

Comparing the Financial Literacy of Public School, Christian School, and Homeschooled Students

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ABSTRACT

The 2008 recession underscored public concern that financial illiteracy has costs that are not limited to the individual who makes poor financial decisions. Considering that college students with limited financial experience are making legally binding decisions, this study explored the personal finance literacy and behavior of Christian college students. The research involved administering an objective item financial literacy and behavior survey. Findings showed a significant positive correlation between financial literacy and behavior. Furthermore, there was no significant difference among Christian college students based on their secondary education experience—Christian, public, or home school. This finding implies that students enter college with similar financial literacy levels, and senior students with inadequate financial literacy demonstrate poor personal financial behavior.

Introduction

The importance of personal finance literacy cannot be overstated. Today, personal finance literacy is a global concern (Gurría, 2013; Organization for Economic Co-operation and Development (OECD), 2004). Moreover, U.S. policymakers in particular recognize that it is a critical skill for economic survival (President's Advisory Council on Financial Capability (PACFC), 2013). Three significant trends underscore the importance of personal finance literacy. First, the financial environment is constantly evolving and complex (Zandi, 2009). Second, individuals have assumed greater responsibility for saving or investing towards retirement (Lusardi & Mitchell, 2006, 2007). Third, the costs for poor economic decision-making may be enormous (President's Advisory Council on Financial Capability (PACFC), 2008).

The availability and access to a variety of financial instruments point to the increasing sophistication of the financial world. According to the recent 2009 Survey of Consumer Payment Choice, the average consumer held five of nine payment instruments and used 3.8 of them in a typical month. The nine payment instruments include cash, checks, money orders, travelers' checks, debit

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cards, credit cards, prepaid cards, online banking bill payments, and bank account number payments (Foster, Meijer, Schuh, & Zabek, 2011).

The study also identified a trend in consumer payment choices away from paper instruments to cards and electronic payments. Approximately 94% of the consumers had at least one type of payment card (debit, credit, or prepaid). The consumers who held credit cards had on average 3.7 cards. Approximately one of three consumers had at least one type of prepaid card. Also, 30% had a nonbank payment account, such as PayPal or Google Checkout. Moreover, 3% indicated that they had made one mobile payment within the past 12 months. On average, consumers made 64.5 payments in a typical month. They used debit cards most frequently (19.0 payments), followed by cash (18.4 payments), credit cards (11.2 payments), and checks (8.2 payments). The rest of the payments were made either by electronic means or other means (Foster et al., 2011).

Accompanying the increased availability of financial instruments is the concern for debt. The Federal Reserve Bank of New York (2011) reported that consumer indebtedness rose to \$11.4 trillion in June 2011. The amount was comprised of mortgage (71%), home equity line of credit (9%), auto loan (6%), credit card (6%), student loan (5%), and other (3%). These data mean that real estate-related debt was approximately \$9 trillion. This issue is important because rising debt increases the risk both to borrowers and the economy, and the next economic crisis could be precipitated by the burgeoning student loan debt (Financial Crisis and Inquiry Commission (FCIC), 2011; Mandell, 2008; National Association of Consumer Bankruptcy Attorneys (NACBA), 2012; PACFC, 2008; Zandi, 2009).

Second, individuals have been increasingly given the burden of securing their own financial future. In the past it was typical for companies to provide defined benefit pensions. Today, retirement planning has become increasingly challenging because companies have moved towards individual retirement investment accounts such as 401(k) plans, Roth, and regular individual retirement accounts to which employees make contributions. These changes have forced consumers to choose from a bewildering assortment of financial products with their own attached rules and regulations (Hogarth, 2006; Lusardi, 2008; Lusardi & Mitchell, 2006, 2007).

Finally, poor financial decisions have severe macroeconomic consequences (FCIC, 2011; Mandell, 2008; PACFC, 2008; Zandi, 2009). One case in point is the recent downturn in the U.S. economy. Analysts agree that the general lack of basic personal finance knowledge among consumers and a lack of understanding of increasingly sophisticated financial products contributed to the mortgage market meltdown in 2008 that precipitated the recent financial crisis (FCIC, 2011; Mandell, 2008; PACFC, 2008; Zandi, 2009). The considerable economic losses that households experienced following the mortgage market collapse led analysts to consider the event to be the worst financial

crisis since the Great Depression (Bricker, Kennickell, Moore, & Sabelhaus, 2012; Hacker, Huber, Nichols, Rehm, & Craig, 2011; Zandi, 2009).

