

Davidson, W. B., Beck, H. P., & Silver, N. C. (1999). Development and validation of scores on a measure of academic orientations in college students. *Educational and Psychological Measurement*, 59(4): 678-693. (Aug 1999) Published by Sage (ISSN: 1552-3888). doi:10.1177/00131649921970107

Development and Validation of Scores on a Measure of Six Academic Orientations in College Students

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ABSTRACT

This article describes the development and score validation of a 36-item measure of six academic orientations in college students: structure dependence, creative expression, reading for pleasure, academic efficacy, academic apathy, and mistrust of instructors. Results from three studies indicate that the measuring instrument, the Survey of Academic Orientations (SAO), has six factorially distinct scales (Study 1) whose scores are stable across different semesters, yielding test-retest coefficients that range from .63 to .86 (Study 2). Also, each of the six scales relates in expected ways to basic personality traits, yielding validity coefficients of .30 to .69 (Study 3). Scores on the six scales are internally consistent, yielding coefficients alpha that range from .59 to .85 (Studies 1-3). Scale scores and a summative score of all 36 items, called the Adaptiveness index, are examined for their potential in predicting a variety of important student outcomes.

Educators have long been interested in students' interpretations of their college experiences. Research on students' perceptions or orientations not only promotes a better understanding of undergraduates but also often has applied utility. A common strategy is to correlate attitudes, traits, or viewpoints with important educational indices. These relationships can then be used to identify or to counsel students prone to performance or adjustment problems. Publication of the LOGO II scale by Eison, Pollio, and Milton (1982) increased interest in the study of students' academic orientations. The LOGO II measures the extent to which students are learning oriented (LO) and grade oriented (GO). Highly LO students see college as an opportunity to acquire information that is rewarding and personally enlightening. Students with high GO scores view the pursuit of course grades as sufficient reason for being, and doing, in college.

Highly LO students are likely to possess a variety of desirable characteristics, including effective study skills, low levels of test anxiety, above-average abstract reasoning ability, and high levels of self-motivation. Highly GO students tend to have low grade point averages (GPAs), poor study habits, high test anxiety, and below average Scholastic Aptitude Test scores (for reviews of the literature, see Milton, Pollio, & Eison, 1986; Pollio, 1992). Although LO and GO have provided valuable insights into the perceptual world of undergraduates, there are important dimensions of the college experience that the LOGO II does not measure. A questionnaire that is sensitive to a wider array of orientations would enable investigators to see more fully how students construe the academic environment. This article describes the results of three studies focused on the development of such a questionnaire, called the Survey of Academic Orientations (SAO). The initial study was an exploratory factor analysis, the second study assessed the temporal stability of the SAO scores, and the third study examined construct validity by correlating SAO factors with relevant personality indices.

STUDY 1

The development of the SAO began with the assumption that learning orientation and grade orientation are prominent components in the perceptual lives of many college students (e.g., Beck, Rorrer-Woody, & Pierce, 1991; Milton et al., 1986). Informal observation and an examination of the empirical literature suggested that the need for structure or predictability (Ebeling & Spear, 1980), feelings of academic competence (e.g., Bandura, 1995; Harackiewicz, Barron, Carter, Lehto, & Elliott, 1997), evaluation preferences (e.g., Fulkerson & Martin, 1981; Goulden & Griffin, 1997), and beliefs about instructors (e.g., Waters, Kemp, & Pucci, 1988) also strongly affect students' interpretations of the college experience. Questions were written to reflect these dimensions. In addition, a number of items from the LOGO II scale were modified to be consistent with the format of other questions. After several pilot studies, 56 items were retained for further inquiry.

Method

Participants. Four hundred seventy-five undergraduates (290 females, 181 males; 383 younger than 25 years of age, 92 who were 25 years or older) from Angelo State University ($n = 315$) and Appalachian State University ($n = 160$) participated for extra course credit.

Procedure. Participants, who were assured of the confidentiality of their responses, completed the 56-item questionnaire in groups ranging from 3 to 35. The response format for the items was a 5-point Likert-type scale (1 = *strongly disagree* and 5 = *strongly agree*).

Results and Discussion

The 56 items were subjected to a principal components analysis with a promax rotation. The solution yielded six factors with eigen values greater than 1.0. The six most salient items on each factor were selected for further analysis. All items chosen for subsequent examination had structure/pattern coefficients of .35 or greater (see Comrey & Lee, 1992).

