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Financial Behaviors and Financial Well-Being of College Students: Evidence from a National Survey

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Abstract The purpose of this study is to explore the relationship between financial behaviors and financial well-being of college students when controlling demographic and financial characteristics, financial education and financial dispositions. Data ($N = 15{,}797$) was collected from college students age 18 and over via an online survey from 15 college campuses throughout the United States during spring and fall of 2008. Results of means comparisons showed significant differences on the financial well-being level by various socioeconomic factors and financial behaviors. In addition, regression analysis showed that budgeting, saving, risky credit card behaviors, and compulsive buying were significantly related to financial well-being when controlling for demographic information, financial characteristics, financial education, and financial dispositions.

Keywords College students · Financial behavior · Financial dispositions · Financial education · Financial well-being

Young adults age 18–25 are in a distinct life-cycle stage (Peterson and Leffert 1995). This period, known as emerging adulthood (Arnett 2000), is characterized by major life-changing experiences, including college. In the midst of these transitional life events, money, and, in particular, the credit system they have gained access to, unarguably plays a central role in shaping the attitudes they form and behaviors they adopt, not only toward financial management but also toward life in general (Xiao et al. 2007).

For the first time, most of these young adults are managing money independently. Many at this age also begin working for a wage and start using credit cards issued in their own names. Some also borrow a sizable amount of money for the first time and must then manage debt (Lyons 2008; Peng et al. 2007; Scott 2010; Xiao et al. 2009). Young adults may be unprepared to effectively manage the psychological costs associated with high debt (Borden et al. 2008; Rao and Barber 2005). A history of poor debt management can adversely affect the credit rating of an individual, affecting their ability to qualify for a home mortgage, purchase a vehicle, obtain employment, obtain insurance, and receive bank loans and other financial services (USA Today/NEFE 2006). This study seeks to further understand the relationship between college students' financial behaviors and financial well-being after controlling for demographic and financial characteristics, financial education and financial dispositions.

Previous studies have confirmed that economic status strongly predicts happiness and overall well-being in most cultures. People are happier when they are financially secure (O'Neill et al. 2005). On the other side, college students experience increased levels of stress and decreased levels of psychological well-being; thus, college students' financial well-being is negatively correlated with academic progress and health (Adams and Moore 2007; Nelson et al. 2008; Norvilitis and Santa Maria 2002; Rao and Barber 2005; Roberts and Jones 2001; Shim et al. 2009).

Financial well-being is a function of individual characteristics, financial behaviors, and financial stressor events

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(Kim 2000; Kim et al. 2003). Developing positive financial behaviors during the college years increases an individual's chances of attaining a better quality of life later in life (Worthy et al. 2010; Xiao et al. 2009). Our research is important for several reasons. First, we want to add evidence to support the argument that domain-specific behaviors (in this case, financial behaviors) are associated with domain-specific well-being (i.e., financial well-being) when controlling for socioeconomic characteristics, financial education and financial disposition. A lack of significant relationship could imply that there is a disconnection between students' behaviors and their sense of financial well-being. This could lead to shocks later in life. Second, we believe that developing positive financial behaviors during the college years increases an individual's chances of attaining a better financial well-being later in life. We believe that a better understanding of how college students develop desirable and undesirable financial behaviors, and how these behaviors affect their financial well-being, will aid those interested in improving their quality of life. We use a measure of financial well-being with a national survey of college students not found in other data.

Literature Review

There has been some exploration of college students' attitudes about, and behavior with, money in general (Danes and Hira 1987; Fan and Xiao 1998; Lyons et al. 2007; Markovich and DeVaney 1997; Masuo et al. 2004; Rindfleisch et al. 1997; Roberts and Jones 2001). Several researchers have examined money attitudes and behaviors using different attitudinal and behavior measures (Bailey and Gustafson 1986; Bailey and Lown 1993; Hanley and Wilhelm 1992; Hayhoe and Wilhelm 1998; Yamanchi and Templer 1982).

Once at college, many students are dealing with financial challenges such as paying bills, creating a budget, and using credit for the first time in their lives. The ability of students to cope with these challenges depends critically on the financial knowledge and behaviors they acquired prior to being on their own (Lyons et al. 2006b). A lack of personal finance knowledge may lead to financial crises. Financial crises can lead to poor credit ratings, bankruptcy, and unanticipated money shortages. In fact, research has shown that students rank finances as a major source of stress (Archer and Lamnin 1985; Murphy and Archer 1996). For example, Adams and Moore (2007) indicated that college students with high risk credit behavior were more likely to report feeling depressed. College students may be considered a high-risk group when it comes to economic stability, and thus well-being, given their propensity to borrow to fund their college education. Most

college students are at the age where they are developing the skills with which they build their present and future economic well-being (Leach et al. 1999).

Relationship between Financial Behavior and Financial Well-Being

Researchers also have applied the systems approach to understand the role of financial management behaviors in determining financial well-being (Fitzsimmons and Leach 1994; Hira et al. 1992). Joo and Grable (2004) indicated that financial well-being is related, both directly and indirectly with financial behaviors, such as paying credit card bills in full each month, maintaining a weekly or monthly budget, and setting money aside for saving. Shim et al. (2009) found that financial behaviors, such as budgeting and saving management, were related to financial well-being of young adults. A common finding is that financial management behaviors are associated with financial well-being. Kim et al. (2003) found that poor financial management was negatively related to well-being. Worthy et al. (2010) indicated that problematic financial behavior by college students may affect their future financial well-being.

Researchers also indicate that positive financial behaviors should improve financial well-being (Shim et al. 2009; Xiao et al. 2006; Xiao et al. 2009). Xiao et al. (2007) examined financial behavior and potential effects of financial behaviors on the well-being of college students. They found that positive cash management, credit management, and saving behaviors were positively related to overall well-being. Additionally, Xiao et al. (2009) found that college students who adopted positive financial behaviors increased their financial satisfaction. A study of college students' credit card use found that positive financial behaviors was related to a decrease in financial stress (Hayhoe et al. 2000).

