

Using the *Survey of Academic Orientations* to Predict Undergraduates' Stress Levels

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The Survey of Academic Orientations (SAO) measures six orientations in college students believed to represent desirable or undesirable perspectives. Previous research established the connections of SAO orientations with grades and persistence. This study shows the extended utility of the SAO as an early warning indicator, enabling advisors to identify those students most likely to experience high levels of academic stress.

KEY WORDS: instruments, student anxiety, student characteristics

Relative emphasis: theory, practice, research

Many universities expend substantial financial and staff resources in attempts to help students overcome academic difficulties and to alleviate adjustment problems. In spite of these efforts, approximately one half of the students who matriculate at American universities never graduate, and others find colleges to be highly stressful and threatening environments. While success cannot be guaranteed, interventions by academic advisors, faculty members, counselors, and student support staff can increase the likelihood that undergraduates will have productive and fulfilling college careers.

The large student-to-staff ratios that characterize most universities make difficult the identification of individuals in greatest need of advisement and support. Many students encountering adjustment problems never come to the attention of their advisors or only do so after a series of performance or social difficulties have seriously jeopardized their chances for a successful college career. A warning system is needed for the detection of at-risk undergraduates before a student's problems become so severe that the chance for improvement is slim.

We explore the potential of the *Survey of Academic Orientations* (SAO) (Davidson, Beck, & Silver, 1999) as a warning indicator that students are at risk. The SAO is a brief questionnaire used to assess undergraduates' perceptions of key college-environment features. In this study, we sought to discover if SAO profiles reliably predict the degree of stress that undergraduates experience when interacting with the academic environ-

ment. If stress-environment relationships are found through the SAO, academic advisors may be able to improve their effectiveness by concentrating their energies on those students most likely to benefit from their services. In addition, SAO scores might help clarify the reasons that reactions to similar academic stressors differ among college students, and to the extent that certain orientations exert causal force toward high stress experiences, they might indicate the type of intervention most likely to be successful in helping students overcome stress-induced challenges.

Key Variables on the *Survey of Academic Orientations* and Background Research

The SAO (see Davidson et al., 1999, for validation studies) furnishes the six academic orientations defined in Table 1: structure dependence (S), creative expression (C), reading for pleasure (R), academic efficacy (E), apathy (A), and mistrust of instructors (M), summarized with the acronym SCREAM. According to Davidson et al. (1999), C, R, and E orientations are desirable because they are generally associated with positive outcomes. High scores on the orientations of S, A, and M are considered undesirable because they are usually associated with negative outcomes. The SAO also yields a global score, called the *adaptiveness index* or *AI*. High AI scores describe students who scored high on the desirable orientations (C, R, E) and low on the undesirable orientations (S, A, M); low AI scores indicate the opposite pattern. The AI is hypothesized to allow assessment of the extent to which a student's overall perspective of academia is associated with favorable or unfavorable outcomes.

After the initial validation of the instrument, research attention was shifted to correlating the SAO with important educational indexes. In the first of these investigations, we (Beck & Davidson, 2001) showed that SAO scores were related to the grades of first-semester freshmen. In a subsequent analysis, we found that the SAO significantly improved the prediction of grade-point averages (GPAs) after the effects of SAT scores and high school percentage rank were considered. In a later study, we (Davidson & Beck, in press) found that, after pre-college ability scores were controlled,

