Financially at Risk: A look at College Students' Credit Card Usage

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Recently we have seen a dramatic increase in the number of reports/attention paid to the financial position of college students. This critical financially-at-risk (FAR) status has gained particular attention in the last decade when we had encountered Great Recession and employment rates rose to record levels and access to/accessing financial resources became more difficult. A few articles have sought to address this topic, approaching it from differing but related perspectives. This project thus proceeded in five key directions (1) Budget Habits, (2) Personality Traits, (3) Demographics, (4) Credit card related information and (5) College academic. on the college students' FAR status

INTRODUCTION

Recently, many educators, policy makers alike have highlighted the predicament of college students' and in particular their financial status. Sources of financial assistance for college students, include parental and family monies, grants, fellowships and gifts. The previously mentioned financial sources relate to more pleasurable avenues. This paper's focus is on the sources that provide financial support to individuals from more frustrating perspectives. Specific examples of these sources are: bank loans, credit cards and lines of credit. It is these frustrating sources that lie at the base of and result in what have been categorized as the "financially at risk" (FAR) status of college students (Archuleta et al, 2013; Braun et al, 2016; Britt et al, 2013; Gutter et al, 2011; Hancock et al, 2013; Hogan et al, 2013; Javine, 2013). This term has covered several areas, but can comprehensively be defined as: (1) a student who has credit card balance of $1,000 or more; (2) a student who is delinquent on their credit card payments by two months or more; (3) a student who has reached the limit on his/her credit card(s), and (4) a student who pays off his/her credit card balances some of the time or never (Joireman et al 2010; Mendes-Da-Silva et al, 2012; Norvis, 2015; Norvilities and MacLean, 2010; Plan et al, 2011; Peltier, 2013; Simpson et al, 2012; Worthy et al, 2010; Xiao, 2011).

Financially at risk or, FAR status for college students is not new, but is one that has been exacerbated by the recent decline in the financial health of the economy, the rise in unemployment and the overall lowered access to financial resources. For many college students today, loans credit cards and lines of

credit are key components that provide access to college and thus the furthering of their educational levels. As such, the area of FAR deserves focus. By studying such a subject area, one can identify and then arrest the problems FAR status brigs with the caveat of funding solutions. Despite the enormous importance of assessing FAR college students, it has received scant attention in the literature, resulting in a pervasive effect on knowledge in this area. The most promising way to arrest and address college students' FAR status is through research that sheds light of this area - illuminating an often minimally studied line of research.

We investigated factors that may influence Financially at Risk status. Factors are considered from few different angles like (1) Budget Habits, (2) Personality Traits, (3) Demographics, (4) Credit card related information and (5) College academics. A flow chart on Factors affecting Credit Card misuse is given at the end section. It looked at: family wealth, parents' education and students' major on the college students' FAR status. The article evaluated what impact these various dimensions had on a college students' FAR status. Issues raised in this article suggest that financially at risk college students are from diverse demographic backgrounds. In addition, it purports that what determines FAR status for a college student is also dependent on generational factors such as parents' characteristics and dimensions.

Review of Related Literature

There are several perspectives in the literature on college students' financially at risk elements, as well as the related area regarding their credit card usage, below is a comprehensive review of this literature.

According to a recent survey by Sallie Mae, the nation's largest student lender, 84 percent of undergraduates have at least one credit card and 92 percent of them use credit cards to pay for college expenses (Field, 2009). In addition, the same study found that on average, the said students had an average credit card balance of $3173 (Field, 2009). Further studies have revealed that college students' reliance on credit cards has increased with the sluggish economy and the rising costs of college (Robb and Pinto, 2010; Palmer et al, 2001; Lyons, 2007). Earlier data which presented information by the Government Accountability Office (GAO) have suggested that college students' credit cards were primarily being used to purchase books, supplies for school, food and clothing, and to a lesser extent, entertainment expenses (Robb and Pinto, 2010). Hypotheses from Robb and Pinto's study looked specifically at the credit card balances of college students, their delinquency rates, as well as whether or not they had reached their rate limits. The authors found that students who were more financially at risk with their credit cards had a profile of being female, Black and or Hispanic, financially independent from their parents and were more likely to receive need-based financial aid (Robb and Pinto, 2010). The results on racial minority students have been confirmed elsewhere in a study by Scott (2007) and by Lyons (2007).

Roberts and Jones (2001) in an earlier study also looked at college student's credit card usage, but focused more so on how their attitudes towards money impacted how they managed their credit card usage. Roberts and Jones (2001) in an unusual step, illuminated the role by colleges' in allowing credit card companies access to students, by revealing that the credit card companies paid a fee to the college to set up their booths on the college campus. Roberts and Jones (2001) found that students who received financial counseling, from parents, a financial institution or other sources were more likely to have lower balances, pay off their balances and less likely to have an overdraft or late payment (Roberts and Jones, 2001). In essence, they were more likely to better manage their credit. These results were echoed in studies by Xiao et al (2007), Hayhoe (2007), Norvilitus et al (2006), Hayhoe et al (1999), Hayhoe et al (2000), Warwick and Mansfield (2000) and Palmer et al (2001).

