Financial Management Practices of College Students from States with Varying Financial Education Mandates

FINAL DRAFT

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Financial Management Practices of College Students from States with Varying Financial Education Mandates

SUMMARY

Introduction

This study uses three categories of financial outcome indicators (financial knowledge, financial dispositions, and financial behaviors) to assess the effectiveness of state policies regarding high school financial education. States were categorized into one of six categories based on their financial education policies; no standards, standards with no required implementation, standards requiring implementation, courses required but not testing, testing required but no courses, course and testing required. An effective policy category would ideally produce students with high levels of financial knowledge, positive financial dispositions (i.e. low materialism, high financial self-efficacy, high future orientation, and some willingness to take investment risk), and positive financial behaviors (i.e. saving regularly, using a budget, engaging in responsible credit use).

Hypotheses

Our first hypothesis is that differences in the rigor of state financial education policies will lead to differences in outcomes related to financial disposition, financial knowledge, and financial behavior. Our second hypothesis is that the increasing rigor of state policies will be associated with healthier financial outcomes.

Method

We collected data via a web survey from 15 college campuses, representing all six policy categories and various regions of the U.S. A stratified random sampling method was employed, with a total of 172,412 emails being sent out, yielding 16,872 respondents. After removing students who were educated abroad, educated by home school, received a GED, or did not indicate their state of high school attendance, the final sample was 15,797 students.

Analysis

Preliminary exploration of the hypotheses includes simple bivariate comparisons utilizing a cross-tabulation table and chi-square test to examine whether or not financial education, risk tolerance, financial knowledge and financial behaviors differed by policy category for the state in which they graduate high school. One–way analysis of variance was then computed to compare means among categories of subjects on financial disposition, financial quiz scales and self-reported financial knowledge variables by policy categories. When the *F*-test indicated significant (.05) mean differences on a given variable, the Scheffe multiple comparison test was used to isolate the specific between-category means that were significantly different.

OLS Regression was used to estimate models for performance on a financial assessment, subjective knowledge, and various psychometrics. Cumulative logistic regression was used to estimate models for relative financial knowledge and willingness to take financial risk. The data analysis for the behavioral outcomes utilized two logistic regression models. For the reduced model, variables include demographics, financial resources, financial education (including policy category), and financial knowledge. The full model included two additional variables: financial

social learning opportunities and financial dispositions. Behavioral outcomes included budgeting, saving, maxing out credit cards, making late payments on credit cards, and not paying off credit cards monthly. After the likelihood ratio test was conducted, the reduced model was rejected in favor of the full model. In addition, structural equation modeling was used to test relationships among some of the concepts such as financial education, social learning, and financial behavior to name a few.

Results and Conclusions

Overall, this study shows that financial behaviors of college students vary by state policy on financial education, even when controlling for demographics, financial resources, financial education, financial knowledge, financial social learning opportunities and financial dispositions. Social learning is an important determinant of dispositions. The results show that both social learning and formal education are important determinants of financial behaviors including savings. In a structural equation model, several important relationships were shown including a significant relationship of financial education on financial knowledge. Further, knowledge along with dispositions was an important predictor of behavior.

In addition, college students will be engaged in various financial transactions out of necessity. Thus regardless of having had a class, many students will need checking accounts and will opt to learn to use them through self-education, social learning opportunities, or simply from trial and error (experience). However, lack of any formal education can lead to false financial knowledge and as such social learning and self education by themselves may be problematic.

Yet, financial knowledge is seen as a key predictor of financial behavior, while financial education is a key predictor of knowledge. Thus, since having standards was a key tipping point in our measures of financial knowledge, having standards should be considered a minimum, with requiring courses and assessment being the ideal, since that had an even stronger impact on knowledge. One important takeaway is that the goal of improving financial knowledge is an important goal in and of itself. It may also be the appropriate goal for financial education.

The following tables summarize the effects of each policy category on each outcome indicator for financial dispositions, financial knowledge, and financial behaviors. The final table in this section focuses on whether having any policy is better than none at all. Each significant positive indicator is marked with an "X." Each significant negative indicator is marked with an "O."

Understanding Executive Summary Bivariate Findings by State Policy Category

	Category of State Position on High School Financial Education					
Finding	No Policy	Standards only	Standards with required	Course required	Assessment required	Course & assessment

			implementation			required
Financial Disposition by Policy Category Students have lower tendency toward compulsive buying		X				
Students with a higher financial disposition toward future orientation				X		
Students with a higher financial disposition toward financial self-efficacy		X				
Students with a **higher financial disposition toward materialism**				**O**		O
More students have average financial risk		X				
Financial Knowledge by Policy Category **Lower financial quiz score** than the other 5 categories					O	
Higher financial quiz scores than the other 4 categories		X	X			
Higher self-reported financial knowledge score than the other 5 categories						X
Students more likely to believe their level of financial knowledge to be better than others.						X
Financial Behaviors by Policy Categories Within all policy categories, most students have one credit card	X	X	X	X	X	X
Within all policy categories, most students acquired their credit card from a bank/financial institution in person	X	X	X	X	X	X
Within all policy categories, most students have not missed a credit card payment by 30 days or more	X	X	X	X	X	X
Most students within all policy categories did not have any risky credit behavior (“max out”, “make late payments, and “do not pay off”)	X	X	X	X	X	X
More students budgeting			X	X	X	X

More students saving		X	X	X	X	X

Understanding Executive Summary Multivariate Findings by State Policy Category (Reduced Model)

Finding	**Category of State Position on High School Financial Education**					
	No Policy	Standards only	Standards with required implementation	Course required	Assessment required	Course & assessment required

Financial Disposition by Policy Category Students were less compulsive buyer		X	X			
Students with a higher financial disposition toward future orientation	n.s	n.s	n.s	n.s	n.s	n.s
Students have lower financial self-efficacy score			O		O	O
Students were significantly less materialistic than the other 5 categories.			X			
Students were less likely to be willing to take above average financial risk		X		X		X
Students were more likely to be willing to take average financial risk		X	X			X
Students were more likely not be willing to take any financial risk				O		
Financial Knowledge by Policy Category **Lower financial quiz score** than the other 5 categories				O	O	
Higher financial quiz scores than the other 4 categories		X				
Higher self-reported financial knowledge score than the other 5 categories		X				X
Students more likely to believed their level of financial knowledge to be better than others.	n.s	n.s	n.s	n.s	n.s	n.s
Financial Behaviors by Policy Categories Students were more likely to budget			X		X	X
Students were less likely to budget		O				
Students were more likely to saving		X		X	X	
Student were less likely to "max out" credit cards		X		X		
Students were less likely to make late payments		X		X		
Students were more likely paying their cards off fully each months		X	X	X		X

Understanding Executive Summary Multivariate Findings by State Policy Category (Full Model)

Finding	**Category of State Position on High School Financial Education**					
	No Policy	Standards only	Standards with required implementation	Course required	Assessment required	Course & assessment required
Financial Disposition by		X	X			

Policy Category Students were less compulsive buyer						
Students with a higher financial disposition toward future orientation	n.s	n.s	n.s	n.s	n.s	n.s
Students have higher financial self-efficacy score		X				
Students have lower financial self-efficacy score					O	O
Students were significantly less materialistic than the other 5 categories.			X			
Students were less likely to be willing to take above average financial risk		X		**X**		X
Students were more likely to be willing to take average financial risk		X	X			X
Students were more likely not be willing to take any financial risk				O		
Financial Knowledge by Policy Category **Lower financial quiz score** than the other 5 categories				O	O	
Higher financial quiz scores than the other 4 categories		X				
Higher self-reported financial knowledge score than the other 5 categories		X				X
Highest percentage of students who believed their level of financial knowledge to be better than others.	n.s	n.s	n.s	n.s	n.s	n.s
Financial Behaviors by Policy Categories Students were more likely to budget			X	X	X	X
Students were less likely to budget		O				
Students were more likely to saving				X	X	
Student were less likely to "max out" credit cards				X		
Students were less likely to make late payments						X
Students were more likely paying their cards off fully		X	X	X		X

each months						

Understanding Executive Summary Multivariate Findings by Indicator of any State Policy

	Having any Policy	
Finding	Reduced Model	Full Model
Financial Disposition by Policy Category Students were less compulsive buyer	X	X
Students with a higher financial disposition toward future orientation	n.s	n.s
Students have lower financial self-efficacy score	O	n.s
Students were significantly less materialistic.	n.s	n.s
Students were less likely to be willing to take above average financial risk	O	O
Students were more likely to be willing to take average financial risk	X	X
Financial Knowledge by Policy Category Higher self-reported financial knowledge score	n.s	n.s
Students more likely to believed their level of financial knowledge to be better than others.	n.s	n.s
Financial Behaviors by Policy Categories Students were more likely to budget	X	n.s
Students were more likely to be saving	X	X
Student were less likely to "max out" credit cards	X	X
Students were less likely to make late payments	X	n.s
Students were more likely paying their cards off fully each months	X	X

INTRODUCTION

Over the last several years a great deal of attention and concern has been placed on the financial behaviors of emerging adults (18-24). The concern stems from the fact that young adults often begin their college careers without ever having been solely responsible for their own

personal finances (Cunningham, 2000). There is general consensus from several previous studies that students lack basic financial knowledge (Bakken, 1967; Chen & Volpe, 1998; Danes & Hira, 1987; Jump$tart, 1997, 2002; Kim, 2000; Volpe, Chen, & Pavlicko, 1996). Thus, states across the U.S. have been discussing the need for financial education, with states taking different measures ranging from doing nothing to requiring classes and testing.

At the high school level, mixed findings have been reported with regard to financial education programming. Over the last several decades, many states have adopted personal financial programs on topics such as money management and credit and debt management for delivery to high school students. The following table documents the changes in state policies over the last decade. There has been a clear trend towards states moving to having a policy as well as greater rigor within those policies.

States with Personal Finance Education in High Schools: A Comparative Look (1998-2007)

Topics	1998	2000	2002	2004	2007	Increase (1998-2007)
Include personal finance in their standards	21	40	31	34	40	19
Standards required to be implemented	14	16	16	20	28	14
Course required to be offered	0	7	7	7	9	9
Course required to be taken	1	4	4	6	7	6
Testing of personal finance concepts required	1	6	6	8	9	8

NCEE, 2007

Currently, 40 states in the U.S. mandate standards for personal finance education, 28 of which require those standards to be implemented. However, only 9 states require a course with personal finance content, 7 states require students to take a personal finance course, and 9 states test personal finance knowledge (NCEE, 2007). With current policies still mainly affecting those in high schools, the current study divided 50 states and the District of Columbia into 6 categories of mandate policies based on the 2004 National Council on Economic Education report for 2008 data collection. We do this because 2007 standards would not affect most students who were in

college during 2008 unless they existed earlier. Further, since it has been established that the behavioral effects of financial education policies, at least savings (Bernheim, Garrett, & Maki, 1997), tends to lag the education, we focus on this earlier point.

Although there are many financial education programs and curricula for teens, a few published studies have examined the effectiveness of these programs and have collectively shown that personal finance courses have varied impact on students' financial knowledge and behavior (Peng, Bartholomae, Fox, & Cravener 2007). This study seeks to measure the effectiveness of six different high school financial education policy categories in the United States. These policy categories range from no policy at all to required courses and testing.

The outcome variables being measured include financial knowledge, financial dispositions, and financial behaviors. A "successful" policy category would ideally produce students with high levels of financial knowledge, positive financial dispositions (i.e. low materialism, high financial self-efficacy, high future orientation, and some willingness to take investment risk), and positive financial behaviors (i.e. saving regularly, using a budget, engaging in responsible credit use). These variables and others were measured and assessed by policy category to determine which policy categories are the most successful.

According to Social Cognitive Theory, behavior is an interaction of personal factors, behavior, and the environment (Bandura, 1977; Bandura, 1986). This suggests that an evaluation of behavioral change needs to consider the factors of people, behavior, and the environment including social environment and physical environment. This theory, then, provides direction within the study when considering the influence of different factors on learned behaviors. Therefore, the final purpose of this study is to introduce a model, which is based on Bandura's social cognitive theory and previous research, which describes the interaction of demographic

factors, financial resources, social learning, financial disposition, financial knowledge, policy category, and financial behaviors.

Thus, several guiding research questions are evident:

1. What are the college students' profiles of financial education, financial knowledge, financial disposition, and financial behaviors?
2. Do the profiles of financial knowledge, financial disposition, and financial behaviors differ by the financial education policy categories?
3. What is the relationship of the financial education policy category on financial behaviors when controlling for demographics, financial resources, financial education, and financial knowledge?
4. How are financial socialization and financial dispositions related to financial behaviors?

LITERATURE REVIEW

The purpose of this section is to define the outcome measures of interest and discuss their known relationships to financial education. Each concept mentioned earlier has multiple dimensions. Financial knowledge will be thought of objectively, subjectively, and relatively. Financial dispositions include factors affecting consumption, savings, and debt use. Financial behaviors themselves include basic money management (budgeting), savings, and credit behavior measures that would influence one's credit score. The next sections will discuss each of these in more detail and then describe established relationships from previous studies.

Financial Education and Financial Knowledge

Conceptualizing and Measuring Financial Knowledge

Financial knowledge was described by Bowen (2002) as "understanding key financial terms and concepts needed to function daily in American society. It includes knowledge about items related to banking, auto, life, health and homeowners insurance, using credit, taxes, and investing. While there are other important areas related to personal finance, these are areas most American adults encounter as they make daily financial transactions and decisions" (p.93). Researchers indicated that well informed, financially educated consumers are better able to make good decisions for their families and thus are in a position to increase their economic security and well-being. Knowledgeable consumers who make informed choices are essential to an effective and efficient marketplace. The number and types of financial education programs have grown since the mid-1990s. Many of these programs focus on providing information to consumers and operate under the implicit assumption that increases in information and knowledge will lead to changes in financial management practices and behaviors (Hilgert, Hogarth & Beverly, 2003).

Financial knowledge has been conceptualized and measured in several ways. Financial knowledge could cover a variety of subjects and could range from basic awareness through mastery of a subject. It can be thought of as true knowledge or perceived knowledge. For instance, knowledge has been directly measured. One widely known example of this is the Jump$tart Survey conducted every other year. It uses a set of questions used as a benchmark of financial literacy of high school students. The survey has been conducted nationally and tests both students who have and have not had financial education courses while in high school. Such knowledge tests are common with a great deal of variability in what topics are truly assessed.

Self-reported financial knowledge was also utilized where respondents are asked how they rate their level of knowledge on a particular personal finance topic. These are often measured as scales. While the efficacy of this measure has not been clearly established, it was still included as it may represent confidence in one's knowledge level.

