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ABSTRACT

The present study explored the perceptions of 664 Hispanic and non-minority high school students as regards barriers to entering health professions and the characteristics of health career jobs. Students were enrolled in a high school for the health professions or an enrichment add-on intervention, or were members of an honor society contrast group. The students were remarkably similar in their perceptions of barriers to entering health professions, and in attitudes toward health careers. Differences in student knowledge about health careers were noted. (Author)

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Evaluating Magnet Schools for the Health Professions: Career Aspirations of Hispanic and Non-minority Students

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ABSTRACT

The present study explored the perceptions of 664 Hispanic and non-minority high school students as regards barriers to entering health professions and the characteristics of health career jobs. Students were enrolled in a high school for the health professions or an enrichment add-on intervention, or were members of an honor society contrast group. The students were remarkably similar in their perceptions of barriers to entering health professions, and in attitudes toward health careers. Differences in student knowledge about health careers were noted.

Various recent reports have addressed the need to increase the number of minority individuals in the health professions (Health Resources and Services Administration, 1984; Mingle, 1987), a need which is especially pressing, because members of minority populations in the United States have comparatively poorer health status and use fewer health-care resources relative to their needs (U.S. Department of Health and Human Services, 1985). Data on ethnic minority representation in the health professions reflect striking disparities between percentages of African-American and Hispanic persons in almost all health professions with respect to representation in the general population (Committee on Allied Health Education and Accreditation, 1991; Health Resources and Services Administration, 1990).

For example, while the 1990 U.S. census indicated that the national population was 11.8% African-American and 9.0% Hispanic, African-American (6.6%) and Hispanic (2.7%) citizens together accounted for only 9.3% of U.S. medical school matriculants in 1991 ssociation of American Medical Colleges, 1992). Furthermore, in 1985-1986, enrollment in the nation's registered nursing programs was 10.3% African-American and 2.7% Hispanic, while in 1988-1989, first year enrollment in dentistry was 6.9% African-American and 7.6% Hispanic (Health Resources and Services Administration, 1990).

And similar, if not even more severe disparities exist in the allied health professions (Institute of Medicine, 1989). Even the high-demand professions of physical therapy and occupational therapy included only 2.1% and 3.3% African-American and 0.9% and

1.1% Hispanic citizens, respectively. In fact, only in laboratory technician (11.1% of overall practicing professionals) and respiratory therapy (10.0%) did African-American representation approach the percentage of African-Americans in the population. Finally, Hispanic representation in allied health fields remains far below the percentage of Hispanics in the general population. At 4.9%, Hispanic representation has been highest in respiratory therapy.

This profile is disturbing, because people are less likely to seek health care that they need when their ethnic groups are underrepresented among health care providers. With respect to health care for Hispanics, for example, Garcia and Ramon (1988) argued that:

> The underrepresentation of Hispanics in the health-care professions carries with it both a human and political toll. The intent of parity is founded in the notion of equality. However, a motivating force in the drive to reach parity is the concept of service--more Hispanic health-care professionals will improve health-care services received by the Mexican-American community of Texas. (p. 242)

Because these views generalize to other ethnic minority groups and to other geographic areas, the Institute of Medicine's (1989) Committee to Study the Role of Allied Health Personnel recommended that:

> The recruitment of minority students is a particular

concern for several reasons: minorities represent a relatively untapped source of human power; their representation in the population as a whole is increasing; and minority professionals are more likely to serve underserved populations.

There have been a number of attempts to recruit and retain minorities in the health professions. The lessons from successful models suggest that interventions must occur early in a student's life and continue through the academic career. (p. 8)

A recent report from the Pew Health Commission (Shugars, O'Neil & Bader, 1991), Healthy America: Practitioners for 2005, supports this view, adding that

> minorities, previously underrepresented in the health professions, will become a large part of the pool of potential applicants to health professional schools. Health professions in general and health professional educators in particular will need to understand and relate to the special needs of this growing segment of society. (p. 7)

So, too, will career counselors.

The purpose of the present study was to explore the perceptions of Hispanic and non-minority, high-school students as regards career choices involving the health professions. Understanding such perceptions may be useful in developing interventions to target the underrepresentation of minorities in

the health professions.

Specifically, the present study was undertaken to address three research questions. First, what dimensions underlie student perceptions of barriers to entering health professions careers? Second, what dimensions underlie student attitudes regarding health professions careers? Third, what differences are there in perceptions of career entry barriers, in health career-related attitudes, and in health career knowledge across (a) the three programs, (b) grade levels, (c) gender, and (d) the two ethnic groups represented in the study?