Hayhoe et al (1999; 2000) and Hayhoe (2007) in a series of studies have looked at college students' credit card usage and spending habits in an effort to determine the impact it has on their investment and saving behaviors, as well as the role gender plays as an altering factor in the relationship. The authors concluded that older college students were likely to have more credit cards or larger balances (Hayhoe et al, 1999) and the females were likely to have a larger balance or have more credit cards (Hayhoe et al, 2000; Chen and Volpe, 2002). Studies from Kara, Kaynak and Kucukemiroglu (1994), Norvilitis et al

(2006) and Warwick and Mansfield (2000) have looked on more general terms at students' overall credit card usage, concluding that students tend to retain the credit cards they acquired during college after graduation (Warwick and Mansfield, 2000). These results have been reinforced by Jones (2005) who also found that credit card problems during the students' college years tend to also follow the students after college (Jones, 2005).

Credit card debt has been said to have negative psychological repercussions for students, with high levels of credit card debts said to be related to a decreased sense of ability to manage one's money and to result in lower self-esteem, a decreased sense of financial well-being and higher levels of overall stress (Norvilitis et all, 2006). The authors concluded as much, after analyzing data from 448 students from five colleges in three states. Using a series of regression analyses, the authors concluded that significant predictors of credit card debt were: number of major credit cards, age, lack of financial knowledge, delay of gratification and multiple levels of credit card usage.

One of the most comprehensive studies done on college students' credit card usage was conducted by Staten and Barron (2002) through the Credit Research Center. Utilizing a pooled sample of credit card accounts randomly selected from the portfolios of five of the top 15 general-purpose credit card issuers in the United States, the study compared behavior across three types of accounts: those opened through college student card marketing programs, those opened by young adults aged 18-24 through normal marketing channels and those opened by older adults through normal marketing channels (Staten and Barron, 2002). The authors concluded that students were more likely to have lower credit limits compared to the other groups, but were more likely to exceed those limits compared to their counterparts (Staten and Barron, 2002). In addition, younger adults, whether or not they were students, had approximately equal rates of delinquency on their cards compared to the other, older group but were less likely to take cash advances compared to the older group (Staten and Barron, 2002).

Pirog and Roberts' study (2007) investigated the role that personality played in students' credit card misuse. Mowen's 3M hierarchical model was applied to survey data from 254 college students, which looked at four elemental personality traits (emotional instability, introversion, materialism and the need for arousal) which was found to be positively associated with credit card misuse, with impulsiveness emerging as a significant central trait that mediated these effects (Pirog and Roberts, 2007). In contrast, Chen and Volpe (2002) looked at financial literacy among college students and found that women generally had less knowledge about personal finance topics. Gender differences remain statistically significant after controlling for other factors such as participants' majors, class rank, work experience and age (Chen and Volpe, 2002). They also observed that women generally had less enthusiasm for, lower confidence in and less willingness to learn about personal finance topics than men do (Chen and Volpe, 2002).

A look at financial at risk (FAR) college students positioning were looked at from three separate studies by Lyons (2004), Lyons and hunt (2003) and Hayhoe et al (2005). Lyons used a random sample of college students and identified the factors that significantly affected the probability a college student is financially at risk for mismanaging/misusing credit. The authors found that the financially at-risk students were more likely to be financially independent, to have received need-based financial aid, to have held $1,000 or more in other debt and to have acquired their credit cards by mail, a retail store or a campus credit card table (Lyons, 2004). Lyons in another study with Hunt, examined the credit practices and financial education needs of community college students. The students were found to have specific preferences for financial education content and how that information was delivered to them (Lyons and Hunt, 2003). The students in this study was also found to have preferred to receive financial education in one-on-one discussions, small group settings and from financial officers, versus other sources (Lyons and Hunt, 2003). Finally, Hayhoe et al (2005) found that college students' attitudes towards credit, money beliefs and behavior and imagined conversations with parents about credit and debt were found to differ between students with credit cards and those without. The authors also used ordered logistic regression to model students with four or more credit cards and found nine variables significant, namely: the affective and behavioral credit attitudes, the retention money attitude, the frequency of imagined interactions, age,

ethnicity, having had instruction in personal finance, year in college and whether they had a student loan (Hayhoe et al, 2005).