Table 1 Description of the *Survey of Academic Orientations*

	Name of Scale	Description of Scale
S	Structure dependence	An overly strong need for clear, detailed, external guidelines for academic assignments
C	Creative expression	A preference for individualistic expression and tasks that involve the extensive use of one's own ideas
R	Reading for pleasure	The tendency to find pleasure in extensive, broad reading beyond that which is assigned in courses
E	Academic efficacy	The belief in one's capability to master academic tasks and assignments and attain one's academic goals
A	Academic apathy	The lack of interest in academic work and an inclination to do as little as possible
M	Mistrust of instructors	The negative perception of instructors as people who deliberately impose unreasonable requirements on students and enjoy the student's subsequent distress
AI	Adaptiveness index	The tendency to develop and utilize orientations that work well in the academic environment (CRE) and to avoid the use of orientations that undermine academic accomplishments (SAM)

scores on the SAO significantly predicted whether freshmen reenrolled for their sophomore year. These results established the SAO as a useful warning device that can be used to identify those undergraduates most at risk of receiving poor grades or not persisting to graduation. This line of research builds a nomological network of educational outcomes that correlate with SAO scores.

Relationship Between Academic Orientations and Stress

While grades and persistence are important, we contend that success in college is multidimensional and not fully reflected by any single metric. Among other attributes, successful college students effectively respond to academic and social pressures while maintaining their overall level of stress at manageable levels. An examination of the SAO items suggests that many academic stressors experienced by students are explained by the various orientations. For example, difficult courses or assignments probably accentuate academic efficacy, dramatically raising the stress of those with low efficacy. Research in which negative affective reactions are found in stressed students with low efficacy supports this finding (Carver & Scheier, 1994; Zimmerman, 1995).

Students' academic orientations may become apparent when students and instructors hold incompatible expectations and requirements. For instance, the highly structure-dependent student might be stressed by vaguely stated assignments; the creative student might be distressed by courses offering little opportunity for student input; the student

with low reading interest might be disturbed by courses with extensive reading assignments; the apathetic student might be apprehensive about courses with high work loads; and the mistrusting student might be unnerved by highly subjective grading schemes. While SAO scores appear to be associated to academic stress, these propositions need to be empirically verified.

The empirical literature provides a useful framework for investigating relationships between academic orientations and stress. Our inquiry was guided, in part, by the seminal ideas of Lazarus and Folkman (1984), who described stress in terms of the three processes of primary appraisal, secondary appraisal, and coping. Primary appraisal is the process of perceiving threat or challenge to one's well-being. Secondary appraisal is the process of bringing to mind and evaluating possible responses to the threat or challenge. Coping is the process of engaging in a response.

We focused our study on the primary appraisal aspect of stress. Using the self-report technique, we asked students to rate the amount of stress they felt in relation to several specific events that occur frequently in college, such as test taking. Our measure of perceived stress is in contrast to another popular approach to measuring stress, sometimes called *stimulus-oriented* or *life-events scaling* (Crandall, Preisler, & Aussprung, 1992; Derogatis, 1982), in which respondents rate whether (or how often) various stressors on a list have occurred in a designated time frame. Although the life-events approach is based on objective measures, individual differences in the appraisal of events are ignored. Because

our interest is in subjective interpretations, we opted to measure students' perceptions of stressful events rather than the occurrence or frequency of stressors that they encountered.

Stress is too broad a construct to be comprehensively addressed by any single study. Therefore, the selection of the subset of stressors is a crucial investigative decision. In studies on college students, group stressors are sometimes lumped into clusters such as academic, interpersonal, intrapersonal, and environmental (see Ross, Niebling, & Heckert, 1999). Because our study is on academic (course-related) stress, we used the SAO to tap into student perceptions of academic matters. However, we also recorded students' reactions to nonacademic stressors. We are also interested in whether the relationship of SAO orientations to stress changed during the course of students' academic careers. Certainly the challenges that individuals must confront alter as they move from matriculation to graduation. In a similar fashion, the importance of various orientations as warning indicators may also wax or wane over time.

Hypotheses

Three suppositions guided this research. The first and central hypothesis is that SAO scores are statistically related to academic stress. If this proposition were supported, we would next determine if knowledge of the students' class (freshman-sophomore vs. junior-senior) improves the prediction of their stress level as based on SAO orientations. No previous research provided sufficient information to predict whether the class variable will produce a statistically significant increment in the explained variance.

