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INFLUENCE OF PERCEIVED CONTROL OVER TIME ON COLLEGE STUDENTS' STRESS AND STRESS-RELATED OUTCOMES

Sarath A. Nonis, Gail I. Hudson, Laddie B. Logan,
and Charles W. Ford

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Assertions that time management results in less stress, healthier employees, and more effective organizations have received little empirical examination. This study investigates the influence of perceived time management (operationalized as perceived control over time) as a stress coping strategy among college students. Also, the influence of perceived time management on valued student outcomes such as academic performance, problem-solving ability, and health are also investigated. Results from a sample of 164 college students found low levels of stress and high levels of academic performance, problem-solving ability, and health for students that perceived high levels of perceived control over time compared to students who perceived low control over time. Discussion of the study findings, implications, and direction for future research is presented.

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Time constraints, financial strain, academic workload, and interpersonal difficulties with faculty, peers, and significant others contribute to stress for college students (Rocha-Singh, 1994). Evidence from past research shows that stress experienced by college students relates to outcomes such as anxiety and depression (Aldwin and Greenberger, 1987; Rawson et al., 1994), hopelessness and suicide ideation (Bonner and Rich, 1987, 1988; Schotte and Clum, 1982), decision-making ability (Priester and Clum, 1993), and attrition (Cope and Hannah, 1975). College students clearly experience stress and could benefit from strategies to reduce it. If university personnel are to effectively promote the adjustment of students to an academic environment, they need to be aware of the types of stressors that are most common to college students and the effects of those stressors on outcomes such as academic performance and health. More

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importantly, university personnel should be in a position to recommend simple strategies that students could use to cope with stress.

While stress is an important issue to both college students and university personnel, there is a paucity of empirical research that focuses on stress and more specifically stress-reducing strategies that students could use in the academic environment. For example, Ragheb and McKinney (1993) state that, "It is vital for students to learn different stress coping behaviors and their effectiveness in reducing academic stress" (p. 10). In addition, job stress is one of the most researched constructs in a variety of work settings due to its negative influence on critical job outcomes such as performance and employee well-being (Cooper and Marshall, 1976; Ganster et al., 1982). More recently, research conducted on work-related stress has focused particularly on identifying strategies (D'Zurilla and Sheedy, 1991; Goolsby, 1992; Keaveney and Nelson, 1993; Oakland and Ostell, 1996) to cope with stress. Some of the coping strategies investigated by researchers include (1) problem-focused and emotional-focused coping strategies (Lazarus and Folkman, 1984; Strutton and Lumpkin, 1994), (2) political strategies such as influence tactics (Deluga, 1989; Nonis et al., 1996), and (3) psychological coping strategies such as intrinsic motivation orientation, role benefits, and psychological withdrawal (Keaveney and Nelson, 1993).

Another strategy that is thought to be effective in coping with stress is time management. Volumes of literature report the positive effects of time management (Macan, 1994; Schuler, 1979). However, this emphasis on time management originated from the untested but popular belief that effective time management not only results in lower levels of stress but also more efficient, satisfied, and healthier employees, and therefore more effective organizations (Cooper and Marshall, 1976; Ganster et al., 1982; Schuler, 1979). Surprisingly, little empirical evidence supports these claims about time management (Macan, 1994). In a review of time management research, Bluedorn and Denhardt (1988) stressed that time management is "the area in most need of research at the individual unit of analysis" (p. 315). At a time when books, articles, and seminars on time management proliferate, there is a need to critically evaluate time management as a coping strategy.

The purpose of this research is to focus on these issues (stress, stress-influenced outcomes, and coping strategies) in a university environment. More specifically, the study attempts to investigate the influence of perceived control of time (perception that one has control over one's time) as a stress-coping strategy among college students. Based on past theoretical and empirical research, the study examines the links between college students' perceived control of time, stress, academic performance, problem-solving ability, and health. Thus, the study tests an integrative model of perceived control of time as a stress-coping strategy with particular emphasis on three key student outcomes: aca-

ademic performance, problem-solving ability, and health. Research conducted in job settings has consistently shown coping strategies to influence job performance (Behrman and Perreault, 1984; Matteson and Ivancevich, 1987; Michaels and Dixon, 1994), problem-solving ability and decision-making ability (Janis and Mann, 1977), and health (Aldwin and Revenson, 1987; Collins et al., 1983; Cooper and Payne, 1988). However, these influences have yet to be investigated in a university environment, which is the basic purpose of this research.

