Personality Factors, Money Attitudes, Financial Knowledge, and Credit-Card Debt in College Students[1]

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The issue of credit-card debt among college students has received increasing attention. This study explored factors hypothesized to be causes and effects of credit-card debt in 448 students on five college campuses. Students reported an average of $1,035 ($SD$ = $1,849) in debt, including students without credit cards or credit-card debt. Lack of financial knowledge, age, number of credit cards, delay of gratification, and attitudes toward credit-card use were related to debt. Sensation seeking, materialism, the Student Attitude Toward Debt scale, gender, and grade point average were not unique predictors of debt. Students reporting greater debt reported greater stress and decreased financial well being. Results highlight the need for comprehensive financial literacy education among college students.

Credit-card debt among college students has become an increasing concern in recent years. Newspapers and magazines cover the topic on a regular basis, and legislators seek ways to stem the tide of indebted students. Although there is a great deal of data indicating that students are in debt, little is known about why students fall into debt. The present study explores the relative weight of personality factors, attitudes toward money and possessions, and financial knowledge as predictors of credit-card debt among college students.

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According to the Survey of Consumer Finances from the Federal Reserve Board (2003), 76% of families hold credit cards and 44% of families have credit-card debt. The median debt held by families was $1,900 in that survey. College student debt is comparable.

In Nellie Mae's (2002) Credit Card Usage Analysis, it was reported that the median credit-card balance among college students was $1,770, with a mean credit-card balance of $2,327. Smaller studies have found similar rates. For example, Norvilitis, Szablicki, and Wilson (2003) reported a mean student credit-card balance of $2,067; and Manning (1999) found a mean balance of $2,226. In his study, which was funded partially by MasterCard®, Staten (2002) disputed these amounts, finding that the mean balance of student accounts was just $552. However, Stanton only examined debt in one active account. This is likely to be an underestimate because students may have more than one active account.

Staten (2002) also argued that credit-card limits are lower for student accounts than for nonstudent, young-adult accounts; thus, students cannot acquire as much debt as nonstudents. Despite the fact that credit-card balances are lower among college students than among older adults, the problem actually may be more severe among students because of their lower income levels.

Norvilitis et al. (2003) found that the mean debt-to-income ratio for college students was .24. That is, students owed roughly 24% of their yearly income in current credit-card debt. This appears to exceed that of the general public. The Federal Reserve Board (2003) study found that credit-card debt comprises just 3.4% of family debt, which includes mortgages and installment loans, and that all debt as a percentage of family assets is 12.1%.

Credit-card debt has negative psychological repercussions for students. High levels of debt are related to a decreased sense of ability to manage one's money and lower self-esteem (Lange & Byrd, 1998), as well as a decreased sense of financial well-being and higher levels of overall stress (Norvilitis et al., 2003). Furthermore, students who have considered dropping out of school for financial reasons are more likely to report poorer mental health and social functioning (Roberts, Golding, Towell, & Weinreb, 1999).

Of course, not every student acquires a credit card, and not every student with a credit card falls into debt. Nellie Mae (2002) estimated that 83% of undergraduates have at least one credit card. Norvilitis et al. (2003) found that 32% of the college students they surveyed paid off their debts monthly, while the Education Resources Institute's (ERI) Credit Risk or Credit Worthy study found that 59% of students regularly pay off their credit cards (ERI, 1998). Furthermore, most students appear to have realistic attitudes toward credit cards and the repayment of money (Warwick & Mansfield, 2000).

Thus, the issue becomes one of identifying what factors place a person at risk for developing problems with credit-card debt so that interventions may be targeted at the appropriate individuals. We propose that risk factors may fall into one of three categories: financial knowledge and attitudes, personality characteristics, and demographic or situational factors. Of these, knowledge is rather straightforward: Those who do not have the necessary knowledge are not going to be able to make informed decisions. Similarly, demographics and situational factors (e.g., year in college) may predispose individuals to debt.

