Measuring Empathy in Female Hygiene Students

Patricia R. Mason
Old Dominion University

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ABSTRACT
MEASURING EMPATHY IN FEMALE DENTAL HYGIENE STUDENTS

Patricia R. Mason
Old Dominion University, 1979
Director: Kathleen E. Russell

The aim of this investigation was to assess empathy in female dental hygiene admissions candidates and first and second year dental hygiene students. A convenience sample of subjects from Old Dominion University, Norfolk, Virginia; the University of Pennsylvania, Philadelphia, Pennsylvania; and Idaho State University, Pocatello, Idaho, were included within the study.

Data were organized according to a 3 x 3 factorial research design with educational setting and student status as the non-manipulated independent variables. The dependent variable, empathy, was measured by the Hogan Empathy Scale.

Three group, two-way analysis of variance yielded no statistically significant empathy differences among levels of dental hygiene students. Results indicated a statistically significant empathy difference among dental hygiene students from the three educational settings. Additionally, no statistically significant interaction was observed among levels of dental hygiene students and their educational setting as measured by empathy scores. All comparisons were at the 0.05 level of significance.
ACKNOWLEDGEMENTS

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# TABLE OF CONTENTS

**ACKNOWLEDGEMENTS** .................................................. ii  

**LIST OF TABLES** ..................................................... vi  

**Chapter**  

1. **INTRODUCTION** .................................................. 1  
   - STATEMENT OF THE PROBLEM .................................. 2  
   - SIGNIFICANCE OF THE PROBLEM ............................... 3  
   - DEFINITION OF TERMS ........................................ 5  
   - ASSUMPTIONS .................................................. 7  
   - LIMITATIONS .................................................. 7  
   - HYPOTHESES ................................................... 9  
   - METHODOLOGY ................................................ 9  

2. **REVIEW OF THE LITERATURE** .................................. 11  
   - THE CONSTRUCT OF EMPATHY ................................ 11  
   - EMPATHY IN MEDICAL, NURSING, AND ALLIED HEALTH PROFESSIONS EDUCATION ........... 15  
   - EMPATHY IN DENTAL EDUCATION .............................. 25  
   - EMPATHY IN DENTAL HYGIENE EDUCATION .................... 30  
   - SUMMARY ..................................................... 34  

3. **METHODS AND MATERIALS** .................................... 35  
   - SAMPLE DESCRIPTION ......................................... 35  
   - RESEARCH DESIGN AND STATISTICAL TREATMENT .............. 39  
   - METHODOLOGY ................................................ 42  
   - INSTRUMENTATION .............................................. 43  
   - PROTECTION OF SUBJECTS ..................................... 46
# LIST OF TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 3 x 3 Factorial Research Design</td>
<td>40</td>
</tr>
<tr>
<td>2. Response Rate to the Hogan Empathy Scale and to the Basic Information Questionnaire</td>
<td>49</td>
</tr>
<tr>
<td>3. Two-Way Analysis of Variance Among Hogan Empathy Scale Scores of All Groups</td>
<td>51</td>
</tr>
<tr>
<td>4. Hogan Empathy Scale Mean Scores, Standard Deviations, Standard Errors, and Minimum and Maximum Scores Based on Student Status</td>
<td>52</td>
</tr>
<tr>
<td>5. Hogan Empathy Scale Mean Scores, Standard Deviations, Standard Errors, and Minimum and Maximum Scores Based on Educational Setting</td>
<td>53</td>
</tr>
<tr>
<td>6. Scheffe's a posteriori Comparison Among Dental Hygiene Students Based on Educational Setting as Measured by Scores on the Hogan Empathy Scale</td>
<td>55</td>
</tr>
</tbody>
</table>
"Empathy is the ability to perceive accurately the feelings of another person and to communicate this understanding to him." Psychologists emphasize that the central ingredient in the helping relationship is the counselor's ability to perceive and communicate the feelings of the patient effectively.

