
COLLEGE STUDENTS' ACADEMIC STRESS AND ITS RELATION TO THEIR ANXIETY, TIME MANAGEMENT, AND LEISURE SATISFACTION

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Abstract: This paper investigated the interrelationship among academic stress, anxiety, time management, and leisure satisfaction among 249 university undergraduates by age and gender. Time management behaviors had a greater buffering effect on academic stress than leisure satisfaction activities. Significant gender differences existed among all the measures. Females had more effective time management behaviors than males, but also experienced higher academic stress and anxiety. Males benefited more than females from leisure activities. Freshmen and sophomore students had higher reactions to stress than juniors and seniors. Anxiety, time management, and leisure satisfaction were all predictors of academic stress in the multivariate analysis. Anxiety reduction and time management in conjunction with leisure activities may be an effective strategy for reducing academic stress in college students.

A disturbing trend in college student health is the reported increase in student stress nationwide (Sax, 1997). Stressors affecting students can be categorized as academic, financial, time or health related, and self-imposed (Goodman, 1993; LeRoy, 1988). Academic stressors include the student's perception of the extensive knowledge base required and the perception of an inadequate time to develop it (Carveth, Gesse, & Moss, 1996). Students report experiencing academic stress at predictable times each semester with the greatest sources of academic stress resulting from taking and studying for exams, grade competition, and the large amount of content to master in a small amount of time (Abouserie, 1994; Archer & Lamnin, 1985; Britton & Tesser, 1991; Kohn & Frazer, 1986).

When stress is perceived negatively or becomes excessive, students experience physical and psychological impairment (Murphy & Archer, 1996). Methods to reduce stress by students often include effective time management, social support, positive reappraisal, and engagement in leisure

pursuits (Blake & Vandiver, 1988; Mattlin, Wethington, & Kessler, 1990). Leisure satisfaction is defined as the positive feeling of contentment one perceives as a result of meeting personal needs through leisure activities (Seigenthaler, 1997). Although relationships among some leisure domains and perceived stress have been studied in a variety of settings involving retirees to school-related settings (Kabanoff & O'Brian, 1986; Kaufman, 1988; Pickens & Kiess, 1988; Ragheb & McKinney, 1993; Tice & Baumeister, 1997), relationships between leisure satisfaction and academic stress of college students have not been addressed directly. The only scientific research that specifically related leisure satisfaction to academic stress was that of Ragheb and McKinney (1993), who established a negative association between academic stress and leisure satisfaction. A limitation of this study, however, was that it measured academic stress using seven items that were extracted inclusively from occupational stress inventories.

The concept of time management is

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generally defined in terms of clusters of behavior that are deemed to facilitate productivity and alleviate stress (Lay & Schouwenburg, 1993). Effective time management strategies increase academic performance (Campbell & Svenson, 1992) and are frequently suggested by academic assistance personnel as aids to enhance achievement for college students. Productive study methods are characterized by "time management" and "strategic studying" (Entwistle & Ramsden, 1983; Kirschenbaum & Perri, 1982). Although programs emphasize starting large tasks well before due dates, breaking down large tasks into small ones, and doing small tasks on a regular schedule, students regularly ignore these techniques and find themselves in great distress before exams (Brown, 1991).

Research has reported evidence for the multidimensional nature of the time management construct (Britton & Tesser, 1991; Macan, Shahani, Dipboye & Phillips, 1990). In the present paper, time management was conceptualized in terms of setting goals and priorities, the use of mechanics (like listing priorities), preference of an organized workplace, and the perceived control of time. These components of time management were taken from Macan, et al. (1990).

The above literature suggests that the tendency to structure one's time and leisure satisfaction may be an important factor in reducing academic stress. The purpose of this study was to examine the interrelationship (and predictors) of college students' academic stress with anxiety, time management, and leisure satisfaction. It was hypothesized that academic stress would show a significant positive correlation with anxiety, and a significant negative correlation with self-reported time management behaviors and leisure satisfaction of college students. A person engaging more frequently in time management behaviors will report fewer physical and psychological symptoms of stress. The greater satisfaction with leisure that students indicate, the lower their perceived academic stress will be. A secondary purpose of this research was to examine the differences in the study variables by gender and age. Since college women and older students report better time management skills than college men and younger

students (Trueman & Hartley, 1996), we hypothesized that females and older students would have effective time management behaviors and consequently less academic stress and anxiety.

