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Factors Related to Financial Stress
Among College Students

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Concerns that debt loads and other financial worries negatively affect student wellness are a top priority for many university administrators. Factors related to financial stress among college students were explored using the Roy Adaptation Model, a conceptual framework used in health care applications. Responses from the 2010 Ohio Student Financial Wellness Survey were analyzed using proportion tests and multivariate logistic regressions. The results show that financial stress is widespread among students – 71% of the sample reported feeling stress from personal finances. The results of the proportion tests and logistic regressions show that this study successfully identified important financial stressors among college students. Two of the most important financial stressors were not having enough money to participate in the same activities as peers and expecting to have higher amounts of student loan debt at graduation. The results also indicate that students with higher financial self-efficacy and greater financial optimism about the future are significantly less likely to report financial stress. Implications for student life administrators, policymakers, financial counselors, and financial therapists are discussed.

Keywords: college students; financial stress; financial self-efficacy; adaptation

INTRODUCTION

Student wellness is an important topic on college campuses nationwide as higher education and student life administrators are becoming increasingly concerned with stress among students. Given that stress has been shown to negatively impact student persistence (Letkiewicz, in press), increased scrutiny of graduation rates from federal and state governments should motivate administrators to understand the causes of stress among students. More specifically, stress resulting from personal financial difficulties is worth exploring in more detail given the challenge college students and recent graduates face regarding the growing burden of student loans. The institutional environment surrounding

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the college education decision has changed dramatically – grants and other forms of aid have not kept pace with the rapid increase in tuition (College Board, 2011; Draut, 2007). As a result, students are relying more heavily on student loans in order to pay for their education (Draut, 2007). "Working your way through college" is no longer realistic since tuition has increased more rapidly than inflation for the last few decades.

Research regarding sources of stress confirms the influential role that personal financial problems play in the lives of college students. Financial difficulties are often cited among college students as sources of stress (Northern, O'Brien, & Goetz, 2010; Ross, Niebling, & Heckert, 1999). In fact, a recent report from Inceptia, a non-profit financial education advocate, found that four of the top five stressors among college students involved problems related to personal finances (Trombitas, 2012). Although the incidence of financial stress has been well-documented, much less is known about the factors related to financial stress among college students. This study sought to fill this gap in the literature by identifying the factors that are associated with increased likelihood of financial stress. This is the first step in understanding the causes of financial stress among students and will provide valuable information to administrators and practitioners of financial therapy, financial counseling, and financial planning.

Since administrators are concerned with student persistence and graduation rates, understanding the occurrences of financial stress can help identify at-risk students and guide efforts to decrease financial stress among students. Furthermore, the identification of factors associated with increased likelihood of financial stress will help practitioners and financial therapy researchers understand the issues and circumstances that are especially influential among college students. Given the important developmental stage of traditional undergraduate students, the experience of financial stress during the college years may have a long-term impact on consumer wellness. Lastly, since financial therapy is a young discipline, this study contributes by introducing a new theoretical framework based on the concept of adaptation that may be useful in the practice of financial counseling and financial therapy.

LITERATURE REVIEW

Financial stress may be defined as the inability to meet one's financial obligations, but can also include psychological or emotional effects (Northern et al., 2010). Much of the literature on financial stress has focused on stress outcomes. Research has documented the following negative outcomes of financial stress: (a) depression (Andrews & Wilding, 2004; Clark-Lempers, Lempers, & Netusil, 1990), (b) anxiety (Andrews & Wilding, 2004), (c) poor academic performance (Andrews & Wilding, 2004; Harding, 2011), (d) poor health (Northern et al., 2010), and (e) difficulty persisting towards degree completion (Letkiewicz, in press; Joo, Durband, & Grable, 2008; Robb, Moody, & Abdel-Ghany, 2011). Other research has focused on coping behavior of financially-stressed students, such as seeking help (Britt et al., 2011; Lim, Heckman, Letkiewicz, Fox, & Montalto, 2012).

Hayhoe, Leach, Turner, Bruin, and Lawrence (2000) examined spending habit differences among college students and included financial stress as a variable in their

model. Financial stress was measured by summing the number of positive responses to seven financial stressors, such as "not able to save for an emergency" and "not able to pay utilities." Hayhoe et al. (2000) found that the number of good financial behaviors was negatively associated with number of financial stressors.

Very few studies have examined factors related to the likelihood of reporting financial stress. Brougham, Zail, Mendoza, and Miller (2009) examined different sources of stress, including academics, financial, family, social, and daily hassles, but the primary focus of their study was to identify coping behavior among students. They found that college women were more likely to report financial stress than college men (Brougham et al., 2009). Anticipated debt has also been shown to be a strong predictor of financial stress among medical students (Morra, Regehr, & Ginsburg, 2008). Archuleta, Dale, and Spann (2013) found that among college students, higher levels of financial satisfaction were significantly and negatively related to financial anxiety.