According to Truax and Carkhuff, an empathic counselor is completely attuned to the patient's verbal and non-verbal expressions, thus, responding to the patient's full range of feelings in their exact intensity. The empathic counselor concentrates his attention on the patient's feelings and eliminates his own personal values, norms, ideas, and codes, minimizing the possibility of communicating a "false" warmth. An empathic counselor encourages a patient to express himself freely. Finally, the empathic counselor's intense concentration on the patient's feelings helps to ensure that perceptive or communicative problems will be recognized. Bachrach has suggested that "... communications guided by empathy are experienced as meaningful and relevant by the patient and lead to a sense of conviction." Research has indicated that an empathic counselor can be a major factor in the
Significance of the Problem

"Measuring particular abilities that are related to success in dental hygiene education and practice is an essential factor in selecting students for admission to dental hygiene schools." A report published by the American Dental Association indicates that most schools base their admissions requirements on Dental Hygiene Aptitude Test scores, Scholastic Achievement Test or American College Test scores, and previous high school and college grade point averages. These academic requirements serve as predictive criteria for success in the dental hygiene curriculum; however, the requirements omit the social and behavioral characteristics of the aspiring dental hygienist. Thus, dental hygiene admissions committees have no systematic method of selecting students with the quality, empathy.

Although empathy is not a criterion for dental hygiene admissions, frequently empathy-oriented learning objectives have been incorporated into community dentistry, ethics, practice management, and clinical courses. No specific course, however, emphasizing empathy exists in the dental hygiene curriculum. "The emphasis in . . . many schools appears to be on technical proficiency and clinical skill reinforced by basic science education." This assertion is supported by such influential components as the (1) American Dental Hygienists' Association Curriculum Guidelines for Dental Hygiene Education;
student populations in helping disciplines.\textsuperscript{15,43,78,79,92} Few studies have been concerned with the empathy levels of dental hygiene students.\textsuperscript{39,92} Consequently, one must question whether empathy exists in aspiring dental hygienists. What are the empathy levels maintained by dental hygiene students? What effect does the dental hygiene curriculum have on student empathy levels? Does educational setting or student status affect student empathy levels? Answers to these questions might prove beneficial in (a) defining the characteristics of individuals attracted to the dental hygiene profession, (b) selecting individuals for admittance into dental hygiene programs, (c) modifying dental hygiene curricula to enrich student empathy levels, and ultimately, (d) enhancing patient-clinician helping relationships. If empathy is fundamental to the concept of total patient care, empathy research in dental hygiene education should be pursued.

**Definition of Terms**

The terms used in this study are:

**Empathy:** The "... intellectual or imaginative apprehension of another's condition or state of mind."\textsuperscript{33} Empathy, the dependent variable, will be measured by the Hogan Empathy Scale (see Appendix A). This scale is based upon the rationale:

\ldots that the concept empathy \ldots is central for understanding a broad range of social phenomena. \ldots This test is a 64-item self-report measure \ldots constructed by comparing the responses of groups with high- and low-rated empathy, using
Educational Setting: The total academic framework of an institution of higher learning which supports the functioning of a dental hygiene curriculum.

Assumptions

The following assumptions were made:

1. Empathy is a measurable construct. 33

2. The Hogan Empathy Scale is an appropriate instrument for measuring empathy in dental hygiene students. Reliability and construct validity have been established for adult populations. 33

3. The Hogan Empathy Scale was scored appropriately and interpreted according to the directions supplied with the instrument.

4. Participants followed test instructions and answered all questions accurately and truthfully. All participants received printed directions for completing the basic information questionnaire and the Hogan Empathy Scale (see Appendices A and B).

5. Participants had no accumulated knowledge concerning the Hogan Empathy Scale or the concept of empathy.

Limitations

The investigation was limited by the following factors:

1. Random sampling techniques were not used; participants comprised intact groups; therefore, results
7. The Hogan Empathy Scale is a forced-choice test; results are relative, not absolute. Participants might not have valued the choices provided.

8. The independent variables could not be controlled by manipulation and because of this lack of control, genuine relationships are difficult to determine. 7

Hypotheses

The null hypotheses tested were:

1. There is no statistically significant difference at the 0.05 level among dental hygiene admissions candidates, first year dental hygiene students, and second year dental hygiene students as measured by scores on the Hogan Empathy Scale.

2. There is no statistically significant difference at the 0.05 level among dental hygiene students at Old Dominion University, the University of Pennsylvania, and Idaho State University as measured by the scores on the Hogan Empathy Scale.

