

Changing College Students' Financial Knowledge, Attitudes, and Behavior through Seminar Participation

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Abstract This pilot study examined the influence of Credit Wise Cats, a financial education seminar presented by Students in Free Enterprise, on the attitudes, knowledge, and intentions toward financial responsibility of college students ($N = 93$). Findings suggest that the seminar effectively increased students' financial knowledge, increased responsible attitudes toward credit and decreased avoidant attitudes towards credit from pre-test to post-test. At post-test, students reported intending to engage in significantly more effective financial behaviors and fewer risky financial behaviors. Finally, demographic factors (e.g., gender and employment status) predicted students' financial knowledge, attitudes, and behaviors. These results suggest that a seminar format may be useful in reaching a wider audience of college students and, thus, warrants future longitudinal evaluation.

Keywords College students · Financial education · Financial knowledge · Financial behavior · Financial attitudes

When college lender Nellie Mae (2002) reported that 83% of undergraduates, who applied to Nellie Mae for a student loan, possessed at least one credit card, financial advisors and educators responded by pushing for more financial education on college campuses. Increased interest in financial education culminated in a 2002 Federal initiative, National

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Partners for Financial Empowerment (NFPE), to provide practical financial knowledge to Americans of all ages. While an increase in the development and delivery of financial education programs is a positive step in promoting financial knowledge, little is known about the types of programs that appeal to college students. This study used a pre–post design to evaluate the impact of seminar-instruction on basic money management skills on the financial knowledge, attitudes, and behaviors of college students at a university in the southwestern United States.

Background and Significance

Despite a 7% drop in the number of undergraduate student loan applicants possessing at least one credit card (Nellie Mae 2004), experts remain concerned that undergraduates are unprepared to use credit wisely. Young adults often begin their college careers without ever having been solely responsible for their own personal finances (Cunningham 2000; Nellie Mae 2002). This lack of experience may make them particularly vulnerable to both the aggressive marketing tactics of financial institutions and the psychological costs associated with high debt.

College students are a lucrative market for financial institutions, both as a source of immediate revenue and as a way to establish brand-loyalty throughout adulthood (Amato-McCoy 2006). However, a lack of experience in financial management may be particularly harmful to students' financial futures (Nellie Mae 2002). Students may not realize the immediate impact of credit card use, for example, the fee structures employed for credit card use or the penalties applied for failure to live up to terms of use (Joo et al. 2003). In addition to the short-term effects, many young adults do not consider the long-term consequences surrounding the misuse of credit, including years of financial debt, low credit scores impeding future plans, and in extreme cases, personal bankruptcy (Holub 2002; Roberts and Jones 2001).

Young adults also may be unprepared to effectively manage the psychological costs associated with high debt; for example, increased levels of stress and decreased levels of psychological well-being (Norvilitis and Santa Maria 2002; Roberts and Jones 2001). An administrator from Indiana University asserted that their institution loses more students to credit cards and debt than to academic failure (Commercial Law Bulletin 1998; Holub 2002; Parks-Yancy et al. 2007). Indeed, high levels of debt have been reported among the stressors that led students to commit suicide (Holub 2002; Roberts and Jones 2001). Holub (2002) suggests that the accumulation of student loans, credit card debt, and lack of financial planning for the future can be overwhelming for undergraduate students upon graduation. Thus, it is important for educators to assist college students in acquiring effective money management practices, including regular review of bank and credit card statements, budgeting, disciplined spending, financial record keeping, and planning for taxes, insurance, investment, retirement, and estate issues (Muske and Winter 2001).

Review of the Literature

The Impact of Financial Knowledge

For people lacking financial experience, financial education programs have been identified as a key to improving financial knowledge and promoting personal financial responsibility

(Elliot 2000; Fox et al. 2005; Peng et al. 2007). In a study of 924 undergraduates from 14 college campuses, Chen and Volpe (1998) found that students with higher financial knowledge were both more likely to keep financial records and more likely to select the correct choice when given a hypothetical scenario regarding a financial decision compared to students with less financial knowledge. Although the current literature finds a positive association between improved financial knowledge and effective financial behaviors, studies also show that students have not received a proper education in financial knowledge and management (Brobeck 1991; Harris/Scholastic Research [HSR] 1993). Mandell (1997) examined 1,509 high school seniors from 63 schools and found the majority of high school graduates unable to make correct financial decisions. Currently, the majority of financial education programs are available not through educational institutions but through community and business organizations (Fox et al. 2005). This suggests that undergraduates start college life without adequate financial knowledge, but with easy access to credit cards. Young adults need to be educated about the risks and consequences associated with credit card use (Joo et al. 2003) so that they can make responsible financial decisions (Chen and Volpe 1998). Many researchers have echoed the call for early financial education of young adults (Hayhoe et al. 1999; Hayhoe et al. 2000; Munro and Hirt 1998; Roberts and Jones 2001). Peng et al. (2007) found a significant association between participation in college level personal finance classes and higher investment knowledge; however no significant association was found between participation in high school level classes and higher investment knowledge. This may suggest that college students are particularly receptive to financial education because of their increased financial responsibility. In a recent review, Fox and colleagues (Fox et al. 2005) found support that even short financial seminars had a positive impact on both financial knowledge and attitudes regarding both installment and credit card debt.