More recent studies on students and their credit card usage and implications have been looked at by a variety of researchers. More specifically, Archuleta et al's study (2013) found that for college students, increased financial debt led to(as to be expected) increased levels of financial anxiety. The authors suggested that early intervention was necessary to foil such eventualities. Having extensive knowledge of the interest rates and payback period on credit cards also had a positive impact on students' credit card usage Mendes-Da-Silva et al (2012). Similar positive relationships were found between self- esteem, risk taking and credit card usage for college students by Palan et al (2011).

From a demographic perspective, Britt et al's study of college students and their credit card debt, found that males and students with wealthier parents exhibited healthier behaviors in regards to credit card usage and debt (Britt et al, 2013). The authors also found that Blacks and Hispanics had less healthy relationships with debt and credit card usage (Britt et al, 2013). Similar findings were echoed in studies from Xiao et al (2011), Gutter et al (2011), Norvilitis and MacLean (2010) and Hancock et al (2013) regarding parental involvement and Worth et al (2010) who looked at the impact of race, gender and age.

Hogan et al (2013) took a different approach, looking at how students' attitudes, behaviors and time management skills impacted their credit card usage. The authors found that the college students who were good at time management and engaged in more positive college behaviors, such as studying, attending classes and not drinking or participating in deviant conduct, were also likely to have a positive relationship with their financial life and ultimately credit card debt (Hogan et al, 2103).

Results from the previously mentioned studies increase our understanding of college students by providing us with more specific data on their financial behavior and spending patterns. Analyzing college students' credit card usage behavior at the very least, could serve as a proxy for other financial decisions they engage in later in life (Jones, 2005). The aim of this study will be to accurately decipher college students' credit card usage and the impact this has on other debt categories and thus students' financial positioning, with the added caveat of the analyses being done across gender lines. Based on the above robust literature review and discussion, the current study will explore the following hypotheses:

Hypothesis I: Certain demographic factors like sex, age, race, years' in school, school of study, parents' education, family income, family wealth and education debt may influence if a student will be at financially at risk.

Hypothesis II: credit card information such as number of cards a student carries, maximum credit limit, average credit card balance carried month to month also may influence if a student will be at financially at risk

Hypothesis III: college academic information e.g., GPA, if satisfied with the instructor, if satisfied with intellectual life of school, if satisfied with course curriculum, if satisfied with intellectual growth, any plan for graduate school, debt for education may influence a student at financially at risk.

Hypothesis IV: some credit card use/misuse factors like less concerned about price of products, have too many credit cards, worries how to pay off credit cards, seldom take cash advances, spend more when pay by credit card, frequently use available credit in one credit card to make payment on another credit card may contribute towards financially at risk..

Hypothesis V: The higher the education related debt, higher the likelihood for a student being financially at risk.

Hypothesis VI: Some of the personal traits like, emotional instability, introversion, openness to experience, agreeability, conscientiousness, body focus, materialism and need for arousal may push a student towards financially at risk

Hypothesis VII : Good budget habits of students e.g., habit of saving regularly, habit of keeping written budgets, habit of shopping with a list, habit of keeping bills and receipts, habit of planning their spending may avoid them falling into financially at risk.

Research Methodology

Definition of 'financially at-risk' students: Lyon (2004) classified a college student as "financially at-risk" if one met one or more of the following characteristics:

1. A student has credit card balance of $1,000 or more
2. A student is delinquent on their credit card payments by two months or more
3. A student has reached the limit on his/her credit card(s), and
4. A student pay off his/her credit card balances some of the time or never.

In this study we try to investigate different factors that may explain the causality of a student become financially at risk. We note that our dependent variable is FAR (Financially at Risk) that takes binary values: 0 or 1. We cannot run linear regression. We used probit regression to investigate the hypotheses.

Underlying unobserved regression relationship is:

$$y_i^* = \beta' x_i + u_i \tag{1}$$

y_i^* : if a student is likely to be a FAR is unobserved. To be specific, How students make a sequence of decisions to be FAR or Financially not at risk is unobserved. Different factors influences a student's decision to spend or over spend using their credit cards. The factors could be a student's budget habits, personality traits (e.g., materialism, body focus, need for arousal etc), college academics (e.g., GPA, Major, if satisfied with intellectual growth etc), credit card related variables (e.g., number of cards, credit limit etc.), Other demographic related information (e.g., age, sex, race etc.). These independent variable that may lead a student on the verge of being financially at risk are considered. In practice what we observe is a binary variable *y* defined by

$$\begin{aligned} y &= 1 \quad if\ y_i^* > 0 \\ y &= 0 \quad otherwise \end{aligned} \tag{2}$$

$$If\ u_i \sim IN\left(0,\sigma^2\right)$$

$$\begin{aligned} &\Pr ob\left(y_i = 1\right) = prob\left(u_i > -\beta' x_i\right) = 1 - F\left(-\beta' x_i\right) \\ &= 1 - \int_{-\infty}^{-\beta' x_i / \sigma} \frac{1}{\left(\sqrt{2\pi}\right)} e^{\left(-\frac{t^2}{2}\right)} dt \end{aligned} \tag{3}$$

Specifically, we used variables x_1, x_2, x_3, x_4, x_5 *and* x_6 in the Probit equation:

$$Y_i = \alpha + \beta_1 x_{1_i} + \beta_2 x_{2_i} + \ldots\ldots\ldots\ldots\ldots + \beta_{33} x_{33_i} + u_i$$

Where:

Y_i = 1 or 0 based on if *i* th student is a FAR

and x_{1i}, x_{2i} etc are independent variables explained in the following table.

u_i = Random Normal Error

Please note that because our dependent variable (FAR) is binary, we cannot run a linear regression. We ran a probit regression.