These circumstances stress the need for consumers to exercise wisdom regarding money matters. As a result, in popular culture today, there are many self-proclaimed financial advisors and gurus that offer to guide individuals in making the right money management decisions (Karol, 2013). Interestingly, the Protestant and evangelical Christian circles are not immune to this phenomenon. There are also well-known Christian money management experts such as Dave Ramsey and Larry Burkett. These experts have authored books, presented seminars, and scheduled media programs to enlighten the public on financial matters (Florida Baptist Witness, 2003; Lampo Group Inc., 2013). For example, Dave Ramsey decries the use of credit cards and promotes the use of cash instead (Lampo Group Inc., 2011). Larry Burkett used Biblical principles that showed budgeting as helpful to individuals in developing a plan of good stewardship (Burkett, 1998).

Given the various opinions how can Christians determine the best money management strategies? The answer lies in seeking the mind of Christ. To know God's perspective on any matter necessitates the knowledge of Scriptures¹ (Philippians 2:5; 1 Timothy 3:16-17; 2 Peter 1:3). It is important to note that there are three fundamental principles in Scriptures. First, knowledge and understanding begin with the fear of the Lord (Proverbs 1:7; 2:1-12; 9:10). Second, a good steward must understand that God owns everything (Genesis 1:1-27). Third, as caretaker of God-given resources, a believer must manage resources to glorify God (Gen. 1:28, Matthew 25:14-30). Other principles include the fact that Christians should avoid covetousness, learn to be content, and keep free from the love of money (1 Tim. 6:6-8, Ephesians 5:3, Hebrews 13:5). There are also other practical money management principles in the Bible such as giving (Mark 12:41-44; 1 Tim. 6:17-19), budgeting (Luke 14:28), saving (Prov. 6:6-8, 30:24-25), and the importance of diligence (Prov. 13:4).

Of note, the Scriptures contain 500 verses on prayer, fewer than 500 verses on faith, and more than 2,000 verses on money (Laurie, n.d.). Accordingly, Christians have the opportunity to acquire foundational principles in money management. The purpose of acquiring knowledge is to live wisely to the glory of God (John 17:17, Rom. 12:2; 2 Tim. 3:16-17). Therefore, Biblical principles on money may help individuals to become good financial stewards to the glory of God. Overall, God is the true source of wisdom and knowledge (Prov. 1:7, 2:1-12, 9:10) and Christians can turn to the Bible to seek God and His perspective on every issue of life and godliness including personal finance. In contrast, to build a foundation outside that which is prescribed by Scriptures necessarily has disastrous consequences (Matt. 7:24-27). Therefore, it is not surprising that Hosea 4:6 warns, "my people are destroyed for lack of knowledge."

In this study, *personal finance literacy* is defined as the knowledge and understanding of money management concepts in order to make effective

consumer choices (Fox, Bartholomae, & Lee, 2005). Although personal finance literacy is a critical tool for survival in the current economy, research shows that the public is ill-equipped to handle personal economic challenges (PACFC, 2008). In fact, personal finance literacy levels are appallingly low among high school students (Mandell, 2008), college students (Chen & Volpe, 1998, 2002; Mandell, 2008), and even among older Americans (Lusardi & Mitchell, 2006).

Accordingly, many argue for its place in education (Fox et al., 2005; Jacobs, Hudson, & Bush, 2000; Lusardi & Mitchell, 2006, 2007; PACFC, 2008, 2013; Zandi, 2009). Specifically, stakeholders in education such as the Financial Literacy and Education Commission (FLEC), (2011), the Jump\$tart Coalition for Financial Literacy (2015), and the Office of Financial Education, Department of Treasury (2002) strongly believe that personal finance literacy programs must be an important component of curriculum development. The goal is to equip consumers to function effectively in an increasingly sophisticated financial world. In light of the recent financial crisis, Zandi (2009) recommended that educators teach the basic principles of personal finance such as saving and budgeting in high schools and contended that personal finance education may help mitigate future economic crises. Because personal finance knowledge is inadequate among students enrolled in higher education institutions (Chen & Volpe, 1998, 2002; Mandell, 2008), both secular and Christian colleges have the opportunity to adequately prepare students to be fiscally responsible.

Statement of the problem

Mandell (2008) and Chen and Volpe (1998, 2002) established that levels of personal finance literacy are low among high school students and college students. The low levels of this literacy among college students is particularly concerning because they are at a critical stage of establishing autonomy (Chickering & Reisser, 1993) and legally face more critical financial decisions that have more serious consequences (Chen & Volpe, 1998; Mandell, 2008). Ultimately, if young people are ill prepared to handle basic money management issues, the consequences can be as severe as an economic crisis (Mandell, 2008; PACFC, 2008; Zandi, 2009). Thus, higher education institutions have a significant opportunity to cultivate appropriate financial skills for the next generation of workers.