Financial Attitudes and Financial Behavior

College students today grew up in an era that supported more lenient attitudes towards debt (Roberts and Jones 2001). Between 1990 and 2000, installment debt increased over 60%, from \$568 billion to \$894 billion, and credit card debt tripled (Baek and Hong 2004). Thus, we would expect college students to report positive attitudes towards the use of credit cards.

Researchers note that consumerism, which promotes instant gratification, contributes to the misuse of credit and financial debt in American society in general (Chen and Volpe 1998; Elliot 2000; Roberts and Jones 2001). There is evidence that individuals' attitudes toward credit card usage are associated with financial behaviors. Danes and Hira (1990) examined individuals' knowledge, beliefs, and behaviors regarding the use of credit cards and found that people who endorsed using credit cards for installment purchases were more likely both to use credit cards and incur finance charges compared to people who did not endorse the use of credit cards for installment purchases. Xiao et al. (1995), in examining affective, cognitive, and behavioral attitudes of 137 college students, found that students generally held favorable attitudes toward credit card use. Further, students who owned credit cards were more likely to hold favorable behavioral attitudes toward credit card usage than students who did not own credit cards. Finally, more frequent use of credit cards was associated with more favorable overall and affective attitudes toward credit card use.

In a separate study, Hayhoe et al. (2000) examined the association of affective attitudes toward credit card use in 480 college students to spending habits, financial practices and

stress levels. They found that students with positive affective attitudes toward credit card use were more likely to purchase goods; such as, clothes, entertainment, travel, and food away from home with credit cards compared to students with less positive affective attitudes. In addition, affective attitudes towards credit card use were associated with how students felt after they made a credit card purchase; specifically, students with less positive affective attitudes toward credit card use were more likely to feel sorry that they purchased goods compared to students with more positive attitudes.

Furthermore, according to Norton (1993), in the United States, credit is sometimes regarded as an asset or alternative income when people's attitudes toward using credit cards are positive. Norton (1993) argued that it is becoming popular for people who do not have adequate cash available to use outstanding credit balances and think they will be able to pay the balance back later. However, the credit balance in credit cards is not their asset; using credit cards while unable to immediately pay a bill in full is borrowing money. Hence, individuals' favorable or positive attitudes toward using credit cards without the ability to repay the balance could lead to financial difficulties.

Individual Characteristics Affecting Financial Knowledge, Attitudes, and Behavior

Although most research finds that the majority of college students manage their use of credit effectively (e.g., 59% pay off their credit card debt monthly; The Educational Resources Institute [TERI] 1998), there are some college students at risk of not being able to repay their debts, either because of a lack of financial knowledge, experience, or funds (Lyons 2004). The relationship of demographic factors to effective credit behaviors has not been extensively examined (Lyons 2004), although some studies have sought to identify differences between individuals who are more likely to engage in effective management of their finances and those who are not.

Gender

Consistent gender differences in financial knowledge have been documented. For example, Markovich and DeVaney (1997) found that male college seniors reported more financial knowledge than female students. Danes and Hira (1987) found that male college students knew more about insurance and personal loans while female college students knew more about overall financial management. Volpe et al. (1996) found that male students were more knowledgeable about investment options compared to their female counterparts. Subsequently, Chen and Volpe (1998) found that female students in their sample were less knowledgeable about financial topics overall than male students.

However, findings regarding gender differences on attitudes toward credit cards have been mixed. For example, Xiao et al. (1995) found that male college students were more likely to hold *favorable* attitudes toward credit card usage compared to female students. However, Joo et al. (2003) found no gender differences in attitudes toward credit card use. Although Hayhoe et al. (1999) did not directly examine the relationship between gender and attitudes toward credit card use, they found that female college students held more credit cards compared to male students, suggesting that female college students have a more positive attitude towards credit card use.

There is mixed support as well for gender differences in financial behaviors/practices. For example, Hayhoe et al. (2000) found that, compared to male students, female students

were more likely to have a written budget, plan their spending, keep bills and receipts, and save regularly. Henry et al. (2001) also found that female students were more likely to have a budget than male students, although the sample size for male students was much smaller than for female students. Davies and Lea (1995) found that students carrying debt were more likely to be male. However, Lyons (2004) examined 2,650 undergraduate as well as graduate students at the University of Illinois and found that women were more likely than men to be risky in using credit cards.