Relationship between Personal Characteristics and Financial Well-Being

Previous research indicates that individual characteristics such as gender, education, and marital status are correlated with financial well-being (Joo and Grable 2004; Loibl and Hira 2007; Malone et al. 2009). Leach et al. (1999) found that male and female students differ in the level of financial strain and perceived financial well-being. However, students of both genders reported that high levels of financial strain negatively affected perceived financial well-being. Porter and Garman (1993) concluded that personal characteristics such as marital status were significant predictors of the financial well-being. Grable and Joo (2006) found that African American college students suffered from higher levels of financial stress than their White peers. In considering the results of the previous research, it seems

clear that college students' gender, race, school rank, and marital status variables are important determinants to include in our analysis.

Relationship between Financial Variables and Financial Well-Being

The most common measure of financial status is income (Xiao et al. 2009). Many studies have examined the relationship between income and subjective well-being (Hsieh 2004; Vera-Toscano et al. 2006; Xiao et al. 2009). We use different income sources to measure the financial status of college students because most students' incomes come from diverse sources including jobs, student loans, financial aid, etc. Rao and Barber (2005) found that income was significantly related to the various financial well-being measures (such as difficulty in paying bills, engaging in money saving measures, perceived ability to manage money and credit cards) for young adulthood. Diener and Biswas-Diener (2002) reported that those whose income allows them to satisfy their desires report greater well-being. Joo and Grable (2004) also indicated that financial well-being is related, both directly and indirectly to income. Grable and Joo (2006) found that college students' credit card debt increases their financial stress. However, Xiao et al. (2009) found that students' debt did not exert a significant effect on their financial satisfaction when positive financial behaviors were performed.

Relationship between Financial Disposition and Financial Well-Being

Financial dispositions commonly refer to one's psychological characteristics with respect to personal finance issues. Previous studies have established links between financial dispositions and financial well-being through financial behaviors (Bandura and Adams 1977; Belk 1984, 1985; Joo et al. 2003; Richins and Dawson 1992; Rook and Fisher 1995; Tokunaga 1993). However, these studies tended to examine each relationship in isolation. For example, Belk (1984, p. 291) notes, "at the highest levels of materialism… possessions assume a central place in a person's life and are believed to provide the greatest sources of satisfaction and dissatisfaction." Tatzel (2003) indicated that the greatest well-being is associated with lower financial striving and with moderate money disposition, neither excessively tight nor loose. Yet, being tight with money and materialistic are both associated with lower well-being. This type of consumer could become a fretful individual, who feels poor, agonizes over purchases, and is a compulsive bargain hunter. Being overly loose with money and highly materialistic, however, are both risk factors for well-being. Dittmar (2005) also concluded that materialism has a

negative impact on individuals' well-being. Stone et al. (2008) pointed out that financial education might decrease materialism, increase positive financial attitudes, and consequently, create happiness and psychological health.

Basic preference shifters such as time orientation and risk tolerance have been found to be related to well-being. An enhanced orientation toward the future may make it possible for individuals to increase their social and economic well-being (Shobe and Page-Adams 2001). Sahu and Rath's (2003) study revealed a strong association between self-efficacy and well-being. Risk tolerance, as one dimension of financial attitudes, may be related to financial wellness. For example, different levels of risk tolerance can result in differences in financial decisions and outcomes. These differences may lead to different levels of financial wellness (Joo and Grable 2004). Joo and Grable (2004) determined that financial well-being is related, both directly and indirectly with financial risk tolerance.

Relationship between Financial Education and Financial Well-Being

Concern about the financial well being of young people and their preparation for making financial decisions in adulthood has led to a groundswell of interest in youth financial education. In recent years, numerous programs and initiatives have been developed to promote and provide financial education to US consumers. Unfortunately, while the number of programs and initiatives has flourished, research measuring the effectiveness of these efforts has not kept pace. In fact, little is still known about whether these efforts are actually improving consumers' overall financial well-being (Lyons et al. 2006a). Some earlier studies have revealed that there is an important relationship between financial education and financial behaviors. Thus, financial education influences financial well-being through financial behaviors (see for example, Lyons 2008; Rao and Barber 2005). Lyons (2008) found that students who had taken, or were currently taking, a formal course in personal finance were significantly less likely to be engaging in risky credit behaviors. While the percentage point impact of a personal finance course was less than that for some of the other factors, she concluded that formal financial education might prevent some students from misusing and mismanaging their credit in the future. In this way, her study investigated how the financial knowledge and behaviors students develop affect their overall financial well-being. Lyons et al. (2006a) suggested that a set of evaluation tools that is flexible enough to account for the wide variation in programs was suited for measuring the impact of financial education on economic well-being. Anderson et al. (2004) pointed out that because low-income persons have such limited resources, financial management training is especially important in determining

their financial well-being. Johnson and Sherraden (2007) also suggested that differences in young people's knowledge and skills learned in financial education classes may have impact on financial well being.

Despite these studies, there is little research specifically examining the relationship between financial behaviors and financial well-being of college students after controlling for demographic and financial characteristics, financial education and financial dispositions. Our research addresses this gap.