A final measure employed for financial knowledge was a relative measurement. These try to establish one's perception of their own knowledge relative to a specific reference group, often as compared to a peer group. This measure may also help to establish confidence in one's knowledge.

Relationship between Financial Education and Financial Knowledge

There has been a link established between financial knowledge and financial education (Barrese, Garner, & Thrower, 1998; Tennyson & Nguyen, 2001). Several earlier studies (Langrehr, 1979; Langrehr & Mason, 1978; Peterson, 1992) found that taking a specific course in consumer education or economics significantly improved students' knowledge in the subject area studied. Borden, Lee, Serido, and Collins (2008) found that a seminar effectively increased students' financial knowledge regarding credit. A study of the NEFE High School Financial Planning Program (HSFPP) in 2003-2004, found that immediately after studying the HSFPP, students reported significant improvement in their financial knowledge (Danes & Haberman, 2004). The result was similar to a study by Danes, Huddleston-Casas, and Boyce (1999) which indicated that immediately after studying the curriculum about 60% of the students increased their knowledge about the cost of credit, auto insurance, and investments. At a three-month follow-up, it was found that students showed statistically significant increases on all questions except the one about their investment knowledge.

Tennyson and Nguyen's study (2001) analyzed the relationship between high school students' scores on a test of personal financial literacy and their state's personal finance policy. The data for this study was from the 1997 survey of high school students conducted by the Jump$tart Coalition for Personal Financial Literacy. There were thirty-one states included in this study, and twenty states had some kind of educational policy in the area of personal finance. The results of the study showed that the scores of students in those states that required specific financial education coursework were significantly higher than those in states with either a general mandate or a non-mandate. However, their study showed association, not causation.

Schug, Wynn, and Posnanski (2002) described an economic education program (Milwaukee Economic Education Partnership) for urban schools. They found that the education program had a positive effect on improving the economic knowledge of the students in urban schools. They suggested that the program provided a good start to address the gap of economic education in urban areas. However, they also thought that it was difficult to expand this kind of program to large urban school districts and the schools and community agencies need to continue to work on expanding economic education for minority youth.

Varcoe, Allen, Devitto, and Go (2005) evaluated the impact of the *Money Talks* curriculum on financial knowledge and behavior of 323 teens. *Money Talks* was a series of four newsletters which was developed by a Cooperative Extension workgroup. The curriculum covered different topics including saving habits, shopping tips, car costs, and money values. The findings indicated that the curriculum increased the financial knowledge and financial behavior of high school students. For example, self-reported data indicated that general financial knowledge increased significantly from a pre-test to post test.

Financial Education and Financial Dispositions

Conceptualizing and Measuring Financial Dispositions

An additional outcome that has been commonly measured is one's psychological characteristics with respect to personal finance issues. Several measurements are used in the literature and are often tied to consumption-oriented issues such as materialism or behavior-oriented issues such as self-efficacy. Financial education also aims to improve understanding about risk and resource allocation over time. Understanding about risk and risk preferences are important factors influencing decision making under uncertainty. Thus risk tolerance for example would influence risk management and insurance decisions as well as investment decisions.

Relationship between Financial Education and Financial Dispositions

Although many studies examined links between psychological factors and financial behavior (Bandura & Adams, 1977; Bandura, 1997; Katona, 1975; Rook & Fisher, 1995; Tokunaga, 1993; Joo, Grable, & Bagwell, 2003; Rha, Montalto, & Hanna, 2001), little is known about the effectiveness of financial education or the curricula used on financial disposition. For example, Huddleston-Casas, Danes, and Boyce (1999) used a five-tiered approach to evaluate the impact of the High School Financial Planning Program (HSFPP) Curriculum on high school students' financial behaviors. The results of this study demonstrated that personal financial programs had a positive impact on students' financial literacy and self-efficacy levels. Danes and Haberman (2004) found that immediately after studying the HSFPP, students reported significant improvement in their confidence. Varcoe, Allen, Devitto, and Go (2005) found that the saving scale of participants increased significantly from pre-test to post-test which meant that students' saving attitude increased after participating in the curriculum. Norum (2008) indicated that financial or consumer education programs could provide beneficial information to students by

covering appropriate credit card use, and the relationship between credit card use and compulsive buying. Borden, Lee, Serido, and Collins (2008) found that the seminar effectively increased students' responsible attitudes toward credit and decreased avoidant attitudes towards credit from pre-test to post-test.

Financial Education and Financial Behavior

Conceptualizing and Measuring Financial Behavior

There are many behaviors worthy of study; however there are several core behaviors seen commonly in the literature. Bernheim, Garrett, and Maki (1997) explored the effectiveness of high school mandates using savings as the outcome measure. Budgeting is seen as another important behavior that, while not often included in evaluation, has been an established learning objective in many financial education programs, including those in high schools. Credit behaviors, especially those affecting the FICO score such as late payments, credit utilization, and carrying a balance are commonly studied behaviors.

Relationship between Financial Education and Financial Behavior

Those who are taught about personal finances at a younger age tend to do better financially than those who were not (Lyons, 2003, 2004; Varcoe, Peterson, Garrett, Martin, Rene, & Costello, 2001). Danes, Huddleston-Casas, and Boyce (1999) found that immediately after studying the High School Financial Planning Program (HSFPP) curriculum about 40% of the students began to write goals to manage their money, to save money for their needs and wants, and to track their expenses. At a three-month follow-up, it was found that around 60% of the students indicated that they had changed their spending patterns and that they now only get things they really need and they spend more wisely. Also 60% of the students had changed their savings patterns, 80% indicated they now save for what they really need or want, and 20%

indicated that they now save every time they get money. Danes and Haberman (2004) also evaluated the HSFPP and found that students who studied the program reported significant improvement in their financial behavior immediately after studying the HSFPP. In a study evaluating the *Money Talks* curriculum, Varcoe, Allen, Devitto, and Go (2005) found that saving behavior increased after participating in the curriculum. Participants' shopping behavior also improved after exposure to the curriculum because participants were more likely to compare prices and wait until items were on sale after the program.

Using a 1995 telephone survey of a nationally representative data set, Bernheim, Garrett, and Maki (1997) compared states with no financial education programs to other states with programs at different times to measure the long term effects of financial curricula in high schools across the country. They found that mandated personal finance education has a positive effect on students' financial behaviors (self-reported rates of saving and accumulated wealth) over the long term, thus the effect was not observable in short run behavior but lagged exposure to financial education. Borden et al. (2008) found that at post-test, students reported intending to engage in significantly more effective financial behaviors and fewer risky financial behaviors. Additionally, Lyons (2008) found that students who had taken, or were currently taking a formal course in personal finance, were significantly less likely to engage in risky financial behavior.

Hypotheses

There are clear links in the literature among financial education and what are seen as core outcome measures including financial knowledge, financial dispositions, and financial behaviors.

1. Differences in the rigor of state policies with respect to financial education will lead to different financial behavior related outcomes including:
    a. Differences in financial knowledge

b. Differences in financial disposition

c. Differences in financial behaviors

2. Greater rigor of state policies will be associated with healthier financial outcomes.

3. Social learning is an important determinant of financial dispositions and financial behaviors

METHOD

Data

The ideal population for this study in terms of importance and access was college students from the United States. Thus, data was collected during spring and fall of 2008 using a web survey of college students throughout the United States. This would indicate that these students would typically have graduated high school over the years 2004 through spring 2008. Thus the policies in place during 2004 may have affected many of these students. While policy changes such as those after may not have affected many of the students currently in college. This study used a stratified sampling technique. The 50 states and the District of Columbia were divided into 6 categories of mandate policies based on the 2004 National Council on Economic Education report to determine college students' states policies during their high school years. Then, using random numbers, states were selected from each of the categories with the target campuses being large state universities; a total of 15 campuses were sampled. A breakdown of the sample by campus is summarized in the table in Appendix A. Random lists of student email addresses were obtained for each campus (in some instances, entire student populations were made available). The sample was limited to currently enrolled college students age 18 and over. Students were emailed three times over a course of one month to request their participation; 172,412 students received emails three times and 16,876 students completed the survey. Students

in “educated abroad” and “homeschooled/GED” categories have distinct characteristics which separate them from the six main policy categories; therefore, they were excluded from the analyses. This resulted in a final sample size of 15,797. The average age of the students was 21.3, and almost all were full-time students (94.3%). About two-thirds (65.8%) were female, 83.3 % were white, 85.7% were single, and 27.4% were senior class-rank. This sample profile is reasonable when compared to the national averages for college students (62.7% female, 69.8% white, 58.1% single, and 27.8% senior). Thus, this sample is similar to the overall demographics of the college students, although students in this sample were more likely to be white and single than the general student population (NASPA, 2008).

Procedure

Student participation was requested using emails delivered to their email addresses of record. Students were informed that every one thousandth completed survey would receive a $100 gift card. The email students received, which contained an informed consent document, took them to the survey, where they had to affirm their assent to the informed consent statement prior to beginning the study.

Measurement of Variables

Independent Variables

Demographic variable: The study involved college students’ demographic variables: age, gender, race, school rank, and marital status.

Financial variables: Financial variables were measured using monthly income, being listed as a dependent on their parents’ tax return, financial aid, and amount of debt.

Financial Education: Financial education was used to both check policy category and capture the different forms of financial education. These questions were: “Were you taught

about personal finances in high school?" and "Have you ever taken a course, program, or seminar on personal finance issues in your community, religious institution, or 4H-in other words not through school?" Responses included yes or no. While a state may not have required personal finance, individual school districts may have chosen to do so.

Policy Categories: The 50 states and the District of Columbia were divided into 6 categories of mandate policies based on the 2004 National Council on Economic Education report.

Policy Category Coding Key

No standards. No testing and no overt policies, no testing	Standards in place. Implementation not required	Standards must be implemented	Course required. assessment not mandatory	Course not required. assessment mandatory	Course required. assessment mandatory
1	2	3	4	5	6

Note: for brevity, the above numbers or captions are consistently used on all tables and figures.

Financial Social Learning Opportunities: The financial social learning opportunities score was a composite measure based on four dimensions: discussions with parents, discussions with peers, observing parents, and observing peers. The score utilized responses to eight items representing these four dimensions. Scores for each dimension ranged from 8 to 40. This measure was based on the work of Gutter and Garrison (2008).

Discussion: Students were asked how frequently in the past five years their parents and friends or other students had discussed the following with them: manage expenses and avoid overspending; check their credit report; pay bills on time; saving and investing; working with a mainstream financial institution; buying and maintaining health insurance, auto insurance and renter's insurance. The student answered by using a 5 point scale from 1=never to 5=often. The average "discuss finances with parent" score for students was 21.90 (*SD*=7.84) and the average

"discuss finances with friends" score was 17.05 (*SD*=6.68). In order to test the reliability of the measure, Cronbach's Alpha was selected. Cronbach's Alpha internal consistency reliability was calculated to be .86 for both discussion with parents and discussion with friends. This result suggests that the inner consistency of the inventory was high.

Observing: Students were asked how frequently in the past five years they observed their parents/caregivers and friends or other students involved in the following: managing expenses and avoiding overspending; checking credit report; paying bills on time; saving and investing; working with a mainstream financial institution; buying and maintaining health insurance, auto insurance and renter's insurance. The student answered by using a 5 point scale from 1=never to 5=often. The average "observing parents' financial behavior" score was 26.99 (*SD*=8.77), and "observing friends' financial behavior" 17.26 (*SD*= 7.24). The inter-item reliability was high for both observing parents (Cronbach's alpha = .87) and observing friends (Cronbach's alpha = .86).

Dependent Variables

Financial Dispositions:

Materialism: The Materialism Scale (Richins & Dawson, 1992) examines three factors related to materialism: centrality, happiness, and success. The 18-item scale is measured on a 5-point scale ranging from 1 (strongly agree) to 5 (strongly disagree). We used 15 items to measure for college students materialism from Richins and Dawson' (1992) scale. We did not use three items ("I don't pay much attention to the material objects other people own," "I usually buy only things I need," and "I enjoy spending money on things that aren't practical") for analysis in this study because students' responses were not fit for these three items. A participant can score from 15 to 75 on the scale. Some items were reverse-coded so that lower scores reflect lower levels of

materialism and higher scores reflect higher levels of materialism. The inter-item reliability was high for college students (alpha = .86).

Compulsive Buying: The Compulsive Buying Scale (CBS), developed by Faber and O'Guinn (1992), is a screening instrument utilized to identify compulsive buyers. The CBS consists of seven statements representing specific behaviors and feelings related to compulsive buying. Six of the statements (e.g., ''Felt others would be horrified if they knew of my spending habits,'' ''Bought myself something in order to make myself feel better,'' and ''Felt anxious or nervous on days I didn't go shopping'') are rated on a scale from l=very often to 5=never. More severe compulsive buying will result in lower scores on the scale. One of the statement ("If I have any money left at the end of the pay period, I just have to spend it") rated on a scale from 1=strongly agree to 5=strongly disagree. We did not use this last item for analysis in the current study because students' responses were not fit for this item. Cronbach's Alpha internal consistency reliability was calculated to be .80.

Self-efficacy: Financial self-efficacy perceptions were assessed for 6 items. Two of the items were generated from the original Money Ethic Scale (MES)' "budget" factor; developed by Tang (1992). These were: "I budget my money very well" and "I use my money very carefully.". The following items were also used: To what extent do you see yourself as being capable of . . .'or 'How confident are you that you will be able to . . .'; Students answered by using a 7-point, Likert-type scale where 1 meant strongly disagree and 7 meant strongly agree. This indicated that higher level of self-efficacy perceptions will result in higher scores on the scale. Cronbach's Alpha reliability of the scale was calculated as .96.

Future Orientation: Future orientation was measured by Strathman, Gleicher, Boninger and Edwards's (1994) ''Consideration of Future Consequences'' (CFC) scale. This is a measure of the extent to which people consider distant versus immediate consequences of possible behaviors. The scale had 12 items. Respondents had to indicate the extent to which each statement described them on a 5 point scale from 1 (doesn't describe me at all) to 5 (describes me very well). Some items were reverse coded, thus a lower score indicated that students are more present orientated while a higher score indicated that students are more future orientated. Cronbach's Alpha internal consistency reliability was calculated to be .78

Willingness to Take Financial Risks: Willingness to take risks was measured with the question, "Which of the statements on this page come closest to the amount of financial risk that you are willing to take when you save or make investments? Responses included: "Take substantial financial risks expecting to earn substantial returns", "Take above average financial risks expecting to earn above average returns", "Take average financial risks expecting to earn average returns", and "Not willing to take any financial risks". This measure is commonly used to account for the risk tolerance of the individual. Risk tolerance as a preference is known to influence decision making under uncertainty such as insurance and investment decisions. For the analyses take substantial financial risks and take above average financial risks were combined as take above average financial risks. This measure of willingness to take financial risk is from the Survey of Consumer Finances. The measure asks about willingness to take a risk proportional to the expected benefit or return.