Ethnicity

Some researchers posit that views held by college students towards money vary by ethnic background (Masuo et al. 2004). There is some empirical support that ethnicity affects individual's knowledge, attitudes, and behaviors regarding credit cards. Chen and Volpe (1998) found that compared to students of other ethnicities, Black students showed the lowest scores across several financial topics. Lyons (2004) found that Black students were more likely to engage in higher-risk financial behaviors; for example, inability to pay credit card balances in full. Joo et al. (2003) found that White college students were more likely to have positive attitudes toward using credit cards. In addition, Grable and Joo (2006) found that White college students reported more responsible financial behaviors compared to Black college students (e.g., paying credit cards in full each month and avoid finance charge and keep track of how much spent on household expenses each month). However, Chien and DeVaney (2001) found that non-White households showed more favorable attitudes toward credit card use.

Employment

Employment status may influence financial attitudes and behaviors (Xiao et al. 2006). Chen and Volpe (1998) surveyed 924 college students to examine their financial literacy, its relationship to personal characteristics, and the impact on students' opinions and decisions about finances. They found that participants with more years of work experience were more knowledgeable than those with less experience. It is possible that students' work experiences enhance their financial knowledge; however, the findings regarding students' employment status and their financial behaviors in other studies were mixed.

Hayhoe et al. (1999) found that college students' employment status was unrelated to the number of credit cards they owned. Lyons (2004) found that students with risky behaviors using credit cards were more likely to be working students and those working more hours per week were more likely to be risky in using credit cards than the entire sample of students. Xiao et al. (1995) found that college students working fewer than 20 h per week showed the most favorable cognitive attitudes toward credit cards. Nellie Mae (2004) reported that students working more than 20 h per week during the school year reported the highest credit card balance among students who did not work, those working fewer than 20 h per week during the school year, and those working during summer/vacation only.

Family Background

Several studies have shown that individuals with higher incomes had more favorable attitudes toward using credit cards (Chien and DeVaney 2001; Mathews and Slocum

1972). Some researchers have suggested that lower income families may not be aware of college financing options (Olson 1982) or may be uncomfortable using credit for college expenses (Churaman 1992). These studies suggest that family background may play a role in young adults' attitudes and behaviors regarding the use of credit cards. In a previously cited study, Hayhoe et al. (2000) found that college students from homes with higher incomes used credit cards more often in purchasing goods; such as, clothes, entertainment, and maintaining cars. In a study of 242 college students, Joo et al. (2003) found that students whose parents often used credit cards were more likely to show positive attitudes toward credit card use; whereas, students whose parents experienced problems associated with credit card use were more likely to have negative attitudes toward using credit cards.

Apart from negative attitudes toward borrowing money, when students do not have enough money to cover their expenses, they may be more likely to borrow money from someone or use credit cards. In a cross-sectional analysis of college students, Davies and Lea (1995) found that students often entered college with anti-debt attitudes, but adopted a more positive attitude as their debt increased due to low income and relatively high expenses. Lea et al. (1993) found that individuals from low income families were more likely to be in debt than those from higher income families. Lino (1995) posited that the most common liability in single parent-headed households was credit card debt. Lyons (2004) found that college students from lower income families were more likely to accrue loans and credit card debt compared to students from higher income families.

Objectives of the Present Study

The primary objective of the present study was to evaluate the effectiveness of The *Credit Wise Cats* project in changing college students' financial knowledge, attitudes, and behaviors towards the use of credit cards. *Credit Wise Cats* is a project of *Students in Free Enterprise* designed to provide information to college students regarding their credit card use and other financial behaviors. This pilot study examined the influence of a *Credit Wise Cats* educational seminar in changing students' attitudes and behaviors toward credit card use.

A second objective of the present study was to understand the relationship of demographic variables on college students' financial knowledge, attitudes, and behaviors. As illustrated above, the available research on this issue has shown mixed results. Hence, this pilot study examined the dynamics among selected demographic variables and students' financial knowledge, attitudes, and behaviors.

A final objective of the study was to explore the interrelationships among students' initial levels of financial knowledge, attitudes toward credit, and their financial behaviors.

Method

Procedure

The *Credit Wise Cats* project provides financial services to students and community members free of charge by offering a series of seminars on basic financial topics (i.e., budgeting and tracking expenses, consumer credit and financing options, savings and insurance coverage). Consistent with recommendations made by Pilcher and Haines (2000), the project utilizes peer educators as instructors. These short seminars (i.e., one and

one-half hours) are designed to offer financial instruction in an engaging and informative format to appeal to college-age students.