METHODS

SAMPLE

The sample consisted of 249 full-time undergraduate students at a Midwestern university. The sampling frame chosen was the University Registrar's directory of address files that provided an up-to-date address list of students by gender and class status. Respondents were randomly selected from the directory. Information was collected using a self-administered, voluntary, and anonymous questionnaire. Of the total 593 surveys randomly selected and mailed to the respondents, 249 completed questionnaires were returned, yielding a response rate of 42%. Consent for participation was obtained prior to the survey. The sample was 91% white, which was representative of the university. Preliminary analysis indicated no statistically significant difference in the demographic information between respondents and non-respondents except in their age and gender. More females and sophomores responded to the survey. The average age was 21 years (SD=2.0), and the majority of the sample were females (74.6%), sophomores (36%), and attended religious activities regularly (75%). In regards to health behaviors, 25% were smokers (defined as current use of any number of cigarettes) and 72.6% consumed alcoholic beverages (had one drink) in the last week. Most students reported bingeing alcohol on the weekend.

Instruments: Four self-report questionnaires were selected for the present study.

Academic Stress: Gadzella's Student-life Stress Inventory (SLSI) (1991) is designed to assess the students' perceived academic stress and reactions to stress. There are 51 items arranged on a Likert response format (1=never true to 5=always true) that assessed five categories of academic stressors (frustrations, conflicts, pressures, changes, and self-imposed), and four categories describing reactions to stressors (physiological, emotional, behavioral, and cognitive). Validity and reliability of the

instrument have been reported earlier (Gadzella, 1991; Gadzella, Masten, & Stacks, 1998). The items were summed for each subsection to get a total score in all nine categories. A higher score was indicative of greater stress and reactions to stress. Internal consistency estimates ranged from 0.69 to 0.82 on the nine categories in the present study.

Leisure Satisfaction: Beard and Ragheb's (1980) Leisure Satisfaction Measurement (LSM) was used to gauge students' leisure satisfaction. The instrument contained 51 questions ranging from "Never True" (1) to "Always True" (5) and assessed six leisure satisfaction components: psychological benefits, educational benefits, social benefits, relaxation benefits, physiological benefits, and aesthetic-environmental rewards. A higher score was indicative of greater benefits from leisure activities. The present study obtained an alpha reliability of 0.95 (subscales ranged from 0.85 to 0.95) as compared to 0.93 reported by Beard and Ragheb (1980).

Time Management: Macan et al. (1990) Time Management Behaviors (TMB) scale was used to assess students' time management behaviors. The instrument contained 46 items with a range of "Seldom True" (1) to "Very Often True" (5). Four subscales of time management were examined: Perceived Control of Time (belief that one can affect how time is spent), Setting Goals and Priorities (goal setting and prioritizing of objectives to reach the goal), Mechanics of Time Management (planning and scheduling), and Preference of Organization (organizational approach to a project or workspace). Certain items were reverse scored so that a higher score indicated greater time management skills. Chronbach's alphas for each of the TMB factors and overall TMB score were as follows: Mechanics of time management (0.85), setting goals and priorities (0.84), perceived control of time (0.67), preference of organization (0.80), and overall TMB score (0.74). The alpha coefficients for this study of mechanics of time management, preference of organization, and overall TMB score were higher than those reported by Macan et al. (1990).

Trait and State Anxiety: Spielberger's (1980) State-Trait Anxiety Inventory Form

Y (STAI-Y) was used to assess both anxiety as an emotional state (state anxiety) and individual differences in anxiety as a personality trait (trait anxiety), with equal numbers of items on both. Validity and reliability of the instrument has been widely reported (Tanaka, Sakamoto, Kijima, & Kitamura, 1998; Goldenberg & Waddell, 1990). Trait anxiety implies differences between people in the disposition to respond to stressful situations with varying amounts of state anxiety. The STAI is a 40-item self-report Likert-type instrument in which subjects respond to items such as "I feel at ease" by marking "Not at all" (1), "Somewhat," (2) "Moderately so," (3) or "Very much so" (4). Both positive and negative items are included in the scales. The two 20-item subscales of the instrument, State Anxiety and Trait Anxiety, have possible scores ranging from 20 to 80. Anxiety based questions were reverse scored so higher scores indicated higher anxiety. Internal consistency of the four subscales were as follows: State Anxiety Absent (0.91), State Anxiety Present (0.82), Trait Anxiety Absent (0.80), and Trait Anxiety Present (0.78).

Basic demographic information: Information was collected regarding age, gender, ethnicity, class status, and health risk behaviors (smoking and drinking).