Financial Knowledge: Financial knowledge was measured with three statements; "Rate their level of knowledge on financial subjects", "Financial knowledge quiz score" and "Overall, rate their knowledge of financial management compared to other people"

Financial Behaviors: Financial behavior can be defined as any human behavior that is relevant to money management. Common financial behaviors include budgeting, credit utilization, and saving (Xiao, 2008; Xiao, Sorhaindo & Garman, 2006). For the purpose of this study, information about credit card (number of credit card, using frequency, obtain time of first credit card, amount of credit card, missed payment, acquire the credit card, and paying with credit card), credit usage behaviors, budgeting, and saving were considered as financial behaviors. Credit usage behaviors that can negatively impact one's credit score including: making late payments, using full capacity of credit, and being a frequent revolver. Behavior can be measured as a binary variable, whether or not to perform the behavior (Xiao, 2008). In the present study, students were asked how frequently in the past year they had done the following: maxed out their credit, been delinquent, and carried a balance. Responses included '0', '1-2', '3-5', and '6 or more'. Students without a credit card would have responded Not Applicable (N/A). The more frequently students engaged in each behavior the higher their credit risk score was. Budgeting was measured with the questions, "Do you currently use a system to manage expenses and avoid overspending?" and "Have you used a budget in the past?" Saving was measured with the questions, "Are you currently depositing/investing money on a regular basis into some sort of account (includes employer plans, mutual funds, individual retirement account (IRA), savings, CDs)?" and "saving in the past and plan to continue saving in the future". Responses included yes or no. Financial behaviors include students' intentions toward budgeting and saving. Responses included "plan to next month", "plan to next six months", "plan to after I graduate" and "I have no plan".

The following table summarizes these variables.

Demographic (College Students)	Financial	Financial Education (Yes or No questions)	Financial Social Learning Opportunities	Financial Dispositions	Financial Knowledge	Financial Behaviors

Age	Monthly income	Were you taught about personal finances in high school?	Discussion	**Materialism** Based on responses about centrality, happiness, & success on the 18-item Materialism Scale (Richins and Dawson 1992)	Self-reported financial knowledge	Checking credit report
Gender	Listed as dependent on parents' tax return	Have you ever taken a course, program, or seminar on personal finance issues in your community, religious institute, or 4H—in other words not through school?	Observing	**Compulsive Buying** Based on responses to 6-statement Compulsive Buying Scale (Faber and O' Guinn 1992)	Financial quiz	Risky credit card behaviors
Race	Financial aid			**Self-Efficacy** Based responses on Likert-type 7-degree scale to 6 statements	Perceived financial knowledge compared to other people	Budgeting
School rank	Amount of debt			**Future Orientation** Based on 12-item *Consideration of Future Consequences* scale (Stratham, Gleicher, Boninger, and Edwards 1994)		Saving
Marital status				**Willingness to Take Financial Risks**		

Analyses

Preliminary exploration of the hypotheses includes simple bivariate comparisons utilizing a cross-tabulation table and chi-square test to examine whether or not financial education, financial disposition (risk tolerance), financial knowledge and financial behaviors differed by policy category for the state in which they graduate high school. One–way analysis of variance was then computed to compare means among categories of subjects on financial disposition (materialism, compulsive buying, financial self-efficacy and future orientation) financial quiz scales and self-reported financial knowledge variables by policy categories. When the *F*-test

indicated significant (.05) mean differences on a given variable, the Scheffe multiple comparison test was used to isolate the specific between-category means that were significantly different.

This was followed by ordinary least squares regression for continuous measures and binary logistic regression for the dichotomous measures. The dependent variables include financial disposition, financial knowledge, students' use of a budget, saving and risky credit behaviors. The factors that influence financial dispositions include demographics, financial resources, financial education (including policy categories), financial social learning opportunities and financial knowledge. The factors influencing financial knowledge include demographics, financial resources, financial education (including policy categories), and financial social learning opportunities.

The logistic regressions are used to test the relationship of policy category for their state of high school graduation on financial behaviors. It was also important to examine the context of high school education thus we compare a full and reduced model to determine whether factors such as dispositions and social learning improved the model. This was tested using a likelihood ratio test. The two models are summarized in the following table.

Reduced Model (Model 1)	Full Model (2)
Demographics	Demographics
Financial Resources	Financial Resources
Financial Education (including policy)	Financial Education (including policy)
Financial Knowledge	Financial Knowledge
	Financial social learning opportunities
	Financial dispositions

A third model was estimated post analysis accounting for median state income, poverty rates, and states economic productivity; these factors were not significant. Finally, structural equation modeling techniques were used to examine the relationships among students'

demographic, financial resources, social learning opportunities, financial disposition, financial knowledge, policy category and financial behaviors. We employed AMOS 16.0 for overall measurement model fit. The path model consists of links between demographic, financial resources, social learning opportunities, financial knowledge, financial disposition, policy category and financial behaviors.

RESULTS

BIVARIATE RESULTS

Policy Category and Financial Education

According to the results, most students were not taught personal finance in high school within almost all policy categories (63.4%-67.8%), except the "course required" category where 61.8% of students were taught personal finance in school (Figure 1). It is indicative of the fact that personal finance is likely not taught unless somehow proscribed in the standards. Given the state of many school budgets, there are many rationales provided as to why this is the case. However this statistic should be monitored to be sure that it is increasing with policy changes. This drives the significance test showing the variability of having had a class by category (χ^2= 602.285; df = 5; $p < .001$). As can be seen in Figure 2, typically most students within all categories (89.3%-92.0%) were not exposed to personal finance information in their communities.

[Insert Figure 1, 2 about here]

Policy Category and Financial Dispositions

Figure 3 shows the results of a one-way ANOVA for differences in compulsive buying among the policy categories. Among the six policy categories, compulsive buying scores are

almost the same. Students in states with "standards only" with higher mean scores would indicate that they were less prone to compulsive buying than those of other categories. However, according to post-hoc analysis results, the students from states with "standards only" had higher mean scores (M=24.89) than those from states with "no policy" (M=24.34), "course required" (M=24.15), "assessment required" (M=24, 24), and "course and assessment required" (M=24.21) (F=9.298, p<.001). As seen in Figure 4, students' future orientation scores in the "course required" category had a higher mean (M=23.09) than other policy categories. However, among the six main policy categories, there are no significant differences on future orientation scores (F=1.373, p>.05). The means of students' financial self-efficacy scores in "standards only" were higher (M=29.95) than those of other categories. According to post-hoc analysis results, there are significant differences between "standards only" and "course required", "assessment required", "course and assessment required" policy category and "no policy" and "assessment required" category (F=8.040, p<.001). Results on materialism scores also showed significant differences with mean scores of the "course required" (M=41.63), and "course and assessment required" (M=41.61) categories being higher, while "standard with required implementation" category being lower (M=40.03) than those of the other categories (F=5.322, p<.001). In general, students had average risk tolerance within all policy categories. While chi-square test results indicate that there was a significant difference in risk tolerance across categories, students in the "standards only" category had the highest percentage of "average risk tolerance" (61.0%) within all policy categories (χ^2=39.931, df=10, p<.001).

[Insert Figure 3, 4, 5, 6 about here]

[Insert Table 1about here]

Policy Category and Financial Knowledge

The differences in financial knowledge among the policy categories are shown in Figure 7. As can be seen, students' financial quiz scores were about the same in every category, excluding: "assessment required" (M=11.95). This category had significantly lower means than other policy categories (F=11.711, p<.001). According to post-hoc analysis results for the six policy categories, students in states with "standards only" and "standards that are required to be implemented" had significantly higher financial quiz scores (M=12.48) than students in states with a "course only" (M=12.13) or an "assessment only" (M=11.95). In addition, students in states with "no policies" had significantly higher financial quiz scores (M=12.38) than students in states with a "course only" (M=12.13) or an "assessment only" (M=11.95) (F=11.711, p<.001). Students' self-reported financial knowledge level scores also showed significant differences with mean scores of the students in states with the most rigorous policy (course and assessment required) being higher (M=25.53) than students in states with "no policies" (M=24.75), "standards only" (M=24.74), and a "course only" (M=24.80) (F=5.210, p<.001). According to the bivariate analysis results, it is possible to say that generally students believe they had "better" knowledge of financial management compared to other people within all policy categories. Among the six main categories, those in states with the most rigorous policies had the highest percentage (59.2%) of students who perceived their level of financial knowledge to be "better" than others; whereas states with "assessment only" had the lowest percentage (54.7%) of students who perceive their level of financial knowledge to be "better" than others. However there were no significant differences in perceiving financial knowledge among the six policy categories (χ^2 =13.980, df=10, p>.05).

[Insert Figure 7, 8 about here]

[Insert Table 2 about here]

Policy Category and Financial Behaviors

Students' credit card numbers were relatively consistent across policy categories, but the "standards only" category has a significantly higher percentage of students with one credit card (42.5%) as compared to the other categories. The results show that almost one-third of the students were using their credit card "rarely" within the policy categories "course required" and "course and assessment required;" one-third of the students were using their credit card "a few times a month" within the policy categories "no stated policy", "standard only", "standards with required implementation", and "assessment required." Among the six policy categories, there are significant differences with the highest percentage (44.9%) of students obtaining their first credit card before college within the "course required" policy category. While the levels of student credit card balances was consistent across policy categories, states with "standards only" had a significantly higher percentage (54.4%) of credit card balance as "$0", and states with "no policy" category had a significantly higher percentage (25.2%) of credit card balance as "$1-$499".

The vast majority of all students reported not missing a payment. Among the six categories, states with "standards only" had the significantly highest percentage (95.9%) of students who did not miss a payment on a credit card bill by 30 days or more. As can be seen in Table 3, the highest percentage of students in each category acquired their credit card from a bank/financial institution in person. States with "course required" had the significantly highest percentage (47.3%) of students acquiring their credit card from a bank/financial institution.

[Insert Table 3 about here]

Approximately one-third to one-half of the students in each category usually use their credit card for "textbooks/school supplies", "clothes and other personal items", "groceries", "eating out", and "gas/auto, maintenance/auto repair" ($p<.001$).

[Insert Table 4 about here]

Most students within all policy categories did not have any risky credit behaviors ("max out", "make late payments", and "do not pay off") behaviors. Among the six categories, states with "assessment required" had a significantly lower percentage of students reporting "0" risky credit behaviors than other categories ($p<.05$).

[Insert Table 5 about here]

Budgeting varies in a meaningful way by policy category. Generally more than half of the students were not budgeting. The results show that significantly higher percentages of students were budgeting within the policy categories "course and assessment required" (52.9%), "standards with required implementation" (51.4%), "assessment required" (50.7%), and "course required" (50.3%)." Most students (39.7%- 46.1%) within all policy categories who were budgeting reported that they had been using a budget for at least six months. Results on students' intentions towards budgeting showed significant differences across categories. Within each category, the highest percentage of students who were not budgeting plan to do so after they graduate (18.4 %- 26.9%), with the "standards only" group having the highest percentage of students that plan to do so after they graduate .

[Insert Table 6 about here]

Saving varies in a meaningful way by policy categories. Generally more than half of the students reported that they save, except "no state policy" category (49.9%). The results show that the percentage of students in the policy categories who were saving was within the range of

51.8% (“course and assessment required”) to 56.1% (“assessment required”). Most of the students who save reported that they plan to continue making the same regular contribution(s) to saving in the future within all policy categories. While most of the students reported that they had been saving for a year or more within all policy categories, states with “standards only” and “course only” had a significantly higher percentage (48.5%-48.4%) of students reporting they had been saving or investing for a year or more. In regards to students’ intentions towards saving, the majority of students in each category who are not saving do plan to start saving after graduation.

[Insert Table 7 about here]

MULTIVARIATE RESULTS

Financial Disposition

Materialism

Table 8 summarizes the results of OLS regressions predicting college students’ financial disposition. Male students were significantly more materialistic than female students. Older, white, and graduate/professional/other students were significantly less materialistic than younger and other ethnicity students. Students with lower income ($1-499) and students who had federal work-study, scholarships, and tuition waivers also were significantly less materialistic than those who have no income and financial aid. However, students with lower debt ($1-999), higher debt ($5,000 or more) and not sure about debt, and students who had federal student loans were significantly more materialistic than those who have no debt and financial aid. Students who had a personal finance course in their community were significantly less materialistic than those who had not personal finance in the community. Social learning opportunities also related to materialism. Students who had discussed financial management with their parents and friends

were significantly more materialistic than those who had not had these discussions with others. Students who had higher self-reported financial knowledge were significantly less materialistic than those who had lower self-reported financial knowledge.

Students within "standards with required implementation" policy category were significantly less materialistic than those without any state policies.

Compulsive Buying

Older, sophomore, junior, senior and graduate/professional/other students were significantly more prone to compulsive buying. However, white and male students were significantly less prone to compulsive buying than other ethnicity and female students. Students who have taken a personal finance course at high school were significantly more prone to compulsive buying than those who have not taken. Financial characteristics were also related to compulsive buying. Students with higher income ($500-1,000 or more) and students with all levels of debt including those unsure of balances were significantly more prone to compulsive buying than those who have no income and debt. Students who had federal student loans and need-based financial aid were more prone to compulsive buying, while students who had scholarships were less prone to compulsive buying than those who had not financial aid. Students who had discussed financial management with their parents or friends or observed their friends behavior were more prone to compulsive buying. Students who observed their parents financial behavior were significantly less likely to compulsively buy than those who were not observed. Thus modeling seemed to have a distinct impact from discussions; in this instance a positive influence. Students who had a higher financial quiz score and higher self-reported financial knowledge were less prone to compulsive buying than those who had a lower financial quiz score and self-reported financial knowledge.

Students within "standards only" and "standards with required implementation" policy categories scored better on the compulsive buying measure than those without any state policies.

Self-Efficacy

White and male students had significantly higher levels of financial self-efficacy than other ethnicity and, female students. Younger and graduate/professional/ other students had significantly lower levels of financial self-efficacy than older and freshman students. Students with $500-999 income and students with all levels of debt had significantly lower levels of self-efficacy than those who have no income and debt. Students who were listed as dependents on their parents' tax return had significantly higher levels of financial self-efficacy than those who were not dependent and not sure. Students who had federal student loans and need-based aid displayed lower levels of self-efficacy, while students who had scholarships displayed higher levels of self-efficacy than those who had not financial aid. Social learning is significantly related to self-efficacy. Students who had discussed financial management with their parents and observed their friends' financial behavior demonstrated significantly lower levels of self-efficacy than those who had not discussed with their parents and not observed their friends financial behavior. Students who had a higher score of self-reported financial knowledge and financial quiz had significantly higher levels of self-efficacy than those who had a lower score of self-reported financial knowledge and financial quiz.