After reviewing the relevant research, the researcher of this present study did not find any studies that either examined the personal finance literacy of Christian college students using an objective item survey instrument or explored a connection between personal finance knowledge and behavior among Christian university students. Furthermore, the researcher is not aware of any studies that have investigated personal finance literacy in relation to students who have attended home schools. Therefore, this study sought to

determine if there is a significant relationship between personal finance literacy and personal finance behavior among seniors at a private Christian liberal arts university using an objective item survey instrument. The study also examined whether there was a significant difference in literacy among students based on the type of secondary education (Christian, public, home school).

Significance of the study

The significance of the study is to provide information on the personal finance literacy and behavior of the previously unexplored, distinctive population of students who have largely been affiliated with Christian education and the home school movement. The findings can help to guide a personal finance curriculum. The results of the analyses and the attendant recommendations may be narrowly generalized to the population of senior undergraduate students enrolled at the private Christian liberal arts university located in Southern United States where the personal finance survey was conducted. The results may also be broadly generalized to the population of undergraduate students enrolled at the private Christian liberal arts university as well as Christian universities with a similar student body.

Null hypotheses

- Ho1: There is no correlation between personal finance literacy and personal finance behavior among college students.
- Ho2: There is no significant difference in personal finance literacy among college students based on the type of high school education (Christian school, home school, or public school).

Operational definitions

The definitions of the following terms are limited to the context of this study.

- *Students* refer to undergraduate students enrolled at the university who are classified as seniors.
- *Personal finance literacy* refers to the score on section one of the survey instrument.
- *Personal finance behavior* refers to the score on section two of the survey instrument.
- *High personal finance literacy* refers to students who score 70% or higher on section one of the survey instrument.
- *Low personal finance literacy* refers to students who score below 70% on section one of the survey instrument.

- *Home-schooled students* refer to students whose secondary education primarily involves instruction outside of formal schooling and parents control the venue (e.g., in the home) and direction of the curriculum. The transmission of personal religious values is also important for this category of students (Wiles & Bondi, 2007).
- *Christian school* refers to secondary schools that offer a curriculum that promotes or is integrated with the Protestant Christian or biblical philosophy. These institutions are not primarily government-funded (Horton, 1992).
- *Public school* refers to schools that are primarily government-funded and have no religious affiliation (Kienel, 2005). These schools may include charter schools that primarily receive government funds.

Summary of the literature

Four main studies relate to the present study: Chen and Volpe (1998), Jorgensen (2007), Mandell (2008), and Marsh (2006). Chen and Volpe (1998) conducted early research on the personal finance literacy of college students. The researchers surveyed students from public, private, two- and four-year colleges of various sizes in six states to determine the personal finance literacy and the impact of personal finance literacy on the opinions and decisions of college students. The results showed that college students did not have adequate financial knowledge. Specific segments such as non-business majors, female students, students younger than age 30 years, and students in lower class ranks exhibited lower personal finance literacy levels. The study indicated that these students held wrong opinions and were more likely to make poor financial decisions. Regression analysis revealed that improving personal finance literacy can help people make correct financial decisions. The study concluded that adequate knowledge among college students may help reduce fiscal irresponsibility (Chen & Volpe, 1998).

Chen and Volpe (2002) followed up their initial investigation with research concerning gender differences in personal finance literacy. They discovered that the gender gap persisted and that female students continued to be less financially literate than male students regardless of age, class rank, major, and work experience. Of note, female students regarded English and Humanity courses as most important while male students regard Math and Science courses as most important. Overall, the researchers found that education (major and class rank variables) and experience (age and work experience variables) impact the levels of personal finance literacy of both male and female students. That is, regardless of gender students with less education reported less personal finance knowledge and students in lower ranks and non-business majors were less knowledgeable than business majors in higher classifications.

Interestingly, the study indicated that while education will improve the financial literacy of all students, the impact is greater for female students. Essentially the researchers suggested that female students will more likely improve financial literacy if they enroll in more business related courses. They also add that students who have employment experience and are older were more knowledgeable because they may have been more exposed to personal finance matters.

Jorgensen (2007) found that the personal finance knowledge of college students was low ($M = 57.6\%$). The financial attitude and behavior scores were also low. Interestingly, all three scores improved significantly each year from freshman to master's level of education. Overall the study confirmed a statistically significant correlation between personal finance literacy and behavior. In other words, students who had a higher personal finance knowledge score had a higher personal finance behavior score. Accordingly, Jorgensen (2007) concluded that personal finance education may have an impact on knowledge which may influence attitudes and behaviors.