A second principal components analysis with promax rotation was performed on the resultant 36 items to ensure that structure/pattern coefficients were not appreciably altered by the deletion of items. The results of the two factor analyses were similar; the removal of the 20 items did not have a pronounced impact on the coefficients. The analysis of the 36 items found six factors with eigen values greater than 1.0 (2.47, 2.32, 3.71, 2.76, 2.17, and 2.40, based on factor order in Table 1) that explained 44.0% of the variance. The correlations between factors were trivial to small (Cohen, 1969), ranging from $-.03$ to $.33$. Table 1 shows the factor structure and pattern coefficients for each of the items (see the appendix for a verbatim copy of the 36-item questionnaire and the scoring instructions).

Factors were given the following names, based on their item contents: Structure Dependence (S), Creative Expression (C), Reading for Pleasure (R), Academic Efficacy (E), Academic Apathy (A), and Mistrust of Instructors (M). As a mnemonic aid, the SAO factors were ordered to form the acronym, "SCREAM." Each factor has six items, which are summed to yield values ranging from 6 to 30.

Students who score high on the S orientation are intolerant of ambiguity and have a strong need for order and predictability. They want to know exactly what is expected on their assignments, and they rely on grades to give direction to their academic pursuits.

Undergraduates with high scores on the C orientation prefer assignments that allow for individualistic expression. They actively participate in classroom discussion and enjoy learning for its own sake. Also, they believe that learning about different cultures and alternative lifestyles is a valuable endeavor.

Students who score high on the R orientation read a great deal from a diverse set of sources. Their readings are not confined to course assignments. They read ungraded materials, such as books recommended at the end of textbook chapters. They enjoy academics and are likely to browse through the library or a bookstore. Also, they prefer courses with lengthy and varied reading assignments.

High scores on the E orientation are indicative of confident undergraduates who feel assured of achieving their academic objectives. They are not plagued by self-doubts, nor are they distracted by fears of failure. They believe that they are “college material” and have the capabilities to do well on course assignments and tests.

Undergraduates obtaining high scores on the A orientation are disinterested in their course work. They are more concerned with the appearances of academic success than actually learning anything. They set minimal academic standards and are unwilling to exert the effort necessary to receive higher grades.

Students who score high on the M orientation think that their instructors are unconcerned with the pressures and stresses that students experience. They also believe that some instructors enjoy giving students poor grades and write tricky test questions to confuse students. Consequently, they tend to attribute their academic failures to instructors rather than to themselves. An examination of the items suggested to the investigators that each orientation was (a) related statistically to students’ academic performance and/or adjustment to college and (b) associated with a different set of performance or adjustment indicators. For example, we expect that high E scores will be associated with high GPAs, and high S and/or M scores will be associated with high stress. In general, high scores on the C, R, and E factors are expected to be correlated with desirable attributes, and high scores on the S, A, and M factors are expected to be correlated with undesirable attributes.

If these suppositions are correct, then it is both reasonable and useful to construct a summary metric that represents the extent to which students’ overall outlook is favorable or unfavorable. The computed metric, called the Adaptiveness Index (AI), sums the values of all 36SAOitems, after reversing the values of 22 items in which an “agreement” response indicates either (a) the presence of an undesirable orientation or (b) the absence of a desirable orientation (see the appendix for a list of items reversed for AI score). A less cumbersome and mathematically equivalent way to handle the reversed items is to subtract the S, A, and M scores from 108, as follows: $AI = R + E + C + (108 - S - A - M)$. Alpha of .81 was obtained for scores on the AI, indicating an acceptable level of internal consistency (Nunnally, 1978). Scores on AI are predicted to be positively correlated with a variety of favorable attributes and negatively correlated with a variety of unfavorable attributes.