3. There is no statistically significant interaction at the 0.05 level among levels of dental hygiene students and their educational setting as measured by scores on the Hogan Empathy Scale.

Methodology

A convenience sample of female dental hygiene students from Old Dominion University, Norfolk, Virginia; the University of Pennsylvania, Philadelphia, Pennsylvania;
Chapter 2

REVIEW OF THE LITERATURE

The construct, empathy, has been studied in various student populations. A review of the literature from the fields of psychology, medicine, nursing, physical therapy, occupational therapy, and dentistry revealed findings significant to the study of empathy in dental hygiene students.

The Construct of Empathy

"Empathy" is derived from the German word "Einfühlung," which means "feeling into." Schafer defined empathy as an inner experience of sharing and understanding another person's psychological state. Rogers stated "... [t]o sense the client's private world as if it were your own but without ever losing the 'as if' quality--this is empathy." In contrast, Truax and Carkhuff asserted that accurate empathy involves verbal communication skills as well as understanding the patient's feelings.

Numerous theoretical formulations defining empathy has been developed; however, a universal definition of empathy does not exist. Due to this situation, problems in the accurate measurement of empathy have occurred. A review of the literature on the various conceptualizations
genuineness to patient outcome. In one phase of the research program, the investigator examined the relationship of empathy to therapeutic progress in the initial stages of psychotherapy. Utilizing several psychological tests, four patients showing improvement and four showing deterioration were selected after six months of therapy. Next, 384 samples of tape-recorded psychotherapy sessions with these patients were selected randomly, coded, and rated by independent evaluators. The researcher found that the tape-recorded psychotherapy sessions involving test-improved patients rated consistently higher on accurate empathy than the tape-recorded psychotherapy sessions with test-deteriorated cases ($p<0.01$).  

Truax et al. 89 examined four therapists' levels of accurate empathy, non-possessive warmth, and genuineness in relation to the degree of improvement or deterioration of 40 patients. An equal number of "good" and "bad" therapy patients were assigned to the four therapists for four months of psychotherapy. Several rating tape recordings of the sessions were rated independently. The researchers found that the therapists who provided high levels of empathy and non-possessive warmth had 90 percent patient improvement while those providing lower conditions had only 50 percent patient improvement.  

In another study, Truax, Carkhuff and Kodman 88 evaluated the relationship between therapists' levels of empathy, unconditional positive regard, and genuineness to
Empathy plays a significant role in successful patient outcome.\textsuperscript{10,51,87-90} Furthermore, individuals seem "... to differ in their ability to empathize with others and these differences appear to be related to their ability to understand and teach others."\textsuperscript{11} A function of the dental hygienist is to teach others proper oral health care.\textsuperscript{99} Low empathic dental hygiene students might have difficulties in making decisions and directing the learning process of their patients. Moreover, low empathic dental hygiene students might have problems in aiding their patients to achieve particular oral health goals. If the helper's level of empathy is a significant variable in affecting oral health behaviors, then empathy levels of dental hygiene students should be identified to determine whether deficiencies of this trait exist.

**Empathy in Medical, Nursing, and Allied Health Professions Education**

Medical educators have expressed a concern that the ability of the doctor to relate empathically to his patients is an essential element in effective medical care, yet the pressure in medical education toward the attainment of technical competence often results in scant attention being paid to the development of empathic attitudes and abilities.\textsuperscript{37}

In an effort to resolve this problem, Lewis\textsuperscript{54} developed an experimental course designed to enhance psychiatric students' communication skills at the University of Texas Southwestern Medical School. Along with other instruments, he used the [Hogan Empathy Scale](#) to establish a base point.
KDS-3A. The relationship between the MCAT scores and the KDS-3A scores also were examined. The authors concluded that (1) a low correlation exists between the MCAT scores and the Hogan Empathy Scale scores, suggesting that identification of students with high scores on the MCAT and high empathy scores might represent a method of predicting which students will make the best clinicians, (2) certain personality characteristics might interfere with fostering positive interpersonal relationships, and (3) personality style and empathy in medical students should be further explored. 50

Hornblow, Kidson, and Jones, 37 using the 64-item Hogan Empathy Scale, attempted to measure empathy in 30 first-year medical students at Monash University, Australia. In one part of the study, empathy scale scores and grades in psychiatry were correlated. No significant relationship between the empathy scores and academic performance was found, supporting previous research. 10, 36 Interestingly, Hogan 33 reported that correlations between empathy scale scores and intelligence scores are ambiguous, depending on the population and measure of intelligence used.