More recently, Mandell (2008) confirmed that college students had low levels of personal finance literacy ($M = 62.2\%$). The study showed that personal finance literacy levels increased as the student progressed through college. Thus, upperclassmen were more financially literate than lowerclassmen. Students taking more quantitative, but nonfinancial, subjects such as science, social science, and engineering were the most financially literate followed by students majoring in business or economics. Finance literacy scores were also higher for students who identified with higher family income and higher parent education categories. Contrary to Chen and Volpe (1998, 2002), the study found that female students were more financially literate than male students. Mandell (2008) also reported that high school seniors had inadequate personal finance literacy and these students scored much lower than college students. Similar to the college results high school students from higher family income and greater parent education categories had higher finance literacy scores. In contrast to the college results male students generally were more financially literate than female students.

Mandell (2008) also considered the personal finance behavior of college students. According to the study students who never pay credit card bills late are more financially literate ($M = 63.5\%$) than students who incur late payment fees at least twice per year ($M = 59.7\%$). Participants with a checking account ($M = 62.6\%$) had a higher mean score than those who did not have a checking account ($M = 54.6\%$). In addition, the respondents who reported that they used checking accounts also used other types of financial tools. These instruments include savings accounts, certificates of deposit, U.S. savings bonds, stocks, mutual funds, retirement accounts such as 401ks and individual retirement accounts (IRAs), and other bonds. In other words, students with checking accounts and savings and investment portfolios were

more financially literate than their colleagues who did not make use of these types of financial instruments.

Mandell (2008) concluded that although college students are more financially literate than high school students, college students on average have limited financial knowledge. The study highlighted that students from lower income families and families with limited education were at a great disadvantage. Therefore, it should not be surprising that the recent economic depression resulted from the crisis in subprime mortgages because these instruments were heavily marketed to people with less income and education. The study concludes that low personal finance literacy has ramifications on a macroeconomic scale (Mandell, 2008).

Marsh (2006) explored the personal finance attitudes, knowledge, and behaviors of college students enrolled in six Baptist universities in Texas. The researcher used a self-reported measure where participants rank their perception of their own personal finance attitudes, knowledge, and behaviors. The study found that seniors possess better self-reported financial attitudes, knowledge, and behaviors than freshmen. Although male students reported significantly higher knowledge than female students, the study found no significant difference in attitude and behavior. Furthermore, students employed full-time reported better personal finance attitudes, knowledge, and behaviors than their colleagues who either worked part-time or not at all. Participants who were employed part-time reported significantly better personal financial attitudes and behaviors.

Nontraditional (at least 25 years) student responses showed significantly higher scores for all three scales than for traditionally aged (24 years and younger) students. Regarding academic discipline, students enrolled in the business, management, and communication major scored significantly higher in attitude, knowledge and behavior scales than participants enrolled in other academic majors. Furthermore, students taking more quantitative subjects (science, mathematics, health sciences) also did much better across all three scales when compared to students taking less quantitative and more liberal arts subjects (education; philosophy, religion, and theology; social sciences). Students who had prior classes in personal finance also reported significantly higher knowledge and better behavior than students who had not taken a course or seminar in personal finance.

Finally, considering the influence of university experience on the personal finance attitudes, knowledge, and behavior of college students, freshmen indicated a significantly greater influence on their attitudes. Marsh (2006) attributes this result to their recent exposure to personal finance education in the freshman seminar course while seniors may not have had much exposure since taking the seminar course during their first year. Therefore, Marsh (2006) suggests that leaders in Christian

higher education develop a personal finance curriculum as a critical component to developing spiritual maturity among students. The goal of personal finance education is to teach students how to manage resources in a biblically sound manner that will bring glory to God. The course can be incorporated in the freshmen orientation program and extend to upperclassmen to equip students with appropriate personal finance attitudes, behaviors, and knowledge so that upon graduation students will be capable of handling the challenges of the economy.

In conclusion, Chen and Volpe (1998) surveyed college students to determine their level of personal finance knowledge. The findings showed that students had low personal finance literacy. Furthermore, the study indicated that students with lower personal finance literacy held wrong opinions and were likely to make poor financial decisions. Ten years later, Mandell (2008) surveyed college students to determine their personal finance literacy. Unfortunately, college students continued to have low personal finance literacy. The researcher also investigated the personal finance behavior of college students. The findings showed that students with higher personal finance literacy scores never paid credit card bills late, had checking accounts, and made use of other financial instruments. Although the study examined personal finance literacy and behavior, Mandell (2008) did not conduct statistical analysis to determine statistically significant relationships.