STATISTICAL ANALYSIS

Student t-tests and ANOVA were used to examine gender and age differences in academic stress, anxiety, time management, and leisure satisfaction. The acceptance level for statistical significance was lowered from 0.05 to 0.01 for the TMB and LSM subscales using a Bonferroni correction for the large number of tests. A Pearson product moment correlation of coefficients was utilized to test the strength of association between academic stress and anxiety, time management, and leisure satisfaction. Results of these analyses determined the variables that were included in subsequent regression analysis, where academic stressors and reactions to stressors served as the dependent variable. Hierarchical regression analysis was employed to control for the combined impact of anxiety, leisure satisfaction components, and time management

behaviors to predict academic stress by gender and age.

RESULTS

Preliminary analyses of variance indicated there were some significant gender and class differences on all four measures (Table 1 and 2). Students, in general, experienced higher stress due to pressure and self-imposed stress as compared to changes, conflict, and frustration. Emotional and cognitive reactions to stressors occurred more frequently, and behavioral and physiological reactions to stressors were reported less often. Females experienced higher self-imposed stress and more physiological reactions to stressors than males; indicating they sweat, stutter, and experience headaches due to stress more than males. Males scored significantly lower than females on both trait and state anxiety, and experience significantly higher satisfaction from leisure activities. Time management behav-

iors, however, showed a reverse trend with females managing their time more efficiently than males in three of the four subcategories. This shows female college students' perceived better control of their time, set and prioritized goals, planned, and had an organized approach to tasks and workspace. No statistically significant age differences were observed in academic stress, anxiety, TMB and LSM subscales (except physiological benefit). Freshmen students reported significantly lower physiological benefits from leisure activities.

To test the interrelationship between academic stress (stressors and reactions to stressors) and anxiety, time management, and leisure satisfaction, Pearson product-moment correlations were performed (Table 3 and 4). There was a greater association of stressors and reactions to stressors with time management behaviors than with leisure satisfaction. All four TMB subscales were strongly (negatively) correlated to academic

Table 1
Comparing Stressors and Reactions to Stressors by Class level and Gender

	CLASS LEVEL				ANOVA (p-value)	GENDER		ANOVA (p-value)
	Freshmen (N=55)	Sophomore (N=90)	Junior (N=46)	Senior (N=53)		Males (N=63)	Females (N=186)	
STRESSORS	MEAN (SD)	MEAN (SD)	MEAN (SD)	MEAN (SD)		MEAN (SD)	MEAN (SD)	
CHANGE	2.75 (.88)	2.58 (.70)	2.52 (.68)	2.58 (.62)	ns	2.61 (.72)	2.60 (.72)	0.16 (.87)
CONFLICT	3.19 (.61)	3.06 (.59)	3.16 (.44)	2.90 (.77)	ns	3.14 (.59)	3.06 (.62)	0.86 (.38)
FRUSTRATION	2.73 (.52)	2.77 (.54)	2.73 (.49)	2.64 (0.51)	ns	2.71 (.48)	2.73 (.53)	-0.13 (.89)
PRESSURE	3.58 (.59)	3.62 (.66)	3.69 (.60)	3.83 (.55)	ns	3.62 (.65)	3.68 (.60)	-0.68 (.49)
SELF-IMPOSED	3.70 (.56)	3.68 (.53)	3.78 (.51)	3.78 (.63)	ns	3.60 (.52)	3.77 (.55)	-2.08 (.03)
REACTIONS TO STRESSORS	MEAN (SD)	MEAN (SD)	MEAN (SD)	MEAN (SD)		MEAN (SD)	MEAN (SD)	
EMOTIONAL	3.05 (1.07)	2.76 (1.02)	2.72 (.99)	2.76 (1.19)	ns	2.69 (.94)	2.86 (1.09)	-1.07 (.28)
COGNITIVE	2.92 (1.05)	2.82 (.94)	3.03 (.96)	2.76 (1.19)	ns	2.77 (1.01)	2.92 (.97)	-1.00 (.32)
BEHAVIORAL	2.21 (.77)	2.08 (.67)	1.90 (.73)	1.97 (.78)	ns	1.96 (.69)	2.08 (.74)	-1.18 (.23)
PHYSIOLOGICAL	2.14 (.72)	1.91 (.72)	1.86 (.70)	1.93 (.84)	ns	1.77 (2.03)	2.03 (.77)	-2.43 (.01)

ns= not significant

stressors and reactions to stressors. Setting goals and priorities reduced behavioral reactions to stressors, and increased their cognitive reaction (strategies for handling those situations). Mechanics of Time Management, i.e., planning and scheduling, was correlated with cognitive and emotional reactions to stressors. Organization of tasks reduced behavioral reactions and increased cognitive reactions. The cognitive reactions to stressors showed a positive association with time management strategies indicating it improves students' problem solving ability. Many of the associations, although statistically significant, were not strongly

correlated ($r < 0.30$). This could be attributed to other confounding factors not measured in this research (e.g. life stressors, cultural factors).