Conceptual Framework

This study relies on the Family Resource Management System Model developed by Deacon and Firebaugh (1988). In the Family Resource Management System Model, the family was viewed as a system with two subsystems, namely personal and managerial. Through the management system, individuals and families strived to accomplish their goals by the acquisition and use of resources. The Family Resource Management System Model was conceptualized as composed of inputs, throughputs, and outputs. Specific forms of input entering the family system are classified as resources and demands (Mugenda et al. 1990). In most of the previous studies, inputs of the managerial system were conceptualized as income, employment status, marital status, education, and knowledge (e.g. Beutler and Mason 1987; Davis and Schumm 1987; Mugenda et al. 1990; Titus et al. 1989). In the current study, Family Resource Management Model was applied for college students as individual to test components of their financial well-being. As indicated above, the literature has shown that demographic and financial variables, financial disposition, and financial education may influence a college student's financial well-being through the financial behaviors. In the present study, demographic characteristics such as gender and race; financial characteristics such as income and debt; financial dispositions such as materialism and financial education are studied, along with input, as control variables whose direct and indirect effects are held constant in the analysis. Throughput has been defined as transformation of matter, energy, and/or information by a system from input to output (Mugenda et al. 1990). Throughput processes have been measured in a variety of ways including budgeting, saving, having credit, debt repayment, and possessing one or more insurance types (e.g. Hira and Mueller 1987; Mugenda et al. 1990; Sumarwan and Hira 1992; Titus et al. 1989). In the current study, throughput processes are represented by financial behaviors of the students, such as budgeting, saving, risky credit card behaviors and compulsive buying. The final component of a management system was output. Deacon and Firebaugh (1988) defined output as meeting demands. One example of output could

be satisfaction derived as a result of achieving a desired end (Mugenda et al. 1990). In the study reported here, the output component was characterized by financial well-being. Based on this relationship, the determinants of college students' financial well-being can be more fully identified in the proposed framework presented in Fig. 1.

Research Questions and Hypotheses

The preceding discussion has pointed out that financial behavior is related to financial well-being. Decreased financial well-being may result from the limited use of certain financial management behaviors believed to be important by experts (Porter and Garman 1993). Researchers also indicated that risky financial behaviors could be associated with chronic stress (Adams and Moore 2007). This study will explore this relationship further, allowing for the relationship of financial behaviors on financial well-being to vary with demographic and financial characteristics, previous financial education and positive financial dispositions. More specifically, we are interested in three categories of financial behaviors: budgeting, saving, credit use, and compulsive buying. Thus, we approached this exploratory study with several guiding research objectives: (1) to determine the level of financial well-being of college students; (2) to characterize levels of financial well-being among college students by demographic, financial characteristics and financial behaviors; (3) to determine whether positive financial behaviors are associated with financial well-being when controlling for demographic and financial characteristics, financial education and financial dispositions. We expect that demographic and financial characteristics, financial education and financial disposition will have a direct impact on college student's financial behaviors and improve their financial well-being. Individual's financial well-being can be either objective or subjective (Joo 2008). In the present study, to measure financial well-being we used subjective well-being.

Hypotheses

Based on the developed model in Fig. 1, along with previous research, the following hypotheses are suggested:

1. College students' financial well-being scores differ by their demographic characteristics such as gender, marital status, race, and school rank.
2. College students' financial well-being scale scores differ by their financial characteristics such as income, debt, financial aid, and student loans.
3. There is a difference between financial well-being scores of college students who were budgeting, saving,

Fig. 1 The conceptual framework adapted from Deacon and Firebaugh (1988)
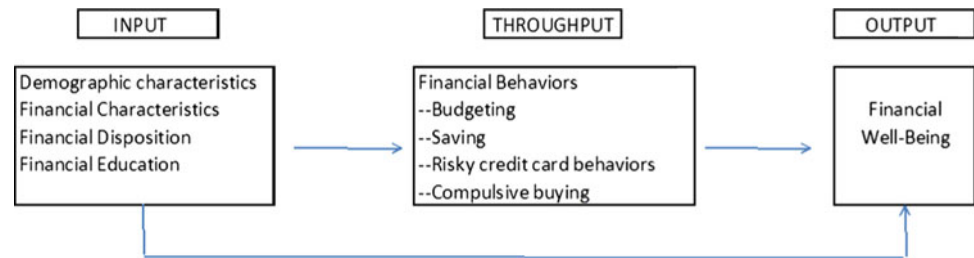
not performing any risky credit card behaviors, and less prone to compulsive buying and those who were not budgeting and saving, were performing risky credit card behaviors, and more prone to compulsive buying.

4. There is a positive relationship between financial behaviors and financial well-being when controlling for demographic and financial characteristics, financial education and financial dispositions.

Method

Data and Sample

Data was collected during both spring and fall of 2008 using a web survey of college students throughout the United States; data collection ended in September 2008. The sample was limited to currently enrolled college students, ages 18 and over. This study used a stratified sampling technique based on state policies regarding financial education in school. Using random numbers, states were selected from each policy category. Random lists of student email addresses were obtained for each campus selected, and, in some instances, entire student populations were made available. Student participation was requested using emails delivered to their email addresses of record (Appendix A). 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.

Students were emailed three times over the course of 1 month to request their participation; 172,412 students received emails three times with about 15,797 completing the survey. The overall response rate was about 10%, which, while seemingly low for survey research, is consistent with the lower response seen in online surveys. Lower response rates can occur because email addresses may be incorrect, invalid, or the email server uses an anti-spam program (Lyons et al. 2005). In this instance, we were warned by some of the campuses that the anti-spam programs may interfere with students receiving our email. The fact that the email request came from outside of the university may also

have caused some students to skip the survey. Finally, the length of the survey may also have been a factor. The average age of the students was 21.3, and almost all students were full-time (94.3%), two-thirds (65.8%) were female, 83.3% white, 85.7% single, and 27.4% seniors. 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 college students, although students in this sample were more likely to be white and single than the general student population (NASPA 2008).