To obtain information both about interest in the project and the financial attitudes and behaviors of college students that were most amenable to educational intervention, students were asked to complete both a pre- and post-test survey during one of the seminars. The pre-test survey, administered prior to the start of the seminar, included demographic information about the participants as well as a series of questions regarding (a) current financial knowledge, (b) attitudes towards the use of credit, and (c) financial behaviors during the past two months. The post-test survey, administered at the end of the seminar, included the same financial items as in the pre-test; however, the wording was changed to assess a change in knowledge, attitudes and future behaviors.

Participants

Pre- and post-test data were collected from 93 students (64% female, 36% male) on the day of the seminar. The students were 20 years old on average ($SD = 2.99$). Approximately 31% self-identified as being White, 29% American Indian or Pacific Islander, 12% African or African American descent, 8% Hispanic descent, 7% Asian, and 13% reported belonging to multiple ethnic groups.

Regarding parental marital status, 55% of students reported that their parents were married and living together, 21% reported that their parents were divorced, and 7% reported that their parents were separated. More than half of the students in our sample were not employed (59%) and were enrolled for an average of 13 credits ($SD = 3.43$). Students who reported having jobs either on or off campus worked an average of 18 h per week ($SD = 9.88$) with an average monthly income of \$592 ($SD = \468). Approximately 12% of the students lived alone and 44% lived in a dormitory. The majority of the students identified themselves as single (88%); 2% were married. Most of the students who attended the financial education seminars did not have children (97%).

This sample of college students had high educational aspirations. Only 1% thought they would not attain a bachelor's degree, 20% said that they would likely attain a bachelor's degree, and 76% expected to pursue post-baccalaureate education (25% expected to attain a Master's Degree, and 51% expected to attain a professional degree).

Measures

Given the intent to assess both the viability of the seminar format and its ability to influence financial attitudes and behaviors of college students, researchers developed pilot measures for the study. Researchers selected items from existing financial measures based on their match to the seminar content. The objective was to sum items to obtain counts within each category rather than create new scales. Thus, a higher category count reflected more student endorsement and a lower count reflected less student endorsement (see Appendix for a list of items within each category).

Number of Credit Cards

At pre-test, participants were asked to report the number of credit card accounts that they had open. At post-test, they were asked how many credit card accounts they intended to keep open.

Level of Debt

At pre-test, participants reported their current level of debt by type (e.g., credit card loan, student loan, car title loan) and the total dollar amount owed ranging from zero to more than \$50,000.

Financial Knowledge

Participants' knowledge regarding financial matters was assessed at pre-test and post-test. The Financial Knowledge score was computed based on seven items. Participants were asked to indicate whether each of seven items did or did not reflect good financial management practices. Examples of items included were: "Paying off store and other credit cards each month" and "Having a high APR credit card." *Correct responses* were coded 1 and *incorrect responses* were coded 0. Responses were then summed to reflect participants' knowledge regarding financial matters.

Attitudes Toward Credit Cards

Two different attitude constructs were measured: Responsible Attitude Toward Credit Cards and Avoidant Attitude Toward Credit Cards at pre-test and post-test. The Responsible Attitude Toward Credit Cards category comprised three items, including, "an excellent way to establish credit; I use them occasionally with this goal in mind." The Avoidant Attitude Toward Credit Cards category comprised two items, including "an *evil* mechanism that only leads to overspending and bankruptcy; I never use them." Items checked by participants were coded 1; otherwise items were coded 0. Responses were then summed to reflect participants' responsible and avoidant attitudes towards credit cards.

Financial Behaviors

Several items regarding financial behaviors were used to create two separate constructs: Effective Financial Behaviors and Risky Financial Behaviors. The decision to examine effective and risky behaviors as two distinct constructs instead of a bipolar dimension was based on the assumption that it is possible to engage in effective behaviors in one domain but in risky financial behaviors in a different domain. For example, a student might report having saved money regularly, but also spending too much in the last two months. Additionally, a student could report having paid off a credit card in the last two months, but also having more than 10 credit cards open.

Effective Financial Behaviors comprised seven items, including "I have followed a monthly budget" or "I read the fine print on credit card offers and consider the information before applying." If participants indicated that *they engaged in the behavior*, it was coded 1; *otherwise*, the item was coded 0. These items were summed to reflect participants' responsible Effective Financial Behaviors. For the pre-test, items were preceded by the stem, "In the past two months ..." and in the post-test items were preceded by the stem, "In the next two months ..." Risky Financial Behaviors comprised four items. Examples

of these items include “You have gotten a cash advance through a credit card/you intend to get a cash advance through a credit card.” If participants indicated that *they engaged in the behavior*, it was coded 1; *otherwise*, the item was coded 0. These items were summed to reflect participants’ Risky Financial Behaviors. For the pre-test, items were preceded by the stem, “In the past two months ...” and in the post-test items were preceded by the stem, “In the next two months ...”

Results

Number of Credit Cards

On average, participants reported that they had two credit cards ($SD = 1.52$) and that they were the primary cardholder for two cards on average ($SD = 1.29$). There was no significant difference between the mean number of credit cards that participants reported having at pre-test and the number of credit cards that they intended to keep open at post-test.