As discussed by Northern et al. (2010), some researchers have used financial data exclusively to measure financial stress. While being unable to pay bills and other financial difficulties may indeed produce stress, there are important psychological aspects of stress that may be missed when using financial data alone (Northern et al., 2010). Being unable to pay bills on time may plausibly be a stressful event for one student, but not for another student. Stress is certainly a complex construct, but the differences in measurement of financial stress are likely a result of a lack of theory-based research. Many of the studies mentioned above do not include an explanation of the theoretical framework used to investigate issues related to financial stress.

Two important concepts have been linked to stress in the college student literature: self-efficacy and optimism. Perceived self-efficacy can be described as a person's perceived ability to handle different situations (Bandura, 1977). Bandura (1982) describes this as a complex process in which "component cognitive, social, and behavioral skills must be organized into integrated courses of action...(p. 122)." Perceived self-efficacy is distinct from concepts such as mastery and locus of control. While self-efficacy is a perception, mastery is about behavior experienced and is a source of self-efficacy (Bandura, 1977; 1982). Locus of control is about orientation of control (Rotter, 1966). A person who has a high level of perceived self-efficacy is confident that he or she can be effective in bringing about the desired results for a given situation.

Research has shown that self-efficacy is associated with a reduced likelihood of stress among college students (Zajacova, Lynch, & Espenshade, 2005) and is positively related to academic performance (Chemers, Hu, & Garcia, 2001; Zajacova et al., 2005). Optimism refers to positive expectations about future outcomes (Scheier & Carver, 1987). Optimism has also been found to be an important construct among college student academic outcomes (Chemers et al., 2001) and health outcomes (Scheier & Carver, 1987). Since self-efficacy and optimism have been used to explore other student wellness outcomes, these concepts may be meaningful when exploring financial wellness, and specifically financial stress, among students.

As this review has shown, there are several important gaps in the financial stress literature. The current study will contribute to the literature by providing an exploration of the factors associated with financial stress among college students. Since most of the research on financial stress considers stress outcomes and coping behavior, this study will also contribute to the literature by exploring an application of the Roy Adaptation Model (Roy and Andrews, 2008) in explaining financial stress among college students.

THEORETICAL FRAMEWORK

Financial stress is a concern because of the negative health outcomes associated with increased levels of stress. Therefore, as researchers examine factors related to the likelihood of reporting financial stress, it may be useful to turn to a health care model. The Roy Adaptation Model (RAM), see Figure 1, is a well-known theoretical framework for designing nursing intervention for patients (Rice, 2011). Under this framework, the patient is viewed as an adaptive system that manages external or internal stimuli through control processes and effectors (coping mechanisms) and the output is either adaptation (health) or ineffective responses (illness) (Roy, 1970, 1984; Roy & Roberts, 1981). Since the details of the RAM are discussed in the nursing context, the specific, technical features of the model will not be discussed here. For a detailed coverage of the model, interested readers are referred to Roy and Andrews (2008).

Figure 1. Roy Adaptation Model
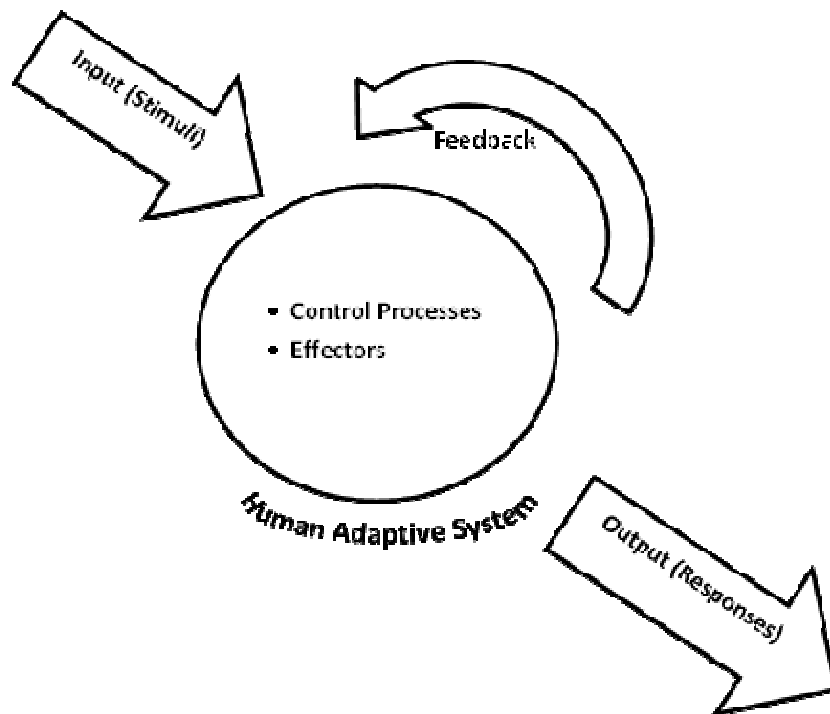
Source: Adapted from Roy and Andrews (2008)