Measurement of Variables

Dependent Variable

Financial Well-being: The InCharge Financial Distress/Financial Well-Being (IFDFW) scale (Prawitz et al. 2006) was used as a measure of financial well-being. This measure is designed to be a latent construct representing feelings about one's financial situation on a continuum from lowest level of financial well-being to highest level of financial well-being. The IFDFW scale is an 8-question self-reported subjective measure of financial well-being. Internal consistency/reliability of the scale is reported as 0.96 (Prawitz et al. 2006). Questions in the IFDFW scale include: "What do you feel is the level of your financial stress today?" For each item, responses ranged from negative (1) to positive (10). Individual scores can range from 8 (1 point on each question) to 80 (10 points on each question). Scores on the IFDFW were computed by adding numerical responses for each of eight items, then dividing the total by eight. Resulting scores could range from 1 (lowest financial well-being) to 10 (highest financial well-being).

Validity and reliability tests for the IFDFW scale have also been carried out for college students in this study. Principal Component Factor Analysis was used for this analysis. The factor loading of each item ranged between 0.69 and 0.90. All 8 items had positive loading on the factor. Almost 64% of the total variance was explained by the one factor extracted. The maximum likelihood confirmatory factor analysis also performed for IFDFW scale using the LISREL 8.80 program. Goodness-of-fit indices ($\chi^2 = 2212.21$, $df = 20$, GFI = 0.99, CFI = 0.97, AGFI = 0.98,

RMSEA = 0.086) suggest that the 1-factor model has an excellent fit for college students. These results can be accepted as proof for the validity of the items, and thus, of the scale. In order to test the reliability of the measure, Cronbach's Alpha was selected. The correlations among the items varied between 0.45 and 0.80. All correlations were significant ($p < 0.01$), and Cronbach's Alpha internal consistency reliability was calculated to be 0.91. This result suggests that the inner consistency of the inventory is high. The average financial well-being score for college students was 6.18 ($SD = 2.11$) and a midpoint of 5.50, which indicated that moderate financial well-being.

Independent Variables

Students were asked questions about themselves and their financial behaviors. The variables are described below with specific reference to coding in Appendix B. Some variables were coded continuously and, thus, are not listed.

Demographic variables: The study involved college students' demographic variables of gender, race, school rank, and marital status.

Financial variables: Financial variables were measured using monthly income, amount of debt, financial aid, and amount of student loans.

Financial Education: This variable was measured with the question, "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.

Financial Dispositions:

Materialism: The Materialism Scale (Richins and 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 of this measure for college students materialism from Richins and Dawson' (1992) scale. We did not use the following 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 final analysis in this study because most of the students did not respond to these three items. We concluded that about 60% missing values for these three items can affect other items in the scale and chose to omit these in the analysis to avoid this bias. So 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. Coefficient alpha was calculated separately for the items comprising the three factors and for the 15 items as a single scale. The five centrality items produced alpha coefficients of 0.65; for the five-item success subscale alpha was 0.77; and for the five happiness items, alpha was 0.75. When combined into a single scale, alpha for the 15 items was high for college students (alpha 0.86).

Money Ethic Scale: Financial self-efficacy perceptions were assessed for 6 items. Two items were generated from the original Money Ethic Scale (MES)'s "budget" factor which was developed by Tang (1992): "I budget my money very well" and "I use my money very carefully." Remaining 4 items were generated by the first author, such as "I am good at managing my money," "I am satisfied with my ability to manage my money," "Compared to other people, I think I do pretty well at making financial decisions," "I am pretty skilled at making financial decision." 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 0.96.

Future Orientation: Strathman et al. (1994) measured future orientation and used the ''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 (does not 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-oriented while a higher score indicated that students are more future orientated. Cronbach's Alpha internal consistency reliability was calculated to be 0.78.

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." For the analyses, the "take substantial financial risks" and "take above average financial risks" categories were combined as "take above average financial risks." This measure of willingness to take financial risk is from the Survey of Consumer Finance. The measure asks about willingness to take a risk proportional to the expected benefit or return.

Financial behaviors: Financial behavior can be defined as any human behavior that is relevant to money management. Common financial behaviors include cash, credit, and saving (Xiao 2008; Xiao et al. 2006). For the purpose of this study,

budgeting, saving, credit usage behaviors and compulsive buying were considered as financial behaviors. Behavior can be measured as a binary variable, whether or not to the behavior is performed (Xiao 2008). In the present study, budgeting was measured with the question, "Do you currently use a system to manage expenses and avoid overspending?" Saving was measured with the question, "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)?" Responses included yes and no. Risky credit usage behaviors are based on the following criteria: 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,' '6 or more.' There was also a 'NA' options for students without credit cards. For the analyses '1–2,' '3–5,' '6 or more' were combined as "1" which indicated that students have performed risky credit card behavior with more frequent behaviors indicating higher credit risk scores. 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," and "Bought myself something in order to make myself feel better") are rated on a scale from 1 = very often to 5 = never. More severe compulsive buying will result in lower scores on the scale. One of the statements ("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 final analysis in the current study because most of the students did not respond to this item. The Cronbach's Alpha internal consistency reliability was calculated to be 0.80.

Analyses

Data analysis began with calculating frequencies of the sample on financial well-being scale items. We conducted bivariate analyses to compare financial well-being by demographic and financial characteristics and financial behaviors. We used t-tests, one-way analysis of variance, and Pearson correlation to identify statistically significant differences among college students' demographic, financial characteristics and financial behaviors. One-way analysis of variance was computed to compare mean IFDFW scores by school rank, amount of debt, income, amount of student loans, and risky credit behaviors. When the F-test indicated significant (0.05) mean differences on a given variable, the Scheffe multiple comparison test was used to isolate the specific between-category means that were significantly

different. Independent sample t-tests were then used to compare mean values on the IFDFW and gender, race, marital status, financial aid, budgeting, and saving. Pearson correlation was used to relationship between compulsive buying and financial well-being. Finally, Ordinary Least Squares (OLS) Regression Analysis was computed to determine the interrelationships between IFDFW and the financial behaviors when controlling for demographic and financial characteristics, financial education and financial dispositions.