Level of Debt

At pre-test, 46% of participants reported that they had no outstanding loans, 33% had credit card loans, 33% had student loans, 12% had auto loans, and 8% had mortgage loans. On average, participants reported that they had accumulated \$1,000–2,000 in credit card debt, and \$2,000–\$3,000 in student loan debt (see more detail in Table 1).

To assess the impact of family environment on level of debt, family income and family structure were entered into a series of hierarchical regression equations. Findings show that family structure predicted students’ credit card debt, with students from divorced families reporting higher credit card debt ($b = 2.16$, $P < .05$). In addition, students from higher income families were less likely to be in debt ($b = -.00$, $P < .05$).

Financial Knowledge

The students in this sample had relatively higher Financial Knowledge at pre-test ($M = 6.08$ out of a possible 7; $SD = 1.32$). Thus, it appears that participants’ already had knowledge regarding the financial topics covered in the seminar. It is possible that a seminar on financial topics appealed more to knowledgeable students. Despite the higher level of initial knowledge, participants improved their overall financial knowledge. On average, post-test scores were significantly higher ($M = 6.51$, $SD = .90$, $t[89] = 3.09$, $P < .01$ [one-tailed]).¹ There were no significant effects regarding demographic factors.

¹ Since the subscales were skewed (Kline 1998), we could not assume that the data were distributed evenly and, therefore, conducted one-tailed tests of significance.

Table 1 The number of credit cards owned, kinds and amount of debt, and financial behaviors

Variable	Distribution
<i>Number of credit cards owned (M = 2, SD = 1.52)</i>	
0	26 (28%)
1	34 (37%)
2	10 (11%)
3	9 (10%)
4	11 (12%)
5	1 (1%)
6 or more	2 (2%)
<i>Kind of debt and average amount range</i>	
None	46%
Credit card(s)	33% (\$1,001–\$2,000)
Student loan(s)	33% (\$2,001–\$3,000)
Auto loan(s)	12% (\$2,001–\$3,000)
Mortgage(s)	8% (\$2,001–\$3,000)
Other	2% (\$1,001–\$2,000)
<i>Effective financial behaviors</i>	
“I read the fine print on credit card offers and consider the information before applying”	Yes (81%)
“In the last two months, I have paid off a credit card balance in full”	Yes (51%)
“In the last two months, I have saved for an important event (e.g., wedding, vacation)”	Yes (50%)
“In the last two months, I balanced my check book”	Yes (47%)
“In the last two months, I have followed a monthly budget”	Yes (43%)
“In the last two months, I have saved for a home purchase”	Yes (13%)
“In the last two months, I have invested money in a mutual fund, stocks, IRAs or other investments”	Yes (12%)
<i>Risky financial behaviors</i>	
“For entertainment, when I am out of cash, I usually charge it all on my credit card”	Yes (25%)
“In the last two months, I have exceeded my credit limit on one or more credit cards”	Yes (17%)
“In the last two months, I have gotten a cash advance through a credit card”	Yes (11%)
“In the last two months, I have been contacted by a collection agency”	Yes (9%)

Attitudes Toward Credit Cards

Both Avoidant Attitude Toward Credit Cards and Responsible Attitude Toward Credit Cards were examined. The Pearson correlation analysis revealed a negative relationship between the two attitudes at pre-test, ($r = -.62$, $P < .001$), suggesting that students reporting more responsible attitudes towards credit card use were also more likely to use them.

In addition, t -test results indicated that there was a significant increase from pre-test ($M = 1.33$, $SD = .83$) to post-test ($M = 1.68$, $SD = .84$) on Responsible Attitude Toward

Credit Cards, ($t[75] = -4.80, P < .001$ [one-tailed]). Thus, attending the seminar encouraged participants to view credit card use as a strategy for establishing good credit and encouraged purposeful and limited use. *T*-test results also showed that students' Avoidant Attitude Toward Credit Cards decreased from pre-test ($M = .46, SD = .54$) to post-test ($M = .18, SD = .39$), ($t[55] = 4.04, P < .001$ [one-tailed]). This may indicate that once students understood how to manage credit cards, they were less likely to avoid using them in the future.

A series of ANOVAs was then conducted to examine the association between demographic status and students' attitudes towards credit card use. There was an interaction between gender and ethnicity and Responsible Attitude Toward Credit Cards, ($F[1, 69] = 12.97, P < .01$), with White male students reporting the highest responsible attitude towards credit and White female students reporting the lowest Responsible Attitude Toward Credit Cards (see Fig. 1).