It was Jorgensen (2007) who used statistical analysis to investigate college student responses to an objective item personal finance literacy and behavior scale. The research uncovered a significant positive correlation between personal finance literacy and behavior. That is, the study demonstrated that students with higher personal finance literacy scores were associated with higher personal finance behavior scores.

Marsh (2006) examined the personal finance attitudes, knowledge, and behaviors of Christian college students. Although Marsh (2006) found significant positive relationships among the three variables, the scale used in the study did not contain objective items. Rather, the study used a self-reported measure involving student opinions of their own personal finance attitudes, knowledge, and behaviors.

Ultimately, these studies either did not explicitly examine personal finance behavior, employ statistical analysis to examine personal finance behavior, examine personal finance behavior of Christian college students, or use an objective item scale to explore the personal finance literacy and behavior of Christian college students. In addition, none of the studies explicitly explored the personal finance literacy and behavior of students who were homeschooled. Therefore, the present study provides helpful findings that relate to the objective personal finance literacy and behavior of Christian college students and students who were primarily homeschooled.

Method

Population and sample

The U.S. Department of Education, National Center for Education Statistics (n.d.) classifies the private Christian liberal university using the Carnegie Classification of “Special Focus Institutions that include Theological Seminaries, Bible Colleges, and other faith-related institutions.” The university is accredited by the Transnational Association of Christian Colleges and Schools. In 2012, the total enrollment for the fall semester was 3,469 of which 2,976 were undergraduate students. Of undergraduate students, 94% were enrolled on a full-time basis and the student body comprised in-state (24%), out-of-state (70%), and foreign (6%) students. Female students (57%) outnumbered male students (43%). The ethnic composition of the students consisted of 79% Caucasian, followed by 5% Hispanic/Latino, 5% Non-Resident Alien, 4% Race/Ethnicity Unknown, 3% Two or More Races, 2% Asian, and 1% Black or African American. Most students (97%) were age 24 years or younger (U.S. Department of Education, National Center for Education Statistics, n.d.). The student body includes students with secondary education experience in Christian schools (51.6%), home schools (34.4%), and public schools (12.6%). A small fraction (1.4%) indicated “other” when describing their secondary education experience. This category refers to students with online secondary education experience (K. Barnes, personal communication, October 12, 2012).

In this study, the target population was senior undergraduate students enrolled at the university in spring 2014. In the spring 2014 semester there were 621 seniors enrolled at the university (K. Sykes, personal communication, April 25, 2014). All senior undergraduate students were invited to participate in the study and the sample population was the subset of students who indicated their willingness to participate in the study.

Design and procedures

The non-experimental quantitative research design entailed administering a survey to investigate the relationship between personal finance literacy and personal finance behavior and to examine the differences in personal finance literacy with respect to the type of secondary education experience. Permission to perform the non-experimental quantitative research design was obtained via email from the Office of Institutional Effectiveness (OIE). The procedures involved the OIE as the facilitator between the researcher and the participants. The OIE emailed the initial “volunteer to participate” survey to 621 seniors. Of those, 138 responded with “yes” they would participate. The OIE emailed those students and 1 week after the end of the survey period emailed the researcher the data in an Excel file. The researcher

used the *Statistical Package for Social Sciences (SPSS) version 21* to evaluate the data. From those who volunteered to participate, 136 students took the survey. Because nine students did not complete the survey and five students had contradictory responses to credit card related questions these responses were eliminated from the study. In the end 122 seniors were included in the study.

Survey instrument

Mandell (2008) granted permission for this study to use the Jump\$tart questionnaire that he designed. Mandell has administered the survey biennially to public high school seniors since 1997–1998 and the sixth round of administering the survey in 2008 marked the first time that college students were evaluated using the instrument. In its original format the survey contains 56 multiple-choice items. The instrument is divided into two sections. The first section addresses personal finance literacy (31 items) and the second section contains classification questions (25 items). Section I contains the income, money management, saving and investing, and spending subscales. The classification section consists of items related to the demographics, the educational background, and the personal financial behavior of the students.

In this study, the researcher used the original 31 test section items of the Jump\$tart questionnaire. The researcher revised the classification section of the Jump\$tart Questionnaire for a number of reasons. First, the questionnaire was revised to appropriately address the target population at the private Christian liberal arts university. For example, the researcher revised the item related to academic major to reflect the course offerings specific to the university. That implies that the responses reflected the fact that as a Christian institution there would be majors that include Bible and Christian ministry (U.S. Department of Education, The National Center for Education Statistics, n.d.).