The hypotheses were tested in the following manner. The first three hypotheses propose relationships between socioeconomic characteristics, financial behaviors and financial well-being. Our analyses compared the financial well-being of college students who differ by demographic, financial characteristics and financial behaviors. We used t-tests and ANOVA procedures to compare the means of the financial well-being by demographic, financial characteristics and financial behaviors. Finally, we used Ordinary Least Squares (OLS) Regression to assess the financial well-being means comparison on financial behaviors after controlling for the demographic and financial characteristics, financial education and financial dispositions.

Results

Bivariate Results

Students' Financial Well-Being by Demographic and Financial Characteristics

Table 1 summarizes the comparison of college students' financial well-being. The averages for the scale are listed for demographic and financial characteristics. Results of the bivariate analysis test showed that college students' financial well-being score differed by their demographic characteristics. As can be seen in Table 1, males, white, and single students had significantly higher financial well-being score than females, non-whites, and married, divorced/separated/widowed, and cohabitating students. Table 1 also shows the results of one-way ANOVA for school rank, where the means of school rank was significant ($F = 29.14$, $p < 0.001$). For those variables showing significant differences, the Scheffe Multiple Comparison Test was used to determine which pairs of categories of each variable were significantly different (Table 2). An interesting pattern in school rank showed that freshman ($M = 6.57$) students reported higher scores of financial well-being than older students. Sophomores ($M = 6.32$) also reported higher scores than the older ranks (junior and senior, $M = 6.00$).

As can be seen in Table 1, financial well-being was also significantly different by financial characteristics. There were significant differences in financial well-being by types

Table 1 Bivariate analysis results of financial well-being scale averages score according to demographic and financial characteristics

Demographic and Financial Variables	Mean	SD	%	Test statistics
Gender				$t = 14.68$***
Female	5.97	2.11	65.8	
Male	6.61	2.03	34.2	
Race				$t = 8.75$***
White	6.26	2.08	83.3	
Other	5.76	2.21	16.7	
Marital status				$t = 9.20$***
Single	6.26	2.10	85.7	
Other	5.75	2.11	14.3	
School rank				
Freshman	6.57	2.07	20.9	$F = 29.14$***
Sophomore	6.32	2.16	19.5	
Junior	6.00	2.15	24.5	
Senior	6.00	2.09	27.4	
Graduate/Professional/Other	6.15	1.92	7.8	
Financial aid				
None	6.74	2.05	19.7	$t = 13.15$***
Federal students loans	5.44	1.98	45.2	$t = -34.88$***
Federal work study	5.42	2.04	8.5	$t = -10.98$***
Need based (i.e. Pell)	5.38	2.09	22.1	$t = -21.41$***
Scholarships	6.37	2.05	52.4	$t = 10.03$***
Tuition waiver	6.27	2.00	5.3	$t = 1.16$
Amount of Debt ($)				$F = 186.41$***
$0	6.48	2.03	77.1	
1–999	4.86	1.99	6.1	
1,000–4,999	5.15	2.09	5.0	
5,000 or more	5.45	2.11	9.6	
Not sure	5.43	1.99	2.2	
Monthly income ($)				$F = 95.44$***
0	6.60	2.07	39.1	
1–499	5.93	2.09	35.5	
500–999	5.74	2.10	15.5	
1000-or more	6.21	2.04	9.8	
Amount of student loans ($)				$F = 326.54$***
0	6.97	1.95	47.4	
1–4,999	5.86	2.02	10.9	
5,000–9,999	5.48	1.98	11.7	
10,000–19,999	5.33	1.96	12.1	
20,000- or more	5.13	1.97	12.2	
Not sure	5.98	1.88	5.7	

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

of financial aid received. Students with no financial aid or with scholarships had higher levels of well-being than those with loans or need-based programs. Financial well-being scores were highest for the "0" debt group ($M = 6.48$). According to the Scheffe Test, there were significant

differences between those with no debt and those with some debt and not sure about their debt levels (Table 3). Students' income also was significantly related to financial well-being. Surprisingly, the financial well-being score was highest for the "0" income group ($M = 6.60$). According to the Scheffe Test, there were significant differences among all income groups ($p < 0.001$) (Table 4). The differences in well-being by student loan categories are shown in Table 1. As can be seen in the table, the financial well-being score was highest for students having no loans at this time ($M = 6.97$). According to the Scheffe Test, there were significant differences between "0" and all other loans groups and those not sure about their loans. There were also a difference among "$1–4,999," "$5,000–9,999," "$10,000–19,999," and "20,000 or more." Finally, there was a difference among "$5,000–9,999" and "$20,000 or more" loans and not sure about their loans (Table 5). Evidence was found to support hypothesis 1 and 2.