Financial Behaviors

Effective Financial Behaviors

Students who participated in the seminar reported engaging in an average of three Effective Financial Behaviors ($M = 2.54, SD = 1.25$) out of a possible seven at pre-test. The most frequently noted effective behavior was "I read the fine print on credit card offers and consider all sides of the situation before applying for a credit card" (81%). The behavior least likely to be engaged in was "I have invested money in a mutual fund, stocks, IRAs or other investments" (9%; see Table 1). The analyses revealed that participants significantly increased the number of Effective Financial Behaviors they intended to engage in after completing the seminar as compared to the number they reported engaging in at pre-test ($M = 2.60$ and $M = 5.67$ respectively), ($t[91] = -16.35, P < .001$ [one-tailed]). Employed students ($M = 2.89, SD = 1.08$) were no more likely to report engaging in more Effective Financial Behaviors compared to students who were not employed ($M = 2.34, SD = 1.22$ [two-tailed]).

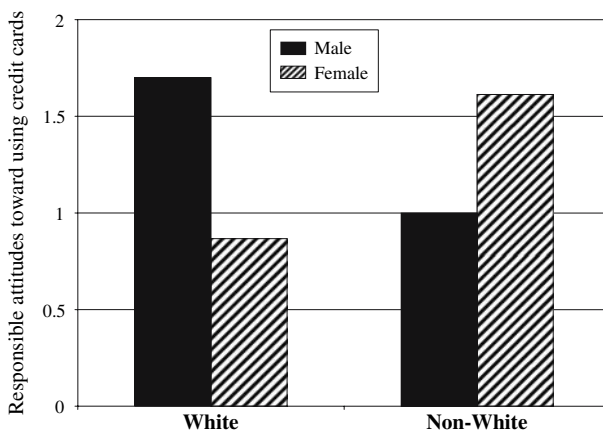


Fig. 1 Responsible attitudes toward credit by gender and ethnicity

Risky Financial Behaviors

Participants generally reported that they had engaged in approximately one, out of a possible four, Risky Financial Behaviors in the last two months ($M = .55$, $SD = .77$; $Median = 0$; $Mode = 0$). The behavior most likely to be reported was “For entertainment, when I am out of cash, I usually charge it all on my credit card (25%; see more detail in Table 1). Participants significantly decreased the number of Risky Financial Behaviors that they intended to engage in when compared to their pre-test levels ($M_s = .55$ vs. $.32$), ($t[91] = 2.64$, $P < .05$ [one-tailed]).

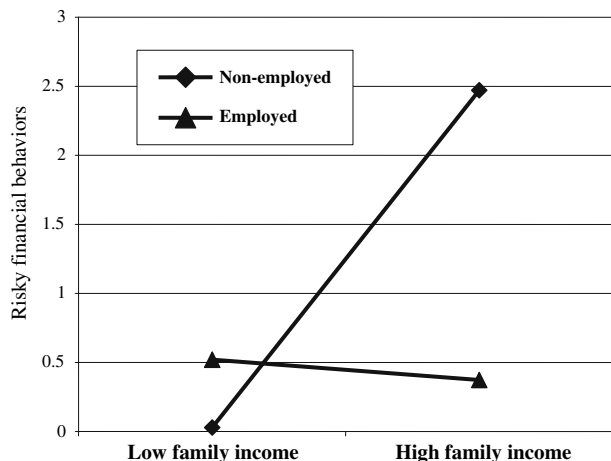
In examining the effects of demographic factors on pre-test Risky Financial Behaviors, there was an interaction between family income level and students’ employment status. In other words, unemployed students from higher income families engaged in more Risky Financial Behaviors compared to unemployed students from lower income families though family income had no effect when students were employed ($F [3, 16] = 3.18$, $P < .05$; see Fig. 2).

Financial Knowledge, Attitudes Toward Credit, and Behaviors

The next set of analyses examined the interrelationships among students’ initial financial knowledge, attitudes toward credit, and their financial behavior. Regarding the relationship between financial knowledge and attitudes towards credit card use, the findings showed that students’ financial knowledge at pre-test was found to predict their avoidant attitude toward credit at pre-test ($b = -.13$, $P < .05$) with students reporting lower financial knowledge more likely to have avoidant attitude toward credit.

When examining the relationship between financial knowledge and behaviors, financial knowledge was not a significant predictor of either effective financial behaviors or risky financial behaviors. Therefore, it appears that simply having knowledge about effective financial practices may not translate into consistent prudent behaviors.

Fig. 2 Risky financial behavior by employment status and family income



Finally, the findings showed a negative association between avoidant attitudes toward credit and risky financial behaviors at pre-test, such that students' with avoidant attitudes toward credit cards were less likely to engage in risky financial behaviors ($b = -.66$, $P < .01$).