Empirical Specification of the RAM

This study developed an empirical model based on the RAM. In this framework, the student is the adaptive system of interest and given the literature on college student wellness, the primary coping mechanism (referred to as effectors in the RAM) of interest is the self-concept. Roy and Andrews (2008) identified the self-concept as one of the primary effectors of a human adaptive system. While other effectors were identified in the RAM, the current focus on the self-concept is primarily practical in nature due to data limitations (i.e., the self-concept could be proxied from the dataset). As the student is presented with possible financial stressors (stimuli), he or she processes these stressors based on previous adaptation and his or her self-concept (coping mechanism). The output is either low financial stress (adaptation/health) or high financial stress (ineffective responses/illness). Since it is assumed that each student has a unique level of adaptation given his or her experiences and personal history, demographic characteristics represent the student's current level of adaptation. In the RAM framework, adaptation refers to their level of learning, emotion management, and judgment (Roy & Andrews, 2008). That is, as students experience life events and financial difficulties, such as working, having children, or experiencing financial hardships, they learn to more effectively cope with or adapt to new financial stressors. Self-efficacy and optimism, in the context of personal finances, were chosen to represent the student's self-concept. This empirical model is presented in Figure 2.

Figure 2. Conceptual framework based on the Roy Adaptation Model
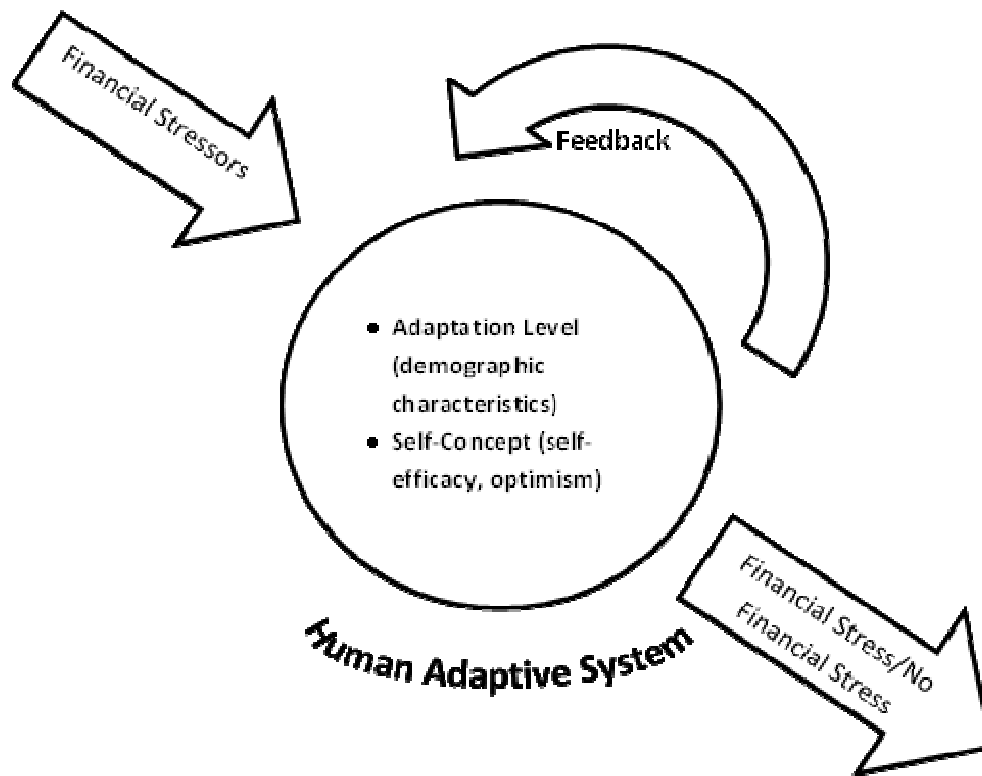
Hypotheses

Based on this theoretical framework, three hypotheses were developed.

H1: Students experiencing financial stressors will be more likely to be financially stressed.
H2: Students reporting greater financial self-efficacy will be less likely to be financially stressed.
H3: Students reporting greater financial optimism will be less likely to be financially stressed.

METHOD

Data

Data are from the Ohio Student Financial Wellness Survey (OSFWS). The survey was conducted at 19 colleges and universities across the state of Ohio and 5,729 respondents completed the survey in November and December of 2010. The survey was administered online, contained 100 questions, and students were given the incentive of being entered to win an iPad. After accounting for missing data, this study analyzed completed surveys from a total of 4,488 students.

Proportion Tests

Proportion tests were used to compare the distribution of stressed students to the distribution of non-stressed students by each independent variable. Since little is known about financially stressed students, these comparisons provide useful insights in describing differences between students reporting financial stress and those reporting no stress. The test statistic (Z-statistic) compares the observed frequency (O_i) to the expected frequency (E_i) for each categorical independent variable and is constructed as $\sum(O_i - E_i)/E_i$. The test statistic has a chi-square distribution, and large values of the test statistic (or small *p*-values) indicate statistically significant differences in the respective characteristic between students reporting financial stress and those reporting no stress. The *Z* test statistics and *p*-values are provided in Table 1.