Table 2 Multiple comparison (Scheffe) test results about financial well-being scale averages score according to school rank of the students

School rank	Freshman	Sophomore	Junior	Senior
Freshman	–	–	–	–
Sophomore	0.25*	–	–	–
Junior	0.57*	0.32*	–	–
Senior	0.56*	0.32*	−0.00	–
Graduate/professional/other	0.43*	0.18	−0.14	−0.14

* $p < 0.05$

Table 3 Multiple comparison (Scheffe) test results about financial well-being scale averages score according to debt levels of the students

Debt	$0	$1–999	$1000–4999	$5000 or more
$0	–	–	–	–
$1-999	1.61*	–	–	–
$1000-4999	1.33*	−0.29	–	–
$5000 or more	1.03*	−0.59*	−0.30	–
Not sure	1.05*	−0.57*	−0.28	0.02

* $p < 0.05$

Table 4 Multiple comparison (Scheffe) test results about financial well-being scale averages score according to income levels of the students

Income	$0	$1–499	$500–999
$0	–	–	–
$1–499	0.66*	–	–
$500–999	0.86*	0.19*	–
$1,000 or more	0.38*	−0.28*	−0.47*

* $p < 0.05$

Students' Financial Well-Being by Financial Behaviors

Table 6 summarizes the comparison of students' financial well-being by financial behaviors. The financial well-being score was significantly different between students who had positive financial behaviors and those who did not. As seen in Table 6, students who were budgeting and saving reported significantly higher financial well-being scores compared to those who did not budget and save. Risky credit card behaviors were also significantly related to financial well-being. As expected, the IFDFW scores were significantly lower with students performing any risky credit card behaviors ($p < 0.001$). Pearson coefficient for the relationship between compulsive buying and financial well-being is 0.500, and it is positive. This tells us that, as we predicted, as compulsive buying decreases, financial well-being increases. Support for Hypothesis 3 was found.

Multivariate Results

OLS regression analysis was used to examine the relationship between level of students' financial well-being and financial behaviors, when controlling for demographic and financial characteristics, financial education, and financial dispositions to measure predicting of financial well-being for each independent variables by one by and to see when the significant is changed. Table 7 summarizes the results of OLS regressions predicting financial well-being. As seen in the Table 7, consistent with bivariate result, positive financial behaviors were positively related to financial well-being. There is partial support for the fourth hypothesis. This hypothesis tested in final model, indicates that there is a relationship between students' financial well-being and financial behaviors, when controlling for demographic and financial characteristics, and financial dispositions except financial education. As seen in the Table 7, an exception was budgeting; positive financial behaviors contribute to financial well-being through such variables as demographic and financial characteristics, and financial dispositions. Students who saved reported significantly higher levels of financial well-being. However, students who budget reported significantly lower levels of financial well-being.

Table 6 Bivariate analysis results of financial well-being scale averages score according to financial behaviors

Financial behaviors	Mean	SD	%	Test statistics
Budgeting				−10.39***
Yes	6.40	2.05	48.3	
No	5.98	2.15	51.7	
Saving				−28.56***
Yes	6.73	1.95	52.2	
No	5.95	2.12	47.8	
'Max out' credit cards				28.22***
Yes	4.70	2.08	13.4	
No	6.41	2.04	86.6	
Make late payments on credit cards				28.37***
Yes	4.80	2.03	15.3	
No	6.43	2.04	84.7	
Do not pay off credit cards				35.05***
Yes	5.12	1.94	31.1	
No	6.66	2.02	68.9	
Compulsive buying				0.500***

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Students who "max out" their credit cards, make late payments on their credit cards and do not pay off their credit card balance fully each month had significantly lower levels of financial well-being those who do not "max out," make late payments and do pay off their credit cards balance fully each month. Students who were less prone to compulsive buying had significantly higher levels of financial well-being than those who were more prone to compulsive buying. When compulsive buying were added to the equation, budgeting was not significant. When self-efficacy were added to the equation, budgeting was negatively related to financial well-being through interact with self-efficacy. White, male, single, senior, graduate/professional/other students reported significantly higher levels of financial well-being than their counterparts. Students with lower income group, all levels of debt and loans and need-based assistance had significantly lower levels of financial being. However, students with scholarship assistance had significantly higher levels of financial well-being than their

Table 5 Multiple comparison (Scheffe) test results about financial well-being scale averages score according to loan level of the students

Loan	$0	$1–4,999	$5,000–9,999	$10,000–19,999	$20,000- or more
$0	–	–	–	–	–
$1–4,999	1.10*	–	–	–	–
$5,000–9,999	1.49*	0.38*	–	–	–
$10,000–19,999	1.63*	0.53*	0.15	–	–
$20,000- or more	1.84*	0.73*	0.35*	0.20	–
Not sure	0.98*	−0.12	−0.50*	−0.65*	−0.85*

* $p < 0.05$

Table 7 OLS regression result for financial well-being (IFDFW)