In one phase of a comparative study on empathy, Khajavi and Hekmat 46 studied the effects of psychiatric residency training on the development of empathy in psychiatric residents. The Hogan Empathy Scale was administered to ten staff psychiatrists, 13 graduate residents,
increase student observation and assessment skills and that these skills are necessary for empathic nursing. Kauffman asked students to assume a disability for a 24-hour time period. She intended to make students aware of how disabilities affect one's abilities and self-concept. Both authors claimed that student empathy levels were increased by participating in the exercises; however, their evaluation tools were not reported.

Rosendahl examined a teacher-adult learner relationship perceived as empathic or non-possessively warm or genuine by an adult learner would foster change in scores of inner-directed support, time competence, and self-actualization. Thirty-one sophomore nursing students were administered a relationship questionnaire and two scales of the Personal Orientation Inventory as pretest and post-test measures. In addition, every fifth subject attended a five-minute interview with the investigator. Attitudes and perceptions of the teacher-adult learner relationship were systematically discussed. Multiple regression techniques were used to score and analyze all of the variables. The study revealed that inner-directed support was moderately related to empathy, non-possessive warmth, and genuineness, while time competence was not related. Rosendahl suggested that teachers should be selected for personal attributes of empathy, non-possessive warmth, and genuineness because growth toward adult learner self-actualization might be encouraged by these three helping conditions.
Subjects were randomly assigned to two experimental and two control groups. The control groups received the lectures and discussions on human behavior while the experimental groups received didactic and experiential training and participated in role-playing activities. Kalisch suggested that empathy can be assessed in nursing students and that empathy training effectively increases student empathy levels. One must question, however, whether a high score on the posttest and post-posttest actually means that a student has acquired a greater level of empathy. Although several pretests, posttests, and post-posttests were administered, the researcher did not indicate if the effect of multiple exposure to the instruments was controlled during the investigation.

Realizing the importance of empathy in the nursing field, Brunclik, Thurston, and Feldhausen developed a test, The Empathy Inventory, especially for nursing students and faculty. Although the authors provided normative data and suggested uses for the inventory, other research studies utilizing this instrument could not be found.

Korson and Hayes discussed a five-year pilot study on empathic relationship therapy utilizing student nurses. An educational-therapeutic approach to patient care was described in an affiliate psychiatric nursing program in connection with a state hospital. The authors suggested that both student nurses and psychiatric patients benefited from the therapy project. Unfortunately, a
and skills in perceptions of feelings and communication.

In 1973, Rubin, Judd, and Conine evaluated the effect of formal education in interpersonal communication on the development of empathic skills of physical therapy students. Twenty-four junior physical therapy students were matched on the basis of age, grade point averages, and previous college experiences. The experimental group was assigned to a one-semester course in interpersonal communications while the control group did not participate in an interpersonal communication course. The authors reported that motivation effects on the two groups were controlled. The Allied Health Professions Empathy Discrimination Index and a two-part inventory, Ramden's Cartoon Listening Test, were given to both groups as posttest measures. Rubin, Judd, and Conine explained that part one of the Cartoon Listening Test measures the subject's ability to perceive the feelings of the patient accurately while part two measures the subject's skill of initiating and communicating an empathic response to the patient. The empathy index and the two-part listening test were administered 18 months after completion of the interpersonal communication course. The experimental group scored significantly higher on the empathy index and on the second part of the Cartoon Listening Test ($p<0.005$). No significant difference on the first part of the Cartoon Listening Test occurred between the groups. The authors
that the levels of empathy held by occupational therapy students and other college students do not differ significantly. If empathy is a necessary interpersonal skill dimension of occupational therapists, it appears that occupational therapy students do not hold any higher level of empathy than other college students.