Physiological benefits from leisure activities significantly reduced academic stressors (conflict, change, and frustration) and reactions to stressors (behavioral and cognitive) among college students. An aesthetic environment and relaxation benefits reduced academic stressors (frustration), and educational benefits lessened physiological reactions to stressors. Both state and trait anxiety were significantly correlated with stressors. However, state anxiety had a greater

Table 2
Comparing Anxiety, Time Management Behaviors, and Leisure Satisfaction By Class Level and Gender

	CLASS LEVEL				ANOVA (p-value)	GENDER		
	Freshmen (N=55)	Sophomore (N=90)	Junior (N=46)	Senior (N=53)		Males (N=63)	Females (N=186)	ANOVA (p-value)
Time Management	MEAN	MEAN	MEAN	MEAN		MEAN	MEAN	
	(SD)	(SD)	(SD)	(SD)		(SD)	(SD)	
Control of Time	3.00 (.65)	3.04 (.76)	3.03 (.63)	2.98 (.74)	0.08 (.97)	3.52 (.99)	3.80 (.83)	-2.16 (.03)*
Mechanics of Time Management	2.85 (.85)	2.92 (.88)	2.91 (.86)	3.17 (.85)	1.49 (.21)	2.52 (.81)	3.11 (.83)	-4.89 (.001)*
Setting Goals	3.27 (.77)	3.15 (.66)	2.98 (.70)	3.19 (.80)	1.40 (.24)	2.92 (.77)	3.23 (.69)	-2.95 (.004)*
Organization	2.27 (.75)	2.48 (.87)	2.28 (.68)	2.16 (.74)	2.08 (.10)	3.19 (.47)	3.24 (.45)	-0.73 (.46)
Leisure Satisfaction (Benefits)								
Social	3.74 (.59)	3.71 (.58)	3.87 (.47)	3.69 (.58)	1.05 (.37)	3.86 (.55)	3.72 (.57)	1.60 (.10)
Physiological	3.02 (.82)	3.27 (.88)	3.49 (.81)	3.27 (.94)	2.46 (.05)*	3.37 (.92)	3.23 (.86)	1.08 (.27)
Relaxation	4.05 (.70)	3.99 (.71)	4.12 (.61)	4.24 (.72)	1.50 (.21)	4.28 (.56)	4.02 (.73)	2.48 (.01)*
Psychological	3.13 (.34)	3.10 (.32)	3.12 (.32)	3.17 (.31)	0.48 (.69)	3.23 (.32)	3.10 (.32)	2.64 (.009)*
Educational	3.37 (.74)	3.26 (.54)	3.28 (.70)	3.28 (.87)	0.26 (.85)	3.32 (.73)	3.31 (.69)	0.09 (.92)
Aesthetics	3.43 (.65)	3.36 (.62)	3.33 (.79)	3.38 (.66)	0.19 (.90)	3.41 (.64)	3.38 (.69)	0.29 (.76)
Anxiety								
Trait Absent	2.22 (.33)	2.18 (.29)	2.22 (.34)	2.16 (.32)	0.52 (.66)	2.23 (.33)	2.10 (.31)	2.85 (.005)*
Trait Present	2.52 (.31)	2.53 (.28)	2.51 (.27)	2.47 (.27)	4.54 (.71)	2.49 (.33)	2.52 (.26)	-0.74 (.46)
State Absent	2.64 (.65)	2.80 (.59)	2.71 (.58)	2.56 (.67)	1.83 (.14)	2.87 (.54)	2.64 (.64)	2.46 (.01)*
State Present	2.01 (.65)	1.81 (.56)	1.87 (.60)	1.97 (.66)	1.51 (.21)	1.78 (.52)	1.94 (.63)	-1.83 (.05)*

* Significant correlation at $p < 0.05$ level of significance

Table 3
Correlation between Academic Stressors and Time Management, Leisure Satisfaction, and Anxiety

STRESSOR VARIABLES					
TMB SCALES	Change	Conflict	Frustration	Pressure	Self-imposed
CONTROL OF TIME	-.229**	-.251**	-.393**	-.268**	-.232**
MECHANIC OF TIME	-.135*	.025	-.169**	.057	.170**
GOALS	-.123	.006	-.221**	.041	.058
ORGANIZATION	-.316**	-.134*	-.396**	-.127*	-.052
LSM SUBSCALES					
SOCIAL	-.007	.045	-.031	-.001	.067
PHYSIOLOGICAL	-.141*	-.130*	-.186**	.001	.097
RELAXATION	-.117	.017	-.148*	-.086	.001
PSYCHOLOGICAL	-.096	-.074	-.088	-.101	.011
EDUCATIONAL	-.011	.098	-.014	.029	.069
ENVIRONMENT	-.078	-.032	-.176**	-.109	.001
ANXIETY					
TRAIT ABSENT	-.234*	-.123*	-.242**	-.120**	-.259*
TRAIT PRESENT	.144*	.063	.134*	.172**	.243**
STATE ABSENT	-.367**	-.064	-.330**	-.420**	-.202**
STATE PRESENT	.406*	.043	.396**	.382**	.269**