Logistic Regression

Logistic regression was used to model the logarithm of the odds that financial stress varies in relation to a set of predictor variables. The logistic regressions were carried out in three blocks. The first block included only financial stressors (stimuli), the second added current adaptation level (control processes), and the third added self-concept (effectors).

Dependent variable. A binary variable representing financial stress served as the response variable. This variable was based on the following statement: "I feel stressed about my personal finances in general." Students responded on a four-point Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*). The four possible responses were collapsed into two groups; those who disagreed or strongly disagreed were coded 0, and

those who agreed or strongly agreed were coded 1. This variable was dichotomized due to the focus on whether or not the student reported stress rather than the magnitude of the reported stress. Although there is certainly a continuum regarding the amount of stress a student experiences, this focus is justified since the RAM dichotomizes the output as either adaptation or ineffective responses. Thus the logit modeled the likelihood of reporting stress.

Independent variables. The conceptual framework for this study suggests that there are three broad categories of variables that need to be considered in modeling financial stress: financial stressors, current adaptation level, and effectors. Due to the exploratory nature of this study, several financial stressors and effectors not included in the final model were initially considered. Proportion z-tests were used to explore whether there were differences in stress levels among the categories. Financial stressors or effectors that were not significant at a descriptive level and in the logit were not included in the final model.

Financial stressors. There were several different questions from the OSFWS that asked the student to identify negative financial circumstances. The responses to the following survey items were classified as financial stressors that could potentially cause financial stress among college students:

1. "I have enough money to participate in most of the same activities as my peers do."
2. "I regularly spend more than I have by using credit or borrowing."
3. "I pay my bills on time every month."
4. "Do you currently have debt from any source, including student loans, credit cards, car loans, personal loans from financial institutions or from family/friends, or any other type of credit or loans?"
5. "How much student loan debt do you expect to accumulate by the time you graduate?"

Items 1, 2, and 3 allowed students to respond on a four-point Likert-type scale, ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). These responses were condensed into two categories – those who agreed and those who disagreed. This coding was used since an ordinal variable would have assumed that the scale between responses (i.e., strongly agree to agree compared to agree to disagree etc.) is constant. For the purposes of this study, it was more useful to distinguish students who exhibited the circumstances or behaviors in items 1 through 3 from those who did not – the degree to which these circumstances or behaviors were true was not the focus. Students responded *yes*, *no*, or *don't know* to item 4, regarding whether the student has debt from any source – credit card debt, car loans, etc. Students were given 11 possible responses for item 5, regarding the expected amount of student loan debt and ranged from *none* to *over $100,000*. This study condensed the categories into four groups: (a) no student loans, (b) below average, (c) average, and (d) above average. The average category was $20,000-29,000 since the average undergraduate student is graduating with $26,600 in student loans (The Institute for College Access and Success, 2012). Dummy variables were used to represent each of the financial stressors or categories of financial stressors. Students disagreeing with Items 1

and 3 and agreeing with Item 2 were expected to be more likely to report financial stress. Therefore, Items 1 and 3 were reversed coded so that each of the financial stressors was expected to increase the likelihood of reporting financial stress.

Current adaptation level. Since it was assumed that each student has unique experiences and circumstances, it is important to control for demographic characteristics that may represent current adaptation levels. For example, it is possible that seniors are more adapted to the college environment and the associated stressors than freshmen. Therefore, the following demographic characteristics were introduced as dummy variables to the logistic regression to control for the current level of adaptation that a student has developed: sex (i.e., male, female), race/ethnicity (i.e., White, Black, Hispanic, Asian, Other), class rank (i.e., freshman, sophomore, junior, senior, other), GPA (i.e., below 3.0, above 3.0), institution type (i.e., community college, 4 year public, 4 year private), whether or not the student has dependents, and current living situation (i.e., on-campus or off-campus). Dummy variables or sets of dummy variables were used to distinguish each of these factors. This set of variables was primarily used as a proxy to capture the underlying differences between people regarding current adaptation levels.

Self-concept. The modified RAM used in the current study suggests that students' self-concept may be useful in helping students respond to financial stressors. Self-efficacy and optimism have been chosen to represent a student's self-concept. Since both of the constructs were asked in the context of personal finances, this study refers to financial self-efficacy and financial optimism. Financial self-efficacy was measured by a single item on the OSFWS, "I manage my money well." Students responded to the self-efficacy measure on a four-point Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Previous literature has used similar, one-item measures to represent financial self-efficacy (Danes & Haberman, 2007; Heckman & Grable, 2011). An ordinal variable was used to represent this measure.

Financial optimism was measured by two items, a general optimism question and a question about the students' ability to support themselves after graduation. The general optimism question made the following statement: "When I think about my financial situation, I am optimistic about my future." The other item stated "I will be able to support myself after I graduate." Students responded to both items on a four-point Likert-type scale from 1 (*strongly disagree*) to 4 (*strongly agree*). Ordinal variables were used to represent responses from these items. Each of these effectors was expected to decrease the likelihood of reporting financial stress.