According to Davidson et al. (1999), the SAO measures undergraduates' perceptions of the academic environment. Their analysis suggests a second hypothesis: The SAO is a better predictor of academic than nonacademic stress. Thus, we predicted that the regression analysis of academic stress on SAO scores will yield a higher R^2 than will the regression analysis of the nonacademic stress on SAO scores.

The third hypothesis consists of a set of statements concerning the direction of the correlation of SAO and stress scores. No orientation score is assumed to be related to all academic attributes. However, Davidson et al. (1999) proposed that high C, R, and E tend to be associated with favorable characteristics and that high scores on the S, A, and M scales tend to be associated with unfavorable characteristics. If stress is regarded as a neg-

ative attribute, then the C, R, and E scores will be negatively correlated with stress, and the S, A, and M scales will be positively correlated with stress. Furthermore, the global AI score will be inversely correlated with stress.

The hypotheses are summarized as follows:

1. SAO scores will be statistically related to stress scores, but the students' class standing will not be shown to be a factor in the SAO-stress relationship.
2. SAO scores will be a better predictor of academic stress than of nonacademic stress.
3. The direction of the relationships between SAO scores and stress will be such that favorable orientation scores will be associated with low stress and unfavorable orientation scores will be related to high stress scores.

Method

Participants

Three hundred seventy-three undergraduates enrolled in psychology courses at a university in the southwestern United States participated in our study. The sample had 111 males and 262 females; it was comprised of 86 freshmen, 73 sophomores, 93 juniors, and 121 seniors. The ethnic composition was 69.7% White, 19.5% Hispanic, 6.2% African American, and 4.6% classified as Other. Ages ranged from 18 to 58 years ($M = 23.9$; $SD = 7.8$). The percentage of each ethnic subsample was within 2% of the university's population distribution. However, the sample had fewer males and more females than represented in the university's distribution, which was 44% male and 56% female.

Procedure

The participants were solicited from psychology courses. Participants earned varying amounts of extra credit points in their classes for volunteering for the study. The opportunity to participate was extended to students in lower division and advanced psychology courses.

Afternoon testing sessions were conducted for groups that ranged in size from 1 to 30 participants. After signing an informed consent form, each participant completed four questionnaires, the first and last of which pertain to this study (SAO; perceived stress instrument). The individuals were then debriefed. The testing sessions lasted approximately 45 minutes. Treatment of participants conformed to the American Psychological Association Guidelines for Ethical Conduct (www.apa.org/ethics/code2002.html), and the pro-

cedure of the study was approved by the university's research review board.

Instruments

Survey of Academic Orientations. The SAO (Davidson et al., 1999) contains 36 questions that measure the six individual orientations (SCREAM) described in Table 1. Each of the orientations is measured by six items scored on a 5-point Likert scale (*strongly agree* to *strongly disagree*). Three of the orientations are considered adaptive: C (I am a very creative person), R (reading is one of my favorite pastimes), E (anytime that I really need a good grade on a test, I can get it). Three of the orientations are viewed as maladaptive: S (I hate it when an instructor assigns a paper but does not give specific guidelines and directions), A (I try to work just hard enough to get the grade that I need in a course), and M (some instructors enjoy giving students poor grades). In addition to individual scale scores, advisors might also employ the AI to identify students at risk for high stress. The AI is obtained by summing responses to the 36 items after reversing the values of items in which an agreement response indicates either a) the presence of an undesirable orientation or b) the absence of a desirable orientation. A simple way to calculate the AI score is to use the following formula: $R + E + C + (108 - S - A - M)$; high scores indicate an overall adaptive perspective.

Previous research (Beck & Davidson, 2001; Davidson et al., 1999) cited in this article presented evidence of reliability (internal and test-

retest) and validity (expected relationships with personality variables and academic outcomes) for the SAO measures. Descriptive statistics calculated on scores obtained from the current participants are presented in Table 2. They are similar to data reported in prior studies. Of the six SAO orientations, all but S had reliability coefficients above .60. The internal consistency coefficient for the AI was .80, which lends credence to grouping the individual scales together on the basis of the adaptive-maladaptive theme.

