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ABSTRACT

Egalitarian attitudes and the personality traits of instrumentality (masculinity) and expressiveness (femininity) were examined for 314 male and 71 female dental students and for women in dental auxiliary programs. The objectives were to (1) investigate their possible correlates (e.g., parental occupation, status, age) and to compare the attitudes toward societal roles of women held by professional and paraprofessional groups with the attitudes of the general population and (2) examine dental students' self-reports of masculine/feminine attributes. The Attitude Toward Women Scale (AWS) and the Personal Attributes Questionnaire (PAQ) were administered to three classes of dental students, female dental hygiene students, and women in the dental assisting program at the University of Minnesota. Among the conclusions are the following: (1) Women who enter dentistry are different from college women in general--stronger on the instrumentality trait and weaker on the expressiveness trait--and also hold more egalitarian attitudes towards women's roles. Except for their attitudes towards women's roles, these women are much more similar to dental men than to other women. (2) Professional men are only slightly different from college men on the masculinity trait, with slightly though significantly higher scores and slightly more egalitarian attitudes toward the roles of women. (3) A comparison between dental students and a group of established professionals seems to suggest that women entering dentistry do so because they are like the men of dentistry. Questions for research as well as for professional education in U.S. dental schools, are posed on desirable gender-associated personality attributes for the dental health practitioner, and the effect of these characteristics on patient treatment styles, public access to dental care, and the individual's oral health condition. (CC)

Masculine and Feminine Personality Attributes of Dental Students And Attitudes Toward Women's Roles in Society

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And Attitudes Toward Women's Roles in Society

Abstract

Egalitarian attitudes and the personality traits of instrumentality (masculinity) and expressiveness (femininity) were examined for 314 male and 71 female dental students. Egalitarian attitudes were also examined for women in dental auxiliary programs. Dental men and dental assisting women hold traditional attitudes towards women's roles in society. In contrast, dental hygiene and dental women hold significantly higher (more egalitarian) views. Dental women score significantly higher on instrumentality, significantly lower on expressiveness, and are significantly more egalitarian than a norm group of college women. Dental women exhibit significantly lower instrumentality scores than dental men but do not differ on expressiveness. A comparison of dental students with academic psychologists suggests that successful professionals have similar personality traits regardless of gender. This paper raises questions for research and discusses implications for recruitment and professional development.

Dentistry in the United States traditionally has been an extreme example of an exclusively male profession. Rosenberg and Thompson[1] estimated that in 1976 women made up only about one percent of the dentists in the United States. This compared with estimates of two percent in law, five percent in medicine, and six percent in pharmacy. Prior to 1975, the number of women entrants into dental school was so small as to be negligible. Coombs and Drolette[2] reported that in 1973, less than four percent of the nation's dental students were women.

Women who entered the field were channeled by tradition into subordinate positions as dental assistants or para-professional hygienists. Auxiliaries were commonly called "girls" and dentists were called "men" by their colleagues. Daughters of dentists became hygienists, sons became dentists. Legal and business authority in a practice was always placed with the dentist and there was no vertical mobility to provide continued professional development opportunity for auxiliaries. There existed few female role models and thus the situation persisted relatively undisturbed for many years.

In the early 1970's, after the women's rights movement had firmly established affirmative action programs in professional schools, applications to dental school from qualified women began to increase. By the end of that decade the American Dental Association Annual Report on Dental Education[3] reported that 17 percent of dental students enrolled (for the 1980-81 school year) were women. At present, women graduates are beginning to establish themselves in the realm of dental practice. However, little is known about the forms of dental practice women are selecting.

This sudden and significant change in the student body raised a host of questions within the practicing profession and within dental education. Would the nature of dental practice change? Would relationships with patients and camaraderie among professionals change? Were the women entering the profession substantially different from men on any professionally relevant characteristic? Were the women entering dentistry different from women students who were not challenging such exclusively male domains?

Studies in dentistry have investigated several of these questions. Coombs[4] compared factors associated with career choice. She noted that the pattern of decision to enter the profession differed for men and women, but males and females possessed similar motivations and intrinsic values in selecting dentistry as a career. Generally, women made the decision to enter dentistry somewhat later in their education than did men, and more than half (58 percent) had had direct experience within the profession. Gershen and McCreary[5] noted the similarity of male and female dental students on personality traits measured by the Comrey Personality Scales. While males and females in the general population typically differ on seven of the ten scales, male and female dental students differed only on one, the masculinity versus femininity trait. Gershen and McCreary[5] contrast their findings with studies by medical educators, which cite differences between men and women medical students in extroversion, order, understanding, and socialization.