Students within "assessment required" and "course and assessment required" had significantly lower levels of financial self-efficacy, while students within "standards only" had significantly higher levels of financial self-efficacy than those in without any state policies.

Future Orientation

Demographic characteristics, financial characteristics and social learning opportunities were significantly related to time orientation. Male and single students were more future-oriented than female and married/separated/divorced students; however junior, senior and graduate/professional/other students were present oriented. Students with lower debt ($1-999) were more future-oriented, while students who had need-based funding and scholarships were more present oriented. Students who had discussed financial management with their parents and observed their friends financial behavior displayed significant future orientation. Students who had higher financial quiz score and higher self-reported financial knowledge tended to be more present oriented. Policy category was not related to this measure.

[Insert Table 8 about here]

Financial Risk Tolerance

Table 9 summarizes the results of the cumulative logistic regressions predicting college students' financial risk tolerance. This modeled the likelihood that one would be willing to take any financial risk, average financial risk, or above-average financial risk. Students who had discussed financial management with their friends were more likely to be willing to take above average financial risk than those who had not discussed. Financial knowledge positively related to the likelihood of being willing to take above average financial risk. Students within "standards only", "course required", and "course and assessment required" policy categories were less likely to be willing to take above average financial risk than those without any state policies.

Students who had a personal finance course in high school were more likely to be willing to take average financial risk than other levels of risk compared to those who did not have a course. Students who had a personal finance course in their community were less likely to be in

that category. Students within "standards only", "standards with required implementation", and "course and assessment required" were more likely to be willing to take average financial risk than those without any state policies.

Greater financial knowledge increased the likelihood one would be more willing to take any financial risk as opposed to no financial risk. Students who had discussed financial management with their friends were more likely to be willing to take any financial risk than those who did not. Students who were "course required" were more likely not to be willing to take any financial risk than those without any state policies.

[Insert Table 9 about here]

Summary of Policy Effects on Financial Disposition

Students within the "standards only" policy category were less compulsive buyers, less likely to be willing to take above average financial risk and more likely to be willing to take average financial risk and had higher levels of financial self-efficacy than those in without any state policies. Students within the "standards with required implementation" policy category were significantly less materialistic, less compulsive buyers, and were more likely to be willing to take average financial risk than those without any state policies. Students within "course required" policy category were less likely to be willing to take above average financial risk and more likely to not be willing to take any financial risk those without any state policies. Students within the "assessment required" policy category had significantly lower financial self-efficacy than without any state policies. Students within the "course and assessment required" policy category had significantly lower financial self-efficacy, were less likely to be willing to take above average financial risk and were more likely to be willing to take average financial risk

than those without any state policies. Policy category had no significant effect on college students' future orientation.

Financial Knowledge

Table 10 summarizes the results of OLS regressions predicting college students' financial knowledge. Demographic, financial characteristics, financial education, social learning opportunities and policy category were significantly predictive of college students financial quiz score. Financial quiz score was significantly higher among students who had discussed financial management with their friends and observed their parents financial behavior. However, financial quiz scores were significantly lower among students who had discussed with their parents and observed friends financial behavior.

Students who had taken a personal finance course in their community scored significantly higher scores on the financial quiz than others. Students within the "standards only" category had significantly higher quiz scores. Students within the "course required" and "assessment required" policy categories had significantly lower financial quiz score than those without any state policies. This may mean that peer learning and informal learning may be successful strategies. In addition, the fact that people selected into the programs may also be indicative of difference in readiness to learn; this would be a potential self-selection bias. Similar to financial quiz score demographic, financial characteristics, financial education, social learning opportunities and policy category were significantly predictive of college students' self-reported financial knowledge. Social learning was also significantly related to self-reported financial knowledge. Students who had discussed financial management with their parents and friends and observed their friends' financial behavior had a higher self-reported financial knowledge score than those who did not. Students who had taken a personal finance course at high school and in their

community had significantly higher self-reported financial knowledge score than those who did not. Students within "standards only" and "course and assessment required" policy categories had significantly higher self-reported financial knowledge score than those without any state policies.

[Insert Table 10 about here]

Table 11 summarizes the results of the cumulative logistic regressions predicting college students' perceived financial knowledge compared to other people. Demographic, financial characteristics, financial education, and social learning opportunities were significantly predictive of college students' perceived financial knowledge. Students who had discussed financial management with their parents and friends and observed their parents financial behavior had higher perceived knowledge. Those who observed friends financial behavior were less likely to think of their knowledge as better than those who were not observed. Students who had taken a personal finance course in high school and in their community were more likely to perceive their financial knowledge as better than those who had not taken any personal finance course. Policy category was not a significant factor for students' perceived financial knowledge as better than others.

Demographic and financial characteristics, financial education, social learning opportunities were significantly predictive of perceive students financial knowledge as same with other people. Students who had discussed financial management with their parents and friends and observed their parents financial behavior were less likely and students who observed their friends' behavior more likely perceived their financial knowledge as same with others. Students who had taken a personal finance course in their community were less likely to perceive

their financial knowledge as the same as others. Policy category was not a significant predictor for students' perceived financial knowledge as the same as others.

Demographic and financial characteristics, financial education, and social learning opportunities were significantly predictive of perceive college students' financial knowledge as worse than others. Students who had discussed financial management with their parents and friends and observed their parents' financial behavior less likely perceived their financial knowledge as worse than others. As expected, financial education negatively related to perceived financial knowledge as worse than others; policy category was not significant related. Social learning negatively related to perceive financial knowledge as worse than others.

[Insert Table 11 about here]

Summary of Policy Effects on Financial Knowledge

Students within the "standards only" category had significantly higher financial quiz scores than those in other policy categories and those without any state policies. They also had significantly higher self-reported knowledge than all other categories, with the exception of "course and assessment required." Students within the "course required" and "assessment required" policy categories had significantly lower quiz scores than students with no state policies. As we see here, just having a standard at all and having the most rigorous standard correlate with higher levels of financial quiz and self-reported financial knowledge.

Financial Behaviors

Budgeting

Table 12 summarizes the logistic regression results predicting budgeting and saving behaviors. According to first model of logistic regression analysis results; gender, school rank, marital status, and taking a personal finance course were significantly related to budgeting.

Students who had a higher score of self-reported financial knowledge were more likely to budget, and students who perceive their financial knowledge as worse compared to other people were less likely, and students who perceive their financial knowledge as better compared to other people were more likely to budget than those who perceive their financial knowledge as same compared to other people.

Students within "standards with required implementation," "assessment required," and "course and assessment required," policy categories were more likely to budget, however students within "standards only" policy category were less likely to budget than those in "no state policy" category.

In the second model we tested whether financial social learning opportunities and financial behavior related to budgeting or not. Students who had discussed financial management with their parents and friends were more likely to budget than those who had not discussed with their parents and friends. Financial dispositions were significantly related to budgeting, with higher levels of self-efficacy being positively related to budgeting, and higher levels of future orientation and materialism being negatively related to budgeting. The relationship between budgeting and efficacy is likely reflective of association. Those who budget feel better about their situation and are likely asserting some control over it and feel better about the usefulness of this activity. However, those more interested in the future and material objects may be less likely to focus on managing current day to day and instead are thinking more long term. Policy category was significantly related to budgeting when adding in financial dispositions and financial social learning opportunities. Students within "standards with required implementation," "course required", "assessment required," and "course and assessment

required" policy categories were more likely to budget, however students within "standards only" policy category were less likely to budget than those in the no state policy category.

Saving

According to reduced model, race, gender, school rank, marital status, and taking a course on personal finance in the community were significantly related to the likelihood of saving. Financial knowledge was significantly related to the likelihood of saving. Students who had higher self-reported financial knowledge and students who perceive their financial knowledge as better than other people were more likely to be saving, and students who perceive their financial knowledge as worse than other people were less likely saving than others.

Students within the "standards only", "course required" and "assessment required" policy categories were more likely to be saving than those without any state policies..

In the second model, social learning was an important determinant of saving. Students who had discussed financial management with their parents and friends were more likely saving than those who had not discussed with their parents and friends. Financial disposition also was a predictor of saving. Higher levels of compulsive buying and self-efficacy were positively related to saving. Students who were not willing to take any financial risk were less likely to be saving than those who were willing to take average financial risks. Students who had higher levels of financial self efficacy and who were less prone to compulsive buying were more likely saving than those who had lower levels of financial self-efficacy and who were more prone to compulsive buying .

Policy category was significantly related to saving when adding in financial dispositions and financial social learning opportunities. Students within the "course required" and

"assessment required" policy categories were more likely to be saving than those in the no state policy category.

[Insert Table 12 about here]

Risky Credit Behaviors

"Max out" credit cards

Table 13 summarizes the results of logistic regressions predicting risky credit behaviors about "max out", make late payments on credit cards, and do not pay off credit card balance fully each month. A higher score of self-reported financial knowledge negatively related to "max out" credit cards. Students within "standards only" and "course required" policy categories were less likely to "max out" credit cards than those without any state policies.

In the second model financial disposition and social learning opportunities significantly related to "max out" credit cards, Students who were less prone to compulsive buying was lower the likelihood of having maxed out their credit cards. Greater self-efficacy was negatively related to the likelihood of having maxed out their credit cards. Those who had observed their parents financial behaviors were less likely to have maxed out their credit cards. Policy category was significantly related to "max out" credit cards when adding in financial social learning opportunities and financial dispositions. Students within "course required" policy category were less likely to "max out" credit cards than those with no state policies.

Make late payments on credit cards

As expected higher score of financial quiz, self-reported financial knowledge, and perceived financial knowledge better than others negatively related to make late payments. Students within "standards only" and "course required" were less likely to make late payments than those without any state policies.

In the second model, financial social learning and financial disposition significantly related to make late payment. Students who had observed their parents' financial behavior were less likely to make late payments on their credit cards. This would be consistent with the implications of Social Learning Theory, modeling behaviors is a key aspect of the social learning process. Students who were less prone to compulsive buying were less likely to make late payments on their credit cards. Students with higher levels of self-efficacy were less likely to make late payments on their credit cards. Policy category also was significantly related to making late payments in the second model. Students within "course and assessment required" policy category were less likely to make late payments on their credit cards than those without any state policies.

Does not pay off credit card balance fully each month

Students within the "standards only", "standards with required implementation", "course required", and "course and assessment required" categories were more likely to be paying their cards off fully each month than those with no state policy categories.

In the second model, financial disposition significantly related to do not pay off balance fully. Students who were less prone to compulsive buying were more likely to pay off their credit cards balance fully each month. Additionally, students who had higher levels of self-efficacy and who were more future-oriented were more likely to pay off their credit cards balance fully each month. Similar to first model, students within the "standards only", "standards with required implementation", "course required", and "course and assessment required" categories were more likely to be paying their cards off fully each month than those without any state policies s in the second model.

[Insert Table 13, 14 about here]

Summary of Policy Effects on Behaviors

When not accounting for social learning opportunities and financial dispositions, students in states with "standards with required implementation," "assessment required," and "course and assessment required," were more likely to budget. Students in states with "standards only" were less likely to budget than students in other policy categories. Students within the "standards only", "course required" and "assessment required" policy categories were more likely to be saving than all other categories. Students within "standards only" and "course required" policy categories were less likely to "max out" credit cards than other policy categories. Students within "standards only" and "course required" were less likely to make late payments than other policy categories. Students within the "standards only", "standards with required implementation", "course required", and "course and assessment required" categories were more likely to pay off their credit card balance fully each month than all other policy categories. The significance of policy categories in the second model should be taken to mean that there is a significant role being played by school-based or formal financial education. The complex role that both social learning and financial education play in terms of shaping knowledge, dispositions, and behaviors is best modeled in regression. When accounting for social learning opportunities and financial dispositions, students in states with "standards with required implementation," "course required", "assessment required," and "course and assessment required," were more likely to budget. Students in states with "standards only" were less likely to budget than students in other policy categories. Students within the "course required" and "assessment required" policy categories were more likely to be saving than all other categories. Students within "course required" policy category were less likely to "max out" credit cards than other policy categories. Students within "course and assessment required" were less likely to make late payments than other policy

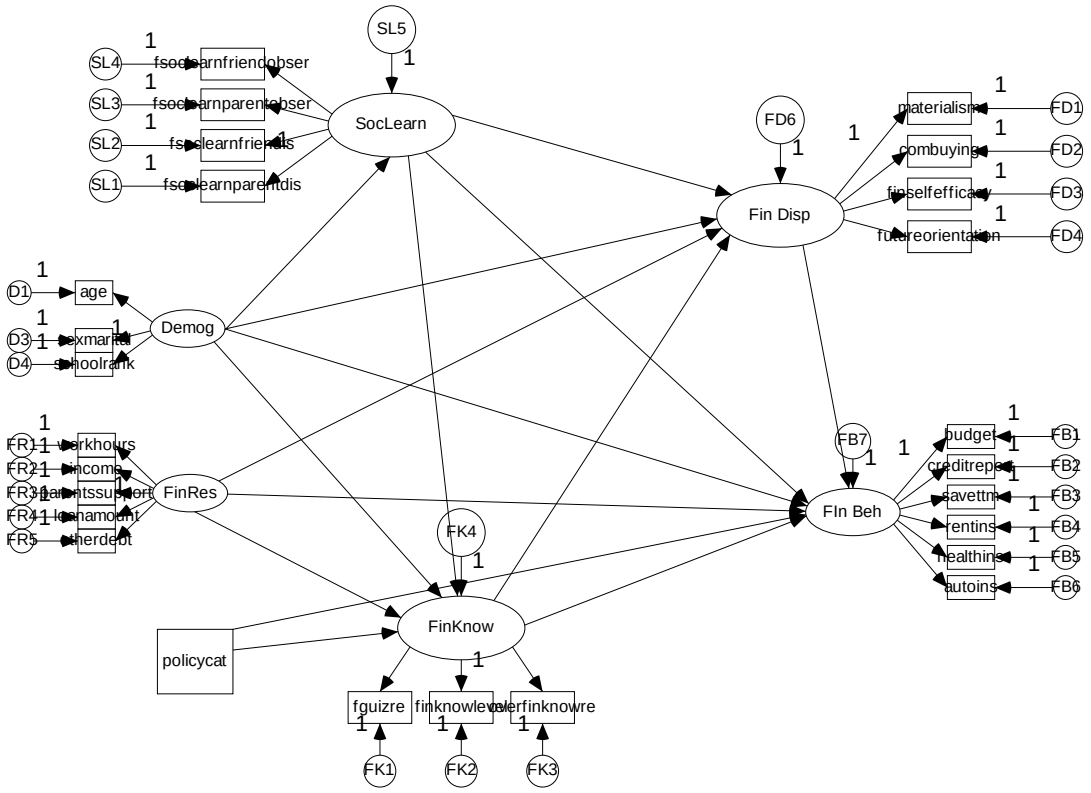
categories. Students within the "standards only", "standards with required implementation", "course required", and "course and assessment required" categories were more likely to pay off their credit card balance fully each month than all other policy categories.