Method

Subjects

The participants were all enrolled in one of three special magnet alternative schools or add-on enrichment programs targeted to interest students in science and math education and careers. One magnet high school is located in an urban area--Houston, Texas; the second high school for health professions is located in the "valley" of Texas, an area near the Texas-Mexico border, and which has a disproportionately higher Hispanic populace than either the urban school district or the population of the country as a whole. As magnet schools, both programs draw students from a broad geographic area, i.e., they do not limit enrollment only to persons living in the nearby neighborhood of the school building. Both schools also consciously strive to maintain ethnically diverse student censuses.

The features of these high schools for the health professions

have been described elsewhere (e.g., Butler, Thomson, Morrissey, Miller & Smith, 1991; Miller, LaVois & Thomson, 1991; Thomson, Holcomb & Miller, 1987; and Thomson, Smith, Miller & Shargey, 1991). The most relevant aspect of the schools, as regards the present study, is that students initially voluntarily enter the schools because they wish to explore the nature of careers in the health professions and/or because they wish acquire the high school preparation requisite for such career choices.

High school students participating in an add-on enrichment program at Baylor College of Medicine constituted a second group of students who participated in the present study. Finally, a third sample of high school honors students from across the Houston area was employed as a contrast group.

Since there were relatively few minority students other than Hispanics across the three samples, our analyses focused only on the Hispanic and non-minority subjects in our studies. Table 1 presents profiles of the samples.

INSERT TABLE 1 ABOUT HERE

Instrumentation

The students completed a Health Professions Questionnaire, which addressed their perceptions of various health professions careers and their perceptions of potential barriers to entering health professions careers. These items were created on the basis of our related previous research (e.g., Miller, Thomson, Smith, Thompson & Camacho, 1992). A 10-point Likert response format was

employed to collect attitudinal data. A score was also derived for student knowledge based on items assessing student awareness of where and with whom various medical specialists work.

Results

The study's first research question asked, what dimensions underlie student perceptions of barriers to entering health professions careers? This question was addressed by subjecting the student's reactions to the 13 entry barriers to a principal components analysis. Based on Guttman's eigenvalue-greater-than-one criterion and the application of Cattell's "scree" test, four factors were extracted and then rotated to the varimax criterion. Table 2 presents the factor pattern/structure matrix, item communality coefficients, and the eigenvalues before rotation as well as the distribution of trace after rotation (Thompson, 1989a).

INSERT TABLE 2 ABOUT HERE

The study's second research question asked, what dimensions underlie student attitudes regarding health professions careers? Again, based on Guttman's eigenvalue-greater-than-one criterion and the application of Cattell's "scree" test, four principal components were extracted and then rotated to the varimax criterion. Table 3 presents the factor pattern/structure matrix, item communality coefficients, and the eigenvalues before rotation as well as the distribution of trace after rotation (Thompson, 1989a).

INSERT TABLE 3 ABOUT HERE

The study's third research question asked, what differences are there in perceptions of career-entry barriers, in health career-related attitudes, and in health career knowledge across (a) the three programs, (b) grade levels, (c) gender, and (d) the two ethnic groups represented in the study? The third research question in the present study involved differences across categorical groupings. The analytic method used was multivariate, so as to avoid inflation of experimentwise error rate and to represent the full network of relationships among variables (Fish, 1988; Thompson, 1992a). Discriminant function analysis (Huberty & Wisenbaker, 1992) was employed to address these research questions. Since all the discriminant function analyses in the present study involved a single grouping variable, the discriminant results are equivalent to one-way MANOVAs, but provide more descriptive information, useful in formulating interpretations, than does MANOVA.

Factor scores from the barriers and job attitudes were employed for the evaluation of program and other differences. Table 4 presents the multivariate tests of differences in the sets of mean scores across program, grade level, gender, and ethnic groups.

INSERT TABLE 4 ABOUT HERE

Discussion

With respect to the study's first research question, four principal components were isolated from the response data involving perceived barriers to entering health professions careers, as reported in Table 2. These components were labelled, "Practical Considerations", "Discrimination", "Interpersonal Pressures", and "Academic Rigor".

With respect to the study's second research question, as reported in Table 3, two principal components were isolated from the response data involving attitudes toward health professions careers. Factor II was labelled "Autonomy". The first factor was a more general dimension that involved a variety of job aspects, ranging from "being helpful to other people" to having "good pay." This factor was labelled "Job Impacts."

With respect to the study's third research question, as reported in Table 4, the overall pattern is that there were few noteworthy group differences across the various groups. Most of the multivariate hypothesis tests were statistically significant, but such outcomes are expected as artifacts in studies with sample sizes such as 664 (Thompson, 1989b, 1992b, in press). Thus, we emphasized the interpretation of effect sizes in addition to requiring that, at a minimum, differences had to be statistically significant to be considered noteworthy. Multivariate effect sizes are a function of lambda values; lambda ranges between zero and one

with smaller values reflecting greater effects.