Table 1
Survey of Academic Orientations Items and Rotated Factor Structure and Pattern Coefficients

Item Numbers and Factors ^a	S	C	R	E	A	M
Structure Dependence						
24. Grades are ideal goal	.58 (.51)	-.07 (.03)	-.18 (-.11)	-.06 (-.15)	-.20 (.04)	-.06 (-.09)
12. Prefers factual questions	.57 (.46)	-.27 (-.14)	-.30 (-.09)	.34 (.16)	-.08 (.01)	.22 (.06)
36. Wants guidelines	.56 (.53)	-.18 (-.07)	-.20 (.00)	.22 (.04)	.06 (.04)	.16 (.03)
30. Way to succeed clear	.49 (.48)	.01 (.10)	-.15 (-.02)	.17 (-.01)	.02 (-.01)	.27 (.19)
6. Instructor sets direction	.43 (.39)	-.10 (.00)	-.15 (-.01)	.27 (.16)	.10 (.07)	.09 (-.05)
18. Study place must be quiet	.37 (.39)	-.01 (.05)	-.05 (.01)	.05 (-.01)	-.18 (-.18)	.03 (-.01)
Creative Expression						
23. Work allows creative ideas	-.24 (-.13)	.68 (.66)	.22 (-.01)	-.13 (-.03)	-.07 (-.05)	.02 (.08)
29. Work requires creativity	-.19 (-.07)	.66 (.63)	.27 (.07)	.08 (-.04)	-.02 (.02)	-.05 (-.03)
11. Considers self creative	.18 (-.10)	.55 (.57)	.06 (-.13)	-.14 (-.11)	.06 (.07)	.05 (.09)
35. Likes class participation	.07 (.04)	.48 (.48)	.13 (.01)	-.12 (-.09)	.05 (.10)	-.03 (-.01)
17. New learning is thrilling	.06 (.18)	.40 (.39)	.23 (.12)	-.06 (.02)	-.22 (-.17)	-.12 (-.10)
5. Learn of other ways of life	.07 (.16)	.34 (.34)	.15 (.08)	.00 (.04)	-.09 (-.06)	-.03 (-.04)
Reading for Pleasure						
7. Reading a favorite pastime	.21 (.04)	.14 (-.13)	.81 (.86)	-.17 (-.09)	-.11 (.07)	-.14 (.00)
31. Time for outside reading	-.25 (-.05)	.23 (-.01)	.77 (.77)	.06 (-.09)	-.13 (.00)	-.05 (.07)
25. Reads a variety of topics	-.21 (.01)	.32 (.11)	.73 (.70)	-.09 (.02)	-.12 (.02)	-.11 (-.01)
1. Looks through the library	-.25 (-.03)	.29 (.07)	.72 (.69)	-.15 (-.03)	-.17 (-.04)	-.11 (.03)
13. Only buy textbooks ^b	.25 (.08)	-.15 (.05)	-.62 (-.60)	.15 (.05)	.13 (.01)	.11 (.01)
19. Does optional reading	-.18 (-.02)	.28 (.12)	.61 (.54)	-.04 (-.13)	-.24 (-.13)	-.20 (-.12)
Academic Efficacy						
15. Unaware how to get grades ^b	.29 (.13)	-.01 (.09)	-.12 (.01)	-.65 (-.56)	.26 (.13)	.35 (.12)
3. Wonders if college material ^b	.21 (.09)	-.06 (-.00)	.02 (.11)	-.64 (-.62)	.29 (.20)	-.14 (.10)
21. Test anxiety lowers grades ^b	.23 (.04)	-.02 (.07)	-.11 (-.01)	-.64 (-.57)	.15 (-.01)	.39 (.20)
9. Can get grade if needed	.02 (.24)	.23 (.20)	.09 (.02)	.52 (.54)	.00 (.16)	-.25 (-.14)
33. Worries about grades ^b	.41 (.30)	-.11 (-.01)	-.13 (.01)	-.51 (-.44)	.07 (-.01)	.17 (-.02)
27. Can guess test questions	-.13 (.04)	.14 (.06)	.15 (.10)	.49 (.52)	-.04 (.07)	-.08 (.08)
Academic Apathy						
14. Grades without effort	.04 (.06)	.01 (-.02)	-.12 (.02)	.08 (-.10)	.67 (.68)	.18 (.07)
32. Works just enough for grade	.03 (.02)	-.10 (-.06)	-.16 (-.04)	.11 (-.01)	.58 (.59)	.05 (-.07)
8. Minimal effort if "pass-fail"	.00 (-.03)	-.07 (-.04)	-.10 (.01)	.17 (.06)	.53 (.51)	.14 (.03)
2. Cut class if not on test	-.08 (-.10)	-.03 (-.04)	-.05 (.03)	.04 (-.09)	.46 (.44)	.24 (.20)
26. Studies in spurts	-.04 (-.04)	.06 (.09)	-.06 (-.02)	.14 (.10)	.41 (.40)	.03 (-.07)
20. Plans study sessions ^b	.22 (.24)	-.09 (-.11)	.08 (.12)	-.11 (-.15)	-.40 (-.39)	.10 (.19)
Mistrust of Instructors						
4. Enjoys giving poor grades	.01 (-.11)	.03 (.03)	-.01 (.03)	.21 (.08)	.03 (-.09)	.55 (.57)
10. Questions from nowhere	.28 (.16)	-.01 (.06)	-.18 (-.06)	.28 (.08)	.15 (.03)	.55 (.47)
34. Instructors try to confuse	.23 (.09)	-.06 (.00)	-.17 (-.06)	.27 (.09)	.08 (-.05)	.54 (.49)
16. Instructor's fault for failures	.08 (.04)	.05 (.04)	-.02 (.05)	.02 (-.16)	.10 (.04)	.51 (.55)
22. Gives too much work	.11 (.01)	-.04 (-.02)	-.06 (.04)	.21 (.05)	.14 (.05)	.49 (.47)
28. "Pop" tests are unfair	.10 (-.02)	-.10 (-.08)	-.11 (-.02)	.19 (.03)	.12 (.01)	.47 (.45)