Few studies have investigated the Masculinity-Femininity traits or sex role attitudes of dentists or dental students. Rosenberg and Thompson[1] reported that male dental faculty and students perceive female dental students as different from both the sex role of woman and the professional role of dentist. A woman dental student is seen by her male colleagues as

deviant in terms of her role identities. Zeitler, Ramsey and Fuller[6] concluded that women dental students were more likely to experience sex discrimination from male classmates than from faculty. Only the Coombs study[7] listed differences between men and women dental students that might be linked to Masculinity-Femininity traits. Women students expressed far greater preference (3 to 1) for working with the aged than did men students, and women alone expressed interest in team dentistry.

What are the attitudes towards women in this male dominated profession, this profession of limited upward mobility for women? There has been substantial research on changing sex role attitudes though no studies have reported attitudes of dentists or dental students compared with normative data such as that reported by Spence and Helmreich[8]. One objective of the present study is to compare dental students' attitudes towards women with existing data.

A second area of interest is dental student's self-reports of various attributes that often have been stereotyped as masculine or feminine. There are several approaches to the study of gender attributes. Traditionally, gender has been viewed as a single continuum with masculinity and femininity marking the poles. The Gershen and McCreary[5] study of gender attributes among dental students used a single continuum scale. Therefore, greater masculinity necessarily meant less femininity and vice versa. More recently, masculinity and femininity have been considered as separate traits that exist in greater or lesser strengths in all individuals.[8,9] Individuals can be strong or weak on both, either, or neither of these traits. The characteristic of androgyny, being strong on both masculinity and femininity, might be considered desirable for health professionals because of the appro-

priateness of such stereotypically masculine characteristics as decisiveness and feminine characteristics such as empathy and support.

The present study had two major purposes: 1) to investigate the gender attribute perceptions of male and female dental students and their possible correlates (i.e. parental occupation, status and age) and 2) to compare the attitudes towards societal roles of women held by professional and para-professional groups with the attitudes of the general population.

Method

SUBJECTS AND PROCEDURES

The Attitude toward Women Scale (AWS) and the Personal Attributes Questionnaire (PAQ) were administered to three classes of dental students at the University of Minnesota (classes of 1981, 1982 and 1983). Total enrollment in the three classes during winter quarter 1980, when the data were obtained, was 431. A total of 385 students, 314 men and 71 women, participated in the study. Early in the spring quarter 1980, 142 women students in the dental hygiene program and 37 women in the dental assisting program completed the AWS.

The study was announced, a week in advance, as an opportunity for students and the investigators to learn how their attitudes about the roles of men and women differed from one another and from the population in general. Students were told that participation was optional and that if they decided to participate they could discontinue participation at any time. Data collection was scheduled during a free period following a regularly scheduled lecture. All students attending the lectures on the days the questionnaire was administered remained and completed the surveys. Each also indicated his or her sex, age, and occupations of mother and father.

Anonymity was assured by assigning a number to each survey form, known only to the student, but by which the student could retrieve his or her personal score when summary data was presented to the class.

MEASURING INSTRUMENTS

The PAQ and AWS were selected for this study because of the large body of data available on the validity and reliability of these instruments.[8] Both appear to measure different constructs, and have previously been administered in tandem to the populations on which normative data is available. Therefore, comparisons could be made between the general population and the group surveyed in the present study.

Personal Attributes Questionnaire

This psychometric instrument[10,11] was devised to measure the psychological dimensions of masculinity and femininity using both conceptions of gender as separate traits. The questionnaire is divided into three separate scales. The Masculinity (M) scale contains items considered to be socially desirable characteristics for both sexes, but that males are believed to possess in greater abundance than females (e.g., independence). Conversely, the Femininity (F) scale contains items describing characteristics considered socially desirable in both sexes, but that females are believed to possess in greater abundance (e.g., gentleness). Items on the third, Masculinity-Femininity (M-F) scale, consist of characteristics for which social desirability appears to vary in the two sexes (e.g., aggressiveness is judged to be desirable in males and non-aggressiveness desirable in females).

The short form of the PAQ[10, 11] contains twenty-four bipolar items on which respondents rate themselves. Each item is scored from 0 to 4: a high score on items assigned to the M and M-F scale indicates an extreme masculine response; a high F score indicates a feminine response. Total

scores are obtained on each scale by adding the individual scores on the eight items. The range of possible values is thus 0 to 32 for each scale.