Perceived stress. The measure of perceived stress was adapted from the *College Adjustment Rating Scale* (Zitzow, 1984), which measures perceived stress in four domains: academic, social, personal, and family. Research conducted by Zitzow on this 100-item instrument yielded a small set of items rated as highly stressful by 1,146 students. We developed an 11-item instrument based on this research by selecting item topics that generated the highest stress ratings in the academic domain and in some other domains in which students indicated they felt very distressed. The items were presented on a 7-point Likert scale from *no stress at all* (1) to *an extremely large amount of stress* (7). Seven of the items asked about academic stress: participating in class, meeting with faculty, taking exams, writing papers, meeting deadlines for course assignments, handling the academic workload, and the possibility of failing to meet program expectations. Responses to these items were summed to form the academic stress scale. Four items asked about nonacademic issues: handling relationships with other students, fulfilling outside

Table 2 Intercorrelations of academic orientations, academic stress, and nonacademic stress, $N = 373$

Scale	S	C	R	E	A	M	AI	AS	NAS
S	1.00								
C	-.12	1.00							
R	-.19*	.27*	1.00						
E	-.17*	.12	.18*	1.00					
A	-.02	-.14*	-.21*	-.15*	1.00				
M	.18*	-.13*	-.11	-.26*	.25*	1.00			
AI	-.42*	.50*	.67*	.59*	-.54*	-.56*	1.00		
AS	.22*	-.14*	-.15*	-.53*	.09	.28*	-.042*	1.00	
NAS	.10	-.04	-.08	-.28*	.12	.18*	-.024*	.58*	1.00
<i>M</i>	23.46	22.87	18.56	18.46	16.64	18.00	109.79	26.89	13.51
<i>SD</i>	2.89	3.33	5.39	4.35	4.06	3.65	13.29	7.90	5.04
α	.44	.67	.83	.73	.66	.69	.80	.85	.67

Note. S = structure dependence; C = creative expression; R = reading for pleasure; E = academic efficacy; A = academic apathy; M = mistrust of instructors; AI = adaptiveness index; AS = academic stress; NAS = nonacademic stress.

* $p < .01$.

responsibilities, being away from home or loved ones, and paying for college or living expenses. These items were summed to form the nonacademic stress scale. The descriptive statistics reported in Table 2 on scores obtained from the current study indicate that both stress scales had acceptable levels of internal reliability.

Although the perceived stress and life events scales measure different phenomena, scores obtained using the two types of instruments should be positively correlated. In a pilot study, we examined the convergent validity of the 11-item perceived-stress scale by administering it to 308 undergraduates along with an extensively validated 83-item measure of life-events stress, the *Undergraduate Stress Questionnaire* (Crandall et al., 1992). The latter survey asks respondents to indicate whether a particular stressful event (e.g., no sleep, registration for classes, bad test score) happened to them in the 2 weeks prior to taking the survey. Scores on the two scales were moderately correlated in the expected direction: $r(307) = .47$, $p < .001$. Those who reported higher levels of subjective stress indicated that they also had experienced more stressors.

Results

Academic advisors and other college support personnel could use either the global or separate orientation scores to identify those students likely to experience high stress levels. Therefore, each of the hypotheses was tested in two ways. Coefficients of correlation were calculated between the AI and the stress variables. Then the stress scores were regressed per the six individual orientations.