Note. Items are listed in order of the strength of structure coefficients. Coefficients in bold indicate items that assess a particular factor. Structure coefficients are not in parentheses. Pattern coefficients are in parentheses. S = Structure Dependence; C = Creative Expression; R = Reading for Pleasure; E = Academic Efficacy; A = Academic Apathy; M = Mistrust of Instructors.

a. Item numbers correspond to the 36-item questionnaire shown in the appendix.

b. Reverse-scored items.

Table 2
*Means, Standard Deviations, Alpha Coefficients,
 and Test-Retest Coefficients of Academic Orientations from Study 2*

Factors	First Session			Second Session			Test-Retest Coefficient
	<i>M</i>	<i>SD</i>	α	<i>M</i>	<i>SD</i>	α	
Structure Dependence	23.43	3.13	.51	23.53	3.22	.54	.63
Creative Expression	23.01	3.49	.73	21.95	3.96	.77	.82
Reading for Pleasure	18.6	5.97	.88	18.4	5.97	.90	.76
Academic Efficacy	17.39	4.33	.70	18.05	4.27	.73	.70
Academic Apathy	16.7	4.25	.70	16.42	4.18	.73	.68
Mistrust of Instructors	18.09	3.47	.64	16.65	3.97	.74	.86
Adaptiveness Index	108.78	13.68	.80	109.81	15.89	.87	.85

STUDY 2

The purpose of the second investigation was to determine the short-term temporal stability of the six orientations and the AI. If the SAO is to have research or applied utility, then the scores must be reasonably reliable across time and should not exhibit pronounced fluctuations due to changes in the students' course schedule.

Method

In November 1996, 152 students at Angelo State University (99 females, 53 males; 102 younger than 25 years of age, 50 who were 25 years or older) completed the 36-item SAO to earn extra course credit. In March of the next semester, 1997, 59 students drawn randomly from the original group were located and agreed to be retested.

Results and Discussion

Means, standard deviations, and internal consistency indices were calculated for the six orientations and the AI using data from the 152 students in the first session and from the 59 students in the second session. These data indicated no clear tendencies for scores on the orientations and the index to either increase or decrease with repeated testings (see Table 2). However, coefficient alphas for scores on factor S in both sessions were somewhat low.

Test-retest reliability coefficients in Table 2 indicate that scores on the six orientations and the AI were quite stable across a 4-month period. The SAO appears to measure relatively enduring qualities that, once formed, tend to operate independently of a particular set of courses.

STUDY 3

The objective of Study 3 was to examine further the construct validity of the SAO scores. The six SAO factors and the AI were tested for their relationships with nine personality measures. The personality variables were intrinsic motivation, extrinsic motivation, openness, the need for structure, self-doubt, suspiciousness, achievement via independence, learning orientation, and grade orientation.

If the SAO orientations have been correctly named and interpreted, they should logically relate to particular personality indices. In deference to brevity, an extended series of a priori predictions will not be specified at this point. Instead, the relationships will be more fully examined in the Discussion section.