RESULTS

Descriptive Results

Considering the demographic composition, the sample had high proportions of females (67.8%), White students (83.9%), and students with GPAs above 3.0 (76.5%). The sample was fairly evenly distributed across class rank. The majority of students were from 4-year private schools (39.6%) or 4-year public schools (37.1%). Most of the students in

the sample (76.1%) did not report having any dependents. In terms of living situation, 47.3% of the sample lived on-campus. Approximately 71% of the sample reported feeling stressed from personal finances. Table 1 presents the full descriptive statistics for the sample.

Proportion Tests

The results of the proportion tests are also presented in Table 1. Comparisons of the proportion of students reporting financial stress are presented for each of the independent variables used in the study. Of the comparisons, race/ethnicity, class rank, and the self-concept variables contained comparisons that were not significant (p >.05), although only class rank did not contain any significant differences. The most striking differences in the proportion of financially stressed students were found when analyzing the financial stressors. For example, 91.4% of students who do not have enough money to participate in the same activities as peers were financially stressed while only 59.2% of students who had enough money for such activities were financially stressed. Additionally, greater proportions of students with debt from any source and students who expected to have student loan debt at graduation were financially stressed. See Table 1 for a complete comparison by independent variable.

Factors Related to Financial Stress Among College Students

Table 1
Descriptive results and proportion tests

Variables	Sample proportion	% Financial stress = Yes	Z test statistic	p-value
FINANCIAL STRESSORS				
Does not have enough money to participate in same activities as peers				
No (Base)	62.1%	59.2%	-	-
Yes	37.9%	91.4%	23.175	<.001
Regularly overspends by using credit or borrowing				
No (Base)	84.9%	68.9%	-	-
Yes	15.1%	85.2%	8.625	<.001
Does not pay bills on time				
No (Base)	83.0%	68.1%	-	-
Yes	17.0%	85.1%	10.753	<.001
Current debt from any kind				
No (Base)	25.0%	50.4%	-	-
Yes	70.6%	78.9%	18.169	<.001
Doesn't know	4.4%	70.9%	5.343	<.001
Expected student loan debt at graduation				
None (Base)	21.1%	48.3%	-	-
Below average	29.6%	71.1%	10.999	<.001
Average	15.7%	76.8%	11.708	<.001
Above average	33.6%	83.9%	18.620	<.001
ADAPTATION LEVEL				
Gender				
Female (Base)	67.8%	75.1%	-	-
Male	32.2%	63.5%	-8.057	<.001
Race/Ethnicity				
White (Base)	83.9%	71.7%	-	-
Black	6.8%	73.0%	.497	0.619
Hispanic	2.1%	75.8%	.876	0.381
Asian	2.4%	52.7%	-4.328	<.001
Other	4.7%	71.4%	-.105	0.916
Class rank				
Freshman (Base)	25.8%	69.3%	-	-
Sophomore	24.2%	72.8%	1.841	0.066
Junior	19.7%	71.6%	1.102	0.270
Senior	25.3%	71.3%	1.017	0.309
Other	4.9%	75.2%	1.766	0.077
Institution type				
Public (Base)	37.1%	68.1%	-	-
Private	39.6%	71.4%	2.070	0.038
Community college	23.3%	76.6%	4.751	<.001
GPA				
Low (Base)	23.5%	79.1%	-	-
High	76.5%	69.0%	-6.354	<.001
At least one dependent				
No (Base)	76.1%	68.9%	-	-
Yes	23.9%	79.3%	6.601	<.001
Living situation				
Off-campus (Base)	52.7%	66.8%	-	-
On-campus	47.3%	76.5%	7.217	<.001

Variables	Sample proportion	% Financial stress = Yes	Z test statistic	p-value
SELF-CONCEPT				
Manage well				
Strongly disagree (Base)	3.0%	83.7%	-	-
Disagree	17.8%	85.5%	.544	0.586
Agree	60.0%	70.8%	-3.246	0.001
Strongly agree	19.2%	58.3%	-5.646	<.001
Optimism-Future financial situation				
Strongly disagree (Base)	6.4%	80.0%	-	-
Disagree	28.9%	84.7%	1.944	0.052
Agree	53.1%	66.1%	-4.732	<.001
Strongly agree	11.6%	57.7%	-6.382	<.001
Optimism-Support self after graduation				
Strongly disagree (Base)	3.0%	77.0%	-	-
Disagree	19.3%	82.8%	1.633	0.102
Agree	60.2%	69.6%	-1.850	0.064
Strongly agree	17.5%	64.1%	-2.936	0.003
OUTPUT				
Feel stressed from personal finance				
No	28.6%	-	-	-
Yes	71.4%	-	-	-
N	4,488			

Source: 2010 Ohio Student Financial Wellness Survey

Logistic Regressions

The results of the logistic regression, shown in Table 2, will be discussed according to the empirical model, beginning with Model 1.