TABLE 1
VARIABLES

Variables in the Probit	**Information obtained from the question in the Survey**
LESS_CONC	I am less concerned with the price of a product when I use a credit card
MANY_CRDS	I have too many credit cards
WORRY_PAY	I worry how I will pay off my credit card debt
Take cash advances	I seldom take cash advances on my credit cards
Spend more when use credit card	I spend more when I use a credit card
Pay one credit card with another card	I frequently use available credit in one credit card to make payment on another credit card
EMO_INSTAB	Emotional Instability (average of four elements under this variable, see survey)
INTROVERSION	Introversion (average of three elements under this variable, see survey)
OPN_TO_EXP	Openness to experience (average of three elements under this variable, see survey)
AGGREABLE	Agreeable (average of three elements under this variable)
CONSCIENT	Conscientiousness (average of four elements under this variable)
BODY_FOCUS	Body Focus (average of four elements under this variable)
MATERIALISM	Materialism (average of four elements under this variable, see survey)
Need for arousal	Need for Arousal (average of four elements under this variable, see survey)
SEX	(as reported by the student)
AGE	(as reported by the student)
Race	(as reported by the student)
Parents' Education	Parents' highest level of education
Family Income	Family Income (as reported by the student)
Family Wealth	Family Wealth (as reported by the student)
GPA	GPA (as reported by the student)
ABIL_INST	Are you satisfied with the ability of instructors
Happy with Intelectual life at School	Are you satisfied with the intellectual life of school
COURSE	Are you satisfied with the course curriculum
INT_GROWTH	Are you satisfied with intellectual growth
SAV_REG	Do you save regularly
WRTN_BUDG	Do you keep written budgets?

Variables in the Probit	Information obtained from the question in the Survey
SHOPLIST	Do you shop with a list?
KEEP_RCTS	Do you keep bills and receipts?
PLAN_SPEND	Do you plan your spending?
Credit LMT	What is the maximum credit limit do you have?
Debt for Education	Educational debt amount (as reported by the student)
Plan Grad School	Do you plan to attend the graduate School (yes/no)

Data and Results:

Data was collected from a random sample of 199 students from an upstate New York undergraduate Catholic School. Out of these 199 students, 110 were female students and 89 of them were male students. 113 students were from Business major, 45 of them were from Liberal Arts major and 41 were from Science major. If we breakdown by school year, we have 25 data sample from freshman class, 36 from sophomore class, 78 from junior and 60 students from senior class.

The grade distribution of these students' range from 1.9 to 4.0. Thirteen of these students have GPA less than 2.75, 134 of these students have GPA between 2.75 to 3.5 and 43 of these students have GPA more than 3.5.

One hundred seventeen of these students have no debt incurred due to college education. Forty of these students have less than $20,000 as debt due to college education. Nineteen of them have less than $40,000 educational loan. Sixteen of these students have less than $60,000 debt due to college education. And only six students have debt of more than $60,000 due to college.

Let us now focus on the first Hypothesis and break it down to sub hypotheses:

Hypothesis I: Certain demographic factors like sex, age, race, years' in school, school of study, parents' education, family income, family wealth and education debt may influence if a student will be at financially at risk.

Sub-Hypothesis I(a): FAR / non FAR distribution among male students and female students are homogeneous:

TABLE 2
FAR/NON-FAR DISTRIBUTION

Crosstab: Sex * FAR					
			NFAR	FAR	Total
Sex	F	Count	78	32	110
			70.9%	29.1%	100.0%
	M	Count	61	28	89
			68.5%	31.5%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

We see from the above table that 29.1% of female students are financially at risk, whereas 28% of the male students are financially at risk. We have carried out chi-square test of homogeneity to test if FAR/ non FAR (which we denoted by NFAR) distribution among male and female students are homogeneous. The chi-square p-value (two-sided) = 0.757. That says that Far/non FAR student distributions are same for both male and female students.

In the probit regression, SEX variable did not come statistically significant. That says, likelihood of a student being FAR or non FAR does not depend on sex.