The AI is hypothesized to represent the extent to which college students' orientations are facilitative or debilitating in their interactions with the academic environment. If this proposition is correct, AI scores will be related predictably to personality measures. Previous research indicates that students who are academically successful and/or satisfied with college tend to be intrinsically motivated (e.g., Utman, 1997), self-assured (e.g., Multon, Brown, & Lent, 1991), learning oriented (e.g., Milton et al., 1986), open to New experiences, and independent (e.g., McCrae, Costa, & Piedmont, 1993). On the other hand, poor academic performance and/or dissatisfaction are usually associated with extrinsic motivation (e.g., Utman, 1997), grade orientation (e.g., Milton et al., 1986), and a strong need for structure (Ebeling & Spear, 1980). These findings lead to the predictions that AI scores would be positively correlated with measures of intrinsic motivation, learning orientation, independence, and openness, and they would be negatively correlated with indices of extrinsic motivation, self-doubt, grade orientation, and need for structure.

Method

Participants. One hundred seventy-six undergraduates (117 females, 60 males; 151 younger than 25 years of age, 25 who were 25 years or older) from Angelo State University ($n = 56$) and Appalachian State University ($n = 121$) participated to earn extra course credit.

Instruments. The 36-item version of the SAO, used in Study 2, was also employed in this investigation. LO and GO were measured with the LOGO II (Eison et al., 1982). The LOGO II consists of 16 LO items (e.g., "I buy books for courses other than those I am actually taking.") and 16 GO items (e.g., "I think grades provide me a good goal to work toward.").

Extrinsic and intrinsic motivation were assessed with the Work Preference Inventory (WPI) (Amabile, Hill, Hennessey, & Tighe, 1994). Fifteen items measure extrinsic motivation (e.g., "I prefer having someone set clear goals for me in my work."), and 15 items measure intrinsic motivation (e.g., "It is important for me to be able to do what I most enjoy."). Persons who score high on the Extrinsic Motivation scale tend to be oriented toward recognition, money, and competition; and they follow the dictates of other people. Persons who score high on the Intrinsic Motivation scale tend to be oriented toward challenge, concentrate on personal enrichment, and set their own goals and objectives.

The need for structure was measured with the Personal Need for Structure scale (PNS) (Neuberg & Newsom, 1993), which has 12 items (e.g., "I don't like situations that are uncertain."). Individuals who score high tend to be rigid and intolerant of ambiguity.

Openness was assessed with the Openness scale of the NEO PI-R, Form S (Costa & McCrae, 1992), which has 48 statements (e.g., "I have a wide range of intellectual interests."). Individuals obtaining high scores are typically responsive to the beauty found in the arts and nature, seek out novelty, are comfortable with complexity, and are tolerant of alternative value systems. Indices of self-doubt and suspiciousness were obtained, respectively, with the O and L scales of the 16 PF-Form A, 1967-68 Edition R (Cattell, 1986). The O scale has 13 items (e.g., "I am properly regarded as a plodding, half successful person."), and the L scale has 10 items (e.g., "I have sometimes been troubled by people saying bad things about me behind my back, with no grounds at all."). High scorers on the O scale (self-doubt) lack confidence in their capacity to deal with challenges, and they tend to be easily ruffled, insecure, and dissatisfied with themselves. High scorers on the L scale (suspiciousness) are mistrusting, skeptical, self-involved, and relatively unconcerned about others.

Achievement via independence was measured with the Ai scale of the California Psychological Inventory-R (Gough, 1987). This scale has 36 statements (e.g., "My daily life is full of things that keep me interested."). High scorers are motivated to facilitate achievement in settings that accentuate autonomy and independence and tend to be mature, foresighted, and self-reliant.

An index of social desirability was obtained by administering the Marlowe-Crowne Personal Practice Inventory (MCPPI) (Crowne & Marlowe, 1960), which has 33 statements (e.g., "I have never truly disliked anyone."). High scores indicate a tendency to answer self-report questions in an overly flattering way.

Procedure

Half the participants completed the questionnaires in the following order: SAO, WPI, 16 PF (L and O scales), LOGO II, CPI (AI scale), MCPPI, NEO-PI (O scale), and PNS. The remaining participants completed the questionnaires

in the reverse order. Groups ranging in size from 2 to 35 completed the questionnaires in approximately 60 minutes.