The first hypothesis was that SAO scores would be associated with academic stress. Support for this proposition was obtained. The regression of academic stress on AI scores was statistically significant, $F(1, 328) = 64.76$, $p < .0001$; $R = .41$; $R^2 = .17$. The class variable (0 = freshman-sophomore, 1 = junior-senior) was added on Step 2. Because there

were relatively few freshmen and sophomores, for the purpose of analysis they were grouped together as were the juniors and seniors. The addition of the class variable did not yield a statistically significant augmentation in the explained variance, $F(1, 327) = 0.53$, ns ; $R_{\text{INC}} = .00$; $R^2_{\text{INC}} = .00$. Similar findings were produced by the regression of academic stress scores upon the six orientation scores. When entered as a block, $F(6, 323) = 23.56$, $p < .0001$; $R = .55$; $R^2 = .30$. Inclusion of the class variable on the second step did not generate a statistically significant increase in R^2 , $F(1, 322) = 2.30$, ns ; $R_{\text{INC}} = .07$; $R^2_{\text{INC}} = .01$. As Table 3 shows, the E, M, and S orientations made statistically significant contributions to the explained variance.

The second hypothesis was also confirmed. AI scores explained 17% of the variance in the academic stress measure but only 6% of the variance in the nonacademic stress measure, $F(1, 328) = 20.80$, $p < .0001$; $R = .25$; $R^2 = .06$. Likewise, the regression of academic stress on the six orientations scores accounted for 30% of the variance while the regression of nonacademic stress on the six orientations explained only 9% of the variance, $F(6, 323) = 5.57$, $p < .0001$; $R = .31$; $R^2 = .09$.

The final group of hypotheses concerned the direction of the relationship of SAO scores to stress. As predicted, the AI was inversely related with the academic stress measure (see Table 2). The correlation of E was statistically significant and negatively correlated with academic stress. Scores on the S and M scales were statistically significant and positively correlated with academic stress. The associations of the C, R, and A scales with academic stress were not statistically significant.

Discussion

Previous research established that scores on the SAO could aid in identifying university students who were at risk of receiving low grades or dropping out of college. The results of the present investigation suggest that the SAO will also be helpful in identi-

Table 3 Summary of regression analysis for SAO scores predicting academic stress

	β	B	$SE\ B$	t
Structure dependence	.103	.283	.127	2.22*
Creative expression	-.052	-.124	.111	-1.12
Reading for pleasure	-.015	-.022	.070	< 1.00
Academic efficacy	-.464	-.854	.087	-9.84**
Academic apathy	-.024	-.047	.093	< 1.00
Mistrust of instructors	.128	.277	.104	2.66**
Intercept			35.124	6.610

Note. * $p < .05$; ** $p < .01$.

fying those students who are most likely to experience problems adjusting to college. Scores on the A, I, E, S, and M scales predicted the degree of academic and nonacademic stress reported by students.

It is interesting that after taking SAO scores into account, we found that the student's class standing did not produce a statistically significant effect in the explained variance in stress scores. Based on this finding, we find no reason to recommend that separate regression equations be used to predict the stress levels of freshman-sophomore and junior-senior students. This result should not be interpreted to mean that students' orientations do not change during the course of their academic careers. To the contrary, in the present sample, juniors-seniors reported higher adaptive or lower maladaptive scores on the S ($t = 3.71, p < .01$), R ($t = 2.03, p < .05$), and E ($t = 2.66, p < .01$) orientations. The determination of whether these changes in the orientation scores are due to exposure to the educational environment or a selection factor is an important topic for future research. However, any conclusions about the operation of academic orientations or stress in students based on class differences must be tempered by the acknowledgment that the classification groups are not equivalent in many ways; for example, the status of declaration and type of major is not considered. In our sample, the freshman-sophomore group undoubtedly included many students with undeclared majors or diverse majors from across campus, and the junior-senior group probably had a high number of students with majors or minors in the social and behavioral sciences.