The findings of this study have implications for both theory and practice. Simply stated, studying and understanding the influence of perceived control of time on academic stress and stress-influenced outcomes such as academic performance, problem-solving ability, and health can lead to a better understanding of how to alleviate that stress. By providing simple coping strategies relevant to perceived control of time, university personnel may enable students to adjust and succeed in the academic environment. From a policy point of view, this may increase retention of students and ultimately result in more funding for the institution.

HYPOTHESIZED MODEL

A schematic overview of the model proposed and tested in this study is summarized in Figure 1. The arrows indicate the hypothesized relationships among the study constructs; the plus and minus designations specify the direction of these relationships. The model is based on selected literature central to the hypotheses discussed hereafter.

Perceived Control of Time

Contrary to the popular belief that time management behavior directly influences stress and stress-related outcomes such as performance, problem-solving ability, psychological and physiological health, empirical evidence suggests that it is linked instead through the perception of control over time (Macan, 1994). Only if time management behaviors (i.e., setting goals, scheduling, prioritizing, organizing) provide a person with the perception that he or she has control over time will stress reduction or changes in stress-related outcomes result. Therefore, it is not time management behavior per se that affects these outcomes but the perceived control over time that these behaviors afford an individual. The influence that perception of control over time has on stress and stress-influenced outcomes makes the investigation of the concept "perceived control over time" intriguing.

The notion of a generalized desire for personal control is not new and has been extensively investigated in job settings. For example, studies have found

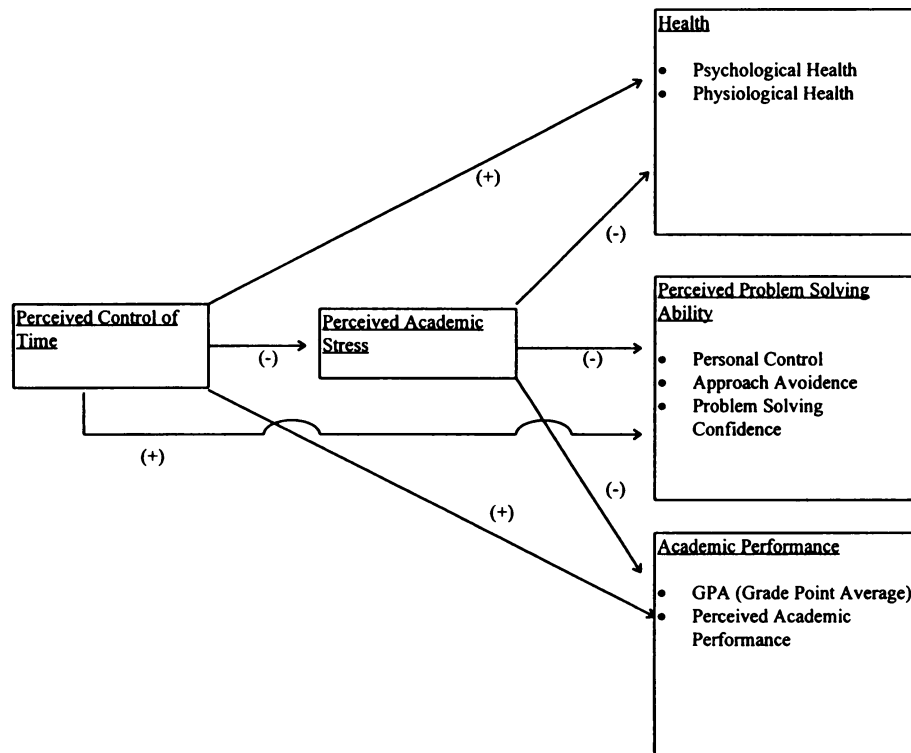


FIG. 1. Schematic view of the proposed model.

significant links between personal control and job performance (Bazerman, 1982; Greenberger et al., 1989), job satisfaction (Greenberger et al., 1989; Spector, 1986), and stress (Spector, 1986; Thompson, 1981). However, this study investigates the influence of a more specific notion of personal control: perceived control of time among college students. This has not been investigated to date.