Financial attitudes and personality factors are somewhat more complex theoretical issues. We argue that students who desire many material possessions and who possess certain personality characteristics—such as an increased likelihood to make impulsive purchases—will be more likely to acquire credit-card debt. This is likely to be related to the relationship between subjective well-being and income that was studied by Diener and Biswas-Diener (2002), who reported that those whose income allows them to satisfy their desires report greater well-being.

Financial Knowledge and Attitudes

High school seniors know little about finances. The JumpStart Coalition for Financial Literacy surveys 12th graders every 5 years to assess knowledge of credit cards and other financial topics (e.g., insurance, banking, retirement funds). In the most recent administration, just 50.2% of questions were answered correctly (JumpStart Coalition for Financial Literacy, 2002).

Although there is no corresponding survey for college students, it appears that those students may not know much more. For example, in a study of 381 college students, few were able to report the current interest rate of their credit cards, though most were able to report their current balance (Warwick & Mansfield, 2000). Furthermore, students without debt underestimate the length of time that it would take to repay debt with interest, although there is some evidence to suggest that this can be improved with education (Lewis & van Venrooij, 1995; Seaward & Kemp, 2000), suggesting that they might not understand the implications of acquiring debt. Those who overestimate their future income are more likely to be in debt (Seaward & Kemp, 2000). These studies have suggested that those who go into debt might not understand the implications of their financial behavior. Those in debt do, however, rate their money-management skills more poorly than do nondebtors (Lea, Webley, & Walker, 1995), indicating that they have a degree of self-awareness about their lack of knowledge, although these

findings are somewhat tempered by the fact that there is a social-desirability issue with reporting money-management skills.

Compounding the problem, prior research has found that those with more liberal attitudes toward credit use are more likely to be in debt (Livingstone & Lunt, 1992). Furthermore, tolerant attitudes toward debt appear to increase after students become indebted (Davies & Lea, 1995), indicating that there may be a cyclical relationship between debt and pro-debt attitudes.

Finally, possession of a credit card may facilitate spending among students, regardless of debt-tolerant attitudes. Feinberg (1986) examined spending-behavior differences between people paying with credit cards or with cash in both observational and laboratory settings. His results indicate that those with credit cards spent less time and more money in making purchase decisions. Thus, it may not be simply that credit cards allow students to get into debt easily. Feinberg argued that they may elicit increased spending also. It is noteworthy, though, that Hunt, Florsheim, Chatterjee, and Kernan (1990) failed to replicate this finding.

Personality Characteristics

Researchers have attempted to identify personality characteristics that are related to the accumulation of debt. The results of these studies have been conflicting and, to date, have not pointed to any one personality characteristic that is clearly indicated as a risk for debt. Most studies have included some demographic factors in their analyses, but, as with personality factors, few consistent findings have emerged.

The role of locus of control in debt is tenuous at best. Specifically, Lea et al. (1995) and Norvilitis et al. (2003) found no relationship between locus of control and amount of debt in college students. Livingstone and Lunt (1992), however, found among British adults that a high internal locus of control was associated with low debt; and Hira, Fitzsimmons, Hafstrom, and Bauer (1993) reported that internal locus of control was associated with optimism about one's financial future.

Self-esteem has been investigated also. It is unclear whether low self-esteem causes people to acquire debt, whether debt decreases self-esteem, or whether a third variable is at work. Nonetheless, students reporting financial strain also report lower self-esteem (Lange & Byrd, 1998). Furthermore, compulsive spenders also report lower self-esteem (Hanley & Wilhelm, 1992).

Impulse problems may play a role in the creation of debt, but the nature of that role is unclear. Self-reports have revealed that those with high levels

of debt report a lack of self-control and the inability to delay gratification and the pleasure experienced when spending (Livingstone & Lunt, 1992; Lunt & Livingstone, 1991; O'Guinn & Faber, 1989). More specifically, O'Guinn and Faber reported that compulsive buyers were more likely to hold more credit cards, to be closer to their credit limits, and to be less likely to pay off their credit cards each month.