Model 1. Financial stressors were the only variables included in Model 1. These were added first to see whether the financial stressors chosen are adequate predictors of financial stress. The model had a Cox and Snell R-squared value of .194, indicating that approximately 20% of the variance in financial stress is predicted by the included financial stressors. Additionally, every financial stressor was significantly and positively associated with financial stress. To interpret the magnitude of the effects, it is most helpful to refer to the odds ratio (OR), the ratio of the probability of financial stress and the probability of no financial stress. An OR less than 1 indicates a reduced likelihood of financial stress while an OR greater than 1 indicates an increased likelihood of financial stress.

Not having enough money to participate in the same activities as peers had the largest positive effect (OR=5.708) on reporting financial stress. Students who regularly spent more than they could afford by using credit or by borrowing were significantly more likely to report financial stress than those who did not regularly overspend (OR = 2.201). Students who were not able to pay their bills on time were significantly more likely to report financial stress than students who did pay their bills on time (OR = 1.698).

Students who had debt (OR = 1.811) or who didn't know if they had debt (OR = 1.525) were significantly more likely to report financial stress than students who did not

have any debt. Compared to students who did not expect to have any student loan debt at graduation, students who expected to have below average debt (OR = 1.686), average debt (OR = 2.023), and above average debt (OR=3.024) were significantly more likely to report financial stress.

Model 2. Demographic characteristics representing a student's current level of adaptation were added to the financial stressor variables in the second model. Model 2 had a Cox and Snell R-squared value of .208, and all of the financial stressors remained consistent in the direction of the effect and significant. Of the demographic variables added in Model 2, class rank, institution type, having dependents, and living situation did not have significant effects. Males were significantly less likely to report financial stress than females (OR = .593). Black students were significantly less likely to report financial stress than White students (OR = .465). Lastly, students with high GPAs (above 3.0) were significantly less likely to report financial stress (OR = .755) than students with low GPAs.

Model 3. The final model added financial self-efficacy and financial optimism variables to Model 2 and had a Cox and Snell R-squared value of .227. All of the financial stressors remained consistent in Model 3. Of the demographic variables, the dummy variables for male students, and Black students remained significant while the effect of having a high GPA became insignificant. Students reporting higher financial self-efficacy were significantly less likely to report financial stress (OR = .670). Lastly, students who were optimistic about their financial situation in the future and who believed they would be able to support themselves after graduation were significantly less likely to report financial stress (OR = .819 and .771, respectively).

Table 2
Multivariate Logistic Regressions for whether the student reports financial stress

Variable[a]	Model 1 (Financial Stressors Only)				Model 2 (Financial Stressors & Adaptation Level)				Model 3 (Full Model)			
	β	S.E.	p-value	Odds Ratio	β	S.E.	p-value	Odds Ratio	β	S.E.	p-value	Odds Ratio
Intercept	-.723	.078	.000	.485	-.319	.145	.027	.727	2.154	.287	.000	8.618
FINANCIAL STRESSORS												
Not enough money to participate in same activities as peers	1.742	.099	.000	5.708	1.775	.102	.000	5.902	1.692	.104	.000	5.433
Regularly overspends	.789	.123	.000	2.201	.787	.126	.000	2.196	.675	.128	.000	1.963
Does not pay bills on time	.530	.126	.000	1.698	.589	.131	.000	1.802	.415	.133	.002	1.514
Current debt from any source (No)	-	-	-	-	-	-	-	-	-	-	-	-
Yes	.594	.095	.000	1.811	.572	.100	.000	1.772	.580	.101	.000	1.785
Doesn't know	.422	.185	.022	1.525	.460	.188	.015	1.584	.389	.190	.040	1.475
Expected student loan debt at graduation (None)	-	-	-	-	-	-	-	-	-	-	-	-
Below average	.523	.107	.000	1.686	.539	.110	.000	1.714	.502	.112	.000	1.652
Average	.704	.131	.000	2.023	.742	.136	.000	2.100	.716	.138	.000	2.046
Above average	1.107	.117	.000	3.024	1.123	.123	.000	3.075	1.060	.125	.000	2.885
ADAPTATION LEVEL												
Sex (Female)	-	-	-	-	-	-	-	-	-	-	-	-
Male	-	-	-	-	-.522	.078	.000	.593	-.477	.080	.000	.621
Race/Ethnicity (White)	-	-	-	-	-	-	-	-	-	-	-	-
Black	-	-	-	-	-.766	.159	.000	.465	-.716	.162	.000	.489
Hispanic	-	-	-	-	-.096	.273	.725	.908	-.155	.276	.573	.856
Asian	-	-	-	-	-.396	.225	.078	.673	-.422	.230	.067	.656