With respect to reliability, alpha coefficients for the self scales have been reported as .73 and .91. Cronbach alpha coefficients for the short form were .85, .82, and .78 for the 8-item M, F, and M-F scales, respectively. In a study of college students, correlations between the long and short form were .93, .93, and .91 for the M, F, and M-F scales, respectively. According to the authors, establishing the PAQ's concurrent validity would be difficult and perhaps inappropriate because conceptually the PAQ measures internal characteristics that influence overt behavior but are not necessarily consistent with behavior. Research to date[8] has shown expected sex traditional distributions of PAQ scores (high M and low F for males, the reverse for females) in samples from different populations. A set of norms was established, using data from 715 college students.

Attitude toward Women Scale

A short, fifteen-item version of the Attitude toward Women Scale[8] was also selected for the present study. The items on the scale describe the rights and roles that women ought to have or be permitted, vis-a-vis men, in such areas as jobs and education, freedom and independence, social etiquette, sexual behavior, and marital relationships and obligations. Items require responses on a 4-point scale ranging from "strongly agree" to "strongly disagree." Items are scored 0 to 3, with high scores indicating a pro-feminist, egalitarian attitude. A numerical index score, ranging from 0 to 45, presumably reflects the degree to which individuals hold traditional or liberal views, and permits comparisons of the attitudes of various groups on this dimension. In a study of college students, the correlation between

the short form and the original fifty-five item AWS was .91. The Cronbach alpha coefficient for the short form was .89.

Extensive data concerning score differences between various groups in expected directions are cited as evidence of the construct validity of the AWS.[10] Based on numerous studies conducted between 1972 and 1975,[8] high school and college women consistently have significantly higher scores than their male counterparts.

Results

DENTAL STUDENTS PAQ AND AWS SCORES

The distribution of PAQ and AWS scale scores for each of the three classes of dental students appeared to be very similar. Combining scores for the three classes permitted analysis with a sufficient number of female students to give reasonable confidence to the stability of the scores. Gender differences for the PAQ and AWS scores were assessed using a MANOVA. The Multivariate F test indicated a significant effect for gender, F (4,380) = 33.6, $p < .00001$.

Table 1 shows mean scores, standard deviations, and F ratios for the three PAQ scales and the AWS for male and female dental students. PAQ mean scores for women were 21.40, 22.71, and 15.10 on the M, F, and M-F scales, respectively. Mean PAQ scores for dental student men were 22.64, 22.31, and 16.67 on the M, F, and M-F scales. Significant differences were observed between dental women and men on the masculinity (M) dimension, F (1,383) = 7.5, $p < .006$, and the M-F dimension, F (1,383) = 12.3, $p < .0004$. Dental men scored 1.24 scale points higher than women on the M scale and 1.57 scale points higher than women in the M-F scale. Women scored significantly higher (38.28) than men (28.85) on the AWS, F (1,383) = 119.0, $p < .00001$.

COMPARISON WITH OTHER GROUPS

Table 2 presents comparisons of male and female dental students with a sample of 715 college students.[8] The t test was used to compare the differences between dental men and women and the norm group of college men and women. The t values obtained were compared with t values: t (120) = 1.98, $p < .05$; t (120) = 2.61, $p < .01$, t (120) = 3.37, $p < .001$.

As shown on Table 2, dental men differ from college men only on the M

scale of the PAQ. Dental men scored 22.6 compared with 21.69 for college men. The t value of 3.08 for this .91 difference exceeded the .01 level. Dental men also scored significantly higher on the AWS. The 2.72 point difference was significant: t (120) = 4.44, p < .001.

PAQ scores for college women were 19.54, 24.37, and 12.52 on the M, F, and M-F scales, respectively. Women dental students scored significantly higher than college women on both dimensions of masculinity: 21.4 versus 19.54 on the M scale, and 15.1 versus 12.52 on the M-F scale. On the femininity dimension, dental women scored significantly lower (22.7 compared with 24.37) than college women. On the AWS, dental women also scored significantly higher (8.71 scale points) than college women. On table 2, t values for the difference between the M, F, and M-F scales and AWS scores for college women and dental women were 3.8, 4.08, 5.84 and 11.85, respectively. Each exceeded the t value of 3.29 (df = 120) required at the .001 level.