Furthermore, those with high levels of self-control are more likely to save money and to spend less money (Baumeister, 2002; Romal & Kaplan, 1995) and are less likely to engage in impulsive spending (Strayhorn, 2002). However, debt was not associated with measures of impulsivity or of impulsive spending (Boddington & Kemp, 1999; Norvilitis et al., 2003). Finally, those reporting high materialism have been found to have more positive attitudes toward credit-card use, but that group did not report a greater overall debt level than participants scoring low on materialism (Pinto, Parente, & Palmer, 2000).

Demographic and Situational Factors

The role of gender in debt is unclear. For example, women are more likely to report having a budget than are men (Henry, Weber, & Yarbrough, 2001) and are more likely to report using sound financial practices (Hayhoe, Leach, Turner, Bruin, & Lawrence, 2000). Conversely, others have found that women have more credit cards than do men (Armstrong & Craven, 1993, as cited in Hayhoe et al., 2000), that men score higher on a test of financial knowledge (Goldsmith, Goldsmith, & Heaney, 1997), and that women have higher levels of debt (Davies & Lea, 1995).

Year in college appears to be another predictor of level of debt, with debt increasing with each year in college (Boddington & Kemp, 1999). Furthermore, age appears to be a separate predictor from college year of the number of credit cards held and attitudes toward debt (Davies & Lea, 1995; Hayhoe, Leach, & Turner, 1999). Specifically, as students age, they become more tolerant of debt and acquire more credit cards. Other research has found that younger individuals are more optimistic about their financial futures (Hira et al., 1993), perhaps indicating that they may be more willing to take on debt because they expect to be able to repay it.

Only one study to date has examined the relationship between performance in school and credit-card debt. Pinto, Parente, and Palmer (2001) reported that academic performance was not related to level of debt. However, high achievers were more likely to report anxiety related to debt. Finally, the number of credit cards held and the frequency of use also have been found to be predictive of debt (Davies & Lea, 1995).

The Present Study

Few studies have attempted to examine all three sets of risk factors simultaneously: financial knowledge and attitudes, personality factors, and demographic factors. In the present study, multiple measures of these risk factors are included in an attempt to identify the most predictive factors of student credit-card debt. We examine several hypotheses:

> *Hypothesis 1*. Financial knowledge will be related negatively to debt and that tolerant attitudes toward debt and credit-card use will be related positively to debt.
>
> *Hypothesis 2*. Higher levels of compulsive spending, materialism, and delay of gratification will predict greater levels of debt. Although no previous studies have reported the influence of sensation seeking, we hypothesize that those who are easily bored and who seek novel experiences will be more likely to acquire debt.
>
> *Hypothesis 3*. The following demographic variables will predict greater debt: larger number of credit cards, more hours worked each week (to pay off debt), greater spending when students go out on weekends, reported frequency of credit-card use, lower grade point average, greater age, and later year in school.
>
> *Hypothesis 4*. Those who report greater debt also will report higher levels of stress and lower levels of perceived financial well-being.

Thus, the primary goals of the present study are to examine the specific personality, financial knowledge, and demographic risk factors for credit-card debt and to determine the relative contribution of these factors to credit-card debt.

Method

Participants

The participants were 448 students from five colleges in three states in the midwestern, northeastern, and southern United States. Two of the colleges are medium-size state universities ($n = 182$). The other three colleges are private, religiously affiliated, liberal-arts colleges ($n = 266$; see Table 1 for demographics).