College Students' Stress

Stress is conceptualized as an event or condition that may be purely physical, social, or psychological (including anticipation and imagination), which triggers a stress reaction (Girdano and Everly 1986; Ragheb and McKinney, 1993). Therefore, a person's perceptions play a substantial role on what some may call objectively stressful events (Lazarus, 1966, 1977). According to Lazarus (1966, 1977), behavior is a function of the interaction between the person and his or her environment and the appraisal of potentially threatening or challenging events. The causal event is actually the cognitively mediated emotional response to the objective event and not the objective event itself. Because percep-

tion plays a key role in the definition of stress, most studies use perceived stress as opposed to objective stress as the study variable.

There is theoretical and empirical justification that stress experienced by college students is multi-dimensional. Mendoza's (1981) research on perceptions of stress in college students defined four dimensions (academic, financial, familial, and personal) that were comparable to the three dimensions of stress (academic, environmental, and family/monetary) identified more recently by Rocha-Singh (1994). However, in this study the investigation of stress is limited to perceived academic stress—the dimension of stress that has several strategic implications for students, instructors, and institutions of higher education. In addition, it is logical to assume that perception of control over time influences academic stress more than stressors such as financial/monetary and environmental. Also, perceived academic stress has been used as a surrogate for college students' stress in several similar studies (Pickens and Kiess, 1988; Ragheb and McKinney, 1993; Yadusky-Holahan and Holahan, 1983).

Perceived Control of Time and Academic Stress

Schuler's (1979) claim that "time management means less stress for individuals, which means more efficient, satisfied, healthy employees, which in turn means more effective organizations" (p. 854), captures most of the conventional thinking about time management. If time management is a useful technique for dealing with stress, one's perception of control over time should also significantly relate to his or her stress following the works of King et al. (1986) and Macan (1994). In a college environment then, a student's perception of his or her control over time should also negatively influence his or her stress. Because stress is operationalized in this study as perceived academic stress, perception of control over time should also negatively influence perceived academic stress.

Perceived Control of Time and Stress-Influenced Outcomes Academic Performance, Problem-Solving Ability, and Health

The writings of time management consultants lead us to believe that perceived control of time influences outcomes such as performance, problem-solving ability, and health (Half, 1997; Schuler, 1979). However, little empirical evidence supports these claims. To date, results of research conducted on some of these influences of perceived control of time have been mixed at best. For example, a positive correlation was identified between academic performance (Macan et al., 1990), grade-point average (Britton and Tesser, 1991), and perception of control over time. However, in the work setting no relationship was identified between job performance and perception of control over time

(Macan, 1994). Such mixed results warrant the testing of the relationship between performance and perception of control over time in other settings. In this study, we hypothesize perceived control over time to positively influence the academic performance (operationalized as perceived academic performance and grade-point average) of students.

Studies conducted in an academic setting have found problem-solving ability to significantly relate to depression and hopelessness among college students (Lakey, 1988; Nezu and Ronan, 1988; Priester and Clum, 1993; Wierzbicki, 1984). But is perception of control over time related to problem-solving ability among college students? In the absence of any empirical evidence some theoretical rationale is provided. When students feel less in control of their time, they are more likely to avoid having to solve problems and make decisions. They have more trouble concentrating and often forget important pieces of information. They are less likely to seek out new information that could help them solve problems; as a result, their ability to solve problems suffers. In this study, it is hypothesized that students' perception of control over time will influence their problem-solving ability (operationalized as problem-solving ability with personal control, approach avoidance, and problem-solving confidence).