Table 3 presents PAQ scale score comparisons of dental students with a recently reported sample of established academic psychologists.[12] No significant differences were observed between women and men on any of the three dimensions.[12] Psychologist men scored 23.2, 22.0, and 16.2 compared with women 23.0, 21.8, and 15.7 on the M, F, and M-F scales, respectively. Dental men scored 22.6, 22.3 and 16.7 on the three scales and did not differ significantly on any dimension from academic psychologist men. Dental women scored significantly lower than psychologist women on the M scale: 21.4 versus 23, t (125) = 3.64, p < .001; significantly higher than psychologist women on the F scale: 22.7 versus 21.8, t (125) = 2.27, p < .01; and similarly on the M-F scale: 15.1 versus 15.7.

DEMOGRAPHIC DESCRIPTION OF THE DENTAL STUDENT SAMPLE

Table 4 shows the basic demographic data that describes the three classes of men and women dental students. Occupational status was estimated by using

the scaling of occupational titles published by Hollinghead.[13] "The scale (of occupation status) is premised upon the assumption that occupations have different values attached to them by the members of our society. The hierarchy ranges from the low evaluation of unskilled physical labor, toward the more prestigious use of skill, through the creative talents of ideas, and the manipulation of men (p. 8)."[13] The Hollingshead scale uses occupational status and education to estimate social position. The present study used only occupational status, since data on level of education was not available. The occupational titles of parents reported by students were compared to those in the cited scale and were assigned the appropriate scale value (1 = high executive and major professional, 7 = unskilled manual labor). The occupation of housewife is not included in the Hollingshead list and was arbitrarily assigned the scale value of 5, equivalent to that of skilled manual employee.

Table 4 shows no significant difference between the mean age of 24.7 years for men and 24.9 years for women. Though similar in age, 36% of the women had previous experience in the profession as either hygienists or dental assistants. The table also shows that parents of women dental students held occupations of high status (2.1 for fathers; 3.5 for mothers) than parents of men (2.6 for fathers; 3.9 for mothers). The .5 scale point difference between the occupational status of fathers of men and women students was statistically significant: t (354) = 2.8, $p < .01$. The scale point difference of .4 between the occupational status of mothers of women was not significant: t (354) = 1.8, $p < .07$.

INTERCORRELATIONS AMONG VARIABLES

Table 5 reports intercorrelations among age, occupation, and each of the dependent variables. For men students, egalitarian attitudes (high AWS scores) were positively associated with age (r = .17), and the PAQ Femininity Scale (r = .14). As expected, a strong positive correlation (r = .49) was present between the M and M-F scales, and a moderately negative correlation

($r = -.22$) was evident between the M-F and F scales. A low, but significantly positive correlation ($r = .13$) was also present between the M and F scales.

For women, mothers' occupation (high status = 1, low status = 7) and the M-F scale were negat vely, though moderately, correlated ($r = -.26$). Moderately high positive correlations were observed between the M and M-F scales ($r = .33$) as expected. Significant positive correlations were also observed between the M scale and the F scale ($r = .31$). Only one significant correlation appeared between the AWS scores and other variables. AWS scores were also positively correlated with the M-F scale ($r = .28$).

COMPARISON OF DENTAL STUDENTS WITH AUXILIARY STUDENTS

Table 6 shows mean scores and standard deviations for students enrolled in the three professional education programs: dentistry, dental hygiene, and dental assisting. A one-way analysis of variance indicated a significant difference among means, $F(3,561) = 52.65$, $p < .000001$. Further analysis was completed using Duncan's New Multiple Range Test. Table 4 reports the Shortest Significant Range required for differences between means. As shown in Table 4, the mean AWS score for women in the Dental Assisting Program (29.73) was similar to the mean score for men in Dentistry (28.85). Women in the Dental Hygiene program had mean AWS scores that were significantly higher (33.84) than women in Dental Assisting, and women in Dentistry had mean AWS scores that were significantly higher (38.28) than women in Dental Hygiene.

Discussion

This study was conducted to investigate male and female dental students' perceptions of their gender attributes, and to investigate the attitudes towards societal roles for women that are held by men and women preparing for positions as dentists or auxiliaries. Comparisons were made of male and female dental students on the Personal Attributes Questionnaire, which measures personality traits typically described as masculinity (instrumentality) and femininity (expressiveness). Comparisons were also drawn between men and women dental students and women hygiene and assisting students on the Attitude Towards Women Scale. All dental students were also asked to report their age and the occupational status of their parents.