Table 1

Demographics at State and Private Colleges

	State ($n = 182$)		Private ($n = 266$)		Total ($N = 448$)	
	n	%	*n*	%	*n*	%
Gender (female)	147	80.8	192	72.2	339	75.7
Age						
18–19	14	7.7	23	8.7	37	8.3
20–21	77	42.3	190	71.4	267	59.6
22–23	46	25.3	38	14.3	84	18.8
24–25	16	8.8	5	1.9	21	4.7
26 or older	28	15.4	11	4.1	39	8.7
Year in school						
Freshman	1	1.0	7	2.6	8	1.8
Sophomore	30	16.5	19	7.1	49	10.9
Junior	55	30.2	92	34.6	147	32.8
True senior	68	37.4	140	52.6	208	46.4
Fifth year or beyond	27	14.8	9	3.4	36	8.0
Ethnicity						
White	144	79.1	249	93.6	393	87.7
African American	24	13.2	8	3.0	32	7.1
Hispanic	7	3.9	2	0.8	9	2.0
Asian	4	2.2	6	2.2	10	2.2
Native American	2	1.1	1	0.4	3	0.7
	M	*SD*	*M*	*SD*	*M*	*SD*
Debt	$1,374	2,254	$795	1,456	$1,035	1,849
Income	$9,765	12,128	$6,577	8,009	$7,892	10,026
Debt-to-income ratio	0.38	1.68	0.26	1.12	0.31	1.37

There were more men ($n = 74$) in the private college sample, $\chi^2(1, N = 447) = 4.80$, $p < .05$. Measured categorically because of the limitations of data collection, students at the state schools were older than students at the private colleges, $\chi^2(4, N = 448) = 49.25$, $p < .001$, and there

were more non-White students at the state schools, $\chi^2(4, N = 447) = 24.28$, $p < .001$.

The study specifically recruited sophomores or older because they would have had time to accumulate credit-card debt. Of the participants in the study, 8 (2%) were first-year students with sophomore standing in credit hours. The students at the state colleges were more likely to be fifth-year seniors, and 7 of 8 of the freshmen were from the private colleges, $\chi^2(4, N = 448) = 35.00$, $p < .001$.

Materials and Procedure

Participants were approached in their classes and asked to participate in a cross-campus research study of college students' attitudes and beliefs on a number of personal topics, including credit cards and credit-card debt. Following written consent, participants were given a 173-item omnibus questionnaire, containing the following scales, to be completed outside of class and returned at the next session.

Faculty members at the five colleges awarded extra credit for participation at their own discretion. The refusal rate is impossible to know because students in the classes were not required to take a questionnaire. Thus, we cannot report a response rate confidently.

Financial status and credit-card use. Students answered 35 questions about their credit-card use and financial status. Questions include information such as number of major and store credit cards held (e.g., Visa® and Master Card, or Sears and Mobil, respectively), whether credit cards are used to pay for tuition, types of purchases for which they use their credit cards (e.g., gas, emergencies, clothes), and how long it will take to pay off their credit cards. Students were provided a place to report current credit-card debt and current yearly income. Reported income included all sources of money: parental support, summer jobs, school year employment, and so forth.

The Financial Well-Being Scale (Norvilitis et al., 2003) assesses students' perceived financial health. This eight-item measure is rated on a 5-point Likert-type scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Questions include "I think a lot about the debt I am in," and "I think I am in good financial shape." In the initial article, Cronbach's alpha was found to be acceptable ($\alpha = .74$).

The Credit Card Use Scale (Roberts & Jones, 2001) is a 12-item measure used to assess credit-card behavior, such as going over the credit limit, paying off the card each month, and making only the minimum payment on the card. Responses are recorded on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). In the initial study, Cronbach's alpha was adequate ($\alpha = .77$).

Attitudes toward debt. Students completed a measure of student attitudes toward debt (Davies & Lea, 1995). This scale is a 14-item measure that is scored on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). The scale is designed to assess debt tolerance in college students. Higher scores indicate greater tolerance of debt. The authors report Cronbach's alpha of .79. Further as evidence of validity, the authors report that the scale was related to overall level of debt.

Financial knowledge. The JumpStart Coalition for Personal Financial Literacy (2002) periodically surveys high school seniors to assess their knowledge of credit cards, insurance, and other personal finance topics. This is a broad-based, 33-item, multiple-choice instrument that was developed by Lewis Mandell of the University at Buffalo and that assesses overall financial knowledge. Nine of the items specifically address debt or credit.