The following section will show the direct and indirect relationships of financial education and social learning in shaping behaviors. . In understanding the complex nature of financial behavior, the following analysis uses Structural Equation Modeling.

Structural Equation Model: Defining the Relationships among Financial Education, Financial Socialization, and the Outcome Measures.

To conduct structural equation modeling, we employed AMOS 16.0. Figure 9 contains the Hybrid Structural Equation Model in graphic form. Table 15 presents the results of the structural model. The CFA results for overall measurement model fit were as follows: χ^2=7149.077, p<0.0001; *CFI*=.922; *IFI*=.922; *TLI*= .895; *GFI*=.968; *RMSEA*= .041. These indices are all indicative of a strong fit of the model to the data. The paths represent a direct link from demographic variables to social learning, financial knowledge, financial disposition, and financial behavior; a direct link from financial resources to social learning, financial knowledge, financial disposition, and financial behavior; a direct link from social learning to financial knowledge, financial disposition, and financial behavior; a direct link from financial knowledge to financial disposition and financial behavior; a direct link from financial disposition to financial behavior; and a direct link from policy category to financial behavior. All of these paths are significant. This finding indicates that college students' demographics, financial resources, financial knowledge, financial dispositions, social learning opportunities and state policy categories directly influence their financial behaviors.

Figure 9. *Hybrid Structural Equation Model for Financial Behavior*



[Insert Table 15 about here]

Having a Policy Versus None

An additional set of regressions were estimated to determine simply whether having any policy led to greater behavioral outcomes. This analysis used a logistic regression and the results are briefly summarized in this section.

In the reduced model, compared to having no policy, students in states that did have a policy were significantly less likely to engage in compulsive buying and less likely to have lower financial self-efficacy. In addition, they were more likely to be willing to take average and above average financial risk. These students were also more likely to budget, save, and pay their credit cards off fully each month and less likely to max out credit cards and make late payments.

In the full model, students in states that did have a policy were significantly less likely to engage in compulsive buying In addition, they were more likely to be willing to take average

and above average financial risk. These students were also more likely to save and pay their credit cards off fully each month and less likely to max out credit cards.

CONCLUSIONS

This study focused on the relationships among state financial education policies, student characteristics, social learning opportunities, financial dispositions, financial knowledge and student financial behaviors. It used data from a web survey collected during 2008 from college campuses across the United States to explore these relationships. Bivariate relationships were proposed and explored using cross tabulations and mean-comparison techniques. Then, OLS regression and logistic regression were used to identify the relationships between policy category and indicators of financial dispositions, financial knowledge, and financial behaviors when controlling for other factors, financial characteristics, financial education, financial social learning opportunities, financial knowledge and financial dispositions. Finally, structural equation modeling was used to define the model of financial behavior. The multivariate results of this study provide several key conclusions.

Financial education and policy category are significantly related to some financial dispositions. Students who were taught personal finance in high school were more prone to compulsive buying than those who were not taught. Students within "standards with required implementation" category were less materialistic than those without any state policies. Students within "standards only" and "standards with required implementation" categories were less prone to compulsive buying than those with no state policies. Students in the "assessment required" and "course and assessment required" categories had lower levels of self-efficacy and students in the "standards only" category had higher levels of self-efficacy than those with no state policies. We found that policy category did not influence students' future orientation scores.

Students within “standards only”, “standards with required implementation”, and “course and assessment required” were more willing to take average financial risk than those without any state policies.

Financial education and policy category are significantly related to financial knowledge. Students who taken personal finance course in high school and in their community had higher level of self-reported financial knowledge and students who taken personal finance course in their community had higher level of financial quiz score than those who had not taken personal finance course . Also students who were taught personal finance course both in high school and in their community perceived their financial knowledge as better than those who were not taught personal finance. One interesting result was that students in the “course required” and “assessment required” policy categories had lower financial quiz scores than students in the other categories, and students in the “standards only” policy category had higher financial quiz score than other five policy categories. On the other hand, students in states with the “standards only” and “course and assessment required” had higher self-reported financial knowledge scores than other four policy categories. In the both regression model, financial education and financial education policies were significantly related to financial behaviors. In the reduced model, students who taken personal finance course in their community were more likely to be budgeting and saving than those who had not. Students within the “standards with required implementation,” “assessment required,” and “course and assessment required” policy categories were more likely to budget than students in states with “no policy”. Students in the “standards only”, “course required”, and “assessment required” more likely to be saving than students in states with “no policy. Policy category also significantly related to risky credit card behaviors. Students in the “standards only” and “course required” were less likely to “max out” and make

late payments on their credit cards than students in states with “no policy”. Students in the “standards only”, “standards with required implementation”, “course required” and “course and assessment required” were more likely to pay their credit cards off fully each month than students in states with “no policy” category.

When controlling for social learning and financial dispositions, again financial education and policy category were significantly related to financial behaviors. In the full model, students who had taken a personal finance course in school and in their community were more likely to be budgeting and students who had taken a personal finance course in their community were more likely saving than those who had not. Students within the “standards with required implementation,” “course required”, “assessment required,” and “course and assessment required” policy categories were more likely to budget, however, students within standards only” were less likely budget than students in states with “no policy” category. Students in the “course required” and “assessment required” were more likely to be saving than students in states with “no policy” category. Similar to reduced model, policy category also significantly related to risky credit card behaviors. Students in the “course required” were less likely to “max out” and students in the “course and assessment required” were less likely to make late payments on their credit cards than students in states with “no policy” category. Students in the “standards only”, “standards with required implementation”, “course required” and “course and assessment required” were more likely to pay their credit cards off fully each month than students in states with “no policy” category.

The SEM analysis clarifies this issue greatly. The results of the SEM capture the role that each of these factors does play. The primary influences on financial behaviors include policy category, financial dispositions, and financial knowledge. The regression for financial

knowledge shows that policy category was predictive of both higher performance on the knowledge assessment and higher levels of self-reported knowledge. In particular having a standard was a key tipping point for financial knowledge with only the most rigorous policy of having both a course and assessment required producing higher levels of self-reported knowledge. Thus, the remaining states without policies should clearly consider adopting standards at the minimum.

Overall, this study shows that financial behaviors of college students vary by state policy on financial education, even when controlling for demographics, financial resources, financial education, financial knowledge, financial social learning opportunities and financial disposition. Social learning was an important determinant of financial dispositions.

In addition, college students will be engaged in various financial transactions out of necessity. Thus regardless of having had a class, many students will need checking accounts and will opt to learn to use them through self-education, social learning opportunities, or simply from trial and error (experience). However, lack of any formal education can lead to false financial knowledge and as such social learning and self education by themselves may be problematic.

Yet, financial knowledge is seen as a key predictor of financial behavior, while financial education is a key predictor of knowledge. Thus, since having standards was a key tipping point in our measures of financial knowledge, having standards should be considered a minimum, with requiring courses and assessment being the ideal, since that had an even stronger impact on knowledge.

Implications for further research

The results of this study can reasonably be generalized to students from these states who attended four year universities. This study should be replicated to determine if similar patterns

exist for the other half of US High school students who did not or do not go to college. Students were not randomly assigned to receive financial education or not. Further research would benefit from some attempts at randomized treatment for subjects.

An important follow-up study should use the results of this study to consider the potential dollar impact of financial education mandate to a community or a state. In other words, if states were to change a policy, what would be the expected return on investment?

Following up with individual states to evaluate specific curriculum use would be a key piece in further identifying the best practices in terms of policies. This would include both classroom experiences and hands-on experiences, such as having a credit union in the school.

Additional question are raised. What factors moderate the influence of social learning on dispositions; does this vary by gender, race/ethnicity, rural vs. urban vs. suburban status? How does community education versus formal education relate; is the relationship on knowledge the same regardless?

One limitation of this study was the lack of control for teacher background. Are all teachers equally prepared for providing this education? How does implementation of financial education vary among schools? How do the various state standards match up with teacher preparation standards in those states?

Implications for state education policymakers

There is clear evidence that students from states with no policies tend to fare worse on the majority of outcome measures (dispositions, knowledge, and behavior) than students from other states. It is not clear that all states should require a class. However what is clear is that having some standard with mandatory implementation or better seems to be a tipping point with respect to many of our outcome measures. States should be encouraged to achieve this minimum. More

rigorous polices would continue to be encouraged beyond this minimum but effort is best spent in moving more states to meet this minimum first.

In addition, the possibility that education may need to compete with social learning and personal experience points to the need for financial education to be an ongoing process beginning at earlier ages before poor habits may take root. One implication of this may be to have personal finance education standards in place for younger ages.

Implications for outreach

Building on the previous point, community educators should be aware of the need to provide programming across the lifespan beginning with youth. This may also prompt a need for additional programming and evaluation of such youth oriented programs.

Further, the significance of the Social Learning Opportunities measure points to the importance of financial socialization. In order to encourage and perhaps guide such processes, it is important to create, pilot, and evaluate family-oriented or social learning opportunity oriented financial education. There is a need to encourage greater sharing; parents need to explain behaviors to children not just model them. This message could be distributed through social marketing as well.

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Figure 1. *Personal Finance Taught in High School by Policy Category*