DEMOGRAPHIC CHARACTERISTICS OF THE SAMPLE

The present sample of Minnesota women dental students did not fit the popular stereotype that views them as older and more mature than their colleagues. The mean age of the male dental students was 24.7 years, and the mean age for female dental students was 24.9 years. Additionally, only thirty-six percent of the women had previous experience or training in dentistry, either as assistants or hygienists. These data may suggest a trend towards new entrants into the profession, as contrasted with Coombs' finding in 1974 that 58 percent of the women enrolled in dentistry had previous experience in the profession.[4]

Approximately 18.5 percent of the present sample of dental students were women. Parents of women dental students held occupations of higher status than men. The difference was significant for fathers and approached significance for mothers. Use of a more sensitive index, which takes into account both occupation and level of education for each parent, may have clarified this possible difference.

ATTITUDES TOWARDS WOMEN'S ROLES IN SOCIETY

Both men and women dental students were more liberal in their attitudes towards women than their respective college norm groups. However, it was the women dental students who had the strong and extreme position on this scale. This was not surprising since these women are clearly pioneers in entering an exclusively male domain. Comparisons of attitudes of dental students with students in auxiliary programs raises questions about the influence of these attitudes in dental practice. The mean AWS score for women in the Dental Assisting Program (29.73) was similar to the mean score for men in Dentistry (28.85). Women in the Dental Hygiene program had mean AWS scores that were significantly higher (33.84) than women in Dental Assisting, and women in Dentistry had mean AWS scores that were significantly higher (38.28) than women in Dental Hygiene. Thus, when comparing attitudes towards the roles of women in society, dental women hold extremely more egalitarian attitudes than do dental men. When comparing attitudes of future auxiliaries, dental hygiene women expressed egalitarian attitudes closer to those of dental women, but women enrolled in dental assisting programs expressed traditional views, similar to those of dental men.

COMPARISON OF PERSONALITY ATTRIBUTES AMONG GROUPS

Although men and women dental students differ somewhat on the masculinity trait, they are far more similar to one another than they are to their respective norm groups. There are obvious problems in making comparisons between the present sample and samples who have previously completed the instruments used in the present study. There are also obvious problems attributing practical significance to the small differences that often reach significance with a large sample size. For example, it is hard to believe that the 1.24 difference (on a 0-32 point scale) observed between

male and female dental students on the instrumentality (M-scale) trait has much practical significance. However, an analysis of differences between the dental student group and other groups who have previously completed the PAQ is useful, as it gives perspective to the differences observed between male and female dental students.

Dental Students and College Students

A comparison of male and female dental students with the sample of college students[8] indicates that dental men do not differ from college men except that dental men have a slightly elevated (.91 difference) M score. However, women dental students differ from college women in all respects, and the differences are much greater. Dental women have significantly higher M scale (a 1.86 point difference) and M-F scale scores (a 2.58 point difference), and significantly lower F scale scores (a 1.67 point difference).

Dental Students and Professionals

There is some evidence that successful professional men and women do not differ on gender-linked personality traits. Helmreich, Spence, and their colleagues[12] reported a lack of sex differences in PAQ scale scores for a sample of Ph.D. academic psychologists. Helmreich and Spence[12] point out that gender-linked personality traits have distinguished all American populations previously studied. Interesting, then, is the comparison of a group of established professionals with aspiring professionals. Dental men do not differ from professional men. Dental women do differ from professional women, but the magnitude of the difference between college women and dental women is greater than the difference between professional women and dental women. The professional women had significantly higher M scale scores, a 1.6 difference, ($p < .001$), and significantly lower F scale scores, though only a .9 difference ($p < .01$). The magnitude of the difference between college women and dental women was 1.86 scale points on the M scale, 2.58 on the

M-F scale, and 1.67 scale points on the F scale. The mean age difference between dental women was also probably greater than between dental women and college women. The mean age of the psychologists was 45 years, with an average of 17 years of postdoctoral experience.

INTERCORRELATIONS AMONG VARIABLES

What variables appear to be associated with personality attributes and attitudes towards women's roles? Data on age and occupational status of parents prompted a number of relationship questions: How is occupational status of father or mother related to masculinity and femininity traits or to egalitarian attitudes towards women's roles? Dental men had slightly more egalitarian attitudes towards women than college men. Is there a relationship between age and attitudes, age and PAQ scale scores?