Payton, Beale, and Meydrech\textsuperscript{70} investigated whether a one-semester graduate course in helping relationships would affect the empathic skills of allied health students. Ten allied health graduate students enrolled at Virginia Commonwealth University were administered a pretest and upon completion of the course, a posttest using the Allied Health Professions Empathy Discrimination Index.\textsuperscript{70} The students' scores on the posttest were significantly higher than the original pretest scores ($p<0.05$). The authors suggested that allied health students could increase their levels of interpersonal functioning through relatively short-term programs. Again, one must question whether a higher score on the posttest means that the student actually acquired a greater level of empathy. The researchers did not indicate whether pretesting and maturation effects were controlled during the investigation. Additionally, a follow-up study was not conducted to determine the longevity of the increased level of empathy.

**Empathy in Dental Education**

The 1977 report of the American Dental Association and the American Association of Dental Schools National
Controls for maturation and pretesting effects, however, were not evident and a follow-up investigation was not conducted.

Morris and Sherlock\textsuperscript{67} conducted a longitudinal study measuring professional ethics and cynicism in 270 dental students from three California dental schools. A background questionnaire and an instrument consisting of 21 situations were administered to the sample during each of their four years of dental school. College grade point averages, annual grades, and Dental Aptitude Test scores were correlated with the inventory scores. The findings suggested that the professional ethics scores decreased while the cynicism scores increased, particularly in the clinical years. Morris and Sherlock resolved that the dental school experience of clinical work, time pressures, insecurities, stress, and frustrations lead dental students to retreat from idealism. Although the decrease in professional ethics and increase in cynicism were evident at all three schools, the authors found the decrease was most common among students with health occupation backgrounds, high socioeconomic origins and superior college records.

Moody, Tassel, and Cash\textsuperscript{66} reported that changes in student attitudes toward cynicism and humanitarianism are due to situational factors and that student changes in attitudes of cynicism and humanitarianism are temporary reactions. A cross-sectional study using Eron's Scale of Cynicism and Humanitarianism\textsuperscript{20} was conducted to determine
toward public health, and linguistic ability as measured by the Dental Aptitude Test (DAT). Statistically significant negative relationships were found among scores on the California F Scale, age, and the two DAT sub-scale scores, manual average and space-relationship aptitude. The manual average sub-scale scores also were negatively correlated with a positive attitude toward public health. The findings indicated that (1) altruistic attitudes decrease with age, (2) manual and visual skills measured by the DAT are inversely related to social consciousness, and (3) linguistic skills are significantly related to non-authoritarianism.\(^5\)

Malvitz\(^5\) attempted to define "social sensitivity" and measured this construct in 141 dental students attending The University of Michigan. The instrument used, the Personality Research Form,\(^4\) contained 20 scales based on Murray's 20 basic needs. An additional questionnaire identifying background information was completed by the students. A correlational study was conducted comparing these background variables to the Personality Research Form. Malvitz reported that students who met the criteria of being "socially sensitive" had decided to become dentists significantly earlier in their lives, were middle children, and seldom contributed to humanitarian organizations. Although Malvitz questioned whether "social sensitivity" is a measurable trait, she suggested that further study comparing dental students from varying
the two groups, with the mean post-posttest scores of Group A significantly higher than those of Group B, on both the Carkhuff's Index of Communication and the Patient's Responses Subjective Scales. In addition, patients of Group A responded more favorably to their dental hygiene students than did patients of the Group B dental hygiene students. Wallace and Wallace concluded that the systematic response training enhanced student-patient rapport and that this type of communication training is needed in dental hygiene.

Hornsby and Vericella examined whether interpersonal functioning of dental hygiene students could be significantly improved by interpersonal communication skills training, and what effects such training had on student attitudes. An experimental group of 28 third year or junior dental hygiene students received 22 hours of systematic interpersonal communication skills training emphasizing empathy, respect, nonverbal warmth, genuineness, and self-disclosure. The control group of 20 fourth year or senior dental hygiene students received no training. A written test, the Dental Hygiene Index of Responding, was administered to both groups as a pretest and posttest measure. All responses to the inventory were evaluated by two independent raters with an interrater reliability estimated at 0.88. Upon completion of the training course, the experimental group members were requested to complete
dental hygiene students were administered several written personality inventories and their patients (n=109) were given a 20-item Likert-type anxiety scale in the dental chair before treatment sessions. Each treatment session consisted of either oral prophylaxis or patient education or both.