While no study has directly tested the influence of perceived control over time as a coping strategy on outcomes such as physiological and psychological health, several studies have found coping strategies such as problem-focused and emotional-focused coping strategies to positively influence physiological and psychological health outcomes (Aldwin and Revenson, 1987; Billings and Moos, 1981; Folkman et al., 1986). In addition, Macan et al. (1990) found a relationship between perceived control over time and job-induced tension (i.e., perceptions of pressures and frustrations) and somatic tension (i.e., physiological symptoms such as insomnia or headaches). Therefore, students who perceive themselves as having control over time should report fewer physiological and psychological symptoms. In this study, it is expected that students who felt in control of their time will demonstrate higher levels of physiological and psychological health.

Perceived Academic Stress and Performance, Problem-solving Ability, and Health

There is a stream of theoretical and empirical justification to show stress as influencing job outcomes such as performance (Goolsby, 1992) and well-being (Cooper and Payne, 1988). Research conducted in university settings has also found that college students' stress affects outcomes such as anxiety and depression (Aldwin and Greenberger, 1987; Rawson et al., 1994), academic performance (Macan et al., 1990), decision-making ability (Priester and Clum, 1993),

and attrition (Cope and Hannah, 1975). In this study, it is hypothesized that perceived academic stress will influence the college students' stress outcomes of academic performance, problem-solving ability, and health (operationalized as physiological and psychological health).

As a conclusion to the above discussion, it should be pointed out that specifications of a model such as this (Figure 1) can always be subject to controversy due to the lack of available theoretical frameworks and empirical examinations on time management (Macan, 1994). Different readers might argue or wish to test alternative formulations of the model. For example, it is possible for some to propose alternative models where stress-influenced outcomes mediate the affects of perceived control over time. For this reason, we present summary statistics for the proposed model and provide the groundwork from which future researchers can construct and evaluate alternative models. At this point, the rationale for the proposed model is based on the available literature.

METHODOLOGY

Sample

The hypotheses were tested using a convenience sample of 164 business students (55% male, 45% female) attending a medium-size (approximately 10,000 students) AACSB accredited state university in the south. Data were collected from students enrolled in sophomore- to senior-level business courses. The sample consisted of the following business majors: marketing and management (30%), accounting (18%), business administration (19%), and other business (33%). On average, students had completed 80 college credit hours. However, about 31% of the sample had completed fewer than 60 college hours. Married students constituted 25% of the sample. The sample was representative of a typical business school to the extent that it did not represent any one single demographic group (e.g., majors, gender, age groups, etc.) extensively. No statistical differences were found for overall stress or the perceived control over time variable with the above-mentioned demographic characteristics. Therefore, the entire sample was used for further analyses.

Measures

Perceived control over time. Five items (i.e., "I feel in control of my time," and "I find it difficult to keep to a schedule because others take me away from my work") assessing the extent to which individuals believe they can directly affect how their time is spent were taken from Macan (1994). Participants responded to each item using a five-point Likert-type scale from 1 (*seldom true*) to 5 (*very often true*). The reported coefficient alpha for this scale is .68 (Macan, 1994).

Perceived academic stress. From the questionnaire developed by Rocha-Singh (1994), six items relating to college students' perceived academic stress such as "meeting deadlines for course assignments" and "handling the academic load" were used. The questionnaire was designed so that the respondent indicated the intensity of stress using a seven-point Likert-type scale varying from 1 (*not at all stressful*) to 7 (*extremely stressful*). This scale was used because its origin is the stress inventory developed by Mendoza (1981) to measure stress among undergraduate college students. Additionally, the items measure stress factors that are common to both undergraduate and graduate students, thereby demonstrating high content validity. Finally, the scale is short (six items) and current with an alpha reliability of .78.

Perceived problem-solving ability. Fifteen items from the problem-solving inventory (PSI) developed by Heppner and Petersen (1982) were used to measure how students perceived their general problem-solving ability. The scale was formatted so that the respondents agree or disagree, using a five-point Likert scale, with statements describing their problem-solving ability. Items on the PSI consist of three factor-based scales: problem-solving confidence (i.e., the confidence to engage in a wide range of problem-solving activities measured with items such as, "I have the ability to solve most problems even though initially no solution is immediately apparent"), approach-avoidance style (i.e., whether an individual approaches or avoids different problem-solving activities measured with items such as, "When confronted with a problem, I tend to do the first thing that I can think of to solve it"), and personal control (i.e., elements of self-control measured with items such as, "When my first effort to solve a problem fails, I become uneasy about the ability to handle the situation"). This inventory has demonstrated high reliability coefficients (alpha) ranging from .72 to .90 and concurrent validity (Heppner and Petersen, 1982).

