ABSTRACT

        A questionnaire designed to assess seven
non-cognitive variables found to be related to college success
particularly for minority students (Sedlacek and Brooks, 1976) was
administered to two successive samples of incoming freshmen at the
University of Maryland, College Park. The Non-Cognitive Questionnaire
(NCQ) consists to two nominal items relating to educational
expectations, 18 Likert-type items relating to expectations about
college and self-assessment, and three open-ended questions relating
to present goals, past accomplishments, and offices held/groups
belonged to. The sample of 1,644 freshmen entering in 1979 and 478
freshmen entering in 1980 were administered the NCQ during summer
orientation. The properties of the instrument were examined to
determine if the responses vary across the races and whether the
items are content valid in their ability to tap the seven
non-cognitive dimensions: positive self-concept, realistic
self-appraisal, understanding of and ability to deal with racism,
preference for long-range goals over short-term or immediate needs,
availability of a strong support person, successful leadership
experience, and demonstrated community service. The results showed
reliability and construct validity for the instrument. For whites,
the non-cognitive dimensions of self-confidence, preference for
long-range goals over short-term or immediate needs, and realistic
self-appraisal were most strongly related to grade point average. For
blacks, the only non-cognitive variables that were related to grade
point average were positive self-concept and realistic
self-appraisal. For whites the NCQ significantly adds to the
prediction of grades, while for blacks it is related to both grades
and enrollment status. (SW)

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NON-COGNITIVE VARIABLES IN PREDICTING
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Terence J. Tracey and William E. Sedlacek

Research Report # 1-82

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SUMMARY

A questionnaire designed to measure seven non-cognitive predictors of academic success was administered to two successive samples of incoming university freshmen. The responses were examined with regard to the reliability of the instrument, and three separate indicators of academic success--first semester college GPA, three semester cumulative GPA and persistence after three semesters. The results showed reliability and construct validity for the instrument. Further using this instrument added to the predictive validity of using traditional measures (SAT scores) on academic success. Also, different items were predictive of success for the different racial subsamples. The questionnaire was particularly predictive of the persistence of blacks. The implications of the results are discussed.

Non-Cognitive Variables in Predicting
Academic Success by Race

Since the 1970's there has been evidence of the growing importance

of retention in higher education for both human value reasons and for

the continued existence of schools. A particularly vital aspect of this

issue is minority student retention. The retention rate for minority

students, particularly black, is lower than the rates for majority

students (Astin, 1975; Sedlacek & Pelham, 1976). The rate of minority

retention is particularly low, and decreasing, in predominantly white

institutions (Goodrich, 1978; Sedlacek & Webster, 1978). This is

obviously a great loss of human potential and it is thus cricial that

steps be taken to understand and reduce attrition, particularly for

minorities.

One means of increasing the retention rate is to do a better job of

selection and admission (Ott, 1978). But most admissions criteria and

procedures have been validated on typically white samples. Studies that

have applied the usual college adminissions criteria to blacks haye

tended to get lower validity than that obtained with the predominantly

white samples (Baggeley, 1974; Borgen, 1972; Farver, Sedlacek, & Brooks,

1975; Pfeifer & Sedlacek, 1970, 1971, 1974). Among the possible explana-

tions for this difference are cultural/racial biases in the traditional

predictors (e.g., standardized test grades, etc.) and that minority applicants

do not know how to play the admissions "game." That is, white applicants

tend to know what is viewed as desirable in college applications, but

many blacks do not. Given these problems, steps must be taken to find alternative ways of obtaining valid information on minority applicants that are indicative of college success.

The purpose of this research was to design and test out a brief questionnaire for use at a predominantly white institution that might tap information related to retention not normally available. The specific information that the questionnaire was designed to assess were the seven non-cognitive predictors of minority college success proposed by Sedlacek, and Brooks (1976). Through research, they found seven variables that have been demonstrated to be related to college success, particularly for minorities. These seven variables are: positive self-concept, realistic self-appraisal, understanding of and ability to deal with racism, preference for long-range goals over short-term or immediate needs, availability of a strong support person, successful leadership experience and demonstrated community service. While these variables have been studied individually, little work has been done on them collectively. So the focus of this study was the development of a quick, reliable and valid measure of these variables. This project was part of an ongoing research plan aimed at gaining a more complete, longitudinal picture of retention, particularly with regard to minorities.