Sub-Hypothesis I(b): FAR/ non FAR distribution among student year in school are same

TABLE 3
CROSSTAB: YEAR IN SCHOOL * FAR

			NFAR	FAR	Total
Year in School	Freshman	Count	18	7	25
			72.0%	28.0%	100.0%
	Sophomore	Count	26	10	36
			72.2%	27.8%	100.0%
	Junior	Count	56	22	78
			71.8%	28.2%	100.0%
	Senior	Count	39	21	60
			65.0%	35.0%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

We see from the above table that more or less 30% of the students are at financially at risk at every year in school: Freshman year to the senior year. We tested for chi-square test of homogeneity and the p value (two sided) of the test statistics came about 0.811. That says that there are no differences between the distributions of FAR/ non-Far student at each year in school. We have not tested this in the Probit analysis as we tried to avoid multicollinearity.

Sub-Hypothesis I(c): Parents' education level influences if the students will be financially at risk

TABLE 4
CROSSTAB: PARENTS' EDUCATION * FAR

			NFAR	FAR	Total
Parents Education	2 Year College	Count	21	10	31
			67.7%	32.3%	100.0%
	4 Year College	Count	50	19	69
			72.5%	27.5%	100.0%
	Graduate Degree	Count	45	19	64
			70.3%	29.7%	100.0%
	High School	Count	21	10	31
			67.7%	32.3%	100.0%
	Less than High School	Count	2	2	4
			50.0%	50.0%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

Except parents education being 'less than High School", percentage of FAR students are approximately 30% at every other parents' education group. We test if Far/ non-FAR distribution is equal among all Parents' education group. The p value (two sided) of the test statistics for chi-square test of homogeneity came about 0.893. This shows that the parents' education level does not influence if students will at financially at risk or not.

Similar result shows in the probit Regression. In the probit regression, Parents' Education variable did not come statistically significant. That says, likelihood of parents' education influencing a student to be a FAR or non FAR is statistically insignificant.

Sub-Hypothesis I(d): Yearly Family Income affects if a student will be financially at risk or not.

TABLE 5
CROSSTAB: FAMILY YEARLY INCOME * FAR

			NFAR	FAR	Total
Family Income	Less than $30,000	Count	2	5	7
			28.6%	71.4%	100.0%
	$30,000 to $50,000	Count	10	3	13
			76.9%	23.1%	100.0%
	$50,000 to $75,000	Count	22	15	37
			59.5%	40.5%	100.0%
	$75,000 to $100,000	Count	39	11	50
			78.0%	22.0%	100.0%
	$100,000 +	Count	62	26	88
			70.5%	29.5%	100.0%
Total		Count	135	60	195
			69.2%	30.8%	100.0%

We see that for 71.4% of students are financially at risk if they are from families with combined family income of $30,000 or less. Even students from combined yearly family income $50,000 to $75,000, financially at risk students are proportionately higher (about 40%). The p value (two sided) of the test statistics for chi-square test of homogeneity came about 0.054. That says that homogeneity of FAR/ non-FAR students is not maintained between family income groups.

Let us divide the income group to just two: Less than or equal to $75,000 and more than $75,000, and the resulting distribution of FAR/ non-FAR students is displayed below:

TABLE 6
INCOME DINSTRIBUTION OVER/UNDER $75,000

	NFAR	FAR	Total
Family Income: (less than equal to $75,000)	34	23	57
	59.60%	40.40%	100%
Family Income: (More than $75,000)	101	37	138
	73.20%	26.80%	100%
Total	135	60	195
	69.20%	30.80%	100%

So, the chi square test of homogeneity is significant (p-value is 3.47) at 10% level of significance. It says that students who come from annual family income of less than $75,000 are likely to be more financially at risk during college.

However, Probit regression shows that Family Income has no influence on a student being Far (or, non-Far). Because probit regression considers interactions of several variables simultaneously, and it is not considered with chi square test, we'll conclude by the probit regression results.

Sub-Hypothesis I(e): Family wealth influences if a student will be financially at risk or not.

TABLE 7
CROSSTAB: FAMILY WEALTH * FAR

			NFAR	FAR	Total
Family Wealth	Less than $50,000	Count	14	5	19
			73.7%	26.3%	100.0%
	$50,000 to $100,000	Count	16	12	28
			57.1%	42.9%	100.0%
	$100,000 to $250,000	Count	44	15	59
			74.6%	25.4%	100.0%
	$250,000 to $500,000	Count	30	10	40
			75.0%	25.0%	100.0%
	$500,000 plus	Count	27	14	41
			65.9%	34.1%	100.0%
Total		Count	131	56	187
			70.1%	29.9%	100.0%