Results and Discussion

Table 3 shows the means, medians, standard deviations, alpha coefficients, and intercorrelations of the six SAO orientations using data combined from all three studies (except the retest data from the second session of Study 2). The large sample size assures the reliability of the coefficients and of the scale norms. Only two of the correlations between orientations exceeded .30. Computations of AI scores across the three studies yielded the following indices: $M = 105.50$, $Mdn = 107.50$, $SD = 13.88$, $\alpha = .81$.

Most of the personality measures had desirable psychometric properties, comparable to figures reported elsewhere. The lone exception was the L (suspiciousness) scale of the 16 PF, whose scores yielded very low internal consistency ($\alpha = .25$). Relationships between scores on the SAO orientations and the L scale were tempered by this consideration.

Table 4 presents the intercorrelations of scores on the six SAO orientations and the personality indices used to assess construct validity. Light is cast on the meaning of the orientations not only from their relatedness with personality variables but also from their intercorrelations with other academic orientations. Construct validity is established if each SAO orientation corresponds to a coherent personality profile. In developing these profiles, we focused on variables whose coefficients of correlation are at least .30.

The S orientation was hypothesized to measure the extent to which students need the details of academic tasks to be completely specified. A positive correlation was found between this orientation and PNS (need for structure) scores, supporting this interpretation. Students who score high on the S orientation also tend to score high in extrinsic motivation and grade orientation and low in achievement via independence. Their heavy reliance on external guidelines is apparent in this pattern of correlates, as is their reluctance to enter achievement situations without such guidelines. Finally, high S scorers are somewhat inclined toward self-doubt, suggesting that the desire for structure is partially predicated on a general lack of self-assurance.

Table 3

Means, Medians, Standard Deviations, Alpha Coefficients, and Intercorrelations of Academic Orientations Across the Three Studies

	S	C	R	E	A	M
<i>M</i>	22.71	22.78	18.73	17.44	17.28	18.40
<i>Mdn</i>	22.00	22.00	19.00	17.00	17.00	18.00
<i>SD</i>	3.51	3.50	5.53	4.44	4.07	3.53
α	.59	.70	.85	.74	.66	.67
Intercorrelations of academic orientations						
S	1.00					
C	-.13	1.00				
R	-.24	.30	1.00			
E	-.28	.15	.19	1.00		
A	-.10	-.07	-.20	-.17	1.00	
M	.20	-.07	.16	-.31	.17	1.00

Note. $N=804$. Correlations of .30 or greater are in bold print. S = Structure Dependence; C = Creative Expression; R = Reading for Pleasure; E = Academic Efficacy; A = Academic Apathy; M = Mistrust of Instructors.

Table 4

Correlations of Academic Orientations and Personality Indices From Study 3

	WPI-E	WPI-I	PNS	16PF-0	16PF-L	NEO-O	CPI-Ai	LO	GO	MCPPI
S	.50	-.13	.40	.30	.02	-.26	-.35	-.29	.39	.13
C	-.19	.62	-.24	.10	.11	.55	.25	.58	-.31	.12
R	-.27	.40	-.22	-.06	-.18	.39	.51	.67	-.55	.10
E	-.12	.26	-.24	-.39	-.18	.29	.51	.36	-.40	.07
A	-.06	-.19	-.14	.16	.27	-.07	-.25	-.33	.32	-.25
M	.21	-.09	.15	.27	.25	-.02	-.32	-.23	.42	-.20
AI	-.33	.49	-.30	-.30	-.23	.46	.64	.71	-.69	.18

Note. Correlations of .30 or greater are in bold print. WPI-E = Work Preference Inventory-Extrinsic Scale; WPI-I = Work Preference Inventory-Intrinsic Scale; PNS = Personal Need for Structure; 16PF-0 = 16PF-0 Scale; 16PF-L = 16PF-L Scale; NEO-O = NEO Openness Scale; CPI-Ai = California Psychological Inventory Ai Scale; LO = Learning-Orientation; GO = Grade-Orientation; MCPPI = Marlowe-Crowne Personal Practice Inventory; S = Structure Dependence; C = Creative Expression; R = Reading for Pleasure; E = Academic Efficacy; A = Academic Apathy; M = Mistrust of Instructors; AI = Adaptiveness Index.

Students who score high on the C orientation have five pronounced tendencies. They tend to be high in intrinsic motivation, the learning orientation, the “Big Five” trait of openness, and the R orientation. Also, they are low in grade orientation. This profile resembles the findings of previous research on creative people. King, Walker, and Broyles (1996) found that people who scored high in creative thinking tended to score high on the Big Five trait of openness. In a review of the literature on creativity, Barron and Harrington (1981) identified core characteristics such as independent, curious, self-regulating, broad interests, and enjoyment of complexity.