	Financial well-being						
	1	2	3	4	5	6	7
Financial behaviors							
Budgeting	0.175 (0.040)***	0.196 (0.040)***	0.212 (0.038)***	0.204 (0.038)***	0.146 (0.037)***	**0.054 (0.036)**	**−0.093 (0.036)****
Saving	0.925 (0.041)***	0.927 (0.040)***	0.788 (0.039)***	0.783 (0.039)***	0.735 (0.038)***	0.623 (0.037)***	0.536 (0.036)***
'Max out' credit cards	−0.728 (0.067)***	−0.732 (0.066)***	−0.567 (0.062)***	−0.568 (0.062)***	−0.503 (0.061)***	−0.172 (0.060)**	−0.137 (0.058)*
Make late payments on credit cards	−0.670 (0.064)***	−0.639 (0.063)***	−0.560 (0.060)***	−0.562 (0.060)***	−0.535 (0.059)***	−0.316 (0.056)***	−0.272 (0.055)***
Do not pay off credit cards	−0.953 (0.050)***	−0.888 (0.051)***	−0.555 (0.049)***	−0.555 (0.049)***	−0.530 (0.049)***	−0.190 (0.048)***	−0.198 (0.047)***
Demographic variables							
White		0.227 (0.055)***	0.249 (0.053)***	0.247 (0.053)***	0.210 (0.052)***	0.137 (0.050)**	0.144 (0.048)**
Male		0.592 (0.042)***	0.562 (0.040)***	0.552 (0.040)***	0.520 (0.041)***	0.292 (0.039)***	0.273 (0.039)***
Sophomore		−0.073 (0.067)	−2.162 (0.064)	0.006 (0.064)	−0.008 (0.063)	0.015 (0.060)	−0.003 (0.058)
Junior		−0.177 (0.063)**	0.020 (0.061)	0.029 (0.061)	−0.021 (0.060)	0.011 (0.058)	−0.034 (0.056)
Senior		0.004 (0.062)	0.228 (0.062)***	0.239 (0.062)***	0.169 (0.061)**	0.191 (0.058)***	0.125 (0.057)*
Graduate/professional/other		0.118 (0.083)	0.317 (0.093)***	0.328 (0.093)***	0.192 (0.092)*	0.248 (0.088)**	0.240 (0.086)**
Single		0.288 (0.056)***	0.112 (0.056)*	0.113 (0.056)*	0.167 (0.055)**	0.164 (0.053)**	0.196 (0.051)***
Financial variables							
Monthly income $1–499			−0.451 (0.046)***	−0.451 (0.046)***	−0.453 (0.045)***	−0.432 (0.043)***	−0.422 (0.042)***
Monthly income $500–999			−0.397 (0.058)***	−0.393 (0.058)***	−0.409 (0.057)***	−0.400 (0.055)***	−0.405 (0.054)***
Monthly income $1,000 or more			0.069 (0.076)	0.068 (0.076)	0.040 (0.075)	0.086 (0.071)	0.056 (0.070)
Debt $1–999			−0.876 (0.079)***	−0.877 (0.079)***	−0.845 (0.078)***	−0.628 (0.075)***	−0.620 (0.073)***
Debt $1,000–4,999			−0.590 (0.085)***	−0.593 (0.085)***	−0.627 (0.084)***	−0.458 (0.080)***	−0.459 (0.078)***
Debt $5,000 or more			−0.429 (0.067)***	−0.434 (0.067)***	−0.450 (0.066)***	−0.330 (0.063)***	−0.328 (0.061)***
Not sure about debt			−0.644 (0.139)***	−0.647 (0.138)***	−0.601 (0.136)***	−0.478 (0.130)***	−0.403 (0.1279)***
Loans $1–4,999			−0.566 (0.082)***	−0.572 (0.082)***	−0.558 (0.081)***	−0.532 (0.077)***	−0.544 (0.075)***
Loans $5,000–9,999			−0.788 (0.085)***	−0.793 (0.085)***	−0.777 (0.084)***	−0.746 (0.080)***	−0.745 (0.078)***
Loans $10,000–19,999			−0.894 (0.086)***	−0.896 (0.086)***	−0.866 (0.084)***	−0.802 (0.081)***	−0.782 (0.079)***
Loans $20,000 or more			−1.006 (0.087)***	−1.009 (0.087)***	−0.980 (0.086)***	−0.877 (0.082)***	−0.870 (0.080)***
Not sure			−0.477 (0.106)***	−0.482 (0.106)***	−0.425 (0.104)***	−0.386 (0.099)***	−0.318 (0.097)***
Federal students loans financial aid			−0.156 (0.069)*	−0.152 (0.069)*	−0.144 (0.068)*	−0.119 (0.065)	−0.114 (0.064)
Federal work financial aid		0.003 (0.073)	−0.045 (0.074)	−0.044 (0.074)	−0.051 (0.073)	−0.083 (0.070)	−0.086 (0.068)
Need based financial aid		−0.435 (0.050)***	−0.269 (0.050)***	−0.271 (0.050)***	−0.292 (0.050)***	−0.309 (0.047)***	−0.319 (0.046)***
Scholarship financial aid		0.322 (0.038)***	0.234 (0.039)***	0.238 (0.039)***	0.200 (0.038)***	0.137 (0.036)***	0.117 (0.036)***
Tuition waiver financial aid		0.027 (0.083)	−0.013 (0.082)	−0.011 (0.082)	−0.032 (0.080)	−0.003 (0.077)	−0.029 (0.075)
Financial education							
Has taken per. fin course in high school				0.079 (0.039)*	0.081 (0.039)*	0.103 (0.037)**	0.056 (0.036)

Table 7 continued

	Financial well-being						
	1	2	3	4	5	6	7
Has taken personal finance course in the community				.100 (0.064)	.044 (0.064)	.060 (0.061)	.062 (0.059)
Financial disposition							
Materialism					−0.027 (0.002)***	−0.010 (0.002)***	−0.012 (0.002)***
No financial risk					−0.305 (0.052)***	−0.310 (0.049)***	−0.306 (0.048)***
Above average financial risk					0.141 (0.044)***	0.228 (0.042)***	0.186 (0.041)***
Future orientation					−0.063 (0.010)***	−0.018 (0.009)*	−0.002 (0.009)
Compulsive buying						0.171 (0.006)***	0.109 (0.006)***
Self-efficacy							0.056 (0.003)***
Constant	6.124 (0.038)***	5.511 (0.094)***	6.222 (0.097)***	6.184 (0.098)***	8.842 (0.239)***	2.899 (0.303)***	2.634 (0.297)***
F	439.54***	210.50***	441.63***	413.78***	131.89***	165.19***	180.74***
R^2	0.195	0.218	0.315	0.315	0.338	0.397	0.425

Note: Unstandardized coefficients are reported, with standard errors in parentheses. * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

counterparts. Lower levels of compulsive buying, higher levels of self-efficacy and above average financial risk were positively related to financial well-being, however, higher levels of materialism and not willing to take any financial risk were negatively related to financial well-being (Step 7).

Discussion and Implications

The purpose of this study has been to explore the relationship between financial behaviors and financial well-being of college students when controlling for demographic and financial characteristics, financial education and financial dispositions. The results of this study provide several key insights. Results from means comparisons showed significant differences on the financial well-being level by various socioeconomic factors and financial behaviors. OLS regression analysis showed that budgeting, saving, risky credit card behaviors, and compulsive buying were significantly related to financial well-being when controlling for demographic information, financial characteristics, and financial dispositions.