Again we tested for Chi-square test of homogeneity to test if FAR/ non-FAR students' distribution is homogeneous among all family wealth groups. The p value (two sided) of the test statistics for the chi-square test of homogeneity came about 0.444. This tells that FAR/ non-FAR students are homogeneously distributed among all family wealth groups. However, we see disproportionately more FAR students in $50,000 to $10,000 family wealth group. It may seem that had we divided the family wealth group into just two groups: less than and equal to $100,000 and More than $100,000 family wealth group and we get the following:

TABLE 8
INCOME DINSTRIBUTION OVER/UNDER $100,000

	NFAR	FAR	Total
Family Wealth: (less than equal to $75,000)	30	17	47
	63.80%	36.20%	100%
Family Wealth: (More than $75,000)	101	39	140
	73.20%	26.80%	100%
Total	131	56	187
	70.10%	29.90%	100%

$$Test\ Statistics: \sum_i \sum_j \frac{(E_{ij} - O_{ij})^2}{E_{ij}} \qquad 1.1591$$

The chi-square test statistics is not significant. That says, the family wealth does not influence if a student will be financially at risk or not.

Probit shows similar results. Family wealth came statistically insignificant, it does not influence FAR behavior.

Sub-Hypothesis I(f): School of study has no influence on a student being financially at Risk

TABLE 9
CROSSTAB: SCHOOL OF STUDY * FAR

			NFAR	FAR	Total
School of Study	Business	Count	76	37	113
			67.3%	32.7%	100.0%
	Liberal Arts	Count	35	10	45
			77.8%	22.2%	100.0%
	Science	Count	28	13	41
			68.3%	31.7%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

We see from the above table that School of Liberal Arts' students are less likely to be financially at risk. We carried out the chi square test of homogeneity, and the p-value of the test statistics (two-sided) came to be 0.417. That tells the distribution of FAR and non FAR students are homogeneously distributed among all the schools. We have not tested this in the Probit analysis as we tried to avoid multicollinearity.

We now break Hypothesis III into smaller part and use chi-square test:
Sub-Hypothesis III(a): Academically weaker students are likely to be more financially at risk

TABLE 10
CROSSTAB: GPA * FAR

			NFAR	FAR	Total
GPA		Count	4	2	6
			66.7%	33.3%	100.0%
	GPA Less than 2.75	Count	10	5	15
			66.7%	33.3%	100.0%
	GPA Less than 3.5	Count	79	32	111
			71.2%	28.8%	100.0%
	GPA more than 3.5	Count	46	21	67
			68.7%	31.3%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

We see from the above table that FAR/Non FAR students are homogeneously distributed among different GPA groups. Chi square test also show same result. The two sided p-value of the chi-square test statistics came to be 0.971 which substantiate that FAR/Non FAR students are homogeneously distributed

among different GPA groups. An academically stronger student is equally likely to be financially at risk than an academically weaker student.

Using chi-square test, we'll test Hypothesis V.
Hypothesis V: Higher the education related debt, higher the likelihood for a student being financially at risk

TABLE 11
CROSSTAB: EDUCATION DEBT * FAR

			FAR		
			0	1	Total
Education Debt	Missing record on education debt	Count	23	7	30
			76.7%	23.3%	100.0%
	Education Debt less than or equal to $20,000	Count	27	13	40
			67.5%	32.5%	100.0%
	Education Debt less than or equal to $40,000	Count	11	8	19
			57.9%	42.1%	100.0%
	Education Debt less than or equal to $60,000	Count	13	3	16
			81.3%	18.8%	100.0%
	Education Debt more than $60,000	Count	6	5	11
			54.5%	45.5%	100.0%
	No Education Debt	Count	59	24	83
			71.1%	28.9%	100.0%
Total		Count	139	60	199
			69.8%	30.2%	100.0%

We carried out chi-square test of homogeneity for FAR and Non-FAR students among different education debt groups. The p-value came to be 0.503. That shows that financially at risk students are independent of amount of student loan that they may have. Similar results are found in the probit analysis.

Probit Analysis

In the previous section, we have analyzed if FAR/non FAR student distribution is homogeneous looking at various single variable cases. Now we will study on a multivariate context, if any variable is likely to influence a student to be financially at risk. We can address all the hypotheses we planned to investigate.

We have looked into different literatures. Those literature conjecture that budget habits, few personality traits, certain demographic characteristics, few credit card characteristics, academic characteristics may influence financially irresponsible behavior. That may lead to credit card misuse, and consequently may make a student financially at risk. A bird's eye view of those conjectures is given below.