The most robust factor in Study 1 was Reading for Pleasure (R), and it has the strongest pattern of correlates in Study 3. Students scoring high on the R orientation strongly value achievements attained through independent effort. They score high on the Big Five trait of openness and, to a lesser extent, on the creative expression orientation. Also, they have high levels of intrinsic motivation. Not surprisingly, students with high R factor scores see themselves as highly learning oriented and report relatively low levels of grade orientation. The profile of students with high scores in Academic Efficacy (E) includes high amounts of achievement via independence and the learning orientation and low amounts of self-doubt, grade orientation, and the M orientation. Apparently, highly efficacious students prefer and derive much satisfaction from achievement situations that emphasize self-regulated learning. Their pursuits are relatively unhindered by doubts about self and others (instructors). Also, they tend to set achievement goals but do not dwell on “grades” as the primary reason for learning. This profile of the E orientation is similar to previous findings on the role of self-efficacy in educational settings (e.g., Zimmerman, 1995).

The strongest correlates of the A orientation are learning orientation and grade orientation. Students with high scores on A are somewhat grade oriented and not very learning oriented. Previous research on students with this LO-GO pattern shows that they tend to think concretely, have poor study skills, and suffer from test anxiety. Although they have a strong desire to make good grades, they often lack the skills necessary to earn them (Milton et al., 1986).

The correlations between the A orientation and LO-GO are not strong enough to indicate that the LO-GO pattern exerts predominate force in students with the high A orientation. Nevertheless, the correlations do indicate that there may be reasons other than disinterest for high A scorers. Some may suffer from discouragement or possibly defensiveness. On one hand, they may want good grades. On the other hand, they seem unable to obtain them. As a consequence, they reduce their effort, which provides a less threatening reason (low effort) for low grades than does an attribution of low capability. Future research can clarify the psychological characteristics that give rise to high scores on the A orientation.

Undergraduates with high scores on the M orientation are highly grade oriented, and they avoid achievement situations that reward independence. Their tendency to focus on grades, combined with their lack of confidence in grade givers, apparently makes them reluctant to pursue tasks that encourage

self-directed accomplishments. Perhaps they believe that such tasks or assignments have vague evaluation standards and leave them especially vulnerable to low grades. We expected the M orientation to be related to the trait of suspiciousness, but the coefficient was somewhat small (.25). It is hazardous to gauge the true nature of this relationship, however, because of the very low internal consistency of the suspiciousness scale scores.

These profiles present a reasonably coherent picture of each academic orientation. None of the correlations reported in Tables 3 and 4 indicates that the SAO orientations should be renamed or reinterpreted. Although the magnitudes of the significant coefficients vary from small to large, the findings together with the factor analysis from Study 1 provide consistent support for the construct validity of scores on the six SAO orientations. Also, the measuring instrument is relatively free of the social desirability bias. Coefficients of correlation with the Marlowe-Crown Personal Preference Inventory range from trivial to small.

The AI furnishes a more molar perspective of students than do the six orientation scores individually. Based on a review of the literature, it was hypothesized that students with high AI scores would score high on measures of intrinsic motivation, achievement via independence, openness, and learning orientation, and that they would score low on measures of need for structure, extrinsic motivation, self-doubt, and grade orientation. The intercorrelations in Table 4 confirm all of these hypotheses, and they provide strong support for the *adaptiveness* label for index scores.

CONCLUSIONS

The purpose of this inquiry was to develop a questionnaire that would enhance our understanding of how undergraduates interpret the academic environment. The resultant instrument, the SAO, consists of 36 questions that measure six orientations. The findings support the construct validity of the SAO scores and indicate that the orientation scores are internally consistent and stable over a 4-month period. The next logical step in the research process is to explore further how these orientations are associated with important aspects of undergraduates' lives.

We predict that the AI will be positively correlated with a variety of favorable characteristics and negatively correlated with a number of unfavorable characteristics. For example, students with high AI scores are hypothesized to have higher GPAs, find more pleasure in their course work, assign relatively high class evaluations, and be more likely to plan postgraduate studies than will students with lower AI scores. High AI scores are also expected to be associated with high levels of satisfaction with the academic environment, low levels of academic stress, and high graduation rates. At a more molecular level, the six orientations clarify and aid interpretations of correlations between AI scores and the aforementioned educational variables. For example, we expect that the association between AI scores and GPA will be due primarily to scores on the A and E orientations.