Second, to better align the survey with the research focus seven items were added to the classification section. One example is item 57 that asked students to indicate whether they were home schooled, attended public school or Christian school, or had some “other” type of secondary education experience. Third, students were able to select only the best option in order to facilitate ease with computation and data analysis. This allowed the researcher to obtain conclusive data that could be easily quantified and coded in order to perform the necessary statistical analysis. Furthermore, the researcher would be able to easily categorize the participants into groups based on the closed-ended responses they provided (Penwarden, 2013).

In the end, the survey contained 63 items in total. Section I of the questionnaire corresponded to the original Jump\$tart college questionnaire (31 items). Section II of the Jump\$tart questionnaire was revised and contained 32 items related to demographics, personal finance behavior, and personal finance education. It is important to note that the revisions were not major and

allowed the survey to remain as close as possible to the original version in order to minimize the impact on validity.

Validity and reliability

Validity

Validity and reliability are important factors when considering an assessment procedure. Validity is defined as “the degree to which an instrument measures what it says it measures or purports to measure” (McMillan, 2004, p. 136). That is, the extent to which an instrument is deemed valid depends on the meaningfulness and appropriateness of the uses and interpretations of the results of the instrument (Miller, Linn, & Gronlund, 2009). Lucey (2005) confirmed the face and content validity of the Jump\$tart questionnaire that Lewis Mandell created in 1997. The survey items were based on the national standards for financial competence developed by the experts within the Jump\$tart Coalition (Jump \$tart Coalition for Financial Literacy, 2015; Mandell, 2008).

For this study the researcher revised only section two, the classification section, of the Jump\$tart questionnaire. To ensure face and content validity, the researcher asked two experts to review the revised survey. The experts verified the accuracy and appropriateness of the items. Ultimately, the instrument used in this study is very closely related to the original instrument that was deemed to have face and content validity (Lucey, 2005).

Reliability

Reliability is defined as the measurement of the internal consistency of an instrument. Internal consistency refers to the extent that items within an instrument measure the same construct and produce similar results. This study used Cronbach’s alpha to estimate internal consistency (McMillan, 2004). Because inter-item correlations are calculated and then averaged to determine reliability, the reliability estimate must lie between 0 and 1. The higher the coefficient alpha the more reliable the instrument is considered to be.

According to Field (2006) the alpha coefficients are expected to be above 0.7 to be considered acceptable, although in some cases values may occur below 0.7 because of the diversity of constructs that are measured. McMillan (2004) considers reliability estimates above 0.78 to be high and estimates below 0.60 to indicate weak reliability. Reliability analysis for the survey administered to seniors ($n = 122$) at the university in this study yielded a coefficient estimate of 0.75. The items included in the behavior section of the survey are based on the curriculum standards of personal finance educators (Jump\$tart Coalition for Financial Literacy, 2015). An analysis of the internal consistency produced a Cronbach’s alpha of 0.68 for the behavior related items.

Treatment of the data

Statistical analysis was conducted using *Statistical Package for Social Sciences 21* (SPSS). The data for this study was received in an Excel spreadsheet and imported into SPSS statistical software. Pearson correlation coefficient was used to analyze the relationship between personal finance literacy (PFL) and personal financial behavior (PFB). One-way analysis of variance (ANOVA) was used to examine significant differences in personal finance literacy (PFL) among college students with respect to the type of secondary school education (public, Christian, or home school). Each statistical test was conducted at the .05 level of significance.

Analysis of data

Table 1 shows the comparison of population and the sample. Of the 122 completed responses, 63.9% ($n = 78$) were female students and 36.1% ($n = 44$) were male students. The majority of the students (81.1%) were between 21 and 23 years. Only one student was at least 28 years old. This suggests that the college students are still at the early stages of financial life cycle (Chen & Volpe, 1998). The table also shows that in the sample, the distribution of secondary education was mainly Christian school (50.0%) followed by home school (41.8%). Only 4.9% of the respondents indicated that they graduated from public high school while 3.3% indicated “Other” for secondary education. The table demonstrates that the sample is representative of the population of seniors based on the distribution of gender, age, and the type of secondary education.

The personal finance literacy scores ranged from a minimum of 25.81% to a maximum of 93.55%. The mean score of 68.32% was higher when compared to participants who scored 62.2% in Mandell’s (2008) initial survey of college students. The mode and the median were 67.74% and 70.97% respectively. Table 2 presents the mean, mode, median, minimum, and maximum scores of the participants.

Table 1. Population and sample comparison.

Characteristic	Population ($N = 621$)	Sample ($n = 122$)
Male	45%	36%
Female	55%	64%
18–20 years	11%	15%
21–23 years	81%	76%
24–27 years	7%	7%
At least 28 years	1%	2%
Public school	13%	5%
Christian school	47%	50%
Home school	37%	42%

Table 2. Sample descriptive statistics.