* Significant correlation at $p < 0.05$ level of significance

** Significant correlation at $p < 0.01$ level of significance

Table 4
Correlation between Reactions to Stressors and Time Management, Leisure Satisfaction, and Anxiety

TMB SCALES	COGNITIVE	BEHAVIORAL	EMOTIONAL	PHYSIOLOGICAL
CONTROL OF TIME	.125	-.218**	-.300**	-.158**
MECHANIC OF TIME	.236**	-.073	-.060	-.005
GOALS	.352**	-.077	-.101	-.015
ORGANIZATION	.214**	-.207**	-.093	-.110
LSM SUBSCALES				
SOCIAL	.082	.032	.002	.033
PHYSIOLOGICAL	.182**	-.194**	-.053	-.052
RELAXATION	.106	.013	-.027	.047
PSYCHOLOGICAL	.089	-.067	.017	-.026
EDUCATIONAL	.191**	.094	-.120	-.133*
AESTHETICS	.117	.030	.042	.062
ANXIETY				
TRAIT ABSENT	.058	-.119*	-.220**	-.107
TRAIT PRESENT	.007	.041	.148**	.050
STATE ABSENT	.002	-.225**	-.354**	-.230**
STATE PRESENT	.050	.349**	.430**	.356**

* Significant correlation at $p < 0.05$ level of significance

** Significant correlation at $p < 0.01$ level of significance

association with reactions to stressors than trait anxiety.

Although Tables 3 and 4 do not reflect the association of variables by gender, significant differences were observed between males and females. Male college students reduced their academic stress due to changes and frustration (daily hassles) when they perceived themselves to be in control of their time, able to set goals, and organized. Perceived Control of Time reduced academic stress due to changes in female college students, but unlike males, it did not reduce stress due to frustration. Those females who were goal oriented had less frustration. Planning lowered stress for females, but lacked association for males. Preference of Organization reduced academic stress for females in all the categories, but associated with only "change" and "frustration" for males. Setting goals and priorities among females reduced emotional reactions and increased cognitive reactions to stressors. Similarly, planning and scheduling (Mechanics of Time Management) reduced emotional reactions and increased cognitive reactions among both males and females. Organization, however, lowered behavioral, emotional, and physiological reactions to stressors only among females. Physiological benefits from leisure activities reduced academic stress from change and frustration for females but not for males. Leisure satisfaction reduced reaction to stress more for females than males. Exercise decreased behavioral reactions in both males and females but increased cognitive reactions to stress only in females. Unlike males, females reported leisure activities in an aesthetic environment improved coping with stress.

To test the relative contribution of anxiety, time management, and leisure satisfaction to perceived academic stress, hierarchical multiple regression analyses were performed. The two dependent variables, stressors and reactions to stressors, were created by summing all items under those categories. Age, gender, and years of schooling were also used as predictor variables in the regression equations. The results of the hierarchical regression analyses are summarized in Table 5. Use of step-wise regression allows the researcher to determine the importance of predictor variables entered

early in the equation when accounting for the total amount of the variance explained (Pedhazur, 1982).

Once the effects of independent variables were controlled, no statistically significant or substantively important difference in academic stress was found between males and females. Trait Anxiety emerged as the strongest predictor of academic stressors. Other variables that were significant in the regression model were Preference of Organization, educational benefit derived from leisure activities, and Perceived Control of Time. All these variables were negatively associated with academic stressors except trait anxiety. Academic stress was lower for those college students with high Perceived Control of Time, low anxiety, who used their leisure time to learn and increase their knowledge, used an organizational approach to tasks, and preferred a well-organized work place. Forty-two percent of the variance in academic stress was explained by these variables.

A significant age difference existed in students' reactions to academic stress. Perceived Control of Time, educational component of leisure satisfaction, and lower anxiety were the other variables that predicted reactions to stressors. Older students with high Perceived Control of Time, low anxiety, and who utilized their leisure time to learn and increase knowledge, had less physical and psychological reactions to academic stress. These variables contributed to 14% of the variance.