Perceived academic performance. Students were asked to provide a self-reported indication of their individual academic performance and their academic performance as compared to other students on a seven-point Likert-type scale ranging from 1 (*very poor*) to (7) (*very good*). The scores of these two items ("How would you evaluate your academic performance to date in college" and "How would you evaluate your academic performance as compared to other students in college") were averaged together to form a composite performance measure. This scale has been used in prior studies and has a reported alpha reliability of 0.89 (Macan et al., 1990).

Health. Ten questions that contained the most common psychological and physiological illnesses experienced by students were designed in consultation with several undergraduate business students. Respondents were asked to indicate how often they had experienced each of the listed health-related outcomes while at college. Five items (unpleasant to be around, nervous, worried, depressed, and tired) measured psychological health and the remaining five items

(upset stomach, crying, nausea, overeating, and loss of appetite) measured physiological health. Responses varied between 1 (*never*) to 5 (*very often*). For high scores to reflect higher levels of psychological and physiological health and low scores to reflect lower levels of psychological and physiological health, all items were reverse coded.

Data Analysis

The hypothesized relationships were tested with a least-square path analysis procedure. A multiple regression analysis was performed for each dependent variable. The relevant independent variables (predictors) for each regression model are identified by arrows in Figure 1. Each regression analysis yields a measure of variance in the dependent variable (R^2) for the relevant model, as well as regression and path coefficients (i.e., standard regression coefficients) for each predictor. The path coefficients were tested for statistical significance (i.e., against the null hypothesis that the slope coefficient is equal to zero) with t -tests. After the "full" (initial) models suggested by Figure 1 were analyzed, "trimmed models" (i.e., those with significant predictors) were computed when more parsimonious models seemed plausible (Kerlinger and Pedhauer, 1973). All statistical tests used a significance level of $p < .05$.

RESULTS

Table 1 contains a summary of means, standard deviations, and pairwise correlation coefficients for all study variables. All measures exhibited suitable reliability coefficients (alpha coefficients varied between 0.62 and 0.89) based on criteria set by Nunnally (1978).

Summary statistics (estimates of R^2 , the path coefficients, and associated probability levels) for each structural equation implied by the proposed model (Figure 1) are displayed in Figure 2 and Table 2. Dependent variables will be discussed in the order in which they appear in the table as this is consistent with the hypothesized flow of effects in the overall model.

Perceived Academic Stress as the Dependent Variable

When perceived academic stress was regressed on perceived control over time, the regression model resulted in an R^2 value of .26, which was statistically significant at $p < .01$. The path coefficient (-0.51) was also significant at $p < .01$ and consistent with the hypothesized negative effect.

Health as the Dependent Variable

Psychological health. Forty percent (40%) of the variance in health measured by psychological health was explained by the regression equation computed

TABLE 1. Means, Standard Deviations, Correlations, and Reliability Coefficients

Variable Name	Mean	S.D.	1	2	3	4	5	6	7	8	Reliability Coefficients
1. Academic stress	4.45	1.29									.84
2. Perceived academic performance	5.05	1.06	-.18 ^a								.89
3. Grade-point-average	3.07	0.54	-.06	.61 ^b							—
4. Psychological health	2.84	0.87	-.62 ^b	.13	.09						.81
5. Physiological health	3.86	0.82	-.38 ^b	.08	.01	.45 ^b					.70
6. PSA-personal control	3.09	0.73	-.40 ^b	.14	.10	.34 ^b	.36 ^b				.70
7. PSA-approach avoidance	3.55	0.57	-.04	.10	.13	-.01	.07	.31 ^b			.62
8. PSA-confidence	3.84	0.55	-.19 ^a	.09	.05	.09	.14	.43 ^b	.38 ^b		.71
9. Perceived control of time	3.24	0.78	.51 ^b	.16	.11	.43 ^b	.32 ^b	.45 ^b	.15	.20 ^b	.64

^a $p < .05$.