	Mean	Mode	Median	Minimum	Maximum
Personal Finance Score (%)	68.32	67.74	70.97	25.81	93.55

Testing the null hypotheses

Null hypothesis one

- Ho1: There is no correlation between personal finance literacy and personal financial behavior among college students.

Pearson correlation was used to determine if there was a significant relationship between personal finance literacy and behavior among the university seniors. The statistic was calculated at the .05 level of significance using the raw personal finance literacy scores and the personal finance behavior scores. To determine the raw personal finance scores each response in the 31-item test section was categorized as either “1” to denote correct responses or “0” to denote incorrect responses. The correct responses were summed to determine the final raw personal finance score. For the test section students can achieve a maximum of 31 points.

Section II contained the behavior items in a multiple-choice format with instructions for students to select the best answer. This format allowed the researcher to assign points to each response. The behavior items included three credit card related items (items 39, 40, and 42) and four savings and investment related items (items 45, 46, 47, and 48). Each item response was given successively higher points. As a result higher points corresponded with better behavior. In some cases items were phrased such that lower points corresponded with better behavior. In these cases the statistical software was used to recode item responses so that the reverse situation could be reflected. Students can achieve a maximum of 14 points for credit card related items and 17 points for savings and investment items. Overall, the highest possible score for the behavior items is 31.

Table 3 shows that for 122 participants the mean personal finance literacy raw score was 21.18 (of a possible 31 points) and the mean personal finance behavior raw score was 16.16 (out of a possible 31 points). The analysis of the data revealed a significant positive correlation between the two scores ($r = .321$, $n = 122$, $p = .000$) at the .01 level of significance (Table 4). That is, there is a statistically significant association between personal finance literacy and behavior. Therefore, the null hypothesis was rejected.

Table 3. Descriptive statistics: personal finance literacy and behavior raw scores.

Variable	Mean	Standard deviation	Participants
Personal Finance Literacy	21.18 (68.32%)	4.360	122
Personal Finance Behavior	16.16 (52.13%)	7.173	122

Table 4. Pearson correlation for personal finance literacy and behavior scores.

		Personal finance literacy score	Personal finance behavior score
Personal Finance Literacy Score	Pearson Correlation	1	.321*
	Sig. (2-tailed)		.000
	N	122	122
Personal Finance Behavior Score	Pearson Correlation	.321*	1
	Sig. (2-tailed)	.000	
	N	122	122

Note. *Correlation is significant at the 0.01 level (2-tailed).

Null hypothesis two

- Ho2: There is no significant difference in personal finance literacy among college students based on the type of high school education (Christian school, home school, or public school).

One-way ANOVA was used to test differences in personal finance scores among students based on secondary school attended. Interestingly Table 5 shows that students who graduated from public school (69.89%) had the highest personal finance mean score followed by home school (68.75%), Christian School (68.32%), and other (60.48%). However, the one-way ANOVA revealed no significant difference in personal finance scores among students regarding the high schools attended, $F(3, 118) = .449, p = .719$, at the .05 level of significance (Table 6). The Tukey HSD post hoc comparisons were not performed because the ANOVA revealed no significant differences among students regarding high schools attended. Accordingly, the null hypothesis was retained.

All tests were conducted at the .05 level of significance. The analysis of the data showed a statistically significant correlation ($r = .321, n = 122, p = .000$) between personal finance literacy and behavior. The one-way ANOVA also revealed no significant difference in personal finance scores among students regarding the high schools they attended, $F(3, 118) = .449, p = .719$.

Table 5. Descriptive statistics: personal finance literacy scores by high school classification.

Classification	Participants	Mean (%)	Standard deviation	Standard error
Public School	6	69.893	10.731	4.381
Christian School	61	68.324	14.870	1.904
Home School	51	68.754	13.119	1.837
Other	4	60.484	20.124	10.062
Total	122	68.324	14.064	1.273

Table 6. One-way ANOVA: personal finance literacy scores by high school classification.

Source	Sum of squares	df	Mean square	F	Sig.
Between Groups	270.059	3	90.020	.449	.719
Within Groups	23663.685	118	200.540		
Total	23933.744	121			

Discussion of the findings

On average, students achieved 68.32% or 21.18 of a possible 31 points on the personal finance scale and 52.13% or 16.16 of a possible 31 points on the behavior scale. The personal finance literacy levels are considered to be inadequate (Mandell, 2008).