Psychological measures. The stress subscale of the Depression Anxiety Stress Scale (DASS; Lovibond & Lovibond, 1995) was used to measure overall perceived stress. The DASS is a 14-item measure that is rated on a 4-point scale ranging from 0 (*did not apply to me at all*) to 3 (*applied to me very much or most of the time*). Higher scores indicate more stress. The scale has satisfactory psychometric properties (Lovibond & Lovibond, 1995).

The Brief Sensation-Seeking Scale (Hoyle, Stephenson, Palmgreen, Lorch, & Donohew, 2002) is an eight-item measure designed to succinctly assess boredom susceptibility, experience seeking, thrill and adventure seeking, and disinhibition. Items are scored on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Hoyle et al. reported an internal consistency reliability of .76.

The Delay of Gratification Scale (Ray & Najman, 1986) is a 12-item measure that is scored either *Yes*, *No*, or *Unsure*. The scale covers deferment of gratification in purchases, as well as in other areas (e.g., "Would you describe yourself as often being too impulsive for your own good?"). Ray and Najman (1986) reported an acceptable internal consistency of the scale ($\alpha = .72$).

The Materialism Scale (Richins & Dawson, 1992) examines three factors related to materialism: centrality, pursuit of happiness, and possession-defined success. The 18-item scale is scored on a 5-point scale ranging from 1 (*strongly agree*) to 5 (*strongly disagree*). Richins and Dawson reported an internal consistency alpha ranging from .80 to .88, and a 3-week test–retest reliability of .87.

The Compulsive Buying Scale (Faber & O'Guinn, 1992) is a seven-item measure designed to explore the behaviors, motivations, and feelings associated with compulsive spending. The measure is rated on a 5-point scale ranging from 1 (*never*) to 5 (*very often*). Cronbach's alpha was high ($\alpha = .95$).

Results

Current Financial Status

When the students were asked how many major bank credit cards they have, 16 (26%) reported not having any, 184 (41%) had one, 91 (20%) had two, 33 (7%) had three, and 24 (5%) had four or more. Regarding store credit cards, 231 (52%) reported that they did not have any store credit cards, 67 (15%) had one, 64 (14%) had two, 41 (9%) had three, and 43 (10%) had four or more. A total of eight students (2%) reported having four or more of both major and store credit cards. There were no differences between the state and private colleges on either number of major credit cards, $\chi^2(4, N = 448) = 3.88$, $p > .05$; or store credit cards, $\chi^2(4, N = 446) = 2.40$, $p > .05$, credit cards.

The average current credit-card debt among all students who reported their debt ($n = 400$) was \$1,035 ($SD = 1{,}849$). When students without credit cards were excluded, the average credit-card debt rose to \$1,401 ($SD = 2{,}057$). Of the 371 participants reporting income, the average yearly income was \$7,892 ($SD = 10{,}026$). The mean debt-to-income ratio for all students was 0.31 ($SD = 1.37$). The debt-to-income ratio for only those students who have credit cards was 0.42 ($SD = 1.59$).

Overall, debt represents about 30% of the average student's yearly income. Students at the state schools reported both greater debt, $t(398) = 3.12$, $p < .01$; and greater income, $t(369) = 3.05$, $p < .01$, than did students at the private schools. There was no difference in the debt-to-income ratio between public and private colleges, $t(350) = 0.78$, $p > .05$. There was no gender difference in credit-card debt: men, $M = \$874$, $SD = 1{,}553$; women, $M = \$1{,}085$, $SD = 1{,}935$; $t(397) = 0.97$, $p = .33$.

