, the 2000 survey found that students whose parents often discussed money matters with them did not score significantly better (52.6 %) than students whose parents sometimes (52.5 %) or rarely (52.4 %) discuss money matters with them (Mandell, 2001).

Financial Literacy and Financial Behavior

Improving financial literacy is merely an intermediate step in the overall societal goal of improving financial behavior. If financially literacy does not translate into useful and efficient financial decision making, little has been gained. The positive relationship between financial literacy and financial behavior has been shown among adults (Hilgert et al. , 2003).

In the 2006 Jump$tart survey, students who had checking accounts were asked whether they had ever bounced a check. Those who never bounced a check had financial literacy scores above 53 % while those who had bounced at least one check had financial literacy scores in the mid-40s, showing a positive association between financial literacy and beneficial financial behavior.

Financial Education and Financial Behavior

A separate study carried out by this author in 2005 followed a matched sample of students who graduated from a school system that taught a highly regarded course in personal financial management. Half the students took this course while the other

half did not. Since the students came from the same environment and educational system, it provided an opportunity to examine the separable impact of the personal financial management course on subsequent financial behavior.

The study tracked students for 1–5 years after they graduated from high school, giving the subjects a mean age in the early twenties. The average personal financial literacy score, among all respondents, on the Jump$tart questions was 69.3 %. This was quite high by comparison to the national Jump$tart results of 52.3 % in 2004. However, there was virtually no difference between those who had taken the course who averaged 68.7 % and those who did not who averaged 69.9 %.

Students who had taken the course in personal financial management were not subsequently more savings-oriented than those who had not taken such a course. Nor did taking the course appear to have a consistent relationship to actual financial behavior. Those who had the course did do better in making credit card payments on time, balancing their checkbooks frequently and never worrying about debt. Those who did not have the course did better in paying off credit card balances, not bouncing checks, preparing their own taxes and having adequate savings and investments.

A regression analysis showed that neither having had the course nor having been out of high school longer had any significant effect on financial behavior. However, being a full-time college student or graduate had a positive and very significant impact on favorable financial behavior reinforcing the Jump$tart findings that aspiration seems to be the most important factor driving personal financial literacy (Mandell, 2006b).

Who Is Financially Literate?

Employing 2006 Jump$tart data, Mandell (2007a) analyzed those high school seniors who are financially literate. Using a cutoff score of 75 %, he found that the 6.9 % of the students who are, by this classification, financially literate are disproportionately white, male and the children of well-educated parents, all variables that are hard to change.

Summary and Future Research Directions

Virtually all studies of students completing high school conclude that our young adults are poorly prepared to make financial decisions in their own best interests. There is also agreement that financial literacy appears to be positively related to the possession of present and likely future financial resources, in that the most literate tend to be white, college-bound and the children of educated parents. Since financial well-being is a product of financial resources and the ability to utilize those resources most effectively, the inequality of financial well-being is probably greater than that of both income and wealth and represents a huge social problem.

The Jump$tart surveys, which track financial literacy over time, have found little improvement since 1997. There have been no comparable studies to contradict this finding. It is possible, however, that financial literacy measures something else, such as intelligence or academic ability, and it would be useful to measure these variables through reported SAT scores and grade point averages in order to isolate financial literacy from academic ability or accomplishment.

There is some disagreement on the impact of high school classes in consumer finances or personal money management on financial literacy. The Jump$tart surveys have consistently found no relationship between such full-semester classes and financial literacy. However, there is some (non-Jump$tart) evidence that programs that require less than a full semester may have a positive impact on both financial literacy and financial behavior. Research is needed to reconcile these findings.

Since only a small proportion of students taking a full-semester class in consumer finances or personal money management are seniors, it would be useful on future Jump$tart surveys to ask students who had taken such a class when they had taken it. It is possible that younger students find these materials to be less relevant to their lives and, consequently, less memorable.

Most evidence shows that higher financial literacy scores are associated with improved financial behavior. Therefore, if classes designed to improve financial literacy are ineffective, it would follow that they would be similarly ineffective in improving financial behavior. However, Bernheim's (2001) findings suggest that education may have a long-term effect on savings behavior that may not be noticeable in the short run, perhaps because students who are still in high school have little discretionary income to channel to savings. These findings are not inconsistent with those of Currie and Thomas (1995) who find positive long-term effects of the Head Start program which may not be apparent for nearly 20 years.

Similarly, there is mixed evidence concerning the effectiveness of educational mandates in this area. There seems to be agreement that specific courses, required of all students, will improve financial literacy somewhat. Research that focuses on best practices used by the most successful teachers would be very useful. However, there is no agreement on what should be taught, and the field of consumer education covers a wide range of subjects (see Alexander, 1979; Bannister & Monsma, 1982; Scott, 1990). The **?** national standards suggest subjects that should be mastered by students in grades K-12, but widespread adoption of these standards may be some time off.

The positive results achieved by students who have played a stock market game suggest that effective teaching includes a high degree of interactivity as well as relevance and perhaps fun but these promising findings should be pursued.

A number of proposals have been advanced to improve the level of youth financial literacy. Some cite preliminary results (Mandell, 2007b) that show that financial learning among middle school students is most effective among sixth graders to propose that students be exposed to financial education in pre-high school grades. The National Association of State Boards of Education (2006) recommends making financial literacy and investor education a basic feature of education beginning in the first grade. A great deal of research is needed to find out the effectiveness of

various methods of teaching younger students and the subjects (such as math) with which it could be best integrated.

Finally, those seeking ways to diminish inequality in the distribution of income, wealth and well-being as well as proponents of an ownership society have proposed substantial government grants to every new-born American to give young people a stake in our economy. Starting at the earliest possible grade, the teaching of personal finances would revolve around this personal investment account, which cannot be drawn down until age 18. The British adopted this policy 3 years ago, so results of utilizing this as a focal point for financial education will not be known for several more years.

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