(Insert the "Credit Card misuse" flow chart here: Before probit result)

TABLE 12
Probit Results

Probit on 8 elements: Dependant Variable = FAR						
	Probit - Step I		Probit - Step II		Probit - Step III	
	Included obs = 82		Included obs = 101		Included obs = 195	
	# NFAR = 60 obs		# NFAR = 74 obs		# NFAR = 136 obs	
	# FAR = 22 obs		# FAR = 27 obs		# FAR = 59 obs	
Variables	Coeff	p-value	Coeff	p-value	Coeff	p-value
C	14.43	0.12	3.90	0.34	0.05	0.92
LESS_CONC	-0.63	0.13	-0.12	0.31		
MANY_CRDS	0.35	0.19	0.20	0.01	0.17	0.00
WORRY_PAY	0.34	0.11	0.18	0.06		
Take cash advances	-0.14	0.33	-0.15	0.02	-0.04	0.19
Spend more when use credit card	0.67	0.17	0.14	0.22	0.07	**0.05**
Pay one credit card with another card	-0.20	0.39	0.05	0.54		
EMO_INSTAB	0.20	0.39	-0.09	0.41		
INTROVERSION	-0.19	0.53				
OPN_TO_EXP	-1.10	0.02	-0.34	0.02		
AGGREABLE	0.12	0.77				
CONSCIENT	0.06	0.89				
BODY_FOCUS	0.79	0.13	0.13	0.41		
MATERIALISM	0.01	0.96				
Need for arousal	0.42	0.21	0.26	0.08	0.07	0.19
SEX	1.04	0.39	-0.22	0.59		
AGE	-0.65	0.14	-0.08	0.65		
Race	-2.23	0.13	-0.43	0.45		
Parents' Education	0.16	0.57				
Family Income	0.00	0.57				
Family Wealth	0.00	0.52				
GPA	-1.73	0.23	-0.24	0.60		
ABIL_INST	0.13	0.71				
Happy with Intelectual life at School	-1.61	0.03	-0.47	0.03	-0.24	**0.00**
COURSE	-0.29	0.47				
INT_GROWTH	1.04	0.14	0.09	0.62		

Probit on 8 elements: Dependant Variable = FAR						
SAV_REG	0.25	0.44	0.00	0.99		
WRTN_BUDG	0.25	0.31	0.04	0.66		
SHOPLIST	0.14	0.41	0.01	0.92		
KEEP_RCTS	-0.36	0.07	-0.10	0.22		
PLAN_SPEND	-0.13	0.62				
Credit LMT	0.00	0.07	0.00	0.43		
Debt for Education	0.00	0.55				
Plan Grad School	1.00	0.34	0.22	0.63		
Akaike info criterion	1.38		1.20		0.46	
Schwarz criterion	2.38		1.79		1.08	
Log likelihood	-22.59		-37.36		-99.02	
McFadden R-squared	0.53		0.36		0.17	

Summary of results

Probit looks into several factors simultaneously to determine if a specific factor influences the dependent variable.

Specifically:

Hypothesis I: Certain demographic factors like sex, age, race, years' in school, school of study, parents' education, family income, family wealth and education debt may influence if a student will be at financially at risk.

None of the factors sex, age, race, years' in school, school of study, parents' education, family income, family wealth and education debt influence FAR behavior. Some factors are being tested by chi-square test and some are being tested in the probit analysis

Hypothesis II: credit card information such as number of cards a student carries, maximum credit limit, average credit card balance carried month to month also may influence if a student will be at financially at risk

We found that more cards that students carry has statistically positive influence on being financially at risk (FAR).

Hypothesis III: college academic information e.g., GPA, if satisfied with the instructor, if satisfied with intellectual life of school, if satisfied with course curriculum, if satisfied with intellectual growth, any plan for graduate school, debt for education may influence a student at financially at risk.

We found that:

1. GPA of a student does not influence FAR behavior.
2. If the students are happy with intellectual life at School, they are less likely to be FAR. This is a significant result.
3. Debt for education does not statistically influence FAR behavior.
4. If a student planned for graduate school, does not statistically influence FAR behavior.

Hypothesis IV: some credit card use/misuse factors like less concerned about price of products, have too many credit cards, worries how to pay off credit cards, seldom take cash advances, spend more when pay by credit card, frequently use available credit in one credit card to make payment on another credit card may contribute towards financially at risk..

Our analysis shows that:

1. If they take cash advances, does not influence FAR behavior statistically.
2. Students who "spend more when use credit cards" are more likely to be a FAR.
3. Credit limit does not influence FAR behavior.

Hypothesis V: The higher the education related debt, higher the likelihood for a student being financially at risk.

Our results show that education related debt does not influence FAR behavior.

Hypothesis VI: Some of the personal traits like, emotional instability, introversion, openness to experience, agreeability, conscientiousness, body focus, materialism and need for arousal may push a student towards financially at risk

Our results show that students who feel "need for arousal" are more likely to be FAR. Other factors do not influence FAR.

Hypothesis VII : Good budget habits of students e.g., habit of saving regularly, habit of keeping written budgets, habit of shopping with a list, habit of keeping bills and receipts, habit of planning their spending may avoid them falling into financially at risk.