Factors Related to Financial Stress Among College Students

Variable[a]	Model 1 (Financial Stressors Only)				Model 2 (Financial Stressors & Adaptation Level)				Model 3 (Full Model)			
	β	S.E.	p-value	Odds Ratio	β	S.E.	p-value	Odds Ratio	β	S.E.	p-value	Odds Ratio
Other	-	-	-	-	-.204	.181	.260	.816	-.259	.185	.162	.772
Class Rank (Freshman)	-	-	-	-	-	-	-	-	-	-	-	-
Sophomore	-	-	-	-	.149	.106	.159	1.161	.183	.107	.088	1.201
Junior	-	-	-	-	.099	.115	.387	1.104	.118	.116	.308	1.126
Senior	-	-	-	-	.173	.110	.115	1.189	.163	.112	.145	1.177
Other	-	-	-	-	.131	.194	.502	1.139	.139	.196	.479	1.149
Institution Type (4 year public)	-	-	-	-	-	-	-	-	-	-	-	-
4 year private	-	-	-	-	-.130	.088	.139	.878	-.159	.090	.075	.853
Community college	-	-	-	-	-.079	.127	.533	.924	-.075	.128	.556	.927
GPA (Low)	-	-	-	-	-	-	-	-	-	-	-	-
High	-	-	-	-	**-.282**	**.097**	**.004**	**.755**	-.188	.099	.057	.828
Has dependents	-	-	-	-	-.109	.110	.281	1.109	-.015	.112	.896	.985
Living situation (Off-campus)	-	-	-	-	-	-	-	-	-	-	-	-
On-campus	-	-	-	-	.103	.096	.231	1.123	.183	.098	.062	1.201
SELF-CONCEPT												
Manages personal finances well	-	-	-	-	-	-	-	-	**-.400**	**.061**	**.000**	**.670**
Optimistic about future financial situation	-	-	-	-	-	-	-	-	**-.200**	**.066**	**.002**	**.819**
Able to support self after graduation	-	-	-	-	-	-	-	-	**-.260**	**.060**	**.000**	**.771**
Model Fit χ² (df)	969.212 (8)	<.001			1046.844 (22)	<.001			1154.412 (25)	<.001		
Cox & Snell R²	.194				.208				.227			
-2Log Likelihood	4403.995				4326.362				4218.794			
Likelihood Ratio Test[b] χ² (df)	-	-			77.633 (14)	<.001			107.568 (3)	<.001		

Source: 2010 Ohio Student Financial Wellness Survey. Bolded effects were significant at the .05 alpha level.

[a] Reference categories in parentheses.

[b] For Model 2 and Model 3, the likelihood ratio tested whether or not the additional variables added significantly to the preceding model.

DISCUSSION

This study has provided useful insight into financial stress among college students. Results were consistent with expectations, as each of the three hypotheses was confirmed. Students who reported negative financial situations (i.e., financial stressors) were significantly more likely to feel financially stressed than students who did not report negative financial situations (H1). Students with greater financial self-efficacy were less likely to report financial stress (H2). Lastly, students who were more optimistic about their financial futures were less likely to report financial stress (H3).

Before addressing the implications of this research, a few limitations regarding the data and method should be noted. Self-efficacy has been identified as an important concept influencing behavior and perceptions. Various approaches to the measurement of self-efficacy appear in the existing literature. A one-item self-efficacy measure was used in this research. While the item has face validity, future research should continue to explore best approaches to measure this construct with attention to both validity and parsimony. Similarly, as financial stress among the college age population receives continued attention, scales for the measurement of financial stress should be assessed to ensure reliable and valid measurement. Although several financial stress scales have recently been developed (e.g., Northern et al., 2010; Archuleta et al., 2013), these measures were not available in the OSFWS; therefore, the best available measure had to be used. The sample also had a large proportion of students who were female and carried a 3.0 GPA or above. This may indicate that the sample is not perfectly representative of college students. Despite these limitations, there are a number of important implications of this study.

Consistent with prior research (Trombitas, 2012), the results show that financial stress is a considerable problem for the majority of university students (71%). Furthermore, this study has identified financial stressors that greatly increase the odds that a student will report financial stress. Over 90% of students who did not have enough money to participate in the same activities as their peers reported feeling financial stress. This variable had the largest positive effect on financial stress in the multivariate analysis when controlling for other financial stressors, demographic characteristics, and self-concept. While reviewing the literature on peer effects in college, Ficano (2012) showed that the literature is mixed in terms of evidence of the strength of peer influence. Our findings support the notion that the peer environment is influential in student outcomes.

This study also confirmed previous findings that expected debt at graduation is a better predictor of financial stress than current student loan debt (Morra et al., 2008). Although current student loan debt was initially considered a financial stressor, it did not contribute significant explanatory power so it was not included in the final model. Expected debt at graduation was a significant positive predictor of financial stress. Students with larger amounts of expected debt were increasingly more likely to feel financially stressed. This provides evidence that the increase in student loan debt is having a negative impact on student wellness.

Factors Related to Financial Stress Among College Students

This study also found significant effects for several demographic characteristics. As found in Brougham et al. (2009), college women were significantly more likely to report financial stress in the current study. Additionally, Black students were significantly less likely than White students to report financial stress. Although significantly lower proportions of Asian students report financial stress, when controlling for other variables Asian students were not significantly less likely to report stress. A possible explanation is that Asian and White students systematically differ across the distribution of other explanatory variables, and once these differences are controlled there is no additional effect of being Asian.