Credit-Card Use

Students were asked to report how frequently they use their credit cards for 13 categories of items. All of the categories were rated on a 5-point scale ranging from 1 (*never*) to 5 (*often*). The most popular purchase was gas, with 100 (22%) students saying that they use their credit cards *sometimes* or *often* for gas. That was followed by clothes or shoes ($n = 89$; 20%), groceries ($n = 59$; 13%), and restaurant food ($n = 40$; 9%). Most students ($n = 399$; 89%) indicated that they do not use their credit cards for tuition. Further, 215 (48%) indicated that they do not use their credit cards for their textbooks.

Financial Knowledge

Number correct on the JumpStart scale (JumpStart Coalition for Personal Financial Literacy, 2002) ranged from 3 to 31, with an average of 60% correct ($M = 19.66$, $SD = 4.87$). Only 1 student scored above 90%. Students at the state schools ($M = 20.21$, $SD = 4.80$) performed marginally better than did students at the private schools ($M = 19.27$, $SD = 4.89$), $t(400) = 1.93$, $p = .06$. This is slightly higher than the 50.2% that is the mean score for high school students. Women ($M = 19.98$, $SD = 4.49$) performed better than did men ($M = 18.74$, $SD = 5.75$), $t(399) = 2.15$, $p < .05$.

Although there are differences between the private and state college students, for the remainder of the analyses, all data will be combined to provide a picture of credit-card debt in a broad group of college students.

Attitudes Toward Debt

Beliefs about debt and income. Students were asked both about how long it will take them to pay off their credit-card debt and how long they think it will take the average student to repay credit-card debt. Responses on the 5-point scale ranged from *I (or the average student) will pay it off this month or next* to *I (or the average student) will pay it off more than 2 years after college graduation*. The *average student* response was subtracted from their personal responses to create a composite score that ranged from -4 to + 4.

Of those students with debt, 266 (73%) believed that it would take them less time than the average student to get out of debt. An additional 75 (21%) thought that it would take them the same amount of time that it would take the average student, and only 22 (6%) thought that it would take them longer than the average student to get out of debt.

A similar calculation was computed for expected income and the average student's income immediately after graduation. In this case, 103 (23%) expected that they would be earning less than average, 192 (43%) thought that they would be earning the average amount, and 151 (33%) thought that they would earn more than the average student. Among those with debt, 50 (18%) thought that they would be earning less than average, 113 (47%) thought that they would be earning the average amount, and 76 (32%) thought that they would earn more than the average student.

Getting out of debt. When asked what they would do if they found themselves in a great deal of debt (over $10,000), 203 (45%) said that it was likely or very likely that their parents would help them out. When asked what action they would be most likely to take, 254 (57%) said that they would pay what they could during college, but plan to pay the rest off after

graduation. Asking parents for assistance was the second most popular option ($n = 103$; 23%).

Predictors of Debt

In order to determine the relative contribution of personality, financial knowledge, and demographic factors in predicting debt, we conducted multiple regression analyses with these factors as the predictor variables and amount of debt as the criterion variable. Multiple regression analyses allow for a determination of which predictors, and in what order, are important in explaining variance in the criterion. The beta weight associated with each predictor provides a measure of its relative contribution.

Two separate backward regression analyses were conducted to examine predictors of debt: those hypothesized to be related to the cause or onset of credit-card debt, and those thought to be caused by debt. In the first regression analysis, the following variables were entered: gender, number of major credit cards, number of store credit cards, number of hours per week students work, amount that students report spending on weekends, frequency of credit-card use, grade point average (GPA), age, year in school, lack of financial knowledge, materialism, student attitudes toward debt (i.e., debt tolerance), sensation seeking, delay of gratification, compulsive buying, credit-card use (negative money practices; e.g., not paying off cards each month), and the belief that one will earn more than the average student after graduation. Significant predictors of debt were number of major credit cards, age, lack of financial knowledge, delay of gratification, and credit-card use ($R = .51$, $R^2 = .26$, adjusted $R^2 = .25$), $F(5, 259) = 18.53$, $p < .001$ (see Table 2 for a summary).