In general, the data support the contention of Davidson et al. (1999) that some orientations are associated with favorable outcomes and other orientations with unfavorable outcomes. As predicted, AI and E scores were negatively correlated with academic stress and M and S scores were positively correlated with academic stress. Like previous research using the SAO, our present study showed that some but not all of the orientations were correlated with a stress criterion. A comparison of investigations indicates that the combination of SAO scores that predicted grades and persistence was different than the combination of scores that predicted stress. Because the orientation descriptions are based on distinct perceptual viewpoints, we expect to see this finding replicated in future research. In other words, the relative importance of the orientations will depend upon the educational attribute being measured. The value and challenge in a multidimensional questionnaire such as the SAO are discovering which components of the instrument are

involved in various important academic outcomes.

If, as Davidson et al. (1999) contended, orientation scores assess perceptions of academia, then the SAO should be a better predictor of educational than noneducational variables. This hypothesis was confirmed. Individual orientations and AI scores accounted for a larger proportion of the variance in academic stress (30 and 17% respectively) than nonacademic stress (9 and 6% respectively). The discrepancies are consistent with previous findings that the SAO orientations are specific expressions of broader personality traits (Davidson et al., 1999; Davidson & Beck, in press). The SAO orientations are more narrowly applied characteristics than are personality traits, which would not be useful for differentiating academic and nonacademic stress.

Advisors, counselors, faculty members, and other university personnel might use either the global AI or the individual orientations to distinguish at-risk students. An obvious advantage of the AI, which combines the SAO orientations, is that single metrics are easier to understand than are multiple metrics. Also, if different orientations are associated with different outcomes and experiences, the AI will likely be correlated with a broader array of educational indexes than will a single orientation.

A limitation in the AI is that, like other global measures, it does not pinpoint the components involved in the relationship. Regression analyses revealed that students at risk for academic stress show low levels of E and high levels of M and S. E was the best single predictor of academic stress. Questions on the SAO indicate that students who are low in E sometimes wonder if they are college material, report being unaware of how to make good grades, believe test anxiety lowers their performance, and feel unable to anticipate exam questions. Previous research shows that undergraduates with little E are hindered by self-doubts, unmotivated to achieve in situations that require independence, concerned about receiving satisfactory grades, and disinterested in learning (Davidson et al., 1999). Also, they are pessimistic and dissatisfied about their academic progress as well as manifest various physical and psychological symptoms (Chemers, Hu, & Garcia, 2001). This unfavorable set of characteristics support the unsurprising result that low levels of E are associated with high stress. To the students' benefit, previous research attests to the malleability of efficacy and offers many guidelines for how best to accomplish constructive change (Bandura, 1997).

Although the M and S variables were weakly

related to academic stress, these orientations may exert a more powerful effect in other educational settings. Stress reactions are, after all, moderated by the degree to which courses contain orientation-specific aggravations. In the present study, the effects of M and S may have been attenuated if many of the sample group's professors expended considerable efforts to be fair and took steps to insure that students understood the performance that was expected of them. The M factor may play a more significant role when instructors grade subjectively, tests include unexpected material, or grades are low. Likewise, the S orientation may exacerbate students' stress reactions if course requirements change unpredictably from one week to the next or if the teacher relies heavily on self-directed learning.

Applications and Interventions

Because of the applied nature of this project, we address how these findings may be implemented into practice. While practicability is dependent upon circumstances, some general guidelines may be offered. The SAO should be given on a volunteer basis. Students should be informed that the primary purpose in administering the questionnaire is to obtain information that may prove helpful in advising them. Students must be assured that confidentiality will be maintained and that their responses to the items will not compel them to participate in any activity.

SAO profiles allow academic advisors, counselors, and faculty members to individualize their interactions with students. When taken as a composite, the correlations of SAO scores with educational outcomes and personality measures tell educators a great deal about how students are likely to differ from one another. Orientation scores and knowledge of the SAO literature are potentially powerful tools that can enable skilled academic advisors, counselors, and faculty members to see the college through the student's eyes. While responding to students as individuals is always good practice, SAO profiles may be of particular value in large universities where students' opportunities to interact with their teachers and support staff are often limited.