The college students could be characterized as experiencing moderate financial well-being about their personal finances. According to national norming data for the IF-DFW scale (Prawitz et al. 2006), the median score (indicating average financial well-being) for the general population was 5.7 on the 10-point scale. This was slightly above the scale's midpoint of 5.5. For college students in the current study, the median score was reported 6.18, indicating they were experiencing moderate financial well-being, which is a little better than the general population.

Overall, this study found a relationship between financial well-being and financial behaviors of college students after controlling for demographic and financial characteristics, and financial dispositions. Generally, positive financial behaviors were positively related to financial well-being of college students, with the exception of budgeting. Our results suggest that to become financially healthy, students need to exhibit desirable behaviors with cash and credit management, saving, etc. Financial well-being can be said to be "high" when students have positive financial attitudes, and exhibit healthy financial behavior. Consistent with earlier studies (Shim et al. 2009; Xiao et al. 2006; Xiao et al. 2007, 2009), we found that positive financial behaviors affected financial well-being positively. This indicates that student who had positive financial behaviors (budgeting, saving, not performing any risky credit card behaviors and less prone to compulsive buying), significantly increased their financial well-being. That is to say financial behaviors are important components because these measure the potential of change in financial well-being (see, Joo 2008). Xiao et al. (2007) also indicated that good financial

practices in cash management, credit management, and saving were positively related to overall well-being. They suggested that financial education on campuses could promote positive financial behaviors; this was wise since they may improve the well-being of students directly.

In conformity with the developed model in Fig. 1, the input variables (demographic and financial characteristics, and financial dispositions), are related to the output variable, financial well-being, through their impact on the financial behaviors except financial education. It can be say that, in the current study college students' financial behaviors predicted financial well-being after controlling for selected demographic and financial characteristics, and financial disposition. Furthermore, in the full step, college students' well-being tended to be related to race, gender, school rank, marital status, income, debt, amount of student loans, financial aid, materialism, self-efficacy, willing to take financial risk, budgeting, saving, risky credit behaviors, and compulsive buying.

Consistent with our expectation, demographic and financial characteristics were significantly related to financial well-being. An interesting result in this study is that freshman students reported higher level of financial well-being compared to their older counterparts. Perhaps there is an increasing responsibility placed on students as they progress with less of a parental safety net. However, when controlling for other factors, seniors had higher well being than freshman. This may be that while seniors have had more times to make mistakes, when controlling for other factors, seniors are more comfortable with their situations. Students would also have had more time to make mistakes or encounter other financial struggles. Students with no financial aid or with scholarships reported higher levels of well-being than those with loans or need-based assistance. The first two groups, especially those who did not qualify or apply for financial aid, likely have greater family resources.

This study confirms the relationship between financial behavior and financial well-being for college students. Given the level of financial well-being among students, financial education and other outreach strategies aimed to promote positive financial practices are of great importance. Since financial behaviors can be an important component in the definition of financial well-being, thereby being financially healthy, happy, and free from worry and financial well-being is one of the components of overall well-being. Other strategies might include social marketing and financial counseling. Students may also benefit from having access to on-campus counseling to help them cope with financial distress or related issues. Educators would have a vested interest in a consistent measure of financial well-being, which could be used to determine program impact. These findings suggest that behaviors influence well being and as such targeting these behaviors through

financial education may be beneficial. The results could be used to develop action-oriented financial education programs that would provide college students the knowledge and skills to positive financial behaviors and improve their financial well-being. In addition, the possibility that education may need to compete with 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. Borden et al. (2008) concluded that effective financial education offered in a seminar format may be both convenient and accessible to a wider audience of college students, then more frequent financial seminars may be effective in promoting financial well-being in college students, so possibly this type of format could also work well with younger age's financial education (Scott 2010).

The results of this study help to further document the financial well-being of college students. Additional studies should measure the IFDFW for other emerging adult households, especially those not enrolled in a 4-year university. While some studies have included this group in research on employee well-being, they have not been the focus of such research.

There are limitations that should be considered in interpreting our results. First, this study only focused on the effects of financial behaviors on one of college students' life domains: financial well-being. Future research studies should consider additional domains, such as overall well-being, happiness, relationship satisfaction, and life quality of college students, because financial behaviors could also affect these life domains. Second, this study only focused on the subjective measures of college students' financial well-being. To study the financial well-being among college students comprehensively, not only subjective measures but also objective measures need to be considered. Further research should include both objective and subjective measures of financial well-being. Finally, the present study did not include health risk behaviors of college students such as smoking, drinking, sleeping, or eating that could mediate the effects of financial well-being on health. Anxiety or depression could also mediate the effects of financial well-being on health (Tokunaga 1993). Further research should examine health status indicators to understand the relationships between financial well-being and health of college students.

Appendix A

See Table 8.

Table 8 Breakdown of the sample by campus and policy category

Campus Representation	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
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

See Table 9.

Table 9 Variable reference coding

Variables	
Demographic Variables	
Race	=Other ethnicity
Gender	=Female
School rank	=Freshman
Marital status	=Married/Divorced/Separated and other
Financial variables	
Monthly income	=No income
Debt	=No debt
Loans	=No loans
Financial aid	=None
Financial disposition	
Risk tolerance	=Willing to take average financial risk
Financial education	
Take personal finance in high school	=Did not take personal finance course in high school
Take personal finance in community	=Did not take personal finance in community
Financial behaviors	
Budgeting	=Do not budget
Saving	=Do not save
'Max out' credit card	=Do not max out credit card
Make late payments on credit card	=Do not make late payments on credit card
Do not pay off credit card balance fully each month	=Pay off credit card balance fully each month

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