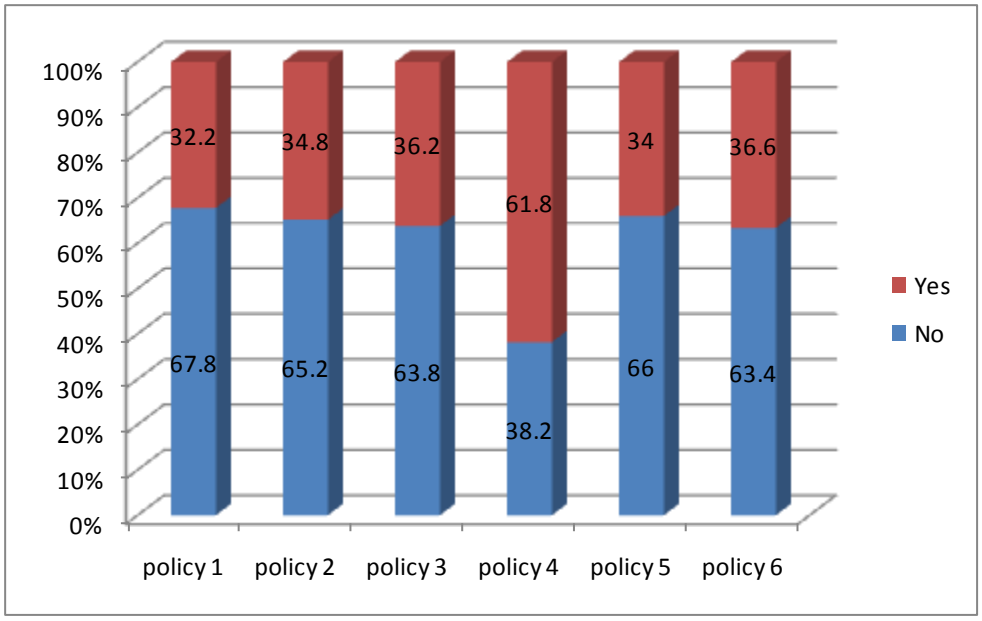

Figure 2. *Personal Finance in Community by Policy Category*

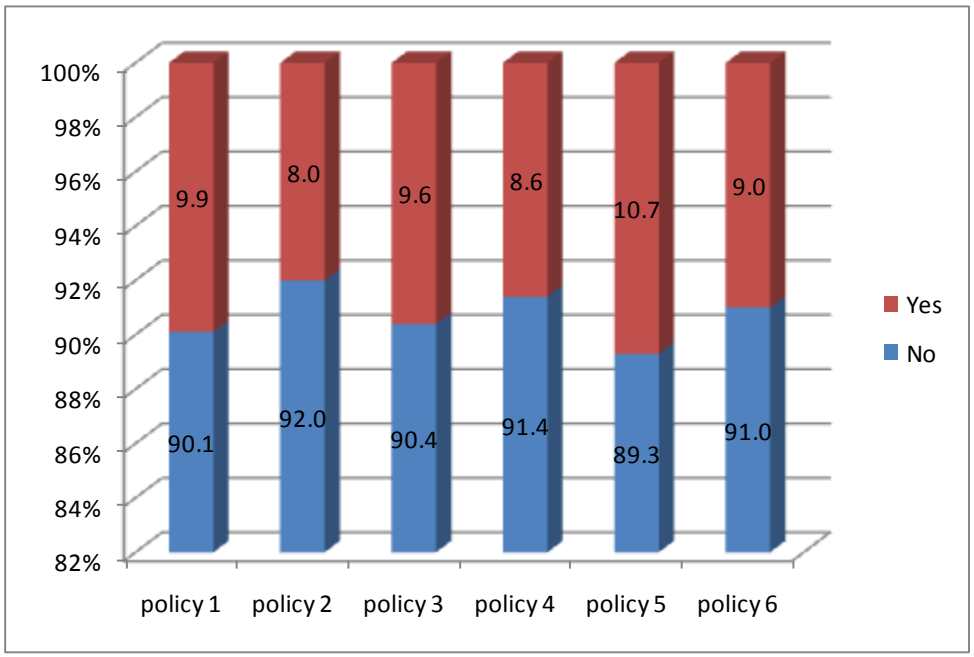

Figure 3. *Compulsive Buying by Policy Category*

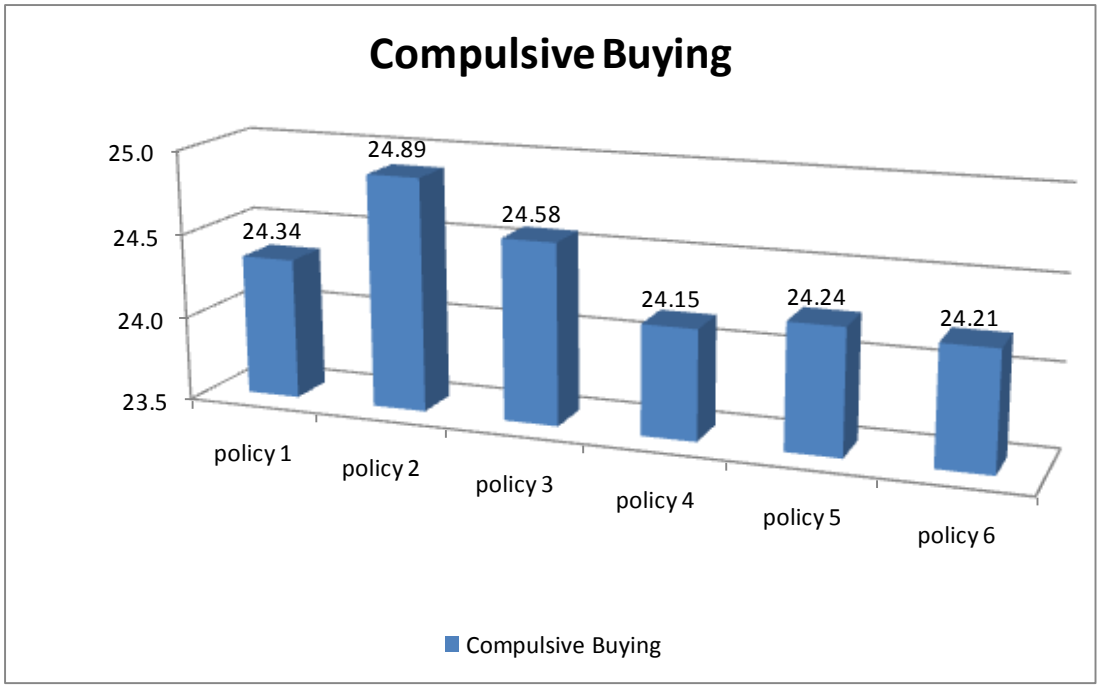

Figure 4. *Future Orientation by Policy Category*

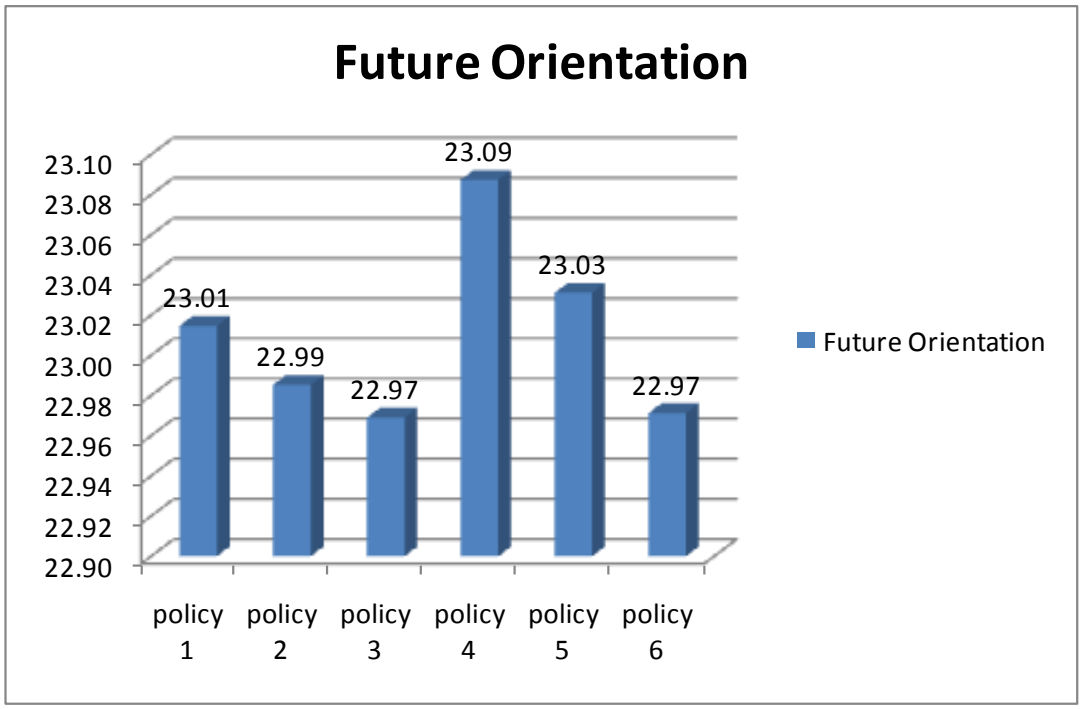

Figure 5. *Financial Self-efficacy by Policy Category*

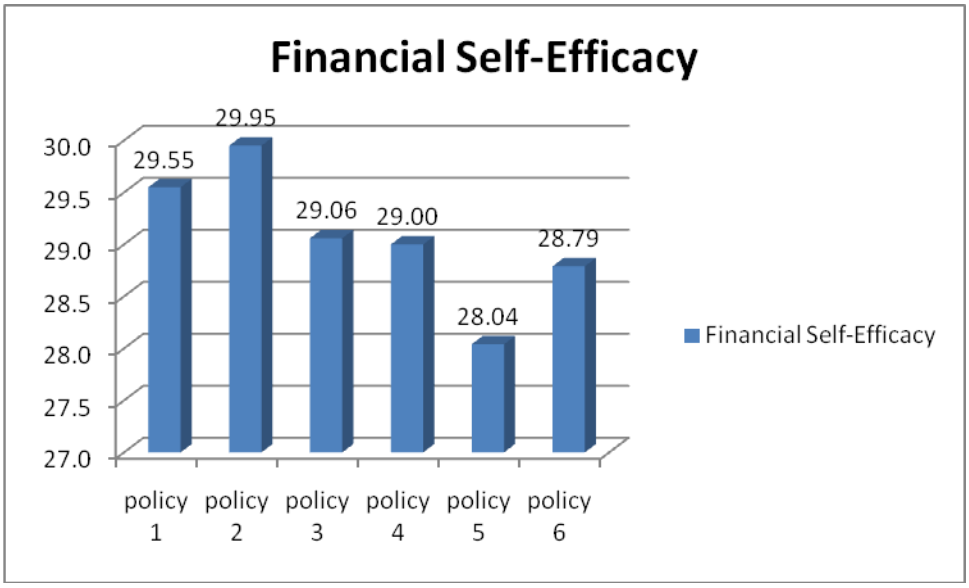

Figure 6. *Materialism by Policy Category*

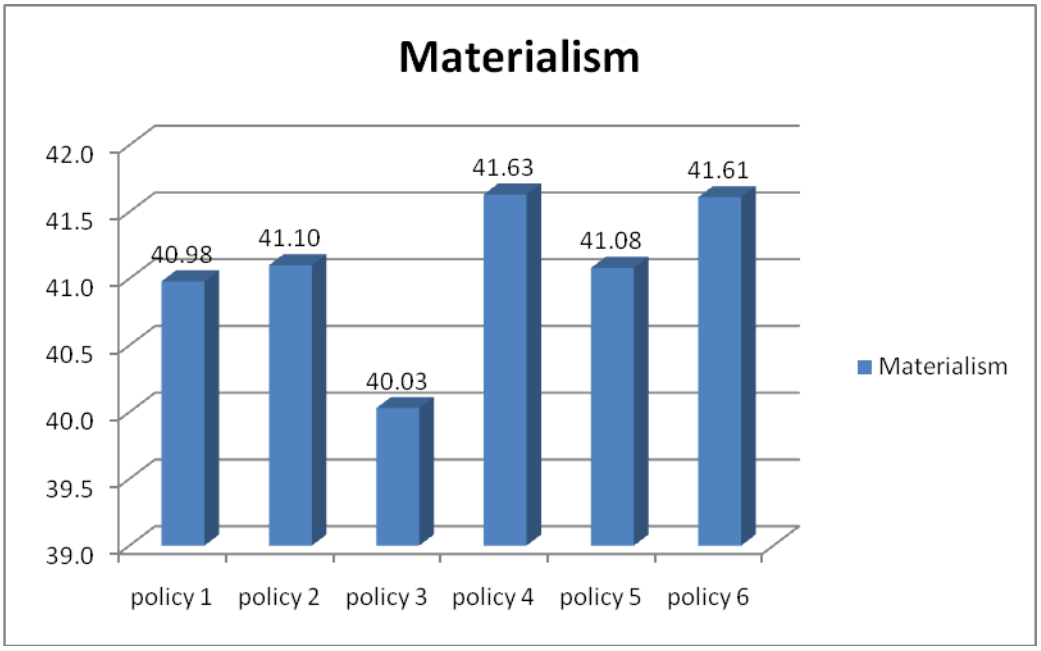

Table 1. *Financial Risk Tolerance by Policy*

Policy Categories	Financial Risk Tolerance %		
	No risk	Average risk	Above average and substantial risk
No stated policy	16.6	56.1	27.3
Standards only	14.7	**61.0**	24.3
Standards with required implementation	15.0	58.4	26.6
Course required	19.6	56.3	24.1
Assessment required	20.5	53.0	26.5
Course and assessment required	16.1	59.9	24.0
Total	16.5	57.8	25.6

χ^2=39.931, *df*=10, *p*<.001

Figure 7. *Financial Quiz by Policy Category*

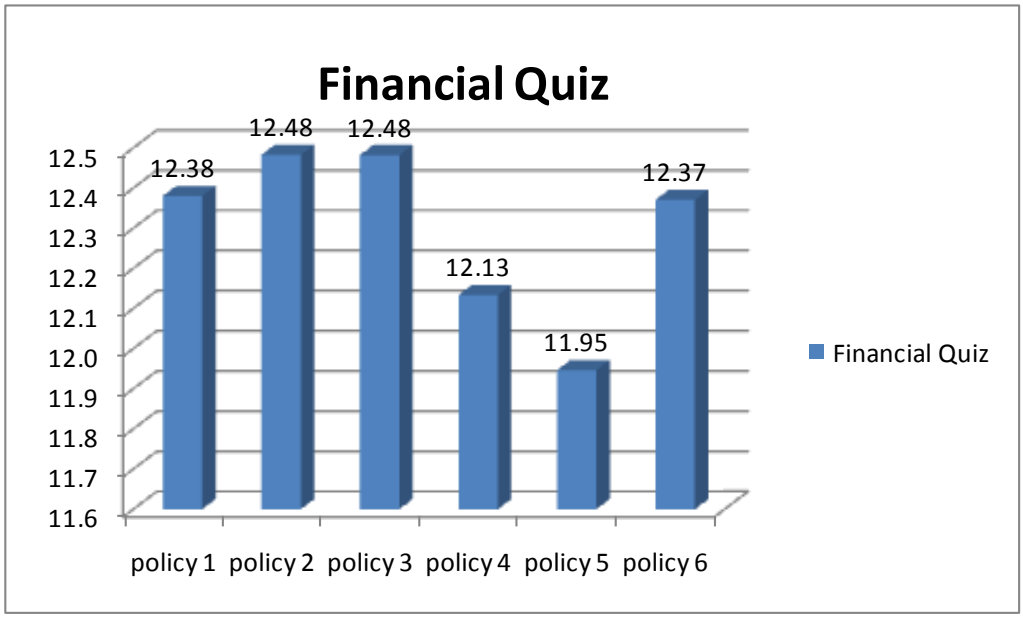

Figure 8. *Self-Reported Financial Knowledge by Policy Category*

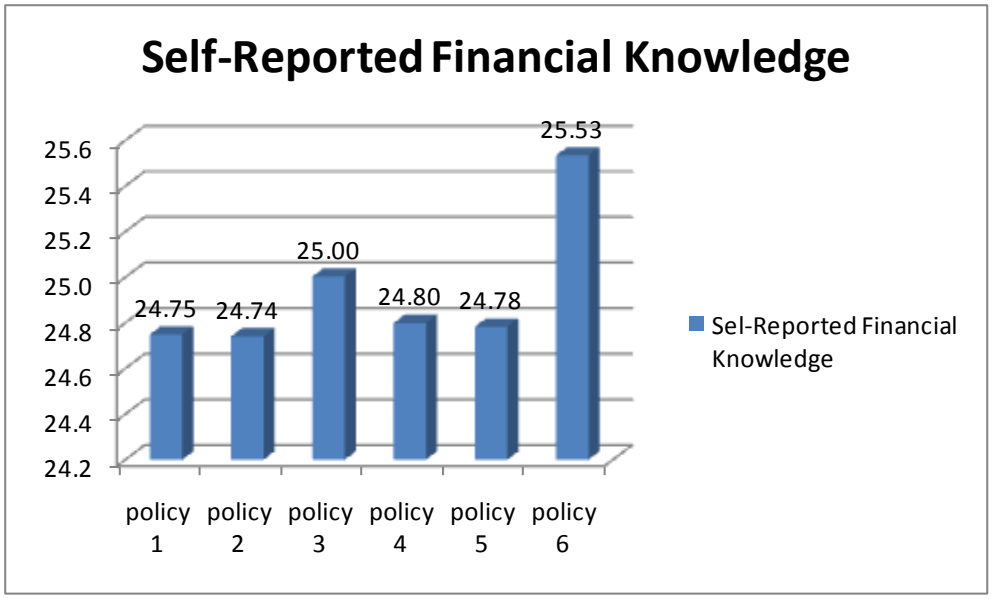

Table 2. *Perceive Financial Knowledge by Policy Category*

Policy Categories	Perceive Financial Knowledge %		
	Worse	Same	Better
No stated policy	13.8	27.9	58.4
Standards only	12.8	30.2	57.0
Standards with required implementation	12.5	29.1	58.5
Course required	13.3	30.5	56.3
Assessment required	15.1	30.2	54.7
Course and assessment required	12.7	28.1	**59.2**
Total	13.2	29.0	57.8