Analysis of the intercorrelations among age, occupation, and each of the dependent variables suggest some expected and unexpected relationships. As expected, the M scale and the M-F scale were positively correlated, a correlation of .49 for men, .33 for women. For men, there was a moderately negative correlation ($r = -.22$) between the M-F scale and the F scale. This relationship was not evident for women. There was a moderately strong positive correlation ($r = .31$) between the masculinity and femininity scales for women, but a very weak correlation ($r = .13$) between masculinity and femininity for men.

Fathers' and mothers' occupational status was not correlated with any of the dependent variables for men, but contrary to expectations, mothers' occupational status was negatively ($r = -.26$) related to the dental woman's M-F scale. This may suggest that women with mothers who provide strong role models find it less necessary to describe themselves as dominant, aggressive, or worldly. Egalitarian attitudes of women were positively related ($r = .28$)

with the self descriptions of dominance, aggressiveness and worldliness. For men there were low positive correlations between egalitarian attitudes and age (r = .17) and egalitarian attitudes and femininity scores (r = .14). The latter correlation suggests that men with egalitarian views are somewhat more comfortable with self descriptions of warmth, expressiveness, and supportiveness.

ANDROGYNY

This personality trait is characterized by Spence and Helmreich[8] as high scores on both instrumentality, the M scale, and expressiveness, the F scale. Dental students are already high on instrumentality (decisiveness, etc.), but both male and female dental students score lower than college women on the F scale. Since dentistry is one of the helping professions, expressiveness (empathy, support, etc.) would appear to be an extremely desirable characteristic. It is a dimension one would expect that women would bring to the profession. However, in this study, no differences were found between men and women dental students. High F scale scores appear to be characteristic of nurses and certainly is characteristic of women who elect to be nursery school teachers.[14] Spence believes such characteristics would be highly desirable for all health professionals.[14]

IMPLICATIONS

Dental Education

Examination of the expressiveness trait as measured by the scale scores raises the question: What F scale score is indicative of a sufficient degree of empathy, support and expressiveness for a health professional? What F scale score is characteristic of the outstanding professional? Can this trait be enhanced through the educational process? Should professionals

be selected on the basis of this trait? Directors of admissions point out that consideration to this trait can only be given if there is a significant pool of applicants that demonstrate this trait. If expressiveness is considered a desirable trait for dentists, it would appear that considerable effort would need to be expended to recruit both men and women who exhibit this trait.

Dental Practice

How do differences in attitudes towards women affect interpersonal relationships in the work place? Are persons with similar views compatible? Do persons with disparity in attitudes towards women find themselves at odds with their employers or employees? Dental assistant students exhibited attitudes towards the roles of women that were similar to future male dentists, but highly dissimilar to future female dentists. Hygiene students exhibited significantly higher AWS (more liberal) scores than either assistants or male dentists. While assistants work in a more subordinate role, hygienists have greater autonomy. How do attitudes towards roles for women influence the working conditions and salaries of hygienists?

We don't know whether such attitudes result in interpersonal conflict, but many people seem to think such attitudes help maintain the sex role stereotyping and lack of mobility for women that is very evident in the dental profession. More than a third of the male dental students hold extremely traditional views of the roles of women in society. There is recent evidence[14] that the greater emphasis on equality that we have all experienced in the last decade through affirmative action programs, the ERA movement, etc., is not enough to change our attitudes about the roles of women. Spence[14] indicated that the greatest shifts in attitudes, as measured by the AWS, occurred between 1972 and 1976. Attitudes remained steady until 1980, and appear to be reversing in the 1980's. Unless the disparity in views is dealt with, it is likely to be a source of interpersonal conflict between dentists

and their employees. In the interests of equality and improvement of interpersonal relationships in dental practice, dental educators may need to consider the development of consciousness raising programs to assist in the professional growth of students.

Career Selection

Dentistry is a profession in which sex role stereotyped positions are even more evident than in medicine. In 1980, men made up only one percent of 169 students enrolled in dental hygiene and dental assisting at the University of Minnesota. In contrast, men comprise 82.5 percent of the student body enrolled in dentistry. The apparent differential effect of parent's occupation on professional career decision-making of women and men raises some interesting questions. Is there greater social status mobility for men than women? Do women who enter traditionally "male" occupations require stronger role models than do men entering the same occupation?