The results indicated that in the 58 patients who received more than one treatment, anxiety decreased monotonically from sessions one to four. Comparison of initial anxiety scores to each subsequent score showed that in 104 comparisons anxiety decreased in 64 percent, increased in 26 percent, and remained the same in ten percent. The anxiety scores were correlated with patient age, sex, and stress of treatment. No significant relationship was found. Anxiety difference scores between the first and second treatments were correlated with the personality variables measured by the inventories. A significant correlation was found with three hygienist personality variables.

The research findings suggested that dental hygiene students who were more social and enterprising and who had a high grade point average did not alleviate their patients' anxiety levels as much as other students. A trend for students with higher clinic grades to decrease patients' anxiety more than those with lower clinic grades also was observed (r=0.500). The researchers concluded that dental hygiene practice is a helping relationship
Chapter 3

METHODS AND MATERIALS

Dental hygiene admissions candidates and first and second year dental hygiene students from Old Dominion University, the University of Pennsylvania, and Idaho State University were requested to complete a basic information questionnaire and the **Hogan Empathy Scale** (HES). Cross-sectional data in a 3 x 3 factorial research design were analyzed to test whether significant differences existed among the empathy scores of the sample groups.

Sample Description

Female participants whose educational setting and student status qualified them as (a) dental hygiene admissions candidates, (b) first year dental hygiene students, or (c) second year dental hygiene students were eligible for inclusion in the sample. By including only those individuals meeting the study's sample population definitions, intersubject differences were minimized.

Each subject was requested to complete a basic information questionnaire and the **Hogan Empathy Scale**. The basic information questionnaire identified each participant's educational setting and student status.

First and second year dental hygiene students were enrolled in one of the following institutions: (a) Old Dominion...
The curriculum is designed as a "one-two-one" years sequence allowing dental hygiene students to enter as sophomores and enroll in advanced dental hygiene courses during their senior year. During the two years of completing primarily dental hygiene courses, the students are required to participate in four semesters of clinic. A summer session of clinic also is offered to first year students before entering into their second year of dental hygiene education. A one-semester course in ethics and professionalism is offered to first year dental hygiene students during their second semester in the program while a two-semester course in community dentistry is offered to second year dental hygiene students during their final year in the program. In addition, an elective course emphasizing the therapeutic skills for the allied health professional is highly recommended for first year dental hygiene students during the summer session. These particular courses have been cited because empathy-oriented learning objectives oftentimes are incorporated within their frameworks.

The University of Pennsylvania is an urban, coeducational, non-sectarian, private institution located in Philadelphia, Pennsylvania. Under the auspices of the School of Dental Medicine, the accredited department of dental hygiene offers a two-year certificate program. A minimum of 77 semester credits is required to complete the program.
A minimum of 128 semester credits is required for receiving either degree. Applicants must submit: Dental Hygiene Aptitude Test scores, American College Test scores, official high school and college records, and accumulative science grade point averages. A minimum of two years of college experience including all pre-dental hygiene courses is required. Most Idaho State University dental hygiene admissions candidates have had to to three years of college education and are from the western region of the United States.

The curriculum is designed as a "two-plus-two" years sequence requiring each student to complete prerequisite courses before entrance into the two-year dental hygiene program. During the two years of dental hygiene education, four semesters of clinical experience are required. Additionally, a one-semester course in ethics and a one-semester course in community dental health must be completed by second year dental hygiene students during their final semester in the program.

Research Design and Statistical Treatment

A 3 x 3 factorial research design (see Table 1) was utilized with two non-manipulated independent variables, educational setting and student status. These variables were further stratified as:

1. Educational Setting
   a. Old Dominion University
   b. University of Pennsylvania
   c. Idaho State University
2. Student Status
   
a. Dental hygiene admissions candidates
b. First year dental hygiene students
c. Second year dental hygiene students

The dependent variable, empathy, was measured utilizing the Hogan Empathy Scale.

Three group, two-way analysis of variance was employed to determine group differences on the mean empathy scores using the Statistical Package for Social Sciences (SPSS) and the Old Dominion University computer facilities. Interactions between two factors, educational setting and student status, were analyzed. All comparisons were tested at the 0.05 level of significance.