χ^2= 13.980; *df* = 10; *p*> .05

Table 3. *Information about Credit Card by Policy Category*

		Policy categories						
		No stated policy	Standards only	Standards with required implementation	Course required	Assessment required	Course and assessment required	Total
Credit card number %	None	24.9	27.6	23.6	26.7	31.7	26.5	26.0
	1	38.1	41.0	42.5	39.6	35.0	39.2	39.5
	2	19.0	18.3	19.2	17.6	17.1	16.6	18.2
	3	10.0	8.0	8.4	9.2	8.8	8.9	9.1
	4 or more	8.0	5.2	6.3	6.9	7.5	8.9	7.2
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=57.857, df=20, p<.001						
Credit card frequency%	Emergency	13.7	14.4	14.0	19.4	19.4	18.3	15.6
	Rarely	25.3	21.9	26.1	27.9	27.1	27.5	25.5
	A few times a month	28.6	30.3	28.6	24.2	28.1	25.1	27.7
	A few times a week	19.8	23.7	19.8	20.2	15.6	19.9	20.5
	Almost daily	12.7	9.7	11.5	8.2	9.7	9.2	10.7
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=97.083, df=20, p<.001						
First credit card %	Before college	42.1	41.0	38.7	44.9	38.7	41.5	41.6
	First year of college	34.7	32.2	36.9	28.1	36.1	32.9	33.4
	After first year of college	23.2	26.8	24.4	27.0	25.2	25.6	25.0
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=30.867, df=10, p<.001						
Credit card amount %	$0	45.6	54.4	47.7	50.6	49.0	52.4	49.5
	$1-499	25.2	24.9	24.8	24.5	21.4	21.1	24.2
	$500-999	8.3	7.1	7.8	8.0	8.0	6.7	7.7
	$1000-2999	9.8	7.4	10.0	8.3	8.0	9.2	9.0
	$3000-4999	4.3	2.8	3.9	3.5	5.3	4.2	3.9
	$5000 or more	5.3	2.7	5.0	3.8	5.8	5.4	4.6
	Not sure	1.6	0.7	0.8	1.3	2.4	1.1	1.2
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=92.379, df=30, p<.001						

Missed Payment %	No	93.8	95.9	95.2	93.7	93.2	94.2	94.4
	Yes	6.2	4.1	4.8	6.3	6.8	5.8	5.6
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				χ^2=12.979, df=5, p<.05				
Acquire credit card %	Mail	18.3	17.4	12.9	15.9	15.8	15.7	16.6
	Campus table	3.9	2.3	2.8	3.3	2.6	4.1	3.3
	Bank/financial Institution	36.1	44.9	47.3	36.9	34.0	36.5	39.3
	Retail store	5.9	5.4	4.1	6.8	5.5	7.3	5.9
	Phone	1.7	1.3	0.9	1.3	1.8	1.2	1.4
	Online	12.9	11.2	10.0	12.5	14.0	12.0	12.1
	Parents	16.3	12.9	16.2	16.8	19.0	17.1	16.0
	Other	4.9	4.6	5.8	6.5	7.1	6.0	5.4
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				χ^2=125.582, df=35, p<.001				

Table 4. *Credit Cards Uses by Policy Category*

Pay for credit cards	Policy categories %						Total
	No stated policy	Standards only	Standards with required implementation	Course required	Assessment required	Course and assessment required	
Text books/school supplies	31.6	32.0	30.7	31.3	24.7	19.4	29.2
				χ^2=158.873, df=5, p<.001			
Tuition and fees	8.1	4.4	7.5	7.4	7.3	6.2	6.9
				χ^2=42.201 df=5, p<.001			
Clothes and other personal items	30.3	32.0	30.0	27.4	23.5	29.4	28.7
				χ^2=29.352, df=5, p<.001			
Groceries	27.9	29.7	28.3	25.2	22.0	25.5	27.2
				χ^2=31.649, df=5, p<.001			
Eating out	25.9	25.8	26.1	20.3	18.8	23.7	24.4
				χ^2=46.720, df=5, p<.001			
Entertainment	19.5	19.9	20.6	16.7	14.3	17.5	18.7
				χ^2=28.565, df=5, p<.001			
Gas/auto maintenance/auto repair	34.1	27.7	32.4	29.9	25.0	33.6	31.5
				χ^2=60.355, df=5, p<.001			
Travel	18.5	19.6	23.7	13.5	15.4	14.8	18.0
				χ^2=100.969, df=5, p<.001			
Rent/utilities	3.5	3.1	3.5	3.2	3.0	4.3	3.5
				χ^2=7.333, df=5, p>.05			
Other bills (cable, int.)	7.7	8.2	8.7	7.4	8.5	7.1	7.8
				χ^2=6.160, df=5, p>.05			
Fraternity/sorority expenses	2.3	1.9	3.0	2.2	1.9	2.2	2.3
				χ^2=7.606, df=5, p>.05			

Table 5. *Risky Credit Card Behaviors by Policy Category*

Risky Credit Card Behaviors	How many times during the last year	Policy categories: No stated policy %	Standards only %	Standards with required implementation %	Course required %	Assessment required %	Course and assessment required %	Total %
'Max out' your credit cards	0	69.7	72.8	73.3	73.2	65.1	70.4	71.1
	1-2	11.3	8.4	9.7	9.1	12.1	9.8	10.0
	3-5	2.8	1.6	2.4	1.8	2.0	2.8	2.4
	6 or more	1.3	.8	1.1	1.0	.4	.7	1.0
	N/A	14.9	16.4	13.4	15.0	20.4	16.3	15.5
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=47.603, df=20, p<.001						
Make late payments on your credit cards	0	68.8	70.4	71.0	69.5	63.6	68.8	69.2
	1-2	12.7	10.8	11.8	11.3	12.4	11.2	11.8
	3-5	2.4	2.0	2.4	3.1	2.5	2.5	2.4
	6 or more	1.3	.5	1.3	1.0	.7	1.3	1.1
	N/A	14.8	16.3	13.6	15.0	20.9	16.3	15.5
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=34.320, df=20, p<.05						
Do not pay off your credit cards	0	50.7	57.8	56.0	55.8	45.9	52.0	53.4
	1-2	11.4	8.2	9.1	9.9	12.3	9.8	10.3
	3-5	6.8	5.8	6.3	6.1	6.7	6.0	6.4
	6 or more	16.2	11.9	15.2	13.1	14.8	15.8	14.7
	N/A	15.0	16.3	13.4	15.1	20.4	16.5	15.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=69.508, df=20, p<.001						

Table 6. *Budgeting by Policy Categories*

Financial Behavior		Policy categories						Total %
		No stated policy %	Standards only %	Standards with required implementation %	Course required %	Assessment required %	Course and assessment required %	
Use budget	No	53.3	56.7	48.6	49.7	49.3	47.1	51.7
	Yes	46.7	43.3	51.4	50.3	50.7	52.9	48.3
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
		χ^2=47.550, df=5, p<.001						
If yes, use budget at least 6 months	No	4.9	3.6	5.3	7.1	7.6	7.5	5.5
	Yes	41.8	39.7	46.1	43.2	43.1	45.4	42.8
	Total	46.7	43.3	51.4	50.3	50.7	52.9	48.3
		χ^2=25.599, df=5, p<.001						
If no, budgeting intention	No plan	15.0	15.5	11.9	11.2	14.4	12.4	13.8
	After graduate	21.0	26.9	22.5	22.5	18.4	19.0	22.1
	Next sixth months	10.7	9.7	9.7	9.8	8.7	9.9	10.0
	Next month	6.6	4.6	4.6	6.2	7.8	5.8	5.8
	Total	53.3	56.7	48.6	49.7	49.3	47.1	51.7
		χ^2=50.383, df=15, p<.001						

Table 7. *Saving by Policy Categories*

Financial Behavior		Policy categories						Total %
		No stated policy %	Standards only %	Standards with required implementation %	Course required %	Assessment required %	Course and assessment required %	
Saving	No	50.1	46.3	47.5	45.3	43.9	48.2	47.8
	Yes	49.9	53.7	52.5	54.7	56.1	51.8	52.2
	Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0
				χ^2=15.685, df=5, p<.01				
Saving plan in the future	No	2.7	2.6	1.8	2.7	3.1	2.0	2.5
	Yes	47.2	51.1	50.7	52.0	53.0	49.8	49.7
	Total	49.9	53.7	52.5	54.7	56.1	51.8	52.2
				χ^2=6.114, df=5, p>.05				
Saving for a year or more	No	6.2	5.2	6.8	6.3	9.8	7.1	6.4
	Yes	43.7	48.5	45.7	48.4	46.3	44.7	45.8
	Total	49.9	53.7	52.5	54.7	56.1	51.8	52.2
				χ^2=16.536, df=5, p<.05				
Saving intention	No plan	3.5	3.0	2.6	3.0	2.5	2.8	3.1
	After graduate	30.7	29.5	30.6	28.0	26.1	29.8	29.7
	Next 6 months	11.5	9.8	10.8	9.8	9.7	11.9	10.9
	Next month	4.4	4.0	3.5	4.5	5.5	3.7	4.1
	Total	50.1	46.3	47.5	45.3	43.9	48.2	47.8
				χ^2=14.090, df=15, p>.05				

Table 8. OLS *Regression of Financial Disposition*

Independent variables	Materialism	Compulsive Buying	Fin. Self-Efficacy	Future Orientation
Demographic Variables				
Age	-.197***	-.086***	-.233***	-.007
White	-1.372***	.806***	.850***	.044
Male	.639**	.800***	.698***	.355***
Sophomore	-.111	-.330**	-.189	-.098
Junior	-.191	-.545***	.014	-.216***
Senior	-.179	-.743***	-.247	-.139*
Graduate/professional/other	-1.454**	-.624***	-.744*	-.273**
Single	.513	.143	.044	.208***
Financial Education				
Personal Finance in HS	-.183	-.178*	.139	.054
Personal Finance in Community	-.998**	.226	-.085	-.009
Financial Variables				
Income				
$1-$499	-.518*	-.112	-.169	.051
$500-$999	-.597	-.378***	-.662**	.009
$1,000 or more	.053	-.553***	-.469	.148
Debt				
$1-$999	1.123**	-2.094***	-2.890***	.229**
$1,000-$4,999	.251	-1.621***	-1.986***	-.133
$5,000 or more	1.681***	-1.669***	-2.471***	.040
Not sure	1.508*	-1.025***	-1.838***	.126
Dependent parents' tax return	.765**	.173	.365*	-.029
Federal students loan	.914***	-.850***	-1.261***	.066
Federal work- study	-.896*	.336*	.443	.040
Need-based	-.055	-.311**	-.434*	-.157***
Scholarships	-1.528***	.755***	.998***	-.172***
Tuition waiver	-1.239**	.150	.504	-.101
Social Learning				
Discuss finance with parent	.037*	-.042***	-.063***	.010***
Discuss finance with friends	.061**	-.044***	-.008	.004
Observing parents	-.006	.018***	.015	-.005
Observing friends	.010	-.037***	-.064***	.014***
Financial Knowledge				
Financial quiz	-.072	.152***	.099**	-.047***
Self-reported financial knowledge	-.133***	.156***	.630***	-.047***
Policy Category				
Standards only	-.127	.595***	.494*	-.094
Standards with required implementation	-.909**	.412***	-.421	-.061

Course required	-.167	.205	-.159	-.078
Assessment required	-.128	.058	-1.068**	-.167
Course and assessment required	.555	.063	-.643**	-.042
Constant	48.730***	22.037***	19.451***	24.162***
F	13.50***	70.03***	99.65***	15.69***
$Adj.R^2$	.045	.192	.253	.043

Unstandardized coefficients are reported. *Note*: *$p < .05$, **$p<.01$, ***$p < .001$

Table 9. *Logistic Regression of Willingness to Take Financial Risk Tolerance*

Independent variables	Above Average Risk Tolerance	Average Risk Tolerance	No Risk Tolerance
Demographic Variables			
Age	.008	-.011	.009
White	-.224***	.334***	-.282***
Male	.946***	-.415***	-.740***
Sophomore	-.030	.066	-.062
Junior	-.110	.188**	-.167
Senior	-.081	.195**	-.226*
Graduate/professional/other	-.166	.399***	-.503***
Single	.105	.071	-.287***
Financial Education			
Personal Finance in HS	-.081	.137**	-.139*
Personal Finance in Community	.294***	-.175*	-.182
Financial Variables			
Income			
$1-$499	-.112	.049	.058
$500-$999	-.039	.005	.045
$1,000 or more	.096	-.057	-.106
Debt			
$1-$999	.046	-.044	.009
$1,000-$4,999	.180	-.216*	.133
$5,000 or more	.293***	-.113	-.257*
Not sure	.109	-.228	.221
Dependent parents' tax return	.069	-.001	-.090
Federal students loan	.000	-.041	.075
Federal work- study	.003	.001	-.028
Need-based	-.134*	-.048	.248***
Scholarships	-.176***	.168***	-.069
Tuition waiver	-.114	.003	.175
Social Learning			
Discuss finance with parent	.000	.004	-.008
Discuss finance with friends	.013**	-.003	-.014*
Observing parents	.002	-.001	.000
Observing friends	.002	.000	-.002
Financial Knowledge			
Financial quiz	.046***	.029**	-.113***
Self-reported financial knowledge	.031***	-.011**	-.023***
Policy Category			
Standards only	-.152*	.195***	-.155
Standards with required implementation	-.101	.162*	-.180

Course required	-.246**	.061	.200*
Assessment required	-.047	-.068	.163
Course and assessment required	-.296***	.181**	.072
Constant	-2.918***	-.056	1.458***
χ^2	714.05***	249.37***	468.36***

Unstandardized coefficients are reported. *Note*: *$p < .05$, **$p<.01$, ***$p < .001$

Table 10. OLS *Regression of Financial Knowledge*

Independent variables	Financial Quiz	Self-Reported Fin. Know
Demographic Variables		
Age	.055***	.242***
White	.504***	.526***
Male	.525***	1.649***
Sophomore	.145*	-.316*
Junior	.353***	-.272
Senior	.472***	.043
Graduate/professional/other	.781***	.477
Single	-.260***	-1.889***
Financial Education		
Personal Finance in HS	-.035	1.128***
Personal Finance in Community	.222***	.867***
Financial Variables		
Income		
$1-$499	.096*	-.123
$500-$999	.184***	1.062***
$1,000 or more	.363***	2.653***
Debt		
$1-$999	-.169*	-1.019***
$1,000-$4,999	.195*	-.136
$5,000 or more	.294***	1.294***
Not sure	-.180	-1.004**
Dependent parents' tax return	.124**	-.768***
Federal students loan	-.049	-.249*
Federal work- study	-.151*	-.376
Need-based	-.077	.582***
Scholarships	.301***	.435***
Tuition waiver	.057	.293
Social Learning		
Discuss finance with parent	-.008*	.216***
Discuss finance with friends	.014***	.126***
Observing parents	.008**	.102***
Observing friends	-.011***	.010
Policy Category		
Standards only	.166**	.442**
Standards with required implementation	.092	.048
Course required	-.145*	-.164
Assessment required	-.372***	.085
Course and assessment required	-.079	.305*
Constant	10.074***	9.925***
F	41.27***	178.88***
Adj.R^2	.104	.307

Unstandardized coefficients are reported. *Note*: *$p < .05$, **$p<.01$, ***$p < .001$