Discussion

This pilot study found a one and one-half hour financial seminar to be effective in enhancing students' financial knowledge, responsible attitudes, and their intentions of engaging in more responsible financial behaviors in the future. Specifically, results from this study show that after attending a seminar on basic financial skills, students reported significant changes in their intentions to limit their use of credit cards and to manage their finances in more beneficial ways, including: (a) utilizing several types of savings/investment vehicles within the next year, (b) increasing the number of effective financial behaviors they engage in, and (c) decreasing the number of risky financial behaviors they engage in.

The results of the current study are encouraging and suggest that effective financial education offered in a seminar format may be both convenient and accessible to a wider audience of college students. According to Masud et al. (2004), 90% of the 1,500 college students who participated in a study reported that they were interested in learning about financial management. Given the demands of the academic curriculum, it may be easier for college students to fit a series of brief financial seminars into their schedule rather than a semester-long course. While the seminar format appears to motivate participants' intentions to engage in effective financial behavior, we do not know if a change in attitude would indeed carry-over into their actual behaviors.

The prevention research literature acknowledges that the link between intentions and behavior cannot be assumed by program providers (Norvilitis and Santa Maria 2002). Intentions are defined as self-instructions to conduct a particular behavior (Triandis 1980) and are assumed to influence a behavior (Ajzen 1991). While a causal link has yet to be established, studies repeatedly find positive meaningful associations between individuals' intentions and behaviors (see more detail in Armitage and Conner 2001; Floyd et al. 2000). Further, experimental studies have found positive associations between changed intentions and subsequent behavior change (e.g., Brubaker and Fowler 1990). Hence, we argue that a change in students' intentions to engage in more effective financial behaviors and less risky financial behaviors is indeed an indicator of program effectiveness in enhancing participants' future financial behaviors.

Findings from this pilot study also provide an opportunity to examine the associations among student demographic factors and initial levels of financial knowledge, attitudes, and behaviors. Consistent with previous studies considering the relationship between gender and financial knowledge (e.g., Volpe et al. 1996; Markovich and DeVaney 1997), we found a trend for male college students to show more financial knowledge than female students. However, when we consider both ethnicity and gender, the associations become less clear; white male students showed the most responsible attitudes toward credit card use, followed by non-White female students. However, the association between gender and attitudes was not moderated by ethnicity. Before pursuing this line of investigation further, we argue for a more theoretical understanding of

the social meaning behind financial knowledge and behaviors, for example, the relationships of gender and ethnicity to perceptions of future career opportunities and earnings potential.

In considering previous mixed findings in the relationship between students' employment status and financial behaviors (e.g., Hayhoe et al. 1999; Xiao et al. 1995), we speculated that students who worked for their money would appreciate the effort involved and would thus be more careful about spending it frivolously. We found mixed support for this interpretation. Employed students were no more likely to report more effective financial behaviors compared to unemployed students. However, other findings considering the relationship of student employment and family income on risky financial behaviors suggest that it may be a combination of factors that play a role in students' financial behaviors. Unemployed students from higher income families were more likely to engage in risky financial behaviors compared to unemployed students from lower income families. One possible explanation may be that unemployed students from higher income families can count on parents' support to cover their expenditures, an option not available to students from lower income families (Lea et al. 1993; Lino 1995; Lyons 2004). However, the relationship between family income and risky financial behaviors was no longer significant once students were employed, suggesting that once students are employed, either by choice or necessity, they become more aware of the impact of their financial behaviors. Longitudinal research is needed to consider if students' behaviors actually change once they become employed.

In empirically examining the dynamics among students' financial knowledge, attitudes toward credit cards, and financial behaviors, findings from this pilot study suggest that students who know more about basic financial management and use credit cards effectively are less likely to have avoidant attitudes toward using credit cards. An interesting companion finding is that students with higher avoidant attitudes toward credit cards report fewer risky financial behaviors. It is possible that improved knowledge about the pros and cons of credit card use is a Pandora's box—removing the fear associated with using credit cards may promote more risky financial behaviors. However, it is also possible that the items used in the study for the two categories are not equivalent. Risky financial behavior assessed risks in using credit cards; whereas, avoidant attitudes toward credit cards assessed not using them at all (see Appendix). This is an important question for future research.

Although the relationship between financial knowledge and behaviors at pre-test was not significant, students with more initial financial knowledge do report intending to engage in effective financial behaviors in the future. It is possible that students' responses reflect what they hear. However, it is also possible that a financial seminar reminds students of the importance of responsible financial behaviors. If this is the case, then more frequent financial seminars may be effective in promoting financial well-being in college students. It is also possible that students who choose to attend financial seminars need help in managing their current financial situation. Some researchers have argued that college students who have financial debt or difficulties are more likely to seek financial knowledge and education because they need to improve their financial situation (Hayhoe et al. 1999; Walker 1996). We conducted additional analyses to see if this might be the case in this study by examining the associations among students' financial debt, knowledge, and intentions for engaging in effective financial behavior. However, our findings do not support this interpretation.