We believe the SAO may identify students who are likely to have academic or adjustment difficulties. If future studies verify the predictive validity of SAO scores, then college personnel can use the SAO to concentrate their attention on students who are at risk for various types of undesirable outcomes. In addition to identifying students who are likely to experience problems, the SAO orientations might have value in devising intervention strategies. Programs could be developed that encourage students to adopt orientations associated with favorable outcomes. If changes in academic orientations lead to changes in behavior, then some of the deleterious characteristics related to low AI scores on the SAO might diminish.

APPENDIX

Survey of Academic Orientations

This questionnaire was designed to discover your attitudes about courses, instructors, and classroom policies. There are no right or wrong answers to these questions. What is important is your opinion. Please read each statement carefully, and indicate how strongly you agree or disagree with each item using the following rating scale.

1. Strongly disagree 4. Agree
 2. Disagree 5. Strongly Agree
 3. Neither Agree nor Disagree
-

1. I like to look through the library for books that spark my interest even when I am not working on a specific course assignment.
2. I might cut class if I think that the lecture material will not be on the test.
3. I sometimes wonder if I am really college material.
4. Some instructors enjoy giving students poor grades.
5. It is important to learn about other cultures and ways of life.
6. It is the instructor's job to set the direction for the course and the student's job to follow that direction.
7. Reading is one of my favorite pastimes.
8. In a "pass-fail" course, I try to exert just enough effort to avoid failing.
9. Anytime that I really need a good grade on a test, I can get it.
10. Instructors sometimes seem to pull test questions out of nowhere.

11. I am a very creative person.
12. I much prefer straightforward factual questions rather than abstract, conceptual ones.
13. The only books that I ever buy are for courses that I am taking.
14. My goal is to get the best grade I can without expending a lot of effort on my school work.
15. Sometimes I feel unaware of how to get good grades.
16. If a student works hard and does not pass, it is probably the instructor's fault.
17. Learning new things is thrilling.
18. The place where I study must be perfectly quiet.
19. I sometimes do optional reading even though I know it will not influence my grade.
20. I plan my study sessions in advance and pretty much stick to the plan.
21. Test anxiety lowers my grade a lot.
22. Instructors give students too much work.
23. I much prefer assignments that leave room for my own creative ideas rather than assignments where everyone is supposed to do pretty much the same thing.
24. Grades provide me with an ideal goal to work towards.
25. I enjoy reading books on a variety of topics.
26. I tend to study in spurts rather than at a regular consistent pace.
27. I am pretty good at guessing the questions on tests beforehand.
28. It is not fair for instructors to give "pop" tests.
29. I prefer assignments in which students are expected to formulate creative answers and not just summarize the work of others.
30. It is very important that the instructor makes it perfectly clear what students must do in order to succeed.
31. I try to make time for outside reading despite the demands of my coursework.
32. I try to work just hard enough to get the grade that I need in a course.
33. I worry a great deal that I may not get the grade I need in a class.

34. Instructors sometimes write tricky test questions just to confuse students.

35. I prefer classes in which students are encouraged to actively participate in discussions.

36. I hate it when an instructor assigns a paper but does not give specific guidelines and directions.

Scoring Instructions

Reading for Pleasure: 1, 7, 13*, 19, 25, 31;

Mistrust of Instructors: 4, 10, 16, 22, 28, 34;

Academic Apathy: 2, 8, 14, 20*, 26, 32;

Creative Expression: 5, 11, 17, 23, 29, 35;

Academic Self-Efficacy: 3*, 9, 15*, 21*, 27, 33*;

Structure Dependence: 6, 12, 18, 24, 30, 36;

Adaptiveness Index: 1, 2*, 3*, 4*, 5, 6*, 7, 8*, 9, 10*, 11, 12*, 13*, 14*, 15*, 16*, 17, 18*, 19, 20, 21*, 22*, 23, 24*, 25, 26*, 27, 28*, 29, 30*, 31, 32*, 33*, 34*, 35, 36*.

Note. Orientation scores are obtained by adding the numbers associated with responses to each item. The “*” indicates a reverse scored item.

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