A second benefit of the SAO, and the one we focused upon in this article, is that the questionnaire can be used to identify at-risk students. Extreme scores on the stress-related scales might generate reasonable concerns that the student is experiencing deleterious degrees of academic stress. Of course, we are not proposing that the SAO or any psychometric instrument be the sole means of iden-

tifying at-risk students. However, a SAO profile may be an appropriate first step because it may suggest that a more in-depth interview with the student is warranted. If conversations confirm that the student is experiencing adjustment problems, then that individual's SAO scores may guide the selection of interventions. In addition to customary stress-reduction methods, changing students' viewpoints of themselves (E), instructors (M), and course assignments (S) as the need arises may ameliorate the problems that students are experiencing. For example, inefficacious students might be encouraged to build a sense of mastery by setting (and attaining) short-term proximal goals. Mistrusting students can be guided to speak with instructors individually when they do not understand the basis of their grades, thereby reducing groundless suspicions. Structurally dependent students might raise their sense of certainty or structure by learning to acquire additional information in ambiguous situations and to rely increasingly on themselves as decision makers. Also, the possibility of ineffective coping strategies should be explored with students reporting the stress-prone profile of academic orientations, especially those with low E or high M or S scores.

While SAO scores provide a potentially valuable advisement tool, no psychometric information is of any benefit unless it is readily available. An important asset of the SAO is that advisors can employ orientation scores to predict stress levels without great difficulty. In a straightforward strategy, the advisor can create an electronic spreadsheet containing columns for the student's name, each of the six SAO orientations, and the predicted stress score. The regression equation (see Table 3) could then be coded and saved as part of the spreadsheet. When the advisor enters the SAO scores, the student's predicted stress score would then be automatically calculated. A data sort might then be performed, bringing to the advisor's attention those students most likely to experience debilitating stress levels.

Limitations and Future Research

The idea of changing students' orientations has merit if these characteristics are causally related to academic stress. We believe they are, so we speak of the academic orientations in terms of their outcomes or consequences. However, our method of inquiry in this study was correlational and does not establish causality. University personnel, who design and implement interventions, often measure the outcomes, which reveal causal connections. Certainly the causal consequences of self-efficacy are well documented. Our study establishes the

connections between SAO scores and general patterns of academic stress. The next step in this line of research is to address more pointedly the theoretical issues of causality and mediation processes.

Attempts to change students' perceptions or orientations may be met with disinterest or resistance. People do not necessarily accept changes even if they are in their own best interests. While the current study provides a profile of perceptions that have the potential to enhance students' academic experiences and reduce their stress, many advisees will be disinclined to change. The challenges are to recognize those who are amenable to making alterations in their outlooks and to set an atmosphere in which they feel inclined to do so.

Future research can also expand upon the findings in terms of sampling and the measurement instruments. The current study used volunteer students enrolled in psychology courses, and their ethnicity reflected the population of students at the university where the sample was drawn. The generalizability of the results to other groups needs to be established by broader sampling. Also, the S and academic stress measures could be improved. The internal consistency of S scores was too low, so the items might be reworded to raise the homogeneity. The measure of academic stress was tapped from seven common types of academic stressors, but a more comprehensive instrument could clarify whether some stressors are more detrimental than others to those with a particular SAO orientation.

Earlier studies (Davidson & Beck, in press; Beck & Davidson, 2001) demonstrated that the SAO could be used to identify undergraduates in danger of receiving low grades or dropping out of college. The results of this investigation extended the use of the SAO as a warning device to undergraduates likely to experience high degrees of academic stress. An important line of future inquiry is to determine if students' academic perceptions, as measured by the SAO, predict other significant educational outcomes. For instance, it is probable that professors and majors vary in the extent that they encourage the S, C, and R orientations. It is a reasonable conjecture that students are most likely to experience dissatisfaction, stress, and other problems when their personal orientations conflict with those emphasized by their instructors and disciplines.

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