The second regression analysis examined those variables predicted to be related to the effects of debt. These effects are perceived financial well-being, overall stress, and the belief that it will take longer than the average student to pay off credit-card debt. All three were significant predictors, such that higher levels of debt are related to low financial well-being, higher levels of stress, and projected longer periods of debt ($R = .45$, $R^2 = .20$, adjusted $R^2 = .20$), $F(3, 312) = 26.45$, $p < .001$ (see Table 3 for a summary).

Discussion

Many college students incur significant debt while in school. Although many students in our study (36% of those with credit cards) report paying off their credit cards monthly, the average debt among all students was over $1,000, and the debt-to-income ratio was .31. Thus, credit-card debt among

Table 2

Summary of Regression Analysis of Personality Factors Predicting Onset of Debt

	B	*SE B*	β	*t*	α
Included variables:					
Number of credit cards	508.98	109.48	.26	4.65	$<.001$
Age	501.31	108.54	.25	4.62	$<.001$
Delay of gratification	75.11	22.96	.20	3.27	$<.01$
Credit-card use	39.29	16.51	.15	2.38	$<.05$
JumpStart*scale	58.94	25.75	.13	2.29	$<.05$
Excluded variables:			Beta in	*t*	α
Grade point average			.03	0.50	.62
Hours worked			.02	0.33	.74
Student attitudes to debt			.05	0.91	.37
Frequency of card use			.05	0.98	.33
Gender			.01	0.12	.90
Belief in future income			.05	0.89	.38
Weekend spending			.09	1.54	.13
Year in school			.08	1.42	.16
Compulsive buying			.09	1.14	.25
Materialism			.08	1.32	.19
Number of store cards			.07	1.26	.21
Sensation seeking			.09	1.62	.11

*JumpStart Coalition for personal Financial Literacy (2002).

college students, though not an issue for all students, is one that requires research and intervention. In the present study, we sought to identify who is at risk for debt so that future researchers can tailor interventions to reduce that risk. In addition, the present study confirmed and clarified results of previous studies. We found several factors related to college student debt.

First, financial knowledge is critical. It is one of the strongest predictors of debt and is also one of the most amenable to change. College students, who are arguably a more select group than the general population of high school seniors assessed by JumpStart (JumpStart Coalition for Financial Literacy, 2002), do not know much more about finances than has been

Table 3

Summary of Regression Analysis of Factors Predicting Effects of Debt

Variable	*B*	*SE B*	β	α
Financial well-being	94.23	14.28	.37	$<.001$
Projected debt repayment	264.87	74.83	.19	$<.001$
Overall stress	22.30	11.18	.11	.05

reported for high school students. According to the present study, that lack of knowledge is related directly to debt. This result is even more striking because only 9 of the 33 items measuring financial knowledge dealt directly with credit or debt. This indicates a broad lack of knowledge that may affect areas beyond debt alone, such as retirement savings.

The number of credit cards also is related to increases in debt. This supports Feinberg's (1986) contention that credit cards facilitate spending by their mere presence. Indeed, in this case, the number of credit cards predicts debt independent of financial literacy and spending attitudes.

Attitudes toward possessions and spending are also important predictors of debt. Delay of gratification and credit-card use habits each uniquely predict debt, supporting and expanding on previous work by Livingstone and Lunt (1992) and Lunt and Livingstone (1991), O'Guinn and Faber (1989), and Pinto et al. (2000). Thus, financial literacy may reduce debt, but other personality factors also are related to debt.

Further, most demographic variables, with the exception of age, were not predictive of debt. Age is a logical predictor, because older students have had more time to accumulate debt. On the other hand, number of hours worked each week and GPA were not significant predictors.

The role of gender remains unclear. Although debt did not vary between males and females, the relative importance of each of the predictors varied slightly. This indicates that it may be difficult to target financial education to specific populations on campus. Because all students will eventually age, students, demographically speaking, are all equally at risk.