DISCUSSION

OVERVIEW OF RESULTS

Results supported the initial hypotheses that a negative correlation would be found between time management behaviors, leisure satisfaction components and perceived academic stress. Leisure satisfaction, however, had a weak correlation (bivariate) with academic stress and further validates the findings reported by Ragheb and McKinney's (1993) study. They found the strength of correlation did not exceed -0.32 with 13 out of 51 as nonsignificant relationships. Educational benefit from leisure satisfaction was the only predictor of academic stress and did not fully support Cleaver and Eisenhart's (1982) emphasis of

association with hobbies and physical activities.

Time management behaviors had a greater buffering effect on academic stress than leisure satisfaction activities. Important relationships were found between some aspects of time management and academic stress. The correlational and regression analyses revealed that affective measures of stress were significantly related to the Perceived Control of Time in this college population. The findings are also consistent with stress research showing that feeling in control of the situation is related to lower levels of stress. Furthermore, using an organizational approach in the work place reduced academic stressors. Our hypothesis regarding effective time management was supported for females but not for older college students. This complements prior research on time management in female college students (Allen & Hiebert, 1991; Rawson, Bloomer & Kendall, 1994; Wohlgemuth & Betz, 1991). Efficient time management in females reduced stress (frustration and change), and its reactions (behavioral, emotional, and physiological). Cognitive reaction to stress increased with more effective time management and satisfaction from leisure activities, demonstrating that thinking

about stress and upcoming stressful situations is a positive reaction to stressors among college students. Higher scores on cognitive reactions for both male and female students indicated their use of problem-solving ability to lower stress. Previous studies have shown that problem solving is an important coping strategy that can reduce, minimize, or prevent stress by enabling a person to better manage daily problematic situations and their emotional effects (D'Zurilla & Sheedy, 1991).

Females had more effective time management scores than males but this did not lower academic stress as hypothesized (Table 5). Although the t-test indicated a significant gender difference in stressors and reactions to stressors, controlling for other variables in the regression model, gender difference became spurious. Higher anxiety and lower leisure satisfaction among females might be a plausible reason for offsetting their relative advantage of time management skills over males. Furthermore, higher academic stress among female respondents may reflect not an actual inequality in number of stressors by gender, but females rating negative events more often and more markedly than males (Allen & Hiebert, 1991). Lower reactions to stressors

Table 5
Predictors of Stressors and Reactions to Stressors

	R	BETA	R ²	P-VALUE
Step STRESSORS				
1. Trait Anxiety Present	.557	2.10	.310	.001
2. Organization	.609	-.117	.371	.023
3. Educational benefit of leisure activities	.631	-8.45	.398	.005
4. Trait Anxiety Absent	.648	-2.58	.420	.003
5. Control of Time	.659	-7.99	.422	.020
Constant				.001
F=34.23, Significance of F < 0.001				
Step REACTIONS TO STRESSORS				
1. Control of time	.311	-.243	.097	.001
2. Age	.348	-.195	.114	.001
3. Educational benefit	.372	-.134	.129	.019
4. Trait anxiety present	.393	.128	.142	.027
Constant				.93
F=12.1, Significance of F < 0.001				

for male college students may result from their socialization, which teaches them that emotional expression is an admission of weakness and not masculine (Davidson-Katz, 1991).

A positive association was found between anxiety and academic stress as predicted. Trait anxiety was a significant predictor of academic stress in the regression analysis. Individuals who scored high on trait anxiety experienced higher stressors and reactions to stressors. Females exhibited higher anxiety (both trait and state) than males (Table 2). This could possibly explain their higher scores on academic stress. Males, however, had greater satisfaction than females from leisure time activities.

THEORETICAL AND PRACTICAL IMPLICATIONS OF FINDINGS

Effective time management seemed to lower academic stress in this sample. Hence, faculty members and counselors should emphasize participation in time management seminars to improve academic success of students. It is recommended that college students be made aware of time management's potential impact on academic stress, and of what activities should be undertaken instead of leaving it to trial and error. Courses offered for credit and sessions on time management at the student recreation centers and residence halls could enhance efficiency. However, these are not well advertised and utilized. For example a course offered in this campus is entitled "Academic Planning and Development" and emphasizes the importance of attendance, time management skills, study habits, teacher/student relationships, and scheduling important events. Although the class has open enrollment for all students, it is only required for those students on academic probation or suspension. Other efforts to help students utilize their time and decrease their stress are offered through the university recreation center and individual sororities and fraternities. Freshman week orientation programs and workshops on coping with stress, although helpful, may still not be adequate. Publicity for these events may help students better utilize these services and improve academic performance.