^b $p < .01$.

TABLE 2. Regression Analysis Results

Dependent Variable	Independent Variable	Perceived Control of Time			
		Full Model		Trimmed Model	
		Path Coefficient	Adj. R^2	Path Coefficient	Adj. R^2
Academic stress	Perceived control of time	-.51 ^a	.26	-.51 ^a	.26
	Perceived control of time	.15 ^b	.40	.15 ^b	.40
	Academic stress	-.55 ^a		-.55 ^a	
Physiological health	Perceived control of time	.17 ^b	.15	.17 ^b	.15
	Academic stress	-.29 ^a		-.29 ^a	
PSA-perceived control	Perceived control of time	.34 ^a	.23	.34 ^a	.23
	Academic stress	-.22 ^a		-.22 ^a	
PSA-approach avoidance	Perceived control of time	.18 ^b	.02	.15 ^a	.02
	Academic stress	.05		—	
PSA-confidence	Perceived control of time	.15	.04	—	—
	Academic stress	-.11		—	
Perceived performance	Perceived control of time	.10	.03	—	—
	Academic stress	-.13		—	
Grade-point average	Perceived control of time	.10	.00	—	—
	Academic stress	.01		—	

^a $p < .01$.

^b $p < .05$.

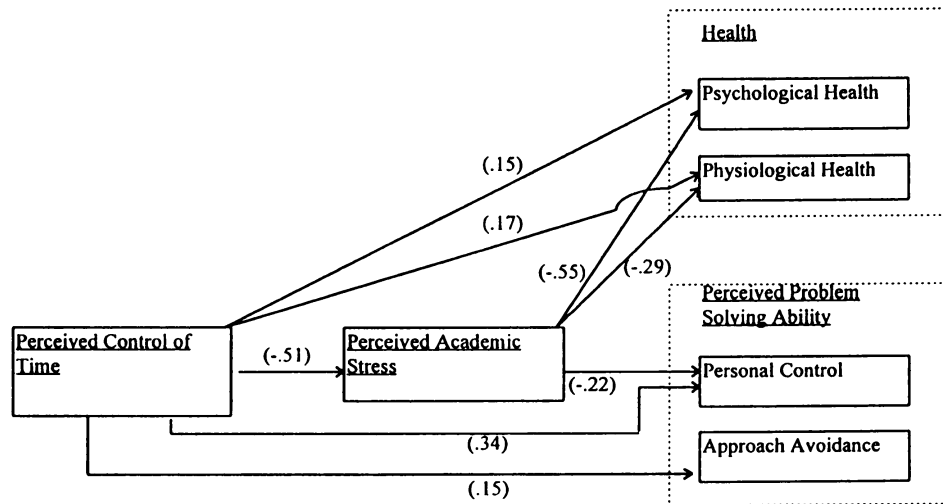


FIG. 2. Trimmed model.

from the two predictors perceived control over time and perceived academic stress. Independent *t*-tests on the individual coefficients in the model indicated both paths to be statistically significant (slope coefficient for perceived control over time = .15, $p < .05$; slope coefficient for perceived academic stress = $-.55$, $p < .01$). The largest path coefficient was for perceived academic stress, demonstrating the larger negative influence on psychological health, compared to the smaller positive influence of perceived control over time.

Physiological health. About 15% of the variance in health measured as physiological health was explained by the regression equation computed from the two predictors, perceived control over time and perceived academic stress. Independent *t*-tests on the individual coefficients in the model indicate both paths to be statistically significant (perceived control over time slope coefficient = .17, $p < .05$; perceived academic stress slope coefficient = $-.29$, $p < .01$). As before, the larger path coefficient was for the negative influence of perceived academic stress on physiological health but much closer in magnitude to the positive influence of perceived control over time.