Finally, as a group, students expected that they would earn more and pay off debt more quickly than the average person. Although one could argue that students were merely estimating future income, it is noteworthy that they responded in a very optimistic manner. Future earning potential was not assessed through this study, but we assume that students represented a broad range of future earners. This unrealistic optimism is in keeping with prior research indicating that students rate their chances of positive events as

greater than the average student and negative events as less likely than the average student (Weinstein, 1980). As Weinstein's work demonstrated, educating students about their status as compared to others may be able to reduce, though most likely not eliminate, this bias.

Future income is clearly important. Students who realistically expect to have higher incomes could reasonably tolerate more debt because they will be able to pay it off in the future. What is critical here is the identification of what is unrealistic optimism and what is achievable.

The present study does have some limitations that temper the conclusions that can be drawn. First, although designed to be comprehensive, time limitations dictated that not all potentially related variables could be included. Future research may wish to examine other personality factors not addressed in this project. Of particular note, the roles of locus of control and self-esteem are unclear and should be investigated further.

Other financial variables also will be of interest in the future. For example, we did not explore students' credit limits or when they received their first cards. We did not ask in detail about how they would expect their parents to assist them or if, in fact, their parents actually had helped them. We also did not ask students to break down the sources of their income, such as summer jobs, support from parents, and school year employment. Still another issue for future research is how students' families' financial backgrounds may have affected their perceptions. These issues may well be important to the perception and repayment of debt.

Second, we did not have a broad range of colleges in our study. No large universities participated and, although the study was geographically diverse, there were no western colleges in the study. Therefore, our findings may not be applicable to these types of institutions.

Third, social desirability may have affected some of our results. Students may have been unwilling to report debt or their true attitudes about money.

Nonetheless, there are implications that can be drawn from the current study. Clearly, college student credit-card debt is not an issue that is singly caused. Instead, students in debt have several risk factors, including knowledge, personal expectations about future income, and attitudes toward money and spending. Thus, solving the problem of credit-card debt will require more than just a brief informational session.

The issue of consumer debt among college students will not be solved through current policies. For example, information provided to students when they apply for credit cards does not appear to solve the problem. The Public Interest Research Group (PIRG, 1998) found that 59% of student credit-card holders found the educational materials provided with applications to be not helpful or "unreadable." PIRG recommended that colleges should alter the way students apply for cards on campus. For example, they

recommended that students should not be allowed to receive gifts for applying until after they have read a credit-card educational brochure.

Furthermore, at present, there is no standard for educating students about money. According to the National Institute for Consumer Education (NICE, 1996), more than half of states have a policy about consumer education in the schools. However, great variability exists in the requirements and in programs offered, with few programs being evaluated systematically and many programs being created by the credit-card companies themselves.

It is encouraging that three quarters of students have reported thinking about trying to manage their money (American Savings Education Council [ASEC], 1999) and that, when offered information on credit-card debt, over half of students requested that information (Norvilitis et al., 2001). This suggests that students want help with such issues. The present study highlights the need for this comprehensive financial education. Although colleges may argue that this is not their responsibility, credit-card debt clearly impacts students' psychological well-being and stress levels and, according to Roberts et al. (1999), may be a factor in retention decisions.

Future research should develop and longitudinally assess the efficacy of financial literacy programs for college students. Because debt was related to multiple factors, not just financial knowledge, the present study suggests that those who design such programs should include both educational and financial value components, rather than education alone, as suggested by Sumarwan and Hira (1993). The programs should also include a piece on self-control, as research has indicated that self-control may be improved with exercise (Baumeister & Exline, 2000). Furthermore, included with the education and values clarification should be a discussion about expectations of future income and debt repayment.

It is unrealistic to expect that students will not acquire credit cards. Credit-card debt, though not a given for all students with credit cards, is a very real problem for many students. As found in the present study, it is multiply caused and will likely have multiple solutions. Thus, a larger dialogue, informed by research, must begin about reasonable standards for financial education and debt management for college students.

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