None of the good budget habits influenced FAR either positively or negatively. None of them came statistically significant. This is contrary to our belief that bad budget habits leads to FAR behavior.

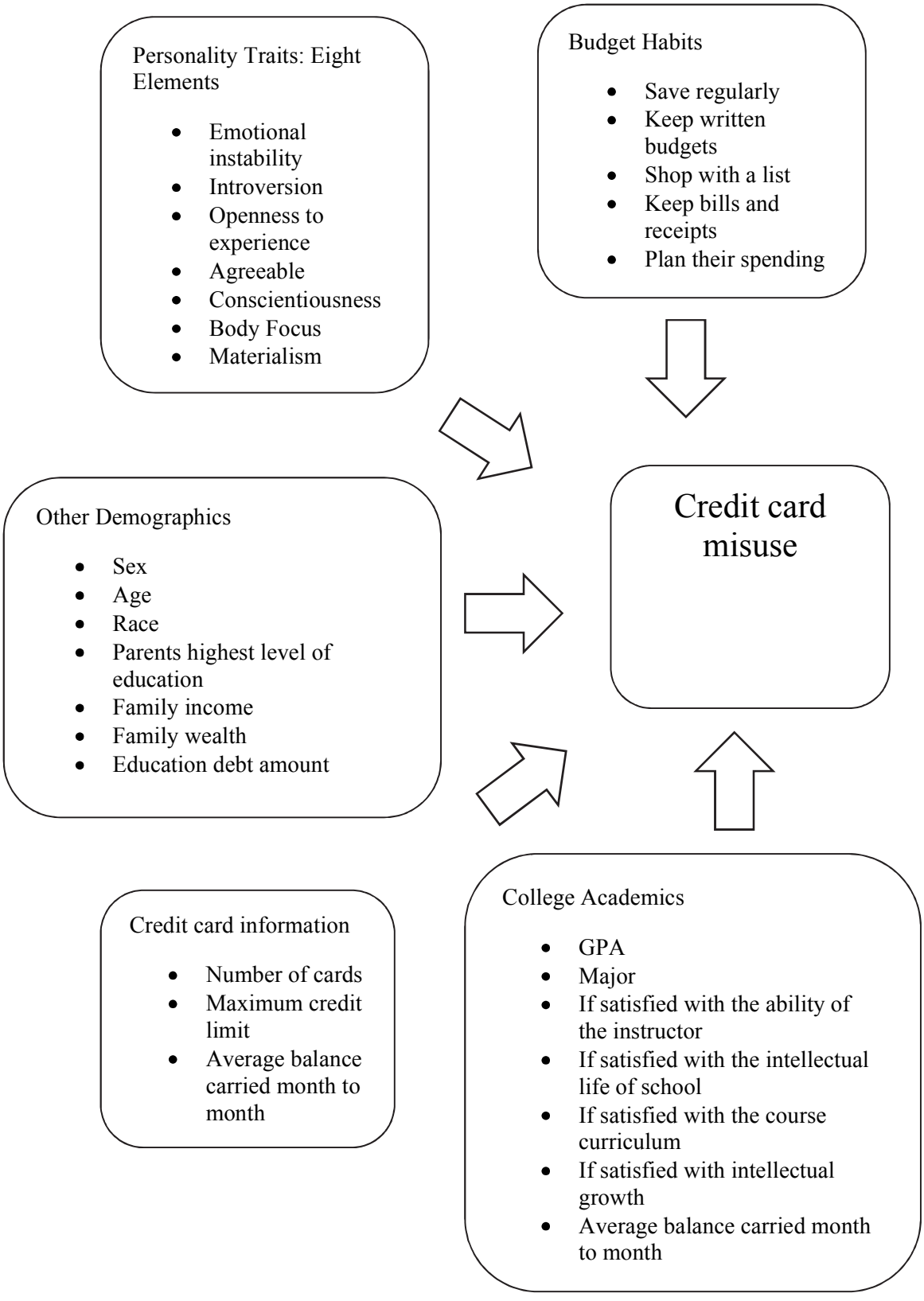
Conclusion

We have investigated mainly five traits of factors that may influence FAR or financially at risk status individuals. These five Traits of factors are given in the Flow Chart at the end section of this paper. These are: (1) Budget Habits, (2) Personality Traits, (3) Demographics, (4) Credit card related information and (5) College academics. The factors that influenced FAR are:

1. If students carry too many credit cards that is likely to influence FAR
2. Contrary to popular belief, too many cash advances does not influence FAR
3. Habit of spending more when using credit cards influences FAR behavior.
4. One personality trait: "Need for Arousal" positively influenced FAR behavior.
5. One factor from College Academics: If students are generally happy with intellectual life at school, it will negatively affect FAR behavior.

Some of our results point toward the need for more detailed investigation for the future.

FIGURE 1
FACTORS AFFECTING CREDIT CARD MISUSE



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