Problem-solving Ability (PSA) as the Dependent Variable

Problem-solving ability (PSA)–personal control. About 23% of the variance in problem-solving ability (PSA) measured as PSA–personal control was explained by the regression equation computed from the two predictors, perceived control over time and perceived academic stress. Results of *t*-tests on the individual coefficients in the model indicate both paths to be statistically significant

(perceived control over time slope coefficient = .34, $p < .01$; perceived academic stress slope coefficient = $-.22$, $p < .01$). This time, the larger path coefficient was for the positive influence of perceived control over time on PSA–personal control and the smaller negative path coefficient for perceived academic stress.

Problem-solving ability (PSA)–approach avoidance. A very small portion of the variance ($R^2 = .02$) in problem-solving ability measured as PSA–approach avoidance was explained by the regression equation computed from the predictor, perceived control over time. Results of t -tests on the individual coefficients in the model indicate that only the path from the predictor, perceived control over time, to PSA–approach avoidance, is statistically significant (slope coefficient = .18, $p < .01$). Perceived academic stress did not explain additional variance in the dependent variable, PSA–approach avoidance.

Problem-solving ability (PSA)–self-confidence. For the model that used PSA–self-confidence as the dependent variable and perceived control over time and perceived academic stress as the predictor variables, none of the paths were statistically significant. Also, only 4% of the variance in the dependent variable was explained by the two predictor variables.

Performance as the Dependent Variable

Perceived academic performance. For the model that used perceived academic performance as the dependent variable and perceived control over time and perceived academic stress as the predictor variables, none of the paths were statistically significant. Also, only 3% of the variance in the dependent variable was explained by the two predictor variables.

Grade-point average. As before, the model that used grade-point average as the dependent variable, using perceived control over time and perceived academic stress as predictors, was not statistically significant ($R^2 = .00$, $p > .05$). Both paths were statistically insignificant.

These results did not support the influence of perceived control over time and academic stress on academic performance of college students. While these results were not totally unexpected, possible reasons for the insignificant path coefficients are provided in the discussion that follows.

DISCUSSION

The most important finding in this study was the influence of perception of control over time on academic stress and stress-influenced outcomes such as health (i.e., physiological and psychological health) and certain aspects of problem-solving ability (i.e., personal control and approach avoidance) in college

students. This is consistent with the conventional belief that feeling in control of one's time results in lower levels of stress and higher levels of individual problem-solving ability and well-being. While the descriptive nature of this study precludes making any causal statements, the consistency of these results with past theoretical and empirical research provides initial support for the contention that a lower perception of control over time may result in undesirable outcomes such as lower levels of problem-solving ability, higher levels of health-related ailments (psychological and physiological), as well as stress in college students.

The absence of a significant influence of perceived control over time and academic stress on academic performance (measured as perceived academic performance and grade-point average) was unexpected and requires further discussion. While the insignificant path coefficients may demonstrate the true state of affairs, it is also possible that this finding is attributable to several other factors.

First, both measures of performance were self-reported performance by students and therefore may contain some bias. However, Macan (1994) found no relationship between perceived control over time and more objective measures (i.e., supervisor's ratings) of job performance. Second, it is possible that a third unmeasured variable moderated the hypothesized relationships. For example, feelings of success, high school grades, or degree aspirations, variables not investigated in this study, could have influenced the observed results. Future research should consider these issues. Finally, the hypothesis proposed the influence of perceived control over time and academic stress on academic performance to be linear.

Some argue that the relationship between work stress and job performance is curvilinear (McGrath, 1976), which intuitively makes sense. That is, people will perform best under moderate amounts of stress; under low or high levels of stress, the performance will be lower. Regression models used in our analyses assumed these relationships to be linear, which may partly explain the nonsignificant relationships. Post hoc to the study, this rationale was tested. In the performance model that used perceived academic performance as the dependent variable, the curvilinear influence of academic stress to performance was statistically significant ($R^2 = .07$; $p < .05$). However, in this model the influence of perception of control over time on academic stress was not significant. In the performance model where grade-point average was the dependent variable, neither of the two influences was statistically significant. The differing points of reference used by students in answering the two questions that measure performance (GPA is cumulative and is an objective measure of a student's performance up to that point in time; perception of performance is based on how one feels about his or her performance at that point in time) may explain the results

of the two performance models. This issue is complex and obviously warrants more research.