Our results indicated that within this college population, the freshmen and sophomore students had higher reactions to stress than juniors and seniors. This could be due to slightly higher anxiety, lower time management behaviors and leisure activities among them as compared to juniors and seniors. Within a college social system, freshmen and sophomores lack the strong social support networks and have not yet developed the coping mechanisms used by juniors and seniors to deal with college stress (Allen & Heibert, 1991). Hence, they have fewer resources for managing stress and anxiety to demanding schoolwork and tasks. This has important implications for stress management. Institutions should include problem-solving training especially for freshmen and sophomores that emphasizes the use of cognitive components to deal with academic stress. Social support networks provided to freshmen, i.e., through freshmen week, special programs, advising, and counselors, although helpful, may still not be adequate.

The lack of a strong correlation between leisure satisfaction and perceived academic stress somewhat limits their theoretical and practical significance. Campus recreation practitioners may plan leisure activities and social-recreational pursuits that increase the educational benefit from leisure pursuits to help students handle their academic stress. Recreation centers and student unions should be planned, equipped, and furnished to encourage leisure activities that give students a broader experience, encourage learning new skills, improve knowledge about things around them, and help satisfy their curiosity.

LIMITATIONS OF THE STUDY

The correlational nature of this study precludes making any causal statements. Therefore, several explanations of our finding can be proposed. For example, there is the possibility that poor time management behaviors may cause academic stress. Alternatively, academic stress may cause poor time management, i.e., students who are performing poorly and are dissatisfied with the present situation may, as a result of the accompanying stress, be less able to manage and control their time.

Another limitation of this study is its reliance on self-reported measures, and is based on a small sample from a predominantly teaching Midwestern university. The results should be considered in context, and not be generalized to other segments of the population without further investigations. In particular, similar studies should be conducted on a more heterogeneous population and larger university setting consisting of minority students to determine the associations between the constructs. Such studies are needed to help focus stress management efforts for this population. For college students, research needs to explore the lower leisure satisfaction and its underlying factors, e.g., a sedentary lifestyle, lack of facilities, or cultural factors.

More objective measures of academic stress such as observed stress reactions should be used in future research. The general rule of thumb for internal consistency of scales is over 0.70 (Nunnally, 1978). Some of the scale reliabilities were lower than 0.70 but none below 0.67. Future research should explore the associations of these constructs with higher scale reliabilities.

Despite these limiting factors, the present research is the first study that examined the interrelationship of academic stress with anxiety, time management, and leisure satisfaction of college students. Results provide important insights for using time management and anxiety reduction in conjunction with certain leisure activities to reduce academic stress.

IDEAS FOR FUTURE RESEARCH

Future research should explore the other mediator variables that could possibly explain the weak, or lack of, correlation between academic stress and other measures: career goals, academic performance, work and life stress, employment status, social support, and coping mechanisms. Furthermore, any differences in life stress and work experiences should be investigated to ascertain if an environmental difference could account for higher stress levels by gender and age. Use of experimental and longitudinal designs will improve the strength of the findings. There is also a need for replication on a more heterogeneous population and

larger university setting so as to increase generalizations.

REFERENCES

- Abouserie, R. (1994). Sources and levels of stress in relation to locus of control and self-esteem in university students. *Educational Psychology, 14*(3), 323-330.
- Allen, S., & Hiebert, B. (1991). Stress and coping in adolescents. *Canadian Journal of Counseling, 25*(1), 19-32.
- Archer, J., & Lamnin, A. (1985). An investigation of personal and academic stressors in college campuses. *Journal of College Student Personnel, 26*(3), 210-215.
- Beard, T.G., & Ragheb, M.R. (1980). Measuring leisure satisfaction. *Journal of Leisure Research, 12*(1), 20-33.
- Blake, R.L., & Vandiver, T. A. (1988). The association of health with stressful life changes, social supports, and coping. *Family Practice Research Journal, 7*(4), 205-218.
- Britton, B.K., & Tesser, A. (1991). Effects of time-management practices on college grades. *Journal of Educational Psychology, 83*(3), 405-410.
- Brown, R. T. (1991). Helping students confront and deal with stress and procrastination. *Journal of College Student Psychotherapy, 6* (2), 87-102.
- Campbell, R.L, & Svenson, L.W. (1992). Perceived level of stress among university undergraduate students in Edmonton, Canada. *Perceptual and Motor Skills, 75*(2), 552-554.
- Cleaver, V., & Eisenhart, H. (1982). Stress reduction through effective use of leisure. *Journal of Physical Education, Recreation and Dance, 53*(1), 33-34.
- Carveth, J.A., Gesse, T., & Moss, N. (1996). Survival strategies for nurse-midwifery students. *Journal of Nurse-Midwifery, 41*(1), 50-54.
- Davidson-Katz, K. (1991). Gender roles and health. In C.R. Snyder & R.D. Donelson (Eds.) *Handbook of social and clinical psychology: the health perspectives*, NY Pergamon Press.
- D'Zurilla, T.J., & Sheedy, C.F. (1991). Relation between social problem-solving ability and subsequent level of psychological stress in college students. *Journal of Personality and Social Psychology, 61*(5), 841-846.
- Entwistle, N., & Ramsden, P. (1983). *Understanding student learning*. London: Croom Helm.
- Gadzella, B. M. (1991). *Student-Life stress inventory*. Commerce, TX: Author.
- Gadzella, B.M., Masten, W.G., & Stacks, J. (1998). *Students' stress and their learning strate-*