Although the effect of GPA was significant in Model 2, the effect became less significant ($p < .10$) in Model 3. This may be explained by the measurement of GPA and the lack of variation within this variable. Since a binary variable was used, as more variables are added to the model, the effect becomes less noticeable. An alternate explanation is that there is a relationship between academic performance and self-efficacy and optimism.

Interestingly, a number of demographic characteristics that had significant differences in the descriptive results were not significant in either Model 2 or Model 3, including class rank, type of institution, having dependents, and living off campus. This suggests that the descriptive differences were largely due to variation of the other covariates. For example, those with dependents may experience some financial stressors more than those without dependents; thus, significant differences at a descriptive level disappear in the multivariate analysis. Future research might investigate these differences further.

As previously mentioned, other financial stressors and effectors were initially considered. Of these other variables, two are important to note: (a) working during the school year and (b) taking a personal finance class in college. Trombitas (2012) found that working was one of the top five stressors for college students. In the current study, working status dummy variables did not significantly add to the model as a financial stressor. Since it is plausible that working influences the likelihood of a student experiencing financial stressors, this finding may indicate that working has an indirect effect on financial stress (i.e., by influencing other financial stressors that affect financial stress). In other words, students who work may differ systematically from students who do not work on the financial stressors included in this study.

Financial literacy has also been a popular topic among university administrators. Students who are more financially knowledgeable are expected to be able to handle financial stressors more effectively than financially less knowledgeable students. When a dummy variable representing whether or not the student took a personal finance class in college was added to the model as an effector, it did not have a significant effect. The most likely explanation for this is that the self-efficacy measure accounted for the effect of taking a financial class. This is consistent with prior research that has shown that financial knowledge is a strong predictor of self-efficacy (Heckman & Grable, 2011). Additionally, although self-efficacy was not specifically mentioned by Gillen and Loeffler (2012), they

found that knowledge was positively correlated with confidence in students' financial management.

The findings also provide possible options to help lower financial stress among students. Since students with greater self-efficacy and optimism were less likely to feel financially stressed, helping to increase self-efficacy and optimism may help reduce financial stress among students. Prior research has shown that positive financial behaviors are positively related to financial well-being of college students (Gutter & Copur, 2011). Self-efficacy theory (Bandura, 1977, 1982, 1993) applied to a personal finance domain suggests that people with higher self-efficacy would be more likely to exhibit positive financial behaviors. Thus, helping students increase their self-efficacy should help increase financial wellness. Although a causal relationship should not be interpreted from these results, there is a relationship between self-efficacy and financial stress. Increasing financial literacy could help students feel more confident and competent in dealing with financial stressors, thus increasing their self-efficacy. Helping students understand future job prospects in their field could also increase financial optimism among students. This study does suggest that further research is warranted to examine whether a causal relationship between financial self-efficacy and financial stress or financial optimism and financial stress exists.

From a theoretical standpoint, this study has demonstrated the application of a health care adaptation model to examine financial wellness. As a young discipline, financial therapy lacks a strong theoretical base (Archuleta & Grable, 2010). Therefore, future research may consider ways to build upon the key features of the Roy Adaptation Model; an adaptation model may be a useful perspective in helping clients respond to changing financial circumstances. Since student and family personal finances (e.g., income, expenses, and assets) are subject to great uncertainty and unpredictable shocks, promoting adaptability among consumers may be a very productive goal. Furthermore, under an adaptation model, financial therapists may function as facilitators of adaptation who help clients understand the financial stressor, ways in which the client is currently processing the information, and possible solutions that could help promote healthy responses to these stressors. As clients articulate financial problems or circumstances that create anxiety, the financial therapist may identify information asymmetries between consumers and financial markets and provide relevant education or literacy resources.

Student life administrators, policymakers, financial counselors, and financial therapists should note several important implications from this study. Administrators should consider ways to use the strong effect of the peer environment to help increase the normalcy of financial education and counseling. Offering low-cost social activities on campus (i.e. concerts, cultural events, and sporting activities) provide students with affordable ways to engage with their peers and may be another way to reduce the financial stress among students. Policymakers should also consider the implications of student loans accounting for an increasing proportion of educational funding. There may be serious negative consequences of this debt burden on student wellness. Lastly, given the widespread occurrence of financial stress, financial counselors and financial therapists should consider using a reduction of financial stress as a measure for counseling success

(see Northern et al., 2010). Through experimental designs (e.g., randomized pre- and post-testing), it may be possible to demonstrate that financial counseling and therapy results in measurable reductions in financial stress, which would help to establish the benefits of such assistance. Peer financial counseling programs could also be used to help students adapt to the many financial stressors that occur during college.

Conclusion

Financial stress, and its associated negative health and academic outcomes, is a serious concern for college students today. While the effects of stress have been well-documented by prior research, factors associated with financial stress among college students have not been adequately explored. This study provides an exploratory examination of financial stressors that are associated with increased likelihood of reporting financial stress, as well as possible factors (e.g., financial self-efficacy) that could be targeted to help students respond to financial stressors. Future research should use experimental designs to test for causal relationships between the variables explored in this study.

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