While the practice of dentistry had been traditionally a male dominated profession in the United States, this does not hold true in other developed countries. Where the structure of dental care delivery systems differs from the private practice, fee-for-service mode of delivery that predominates in this country, there are substantial numbers of women (e.g. Coombs[7] reported 40 percent of Swedish dentists were women) in the profession. Thus, social norms of equality of opportunity for women in the profession may be necessary, but not sufficient without structural change, to encourage large numbers of women to select dentistry as a profession.

Conclusions

In summary:

1) Women who enter dentistry are quite different from college women in general. They are stronger on the instrumentality trait and weaker on the expressive-

ness trait. They also hold more egalitarian attitudes towards women's roles. Except for their attitudes towards women's roles, these women are much more similar to dental men than to other women.

2) Professional men are only slightly different from college men on the masculinity trait. They have slightly, though significantly, higher scores and they have slightly more egalitarian attitudes toward the roles of women.

3) A comparison between dental students and a group of established professionals would seem to suggest that those women who enter dentistry do so because they are like the "men" of dentistry.

This study clearly raises many questions for research as well as for professional education in U.S. dental schools. What gender associated personality attributes are desirable for the dental health practitioner? What levels of instrumentality and expressiveness (as measured by PAQ scales) are characteristic of the outstanding professional? Do dimensions of these traits differ among public health dentists, private practice dentists, older and younger dentists, men and women dentists, dentists in various modes of practice? Finally, how might these characteristics and attitudes affect patient treatment styles, public access to dental care, and ultimately, the public's oral health condition?

Table 1

Means and Standard Deviations and F Ratios for Male and Female Dental Students on PAQ and AWS Scores

Variables	n	$\bar{X}$	SD	F*	Significance
PAQ Masculinity					
Males	314	22.64	3.4	7.5	$p < .006$
Females	71	21.40	3.6		
PAQ Femininity					
Males	314	22.31	3.3	< 1	N. S.
Females	71	22.71	3.0		
PAQ Masc-Fem.					
Males	314	16.67	3.5	12.3	$p < .00004$
Females	71	15.10	3.0		
AWS					
Males	314	28.85	7.0	119.0	$p < .000001$
Females	71	38.28	4.4		

*df = 1,383

Table 2

Means and Standard Deviations of PAQ Scales and AWS Scores for Dental Students and College Students

		PAQ						AWS	
		M		F		M-F			
Comparison Group	n	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD	$\bar{X}$	SD
Men									
College Students†	350	21.69	4.18	22.43	3.7	16.69	4.12	26.18	8.21
Dental Students	314	22.6	3.4	22.3	3.3	16.7	3.5	28.9	7.0
Comparison	D	.91		.13		.01		2.72	
	t	3.08**		.58		.03		4.44*	
Women									
College Students†	350	19.54	4.32	24.37	3.68	12.52	4.25	29.59	9.58
Dental Students	71	21.4	3.6	22.7	3.0	15.1	3.0	38.3	4.4
Comparison	D	1.86		1.67		2.58		8.71	
	t	3.8*		4.08*		5.84*		11.85*	

†Data reported by Spence and Helmreich[8] for a sample of 715 college students. The authors report approximately equal n's for male and female respondents, thus n was estimated at 350 each.

*$p < .001$

**$p < .01$

Table 3

Means and Standard Deviations of PAQ Scales

for Dental Students and Academic Psychologists

Comparison Groups		n	PAQ Scales M $\bar{X}$	M SD	F $\bar{X}$	F SD	M-F $\bar{X}$	M-F SD
Men								
Psychologists†		141	23.2	3.7	22.0	4.1	16.2	3.4
Dental Students		314	22.6	3.4	22.3	3.1	16.7	3.5
Comparison	D		.6		.3		.5	
	t		1.63		.77		1.43	
Women								
Psychologists†		55	23.0	3.7	21.8	3.8	15.7	3.3
Dental Students		71	21.4	3.6	22.7	3.0	15.1	3.0
Comparison	D		1.6		.9		.6	
	t		3.64**		2.27*		1.81	

†Data are reported by Helmreich, et al.[12]

*$p < .01$

**$p < .001$

Table 4

Mean Age and Parent Occupation Scale Scores for Men and Women Dental Students

Group	n†		Age	Fathers' Occupation	Mothers' Occupation
Men	291	$\bar{X}$	24.7	2.6	3.9
		SD	2.5	1.5	1.3
Women	65	$\bar{X}$	24.9	2.1	3.5
		SD	3.0	1.2	1.3
Comparison		D	.2	.5	.4
		t	-.51	2.8**	1.8*

Note. Parent occupation was scaled on a seven point scale: 1 = high professional; 7 = unskilled laborer.