- gies, test anxiety, and attributions. *College Student Journal*, 39(2), 416-421.
- Goldenberg, D., & Waddell, J. (1990). Occupational stress and coping strategies among female baccalaureate nursing faculty. *Journal of Advanced Nursing*, 15(5), 531-43.
- Goodman, E.D. (1993). How to handle the stress of being a student. *Imprint*, 40: 43.
- Kabanoff, B., & O'Brian, G.E. (1986). Stress and the leisure needs and activities of different occupations. *Human Relations*, 39(5), 903-916.
- Kaufman, J.E. (1988). Leisure and anxiety: A study of retirees. *Activities, Adaptation and Aging*, 11(1), 1-10.
- Kirschenbaum, D. S., & Perri, M G. (1982). Improving academic competence in adults: a review of recent research. *Journal of Counseling Psychology*, 29(1), 76-94.
- Kohn, J.P., & Frazer, G.H. (1986). An academic stress scale: Identification and rated importance of academic stressors. *Psychological Reports*, 59(2), 415-426.
- Lay, C.H., & Schouwenburg, H.C. (1993). Trait procrastination, time management, and academic behavior. *Journal of Social Behavior & Personality*, 84(4), 647-662.
- LeRoy, A. (1988). How to survive a nontraditional nursing student. *Imprint*, 35(2), 73-86.
- Macan, T. H. Shahani, C., Dipboye, R. L., & Phillips, A. P. (1990). College student' time management: Correlations with academic performance and stress. *Journal of Educational Psychology*, 82(4), 760-768.
- Mattlin, J. A., Wethington, E., & Kessler, R.C. (1990). Situational determinants of coping and coping effectiveness. *Journal of Health and Social Behavior*, 31(1), 103-122.
- Murphy, M.C., & Archer, J. (1996). Stressors on the college campus: A comparison of 1985-1993. *Journal of College Student Development*, 37(1), 20-28.
- Nunnally, J.C. (1978). *Psychometric theory*, (2nd ed.), New York: McGraw Hill.
- Pedhazur E. (1982). *Multiple Regression in Behavior Research*, (2nd Ed.) New York: Holt, Rinehart and Winston.
- Pickens, I.R., & Kiess, D.A. (1988). Knock out academic stress via leisure reading. *Reading Improvement*, 25(2), 300-302.
- Ragheb, K.G., & McKinney, J. (1993). Campus recreation and perceived academic stress. *Journal of College Student Development*, 34(1), 5-10.
- Rawson, H.E., Bloomer, K., & Kendall, A. (1994). Stress, anxiety, depression, and physical illness in college students. *The Journal of Genetic Psychology*, 155(3), 321-330.
- Sax, L.J. (1997). Health trends among college freshmen. *Journal of American College Health*, 45(6), 252-262.
- Seigenthaler, K. (1997). Health benefits of leisure. *Research update. Parks and Recreation*, 32(1), 24-31.
- Spielberger, C.D. (1980). *Manual for the state-trait anxiety inventory (Form Y)*. Consulting Psychologists Press, Inc. p 81
- Tice, D., & Baumeister, R. (1997). Longitudinal study of procrastination, performance, stress, and health: The cost and benefits of dawdling. *Psychological Science*, 8(6), 455-458.
- Tanaka E, Sakamoto S, Kijima N, Kitamura (1998). Different personalities between depression and anxiety. *Journal of Clinical Psychology*, 54(8), 1043-51.
- Trueman, M., & Hartley, J. (1996). A comparison between the time-management skills and academic performance of mature and traditional-entry university students. *Higher Education*, 32(2), 199-215.
- Wohlgemuth, E., & Betz, N.E. (1991). Gender as a moderator of the relationships of stress and social support to physical health in college students. *Journal of Counseling Psychology*, 38(2), 367-374.