Limitations and Directions for Future Research

While the findings of this study provide valuable information on ways to improve the financial management skills of college students, they must be considered in light of study limitations. One limitation is the timing of the pre- and post-test surveys. Since the post-test was administered right after the seminar, it is not possible to examine participants' actual financial behaviors and, thus, understand the full impact of the seminar. Although intentions may have strong associations with future behaviors (see review by Webb and Sheeran 2006), testing this relationship requires data from a longer term follow-up.

Further, the present study does not consider the possible role that current circumstances play on actual behaviors. Credit cards, for example, may be used to handle immediate financial needs; such, as unexpected expenses, or disruptions to ongoing financial support (Davies and Lea 1995; Lyons 2004). Thus, individuals who intend to reduce their credit card use may continue to overuse credit cards if they lack the resources to cover immediate expenses. An important consideration for future research is to examine whether current financial circumstances moderate the link between intention and financial behaviors.

Finally, many studies have found that college students use their credit cards on everyday purchases for the sake of convenience (Cunningham 2000; Davies and Lea 1995; Hayhoe et al. 2000; Holub 2002; Roberts and Jones 2001; The Education Resources Institute 1998). We are not aware of any studies that examine the trade-off between the cost of convenience and the cost of using credit cards. This would be an interesting and important perspective to consider in future studies.

Implications

Financial experts and researchers have called for regular financial education courses on campus. However, current academic pressures may make it difficult for general education students to include such courses in their schedule. Thus, seminars or workshops that target specific financial topics may be an attractive alternative for improving students' financial knowledge, attitudes, and behaviors. Indeed, Schreiner et al. (2002) found financial classes with shorter hours to be more effective in increasing savings of participants than classes with longer hours (e.g., 8–10 h). Further, when asked about receiving financial education, most college students stated a preference for receiving information through pamphlets/handouts or through on-line services (Lyons 2004), suggesting that short and easily accessible methods may be more appropriate in reaching college students.

If easier-access and shorter-duration formats attract and motivate college students more effectively than conventional classes, then it is important for financial experts and educators to consider how to package financial content appropriately. Shorter and more accessible formats may offer an attractive, affordable and effective alternative, both for college students and for educators, particularly for introductory information on personal finance.

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Appendix

Table A1 Measurement of variables

Variable	Measure
<i>Debt</i>	
The number of loans	Sum of credit cards, auto loan, student loan, mortgage, loans from pawnshops, paycheck loans, or car title loans
The amount of debt	Total amount of each type of loan
<i>Financial knowledge</i>	
Making payments on time	1 If checked for good practice; 0 otherwise
Paying off store and other credit cards each month	1 If checked for good practice; 0 otherwise
Having a high APR credit card	1 If checked for not good practice; 0 otherwise
Exceeding credit limits	1 If checked for not good practice; 0 otherwise
Owning financial assets (e.g., Roth IRA, saving accounts, stocks, bonds)	1 If checked for good practice; 0 otherwise
Bouncing checks (NSF)	1 If checked for not good practice; 0 otherwise
Having more than 10 credit cards from stores, banks, etc	1 If checked for not good practice; 0 otherwise
<i>Avoidant attitudes toward credit</i>	
I regard credit cards as <i>evil</i> mechanisms that only lead to overspending and bankruptcy; I never use them	1 If checked; 0 otherwise
As I've never had a credit card, I can't answer	1 If checked; 0 otherwise
<i>Responsible attitudes toward credit</i>	
I regard credit cards as ...	
a resource I use in case of an emergency in case of an emergency	1 If checked; 0 otherwise
a convenient mechanism for purchases when I don't have any cash handy, or when I am traveling	1 If checked; 0 otherwise
an excellent way to establish credit; I use them occasionally with this goal in mind	1 If checked; 0 otherwise
<i>Risky financial behavior</i>	
In the past 2 months, I have ...	
gotten a cash advance through a credit card	1 If checked; 0 otherwise
been contacted by a collection agency	1 If checked; 0 otherwise
exceeded my credit limit on one or more credit cards	1 If checked; 0 otherwise
For entertainment, when I am out of cash, I usually charge it all on my credit card	1 If checked; 0 otherwise
<i>Effective financial behavior</i>	
In the past 2 months, I have In the past 2 months, I have ...	
paid off a credit card balance in full	1 If checked; 0 otherwise
followed a monthly budget	1 If checked; 0 otherwise
balanced my check book	1 If checked; 0 otherwise
invested money in a mutual fund, stocks, IRAs or other investments	1 If checked; 0 otherwise
saved for a home purchase	1 If checked; 0 otherwise

continued

Variable	Measure
saved for an important event (e.g., wedding, vacation)	1 If checked; 0 otherwise
I read the fine print on credit card offers and consider the information before applying	1 If checked; 0 otherwise

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