†The reduced n is a result of missing data.

*$p < .07$

**$p < .01$

Table 5

Intercorrelations among age, Parent Occupation, AWS Scores and PAQ Scales for Men and Women Dental Students

Variable	1	2	3	4	5	6	7
Men Students*							
1. Age	1.0	.18	.04	-.05	.01	.03	.17
2. Fathers' Occupation		1.0	.15	-.02	.06	-.06	.01
3. Mothers' Occupation			1.0	.04	.09	.00	-.04
4. PAQ Masculinity Scale				1.0	.13	.49	-.00
5. PAQ Femininity Scale					1.0	-.22	.14
6. PAQ Masc-Fem Scale						1.0	.00
7. AWS							1.0
Women Students†							
1. Age	1.0	.05	.02	-.14	.08	-.02	.17
2. Fathers' Occupation		1.0	.08	.12	.16	-.12	.00
3. Mothers' Occupation			1.0	.09	.02	-.26	.07
4. PAQ Masculinity Scale				1.0	.31	.33	-.01
5. PAQ Femininity Scale					1.0	-.09	-.16
6. PAQ Masc-Fem Scale						1.0	.28
7. AWS							1.0

* For Men, any correlation equal to or greater than .11 is significant.

† For Women, any correlation equal to or greater than .24 is significant.

Table 6

Means of Male and Female Respondents by Dental School Program on AWS and Analysis of Variance Results

	Comparison Groups				Duncan's Multiple Range Test
	Dental Men	Women Assisting	Women Hygiene	Dental Women	Shortest Significant Range ($p = .01$)
n	314	37	142	71	
$\bar{X}$	28.85	29.73	33.84	38.28	
SD	7.0	7.1	5.5	4.4	
Difference					
$\bar{X}_1$		.88	4.99*	9.43*	3.65
$\bar{X}_2$			4.44*	8.55*	3.81
$\bar{X}_3$				4.10*	3.91

*$p < .01$

References

1. Rosenberg, H. M. and N. L. Thompson. Attitudes toward women dental students among male dental students and male dental faculty members. Journal of Dental Education, 40(10): 676-680, 1976.

2. Coombs, J. A. and M.E. Drolette. Discrimination - the case of the female dental student. Women and Health: Issues in Women's Health Care, 2(1): 12-21, 1977.

3. American Dental Association. Council on Dental Education. Annual Report on Dental Education 1980/81. Chicago: American Dental Association: 1981, pp. 4-7.

4. Coombs, J. A. Factors associated with career choice among women dental students. Journal of Dental Education, 40(11): 724-732, 1976.

5. Gershen, J. A. and C. P. McCreary. Comparing personality traits of male and female dental students: a study of two freshman classes. Journal of Dental Education, 41(10): 618-622, 1977.

6. Zeitler, D. L., E. F. Ramsey and J. L. Fuller. The dental educational environment as perceived by the female student. Journal of Dental Education, 41(5): 271-272, 1977.

7. Coombs, J. A. An International Comparison: American and Swedish Dental Students. Journal of Dental Education, 42(12): 652-658, 1978.

8. Spence, J. T. and R. C. Helmreich. Masculinity and femininity: their psychological correlates and atecedents, Austin: University of Texas Press, 1978.

9. Bem, S. L. On the utility of alternate procedures for assessing psychological androgyny. Journal of Consulting and Clinical Psychology, 45(2): 196-205, 1977.

10. Spence, J. T., R. C. Helmreich and J. Stapp. Ther personal attributes questionnaire: a measure of sex-role stereotypes and masculinity-femininity. JSAS Catalog of Selected Documents in Psychology, 4: 127, 1974.

11. Spence, J. T., R. C. Helmreich and J. Stapp. Ratings of self and peers on sex-role attributes and their relations to self esteem and conceptions of masculinity and femininity. Journal of Personality and Social Psychology, 32(1): 29-39, 1975.

12. Helmreich, R. L., J. T. Spence, W. E. Beane, G. W. Lucker and K. A. Matthews. Making it in academic psychology: demographic and personality correlates of attainment. Journal of Personality and Social Psychology, 39(5): 896-908, 1980.

13. Hollingshead, A. B. Two factor index of social position, 1965: Yale Station, New Haven, New Jersey 1957 (mimeographed).

14. Spence, J. T. Personal communication. March 1981.