Null hypothesis one

- Ho1: There is no correlation between personal finance literacy and personal finance behavior among college students. Pearson correlation was used to determine if there was a significant relationship between personal finance literacy and behavior among the university seniors. The statistic was calculated at the .05 level of significance using the raw personal finance literacy and behavior scores.

The analysis of the data revealed a significant positive correlation between the personal finance literacy and behavior raw scores ($r = .321$, $n = 122$, $p = .000$) at the .01 level of significance. That is, there is a statistically significant association between personal finance literacy and behavior. Therefore, the null hypothesis was rejected. The significant association implies that higher personal finance literacy corresponds to better behavior. This finding confirms Chen and Volpe's (1998) earlier study that concluded that students with higher financial literacy levels were less likely to make poor financial decisions and behave more responsibly in real situations.

Null hypothesis two

- Ho2: There is no significant difference in personal finance literacy among college students based on the type of high school education (Christian school, home school, or public school).

Although students who graduated from Public School had the highest personal finance mean score (69.89%) followed by home school (68.75%), Christian School (68.32%), and other (60.48%) the one-way ANOVA revealed no significant difference in personal finance scores $F(3, 118) = .449$, $p = .719$, at the .05 level of significance. Therefore, the null hypothesis was retained. This interesting result suggests that students appear to have the same personal finance literacy levels when entering college regardless of the secondary institutions they attended.

Implications

This study defines *personal finance literacy* as the knowledge and understanding of money management concepts in order to make effective consumer choices (Fox et al., 2005). According to the results, the mean personal finance literacy

score for the students (68.32%) was less than 70%. Based on the study conducted by Mandell (2008) the level of personal finance literacy was not much higher than the mean personal finance literacy score for students in other public universities (62.2%). In addition, according to the grading system the score for the latter group is considered below average or less than a “C” (Mandell, 2008). Hence, one important implication is that Christian college students have inadequate levels of personal finance literacy. That is, seniors at the university who are preparing to graduate do not have an appropriate level of knowledge and understanding of money management concepts.

The definition of *personal finance literacy* also includes a behavior component. Therefore, another major implication is that the significant positive correlation established between personal finance literacy and behavior indicates that Christian college students at the private Christian liberal arts university do not have acceptable personal finance behavior. This finding implies that Christian college students are not equipped to serve God with their finances. Their inadequate personal finance literacy may lead to poor financial stewardship that does not glorify God. Therefore, Christian educators should focus on enhancing the personal finance literacy of students to cultivate better behavior. The matter of implementing strategies to improve personal finance literacy among Christian college students becomes more urgent given that the participants were seniors who are about to face greater fiscal responsibility upon graduation. Furthermore, personal finance education may also address the widespread personal finance illiteracy that policymakers identified as a major contributing factor that led to 2008 economic recession.

Accordingly, leaders in Christian education should consider incorporating more personal finance content into the curriculum throughout a student’s university career. Currently, the university offers a required course in the fundamentals of economics. The course is offered to sophomore students and is an economics course that incorporates content addressing personal finance. The personal finance content consists of two in class sessions that provide an overview of credit cards, bank choices, retirement plans, and personal budgets. There is also a personal finance team project that students work on outside of class time. The university also offers other economics and business courses that may include some personal finance content. Because there is no specific dedicated personal finance education, curriculum planners have the opportunity to supplement personal finance education at the university. The focus can start at the freshmen level because there is no significant difference in personal finance literacy among students who were home-schooled or attended Christian or public high school. For example, higher education institutions may include a personal finance evaluation instrument either during the admissions process or during the freshmen orientation process. The purpose would be to guide and direct students to specific resources and tailor personal finance education based on their results.

The university can also develop a specific personal finance course that students can take as an elective at any time as they progress through college. There can also be one-to-one advising for seniors to address their personal finance concerns so that they graduate equipped with the financial knowledge and tools to successfully navigate the fiscal challenges of a global economy. Ultimately, to help students mitigate or avoid future personal economic distress they must cultivate adequate personal finance literacy and corresponding prudent behaviors.

In conclusion, the results of the study imply that enhancing personal finance literacy is very important and must be a priority of the private Christian liberal arts university. Specifically, administrators can aggressively pursue strategies to support a more comprehensive goal of equipping students holistically. That is, in addition to cultivating students spiritually and academically, the goal will now explicitly include preparing students with financial know-how to behave responsibly in an increasingly complex financial world. Overall, leaders in Christian higher education should promote personal finance education. They should encourage, train, and equip teachers to integrate personal finance into the curriculum of business and nonbusiness subjects. Ultimately, with this directive practitioners in Christian education will help cultivate financial stewardship among college students to the glory of God.

Note

1. All Scripture quotations are taken from the King James Version of the Holy Bible.

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