IMPLICATIONS

The study demonstrated the positive influence of perception of control over time as a stress-coping strategy. Findings of this study have several implications for university personnel, students, and theoreticians.

Utility to University Personnel

From a policy point of view, university personnel should realize that teaching students simple stress-coping strategies such as having control over their time cannot only reduce dropout rates but can also positively influence students' overall well-being and problem-solving skills, both key to success in an academic environment. In this regard, student counseling centers should emphasize the importance of both the perception of, and behavior relating to, time management when advising students. In addition to recommending strategies that help students manage their time better (e.g., prioritizing tasks, setting deadlines, keeping daily logs, etc.), strategies that increase their perception of control over time (e.g., feeling in control of time, not being overwhelmed by tasks, correctly estimating the completion time of a task) should also be emphasized.

Instructors should do everything possible to make the student believe that he or she has control over his or her time and not the opposite. For example, instructors can schedule exams, assignments, and projects at short, regular intervals rather than having only one or two exams (i.e., midterm and a final), assignments, or projects. Major assignments and projects can often be divided into smaller parts with separate deadlines. For example, if a project involves a marketing plan, it can be broken down into smaller parts due on separate days, such as a situational analysis, mission statement and objectives, and marketing strategy. Having exams, assignments, and projects in shorter intervals will require the students to keep up with course work. This may result in higher levels of perceived control over time, especially for students who do not manage their time well. Also, a syllabus containing a complete time schedule (e.g., exams dates, project due dates, topics to be covered dates) and adherence to it will help students plan ahead and manage their time better. In addition, providing students sufficient time to study for an exam (e.g., not scheduling an exam soon after an important topic has been introduced), or complete a project can also increase their perceptions of control over time. By planning and managing activities with student time management and control in mind, instructors could give students a perception of control over their time outside of class, which could significantly alleviate their stress level and improve their overall well-being.

Utility to Students

For many students, college is their first experience in managing life's demands. What they find after the first semester in school is that they have committed themselves to an overwhelming schedule. For students experiencing this for the first time, the initial need to escape (i.e., procrastination) from the grueling schedules of classroom activities is great. These classroom demands could result in students indulging in deviant behaviors (i.e., substance abuse, cheating) or dropping out of school altogether. Students should be made aware that they cannot possibly manage their time until they have the knowledge and the experience of being in control of their time. The first step in getting control of one's time is to be aware of how one uses time. Keeping a record of how they manage their time and then later evaluating whether their time was well spent may help students decide whether to continue with their current behaviors or start making different choices. Also, dividing big projects into smaller projects or completing tasks as they arise (just doing them) can increase the perception of control over time.

Utility to Researchers

For theoreticians, the findings of this study provide direction for future research. Because the descriptive nature of the study precludes making any cause-effect inferences, future standardized longitudinal studies will help overcome the shortcomings of our findings and those of other researchers. For example, in our study, because all measures were taken at the same point in time, the time sequence of the relationship among the variables cannot be determined unambiguously. Therefore, the study's results should be interpreted only as a test of the a priori explanatory scheme of models and as suggesting a plausible "new" model. Second, investigating the effects of perceived control over time on the relationships between stress and other stress-related outcomes such as student satisfaction, motivation, involvement, commitment, and propensity to drop out of school should provide important information to both university personnel and students. In this light, testing other plausible models will help researchers to empirically test the claims of time management and better understand what is not known at this time. Third, the study showed the relationship between stress and academic performance to be curvilinear. Empirical research on job stress to date has neglected this curvilinear relationship and focused primarily on the simple linear influence of stress on outcomes such as performance and well-being. Future studies can also be directed at this issue.

LIMITATIONS

Reliance on self-reported measures is one of the limitations of this study. More objective measures of performance such as grades, test scores, or

teachers' ratings of performance, observed stress reactions, and problem-solving ability, can be used in future research. Also, the convenience nature of the sample (business students in a medium-size public university in the South) requires replication of this study in other university environments prior to generalizing these results to all student populations. Finally, the study is also constrained by the absence of controls for variables such as race, ethnicity, and degree aspirations, all of which may be related to outcomes such as grade-point average and problem-solving ability.

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