As reported in Table 4, there were noteworthy differences with respect to knowledge about medical specialties both across the three programs and across grade levels. Students from the health professions high school setting knew more, and students at higher grade levels also knew more. Neither result was considered surprising. What is more surprising is the finding that the perceptions of career barriers and of the careers themselves were so similar across all the comparisons that we made.

Of course, like all studies the present study is limited. No one study, taken singly, establishes the basis for generalizable insight. As Neale and Liebert (1986, p. 290) observe:

> No one study, however shrewdly designed and carefully executed, can provide convincing support for a causal hypothesis or theoretical statement... Too many possible (if not plausible) confounds, limitations on generality, and alternative interpretations can be offered for any one observation. Moreover, each of the basic methods of research (experimental, correlational, and case study) and techniques of comparison (within- or between-subjects) has intrinsic limitations. How, then, does social science theory advance through research? The answer is, by collecting a diverse body of evidence about any major theoretical proposition.

The present study is but one snapshot of dynamics involving the perceptions of Hispanic and non-minority high school students as regards health-related career choices. But developing multiple snapshots will enable us better to understand the dynamics involved in these choices.

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Table 1
Demographic Characteristics of the Samples

Grade	Medical High		Science/Math		HS Honors		TOTAL	
9	148	31.5%	87	60.4%	0	0.0%	235	35.4%
10	167	35.5%	57	39.6%	0	0.0%	224	33.7%
11	110	23.4%	0	0.0%	13	26.0%	123	18.5%
12	45	9.6%	0	0.0%	37	74.0%	82	12.3%
TOTAL	470		144		50		664	
Gender								
Male	176	37.4%	88	61.1%	23	46.0%	287	43.2%
Female	294	62.6%	56	38.9%	27	54.0%	377	56.8%
TOTAL	470		144		50		664	
Ethnicity								
White	69	14.7%	29	20.1%	44	88.0%	142	21.4%
Hispanic	401	85.3%	115	79.9%	6	12.0%	522	78.6%
TOTAL	470		144		50		664	

Table 2
Principal Components Rotated to the Varimax Criterion
(n = 664)

Item	I	II	III	IV	h^2
...length of training required... (TRAIN)	0.773	0.125	0.102	0.083	0.630
...cost of training required... (COST)	0.762	0.059	0.030	0.057	0.588
Limited access to opportunities... (OPPOR)	0.646	0.224	0.210	0.231	0.565
Limited availability of jobs... (JOBS)	0.543	0.314	0.156	0.154	0.441
Discrimination based on my gender (GENDER)	0.100	0.847	0.098	0.141	0.757
Discrimination based on my race... (RACE)	0.168	0.829	0.087	0.071	0.729
Discrimination based on my age (AGE)	0.257	0.752	0.182	0.025	0.665
How my friends think I'll turn out (FRIEND)	0.032	0.139	0.825	-0.032	0.702
What my family expects of me (FAMILY)	0.120	0.067	0.757	0.120	0.606
...how [educators] explained... careers (TEACHER)	0.444	0.117	0.506	0.103	0.477
...feedback... about ability (ACCURACY)	0.453	0.210	0.489	0.164	0.515
...difficulty of math courses (MATH)	0.128	0.093	0.040	0.889	0.816
...difficulty of science courses (SCIENCE)	0.207	0.107	0.129	0.859	0.810
Prerotation eigenvalues	4.511	1.401	1.308	1.083	8.302
Postrotation trace	2.471	2.239	1.897	1.694	8.302

Table 3
Principal Components Rotated to the Varimax Criterion
(n = 664)

Item	I	II	h^2
Are helpful to other people (HELP)	0.783	-0.112	0.625
Are highly respected... (RESPONS)	0.749	0.071	0.566
Are exciting (EXCITE)	0.651	0.114	0.437
Have good job security (SECURE)	0.648	0.127	0.437
Have good pay (PAY)	0.644	0.074	0.420
Let each person be one's own boss (BOSS)	0.088	0.784	0.622
Are easy to get.., many openings (OPEN)	-0.042	-0.728	0.532
Prerotation Eigenvalue	2.498	1.141	3.639
Postrotation Trace	2.442	1.197	3.639

Table 4
Multivariate Effects(n = 664)

Hypothesized Differences	p	lambda
Program Differences		
Barriers Factors I-IV	<.001	.927
Attitudes Factors I-II	<.001	.922
Job Knowledge (v = 2)	<.001	.908
Grade Differences		
Barriers Factors I-IV	.146	.986
Attitudes Factors I-II	.291	.979
Job Knowledge (v = 2)	<.001	.873
Gender Differences		
Barriers Factors I-IV	.061	.992
Attitudes Factors I-II	<.001	.931
Job Knowledge (v = 2)	<.001	.961
Ethnicity Differences		
Barriers Factors I-IV	.749	.999
Attitudes Factors I-II	<.001	.956
Job Knowledge (v = 2)	.574	.998