Method

Sample

Two separate samples of incoming freshmen at the University of Maryland, College Park (1979 entering freshmen, N=2157; 1980 entering

freshmen, N=573) were given the Non-Cognitive Questionnaire (NCQ) during
summer orientation. Only those freshmen who had completed all the NCQ
and whose SAT scores were able to be obtained from university records
were included in this study. This resulted in final samples of 1644
for the 1979 freshmen and 478 for the 1980 freshmen. Of this final 1979
sample of 1644, 1339 identified themselves as white, 190 as black and 110
as being of other racial/ethnic backgrounds (predominately Asian-American).
For the 478 freshmen in the 1980 sample, 355 were self-identified as
white, 89 as black and 34 as other (again, predominantly Asian-American).

Instrument

The Non-Cognitive Questionnaire (NCQ) was designed with past research
as a base and is intended to assess seven non-cognitive variables
found to be related to minority retention (Sedlacek & Brooks, 1976). The
NCQ consists of two nominal items relating to educational expectations, 18
Likert-type items relating to expectations about college and self-assessment,
and three open-ended questions relating to present goals, past accomplish-
ments and offices held/groups belonged to. All items, with the exception
of the open-ended items, have been found to have adequate test-retest
reliability. The two week correlations (N=18) for the items range from
.70 to .94. The open-ended items were included in the questionnaire as
they may have been able to access dimensions not covered in the structured
Likert-type item format. The responses to the question asking for one's
goals were rated for: 1) the amount of _time_ required to complete the goals,

i.e., how long-range they are (interrater $r=.89$) and 2) the degree to which the goals are related to <u>academia</u> (academic goals interrater $r=.83$). The open-ended item asking for which past accomplishments one is proudest of was rated for the <u>degree of difficulty</u> relative to all high school graduates (interrater $r=.88$). The final open-ended item asked the respondent to list all offices held and/or extracurricular activities. This item was rated on four dimensions: 1) <u>number</u> of activities (interrater $r=1.00$), 2) degree of <u>leadership</u> exhibited (interrater $r=.89$), 3) degree list was related to <u>academia</u> (academic activities interrater $r=.98$) and 4) the degree to which <u>community involvement</u> was reflected (interrater $r=.94$). Lockett (1980) reported coefficient alpha reliabilities ranging from .54 to .73 for scales on a modified version of the NCQ employed in the present study.

Analyses

There were two basic types of analyses performed on the data, each reflecting the major purposes of this study. First, the properties of the instrument itself were examined to see if the responses did vary across the races and if the items were content valid in their ability to tap the seven non-cognitive dimensions posited by Sedlacek and Brooks (1976). To accomplish this, the relationships among the Likert-type items were examined using separate factor analyses for each race. A principal components factor analysis, using squared multiple correlations as commonality estimates and varimax rotation was done on the Likert-type items for the entire sample,

the white sample, and the black sample. These factor analyses would yield information on the degree to which the items clustered along the posited seven non-cognitive dimensions and how this varied by race.

The second set of analyses was designed to establish the external validity of the NCQ as a predictor of collegiate success. College success can be defined in many different ways, i.e., grade point average, continued enrollment, etc. Examining retention using only one of these definitions can lead to an invalid or biased picture of what contributes to retention (Tracey & Sedlacek, 1981). As such, this study used two separate, albeit not mutually exclusive, measures of collegiate success, grade point average (GPA) and enrollment status, to move toward gaining a complete understanding of this issue.

Separate step-wise regressions were performed on each sample (1979 freshman and 1980 freshmen) examining the relationship of the NCQ items and SAT scores to GPA (one semester GPA and three semester GPA for the 1979 sample and one semester GPA for the 1980 sample). In addition, as traditional cognitive data (i.e., SAT scores) often dominate regression equations which include noncognitive variables, separate regressions were done using only the NCQ responses as predictors. The above regressions were performed on: 1) the entire sample for each year, 2) whites only subsample for each year, and 3) blacks only subsample for each year.

To examine the relationship of the NCQ responses and SAT scores to persistence, stepwise discriminant analyses were used. As an accurate determination of persistence (enrolled vs. not enrolled) could only be obtained after several semesters, this analysis was done using only the

1979 sample, as enrollment status was determined over three semesters not just one. As with the regression analyses, stepwise discriminant analyses were done using NCQ responses plus SAT scores, and NCQ responses alone, as predictors to determine the extent of overlap between the data sets. Also, as with the regressions above, separate discriminant analyses were done for the entire sample for each year, the white sample for each year and the black subsample for each year.

Results

This section will be divided into two parts, the first describing those results which examine the differences and similarities in the responses to the instrument across races. In a sense, this part concerns itself with measurement properties of the questionnaire. The second part of the results will be concerned with describing the analysis done relating question-naire responses to success in college. This section emphasizes the application of the data. As the questionnaire as a whole was developed with minority selection in mind, most of the subsequent writeup will center on the minority data, particularly black, as this group had sufficient numbers for all the analyses, which most of the other minority groups did not. All differences noted below are statistically significant at the .05 level.

Internal Questionnaire Results

The results of the separate factor analyses conducted showed fairly similar structures for each racial group. Because this study was most concerned with minority students and because of space limitations, only

the factor analysis on the black sample will be presented. Table 1 is a
summary of the factors obtained and the items that loaded from this factor
analysis on the black sample. As can be seen from Table 1, the results
of the factor analysis demonstrate support of six of the seven non-cognitive
variables suggested by Sedlacek and Brooks (1976). The six variables that
were supported by the factor analysis were: leadership (Factor I), recognizing
racism (Factor II), preference for long-range goals (Factor III), realistic
self-appraisal (Factor IV), support for college plans (Factor V), self-confi-
dence (Factors VI and VII). Factor VIII seemed to be assessing general
familiarity with academia unrelated to academic self-confidence. So the
items used do appear to cluster along the seven variables as designed.

Insert Table 1 about here

Predicting Collegiate Success

Given the number of items and analyses done on the different samples,
only those items that significantly added to the prediction of any of the
criteria (first semester GPA, three semester cum or enrollment status) will
be presented. The specific items that significantly added to prediction
in each analysis and the overall multiple correlation coefficients are
summarized in Table 2.

Insert Table 2 about here

In all the analyses, the NCQ items were at least as highly predic-
tive of the criteria examined as SAT scores alone. Combining the NCQ
items with SAT scores resulted in significant increases in prediction in
each of the eight separate analyses performed. So for all criteria, the
usage of the NCQ items added to the ability to predict collegiate success,
for blacks and whites.

When the criterion that was examined was first semester grades, the
NCQ was found to be more predictive for whites than blacks in both sample
years. Further, the same non-cognitive variables were related to first
semester grades for each racial group. The variables that were found to
be predictive for both races were: positive self-confidence (items 3 and
8, as listed in Table 2) and realistic self-appraisal (items 9, 12, and 13).
For the white subsample only, community involvement (item 14c) leadership
(item 4) and preference for long range goals (item 7) were also predictive
of first semester grades. Thus, the non-cognitive variables (particularly
self-confidence and self-appraisal) were predictive of first semester grades
for both races but this relationship was stronger for whites than blacks.

A similar picture appears from the analyses performed using three semester
cum as the criterion. The non-cognitive variables of positive self-concept
(items 8, 11 and 3 alone for whites) and realistic self-appraisal (item 2
for blacks and items 2, 6 and 13 for whites) were highly related to cum
for both races. And like the previous analyses, more of the non-cognitive
variables were predictive for whites. For whites only, the variables of

preference for long range goals (item 1) and recognizing racism (item 10) were related to cum. It is noteworthy that the multiple correlation coefficients in these analyses were higher than those coefficients of the analyses done on first semester grades. The NCQ items, and implicit variables, were more predictive with increasing time.

The final analyses related the NCQ items to enrollment status after three semesters. It was here that a <u>strong</u> relationship was found between the non-cognitive variables and college success for the black subsample but not the white subsample. Only one of the non-cognitive variables (realistic self-appraisal) was predictive of enrollment for whites, while four of the variables were predictive for blacks. Realistic self-appraisal (item 2), positive self-confidence (items 3 and 8), support (item 5) and community involvement were significantly related to continued enrollment. Of all the analyses done, this was the only set where the predictive power of the resulting equation for the blacks was higher than the prediction of the equation for the whites. So, for blacks, the non-cognitive variables are most predictive of continued enrollment and moderately predictive of grades; while these variables are predictive of grades for whites but not particularly predictive with regard to enrollment status.

Discussion

The results of this study support the increase in predictive power gained by using non-cognitive variables, as measured by the NCQ, in addition to the usual academic predictors, i.e., SAT scores. In every one of the

analyses performed, the addition of the non-cognitive items to the SAT
scores significantly increased the prediction of grades and enrollment
status. Further, the use of the NCQ items alone (without SAT scores)
yielded a significantly higher relationship to college success (GPA and
enrollment status) than did the SAT scores alone.

The predictive power of the NCQ was evident in each of the racial
subgroups studied. In fact, using the NCQ added slightly more to the
prediction of college grades for whites than it did for blacks. But this
result was probably more due to the far greater number of whites in the
sample than blacks. With this much higher number, any relationship evi-
denced in the regression would more likely attain significance even though
the level of the relationship (r) in the two samples was equal.

Generally, it was slightly easier to predict grades after one and
three semesters for white students than it was for black students, even
with the inclusion of the NCQ which was designed to increase prediction
with blacks. But when a different criterion of collegiate success was
examined, that of enrollment status after three semesters, the opposite
relationship was evidenced. The enrollment status of blacks was much
better predicted from the NCQ whereas using this questionnaire yielded
little predictive power for whites. So it appears that different
processes are operative for each race with regard to collegiate success.

For whites, the non-cognitive dimensions (Sedlacek & Brooks, 1976)
of self confidence, preference for long range goals over short-term or
immediate needs, and realistic self-appraisal were most strongly related
to GPA.

In addition, some items relating to leadership, community service and not understanding racism entered some of the predictive equations but the relationship was not as strong as those above. But with regard to enrollment status, the only items that were significant, albeit marginally, were those reflecting positive self-concept. So the non-cognitive dimensions of positive self-concept, ability to delay gratification, and realistic self-appraisal were highly related to doing well academically in college for whites. The dimensions related to continued perseverence in school for whites were not generally related to the variables measured in the NCQ and proposed by Sedlacek and Brooks (1976).

.For blacks, the opposite pattern emerged. The only non-cognitive variables that were related to academic achievement, i.e., GPA, were positive self-concept and realistic self-appraisal. The strength of the relationship of these dimensions to GPA was not as high as it was for the white subsamples. But while there was little, if any, ability to predict enrollment status using the NCQ for whites, there was a strong relationship for the black subsample. For blacks, the dimensions that were related to continued enrollment were positive self-concept, support and community service. Having a person(s) available to support the black student when needed and having had experience in community service were strongly related to staying in school. This support person does not have to be a member of the family (as these items did not load into the analyses). What seems to be measured by these dimensions is an ability to reach out in a constructive manner and being able to ask for help when it is needed. This ability was much more crucial for continued existence in college for blacks than whites.

It is interesting to note that the variables of support and community service are related to continued enrollment for blacks and not to GPA. This seems to indicate that those blacks who do get good grades and stay in school have similar levels of self-confidence and ability to realistically appraise themselves as those blacks who do not persevere. The key difference between these two groups of blacks is that those who continue have more support in the family and community to continue. This continuance relationship does not appear at all for whites. This result indicates that the process of succeeding in college varies between the races. Success for whites should be examined in terms of grades; while success for blacks should be examined first with regard to enrollment status and then with regard to grades as different processes appear involved.

The results of this study demonstrate that the Non-Cognitive Questionnaire is both reliable and valid as an aid in predicting collegiate success for both blacks and whites. The exact relationship of the NCQ to collegiate success varies between blacks and whites. For whites, the NCQ significantly adds to the prediction of grades, while for blacks it is related to both grades and enrollment status. Lockett (1980), using a modification of the NCQ presented here, found that for blacks at the University of Missouri positive self-concept, community participation, leadership, and understanding racism correlated with grade point averages. Lockett further found that long range goals, lower self-concept and realistic self-appraisal correlated with satisfaction with the college environment for black students. Given this reliability and validity, the NCQ items can be used as a beneficial

addition to those collected in initially selecting students. Also, the
NCQ could be of value post-admission. Students could be given the NCQ
during orientation, as was done here, and those students lacking in the
dimensions that are related to collegiate success could be identified.
Programs aimed specifically at these students could then be developed and
implemented. Thus, efforts could be directed where they are most needed
such as aiding black students that do not have the self-confidence, support
and community service experience to keep them in school.

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Table 1

Summary of the Factors and Largest Loading

Items[1] Identified in the Black Sample[2]

Factor I Leadership (32.8% of common variance)

Item	Loading
I am sometimes looked up to by others.	.73
If I ran into problems concerning school, I have someone who would listen to me and help me.	.41
In groups where I am comfortable, I am often looked to as leader.	.55

Factor II Fair academic opportunity (13.9%)

Item	Loading
I want a chance to prove myself academically.	.62
If course tutoring is made available on campus at no cost, I would attend regularly.	.54
I expect I will encounter racism at UMCP.	.33

Factor III Preferring long-range goals (13.5%)

Item	Loading
Once I start something, I finish it.	.90
When I believe strongly in something, I act on it.	.54

Factor IV Academic Self-Appraisal (10.9%)

Item	Loading
I am as skilled academically as the average applicant to UMCP.	-.58
I expect to have a harder time than most students at UMCP.	.45

Factor V Family Support (9.1%)

Item	Loading
My family has always wanted me to go to college.	-.62
My friends and relatives don't feel I should go to college.	.62

Table 1 (Continued)

Factor VI Lack of Perseverance (7.7%)

Item	Loading[1]
I get easily discouraged when I try to do something and it doesn't work.	.51
People can pretty easily change me even though I thought my mind was already made up on the subject.	.44

Factor VII Self-Confidence (6.5%)

Item	Loading
When I believe strongly in something, I act on it.	.39
My high school grades don't reflect what I can do.	.38
Rated difficulty of three best accomplishments.	.31

Factor VIII Academic Familiarity (5.6%)

Item	Loading
It should not be very hard to get a B (3.0) average at UMCP.	.43
Rated degree of academic relatedness of three most primary goals.	.41

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[1] Only those items with loadings above .30 are reported.

[2] Complete factor and intercorrelation matrices for this sample and the the white sample are available upon request from William Sedlacek, Counseling Center, UMCP, College Park, MD, 20742.

Table 2

Summary of the NCQ Items that were Significant[1] and Corresponding Beta Weights
for Each of the Analyses Performed[2]

Items	Regressions on first semester GPA				Regressions on three semester GPA		Discriminant analyses on enrollment status after 3 semesters	
	1980 Sample		1979 Sample		1979 Sample		1979 Sample	
	Whites N=355	Blacks N=89	Whites N=1339	Blacks N=190	Whites N=1027	Blacks N=158	Whites N=1046	Blacks N=154
1) Three goals that you have for yourself right now. Rated for: a) Time to complete					-.09			
2) Uncertainty of graduation given that 50% do not.					-.07	-.22	.36	.53
3 List three things that you are proud of having done. Rated for degree of difficulty.	.19	.28			.12	.19		-.43

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19.

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Table 2 (Continued)

Items	Regressions on first semester GPA				Regressions on three semester GPA		Discriminant analyses on enrollment status after 3 semesters.	
	1980 Sample		1979 Sample		1979 Sample		1979 Sample	
	Whites	Blacks	Whites	Blacks	Whites	Blacks	Whites	Blacks
4) I am sometimes looked up to by others.			-.09					
5) If I run into problems concerning school, I have someone who would listen to me and help me.				.07				-.52
6) I expect to have a harder time than most students.			.12		.06			
7) Once I start something I finish it.			-.07					
8) When I believe strongly in something, I act on it.			.08	.10		.22		-.38
9) I am as skilled academically as the average applicant.				-.10				

20.

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Table 2 - continued.

Items	Regressions on first semester GPA				Regressions on three semester GPA		Discriminant analyses on enrollment status after 3 semesters	
	1980 Sample		1979 Sample		1979 Sample		1979 Sample	
	Whites	Blacks	Whites	Blacks	Whites	Blacks	Whites	Blacks
10) I expect I will encounter racism at UMCP.					-.08			
11) People can pretty easily change me even though I thought my mind was made up on the subject.				-.17		-.16		
12) I want a chance to prove myself academically.			-.06					
13) My high school grades don't really reflect what I can do.	.34	.21	.31		.32		-.68	
14) List of offices held and activities. Rated for: a) leadership b) academic relatedness	.16				.61			
c) community involvement	.09							-.35
Multiple R for analyses	.48	.38	.39	.29	.44	.40	.18	.49
Multiple R for analyses with SAT included	.59	.51	.51	.37	.54	.41	.24	.52

[1] (p 105)
[2] Copies of complete instrument are available from William E. Sedlacek, University of Maryland, College Park 20742