Analysis of variance is appropriate because the Hogan Empathy Scale uses an interval scale of measurement. The rationale of analysis of variance is that the total variance of all subjects can be analyzed into two sources, variance between groups and variance within groups. Analysis of variance permits statistical evaluation of interaction effects. In addition, analysis of variance allows for reasonable departures from the assumptions of normality and homogeneity without seriously affecting the validity of the inferences drawn from the data.

A significant F-ratio mandated the use of Scheffé's method of a posteriori comparison. Since large and unequal sample sizes were examined, Scheffé's method was employed. Scheffé's method is more conservative than other multiple comparison methods and does not require equal number of scores per mean. Furthermore, Scheffé's method is not seriously affected by violations of the normality and homogeneity of variance.
A cover letter briefly explained the purpose of the study (see Appendices C and D). The basic information questionnaire provided directions for completing the packet materials and was designed to determine student status (see Appendix B). For future research purposes, information on each participant's age, birth order, number of total college credits, and number of college credits in psychology also was collected. In addition, the questionnaires were color-coded in order to identify each participant's educational setting. Each institution was randomly assigned a color and the respective colored questionnaires were sent to the sample groups as defined by this study. Only appropriately completed questionnaires and tests received from female dental hygiene students within the six-week time schedule were scored.

Instrumentation

The instrument used to measure empathy in dental hygiene students was the Hogan Empathy Scale. Developed by an item-analysis of responses from high-rated groups versus low-rated groups, the Hogan Empathy Scale attempts to measure empathy using the self-reporting approach. This empirically-keyed instrument consists of 64 true-false questions derived from the California Psychological Inventory (CPI), the Minnesota Multiphasic Personality Inventory (MMPI), and the Institute of Personality Assessment and Research at the University of California.
In relation to the California Psychological Inventory, Grief and Hogan\textsuperscript{27} reported that the empathy scale was related most closely to the measures of interpersonal effectiveness and social adequacy. The authors also reported that the 39-item CPI subscale of the Hogan Empathy Scale routinely correlates above 0.90 with the 64-item version.

Hornblow, Kidson, and Jones\textsuperscript{37} conducted a validation study of the 64-item Hogan Empathy Scale using first-year medical students at Monash University, Australia. Empathy scale scores, patient empathy ratings, peer empathy ratings, self-empathy ratings, and grades in psychiatry were correlated. Inter-rater and intra-rater reliability were assessed. Of the correlation studies, a significant correlation was found only between peer empathy ratings and empathy scale scores ($r=0.45, p<0.05; n=29$). In another phase of the study, the Hogan Empathy Scale scores of the medical students were compared to scores of 25 psychiatric patients diagnosed with "personality disorders." The scores of the medical students were found to be significantly higher than those of the psychiatric patients ($t=4.44, df=52, p<0.001$). The researchers concluded that the Hogan Empathy Scale lacks established validity in measuring empathy in the clinical setting; however, the scale is moderately successful in measuring the ability to handle effective interpersonal relationships.\textsuperscript{37}
3. **Consent Procedures**—A cover letter rendering a brief description of the study was issued to each subject. Subject participation was voluntary.

4. **Protection of Subjects’ Rights**—Confidentiality of each subject's response was maintained throughout the study by using numbers rather than individual names to identify data. All data were treated as confidential by the researcher and no individual data were released without written permission of subjects. Results were reported in group form only. Finally, subjects were allowed to withdraw from participation in the study at any time without threat of penalty.

5. **Potential Benefits**—The data gathered in this study provided information on the personality characteristics of dental hygiene students. Specifically, the study assessed empathy in female dental hygiene admissions candidates and female first and second year dental hygiene students. This information may prove beneficial in defining the characteristics of individuals attracted to the dental hygiene profession, selecting individuals for admittance into dental hygiene programs, modifying dental hygiene curricula to enrich student empathy levels, and enhancing patient-clinician helping relationships.

6. **Risk-Benefit Ratio**—The potential benefits of this research to the subjects far outweighed any minor inconveniences that the subjects might have incurred.
Table 2
Response Rate to the Hogan Empathy Scale
and to the