Table 11. *Logistic Regression of Perceive Financial Knowledge*

Independent variables	Perceive Fin. Know. Better	Perceive Fin. Know. Same	Perceive Fin. Know. Worse
Demographic Variables			
Age	.020**	-.007	-.026*
White	.268***	-.114*	-.309***
Male	.618***	-.355***	-.664***
Sophomore	.029	-.029	.010
Junior	.176**	-.118	-.113
Senior	.195**	-.123	-.134
Graduate/professional/other	.197	-.060	-.292
Single	-.404***	.294***	.314**
Financial Education			
Personal Finance in HS	.301***	-.005	-.664***
Personal Finance in Community	.294***	-.157*	-.427***
Financial Variables			
Income			
$1-$499	.091*	.008	-.188**
$500-$999	.395***	-.171**	-.523***
$1,000 or more	.781***	-.493***	-.818***
Debt			
$1-$999	-.385***	.090	.575***
$1,000-$4,999	-.081	.009	.168
$5,000 or more	.160*	-.146	-.085
Not sure	-.542***	.078	.710***
Dependent parents' tax return	-.021	.015	.032
Federal students loan	-.202***	.204***	.033
Federal work- study	-.241***	.172*	.145
Need-based	.203***	-.086	-.234**
Scholarships	.213***	-.079	-.281***
Tuition waiver	.020	.033	-.108
Social Learning			
Discuss finance with parent	.046***	-.019***	-.066***
Discuss finance with friends	.041***	-.032***	-.029***
Observing parents	.020***	-.010***	-.020***
Observing friends	-.016***	.014***	.006
Policy Category			
Standards only	.036	.046	-.154
Standards with required implementation	.004	.055	-.102
Course required	-.099	.089	.057
Assessment required	-.045	.044	-.001
Course and assessment required	.007	.021	-.046
Constant	-2.538***	.209	1.695***

χ^2	1649.20***	483.67***	1060.77***

Unstandardized coefficients are reported. *Note*: *p < .05, **p<.01, ***p < .001

Table 12. *Logistic Regression of Financial Behaviors*

Independent variables	MODEL 1		MODEL 2	
	Budgeting	**Saving**	**Budgeting**	**Saving**
Demographic Variables				
Age	-013	.002	.001	.022**
White	.112	.173**	.074	.128
Male	-249***	-.157***	-.227***	-.204***
Sophomore	-.051	-.267***	-.032	-.280***
Junior	-.130	-.483***	-.139	-.453***
Senior	-.309***	-.769***	-.310***	-.751***
Graduate/professional/other	-.327**	-.660***	-.280*	-.654***
Single	-.180**	-.139*	-155*	-.202**
Financial Education				
Personal Finance in HS	.089	.010	.097*	.021
Personal Finance in Community	.349***	.339***	.375***	.301***
Financial Variables				
Income				
$1-$499	-.063	.472***	-.097	.504***
$500-$999	-.009	.532***	.016	.560***
$1,000 or more	.148	934***	.212*	1.008***
Debt				
$1-$999	-.060	-.397***	.120	-.240*
$1,000-$4,999	-.062	-.362***	.060	-.239*
$5,000 or more	-.067	-.295***	.086	-.142
Not sure	-.092	-.149	-.032	-.096
Dependent parents' tax return	-.002	-.033	-.047	-.044
Federal students loan	.017	-.391***	.110*	-.312***
Federal work- study	.034	-.032	.047	-.045
Need-based	-.003	-.287***	.001	-.252***
Scholarships	.101*	.148**	.036	.089
Tuition waiver	.112	-.035	.065	.000
Financial Knowledge				
Financial quiz	-.004	.011	-.006	.004
Self-reported financial knowledge	.051***	.046***	.018***	.021***
Perceive financial knowledge worse	-.405***	-.200**	-.320***	-.087
Perceive financial knowledge better	.327***	.344***	.078	.191***
Policy Category				
Standards only	-.136*	.156*	-.189**	.116

Standards with required implementation	.216**	.054	.217**	.018
Course required	.141	.231**	.156*	.251**
Assessment required	.237*	.285**	.296**	.307**
Course and assessment required	.223***	.014	.242***	.017
Social Learning				
Discuss finance with parent			.013***	.014***
Discuss finance with friends			.016***	.010*
Observing parents			.004	.004
Observing friends			.004	.004
Financial Disposition				
Materialism			-.008**	-.001
Compulsive buying			.014	.062***
Self-efficacy			.052***	.027***
Future orientation			-.044***	.001
No financial risk			-.059	-.230***
Above average fin. Risk			-.072	.030
Constant	-1.065***	-1.151***	-1.645***	-3.663***
χ^2	727.78***	970.78***	1048.27***	1137.67***

Unstandardized coefficients are reported. *Note*: *$p < .05$, **$p<.01$, ***$p < .001$

Table 13. *Logistic Regression of Risky Credit Behaviors*

Independent variables	MODEL 1		
	Max Out	**Make Late Payments**	**Do not Pay off**
Demographic Variables			
Age	.002	.026***	.038***
White	-.588***	-.624***	-.412***
Male	.148*	-.076	-.209***
Sophomore	.499***	.507***	.618***
Junior	.690***	.936***	1.084***
Senior	.812***	1.175***	1.323***
Graduate/professional/other	.315	1.169***	1.156***
Single	-.093	.133	-.166*
Financial Education			
Personal Finance in HS	.056	.065	.017
Personal Finance in Community	.147	.088	-.016
Financial Variables			
Income			
$1-$499	-.081	.160*	.208**
$500-$999	.272**	.332***	.637***
$1,000 or more	.311**	.576***	.679***
Debt			
$1-$999	.963***	.992***	1.094***
$1,000-$4,999	.948***	.703***	.839***
$5,000 or more	.932***	.568***	.692***
Not sure	.218	.051	.195
Dependent parents' tax return	-.418***	-.240**	-.240***
Federal students loan	.371***	.372***	.648***
Federal work- study	-.059	-.159	-.222*
Need-based	.459***	.381***	.481***
Scholarships	-.092	-.304***	-.324***
Tuition waiver	.014	-.381**	-.081
Financial Knowledge			
Financial quiz	-.022	-.064***	-.014
Self-reported financial knowledge	-.023***	-.051***	-.010
Perceive financial knowledge worse	.302**	-.003	-.080
Perceive financial knowledge better	-.129	-.177*	-.093
Policy Category			
Standards only	-.326***	-.254**	-.520***
Standards with required implementation	-.158	.092	-.337***
Course required	-.347**	-.237*	-.446***
Assessment required	-.141	-.108	-.234
Course and assessment required	-.145	-.150	-.274***

Constant	-1.344***	-842**	-1.915***
χ^2	733.12***	852.48***	1864.54***

Unstandardized coefficients are reported. *Note*: *p < .05, **p<.01, ***p < .001

Table 14. *Logistic Regression of Risky Credit Behaviors*

Independent variables	**MODEL 2**		
	Max Out	**Make Late Payments**	**Do not Pay off**
Demographic Variables			
Age	-.023*	.008	.012
White	-.433***	-.556***	-.203*
Male	.353***	.044	-.012
Sophomore	.506***	.534***	.587***
Junior	.670***	.998***	1.096***
Senior	.721***	1.130***	1.271***
Graduate/professional/other	.099	1.067***	1.148***
Single	-.043	.108	-.148
Financial Education			
Personal Finance in HS	-.017	.017	-.083
Personal Finance in Community	.208	.096	-.070
Financial Variables			
Income			
$1-$499	-.142	.116	.183*
$500-$999	.164	.261*	.593***
$1,000 or more	.233	.567***	.630***
Debt			
$1-$999	.594***	.585***	.625***
$1,000-$4,999	.676***	.365**	.485***
$5,000 or more	.639***	.243*	.349***
Not sure	-.129	-.227	-.154
Dependent parents' tax return	-.355***	-.152	-.183*
Federal students loan	.169*	.165*	.478***
Federal work- study	.057	-.108	-.206
Need-based	.424***	.353***	.471***
Scholarships	.129	-.199**	-.189**
Tuition waiver	-.008	-.477**	-.144
Financial Knowledge			
Financial quiz	.005	-.045*	.010
Self-reported financial knowledge	.004	-.033***	.018**
Perceive financial knowledge worse	-.047	-.249*	-.483***
Perceive financial knowledge better	.231*	.127	.224**
Social Learning			
Discuss finance with parent	-.002	.005	-.002

Discuss finance with friends	.003	.002	.008
Observing parents	-.013*	-.014**	-.018***
Observing friends	-.008	-.001	-.003
Financial Disposition			
Materialism	.001	-.010*	-.005
Compulsive buying	-.216***	-.175***	-.271***
Self-efficacy	-.030***	-.023***	-.023***
Future orientation	.012	.020	-.066***
No financial risk	.041	.066	-.051
Above average fin. Risk	-.005	.056	-.027
Policy Category			
Standards only	-.186	-.095	-.416***
Standards with required implementation	-.083	-.043	-.270**
Course required	-.362**	-.193	-.474***
Assessment required	-.159	-.053	-.221
Course and assessment required	-.170	-.214*	-.326***
Constant	3.845***	3.662***	6.752***
χ^2	1443.94***	1327.13***	2960.19***

Unstandardized coefficients are reported. *Note*: *$p < .05$, **$p<.01$, ***$p < .001$

Table 15. *Coefficients between Manifest Measures and Latent Constructs*

Panel A

Construct	Path	Path coefficients	*t* values	Completely standardized
Demographic	School rank	1.000		.672
	Sex-marital	-.348	-17.004***	-.152
	Age	3.764	59.914***	.760
Financial Resources	Loan amount	1.000		.134
	Parent support	-1.822	-15.255***	-.257
	Income	6.750	15.657***	.989
	Work hours	5.808	15.694***	.881
	Debt	1.844	15.400***	.261
Social Learning	Observing parents	.988	59.767***	.739
	Observing friends	.517	34.905***	.465
	Finance discuss with parents	1.000		.821
	Finance discuss with friends	.505	34.799***	.481
Financial Knowledge	Self-reported financial knowledge level	1.000		.917
	Financial quiz	.129	32.485***	.413
	Perceive financial knowledge	.074	59.125***	.620
Financial Disposition	Materialism	1.000		.230
	Compulsive buying	-2.707	-21.667***	-.861
	Financial self-efficacy	-1.585	-24.197***	-.402
	Future orientation	.348	20.312***	.209
Financial Behavior	Rental insurance	.521	19.909***	.247
	Health insurance	.227	12.925***	.147
	Auto insurance	.310	16.157***	.194
	Budget	1.000		.365
	Credit Report	.595	18.530***	.270
	Saving	1.049	25.417***	.372

Note: *$p < .05$, **$p<.01$, ***$p < .001$

Panel B

Path Coefficients for Latent Constructs

Construct	Path	Path coefficients	*t* values	Completely standardized
Demographic	Social learning	-1.814	-17.030***	-.255
	Financial knowledge	2.201	26.560***	.337
	Financial disposition	.429	15.461***	.347
	Financial behavior	-.048	-3.894***	-.098
Financial Resources	Social learning	2.098	6.438***	.086
	Financial knowledge	1.432	5.847***	.064
	Financial disposition	.230	4.201***	.054
	Financial behavior	-.262	-7.699***	-.156
Social Learning	Financial knowledge	.456	35.867***	.498
	Financial disposition	.069	16.727***	.397
	Financial behavior	-.009	-5.761***	-.124
Financial Knowledge	Financial disposition	-.123	-20.510***	-.647
	Financial behavior	-.023	-11.249***	-.308
Financial Disposition	Financial behavior	.150	14.202***	.378
Policy Category	Financial behavior	-.004	-2.198*	-.027

Note: *$p < .05$, **$p<.01$, ***$p < .001$

Appendix A

Breakdown of the Sample by Campus and Policy Category

		Policy Category						
		No Standards or Testing	**Standards in Place, Implementation Not Required**	**Standards Must Be Implemented**	**Course Required, Testing Not Mandatory**	**Course Not Required, Testing Mandatory**	**Course Required, Testing Mandatory**	**Missing/ Miscellaneous**
Campus Representation	**Name:**	**California State University at Northridge**	**University of Alabama** *Listed in Newsletter	**University of Arizona**	**Illinois State University**	**Virginia State University**	**University of Georgia**	**No University Listed**
	Emails Sent:	3998	0	12049	18039	5033	1999	N/A
	Emails Started:	389	49	654	1367	249	147	33
	Response Rate:	9.73%	N/A	5.43%	7.58	4.95%	7.35%	N/A
	Name:	**University of Florida**	**University of Vermont**	**Purdue University**	**University of Utah**	**University of Kentucky**	**University of Missouri**	**University of Cincinnati**
	Emails Sent:	32855	4500	4000	2000	4000	21653	N/A
	Emails Started:	3320	509	234	254	369	3258	1
	Response Rate:	10.11%	11.31%	5.85%	12.70%	9.23	15.05	N/A
	Name:	**Iowa State University**	**University of Wisconsin**					**University of Michigan**
	Emails Sent:	22736	27034					N/A
	Emails Started:	1861	3538					1
	Response Rate:	8.19%	13.09%					N/A
	Name:	**University of Rhode Island**						**Community College (Iowa)**
	Emails Sent:	12516						N/A

	Emails Started:	639						1
	Response Rate:	5.11%						N/A
Totals		**Emails Sent**: 172,412		**Surveys Started:** 16,873		**Response Rate**: 9.79%		**Average Response Rate**: 8.98%

Appendix B

Having any Policy: Reduced Model
Compared to having no policy, students in states that did have a policy were significantly less likely to engage in compulsive buying and less likely to have lower financial self-efficacy. In addition, they were more likely to be willing to take average and above average financial risk. These students were also more likely to budget, save, and pay their credit cards off fully each month and less likely to max out credit cards and make late payments.

Having any Policy: Full Model
Compared to having no policy, students in states that did have a policy were significantly less likely to engage in compulsive buying. In addition, they were more likely to be willing to take average and above average financial risk. These students were also more likely to save, and pay their credit cards off fully each month and less likely to max out credit cards.

	Reduced Model	Full Model
Finding	Having any Policy	Having any Policy
Financial Disposition by Policy Category Students were less compulsive buyer	X	X
Students with a higher financial disposition toward future orientation	n.s	n.s
Students have lower financial self-efficacy score	O	n.s
Students were significantly less materialistic.	n.s	n.s
Students were less likely to be willing to take above average financial risk	O	O
Students were more likely to be willing to take average financial risk	X	X
Financial Knowledge by Policy Category Higher self-reported financial knowledge score	n.s	n.s
Students more likely to believed their level of financial knowledge to be better than others.	n.s	n.s
Financial Behaviors by Policy Categories Students were more likely to budget	X	n.s
Students were more likely to be saving	X	X
Student were less likely to “max out” credit cards	X	X
Students were less likely to make late	X	n.s

payments		
Students were more likely paying their cards off fully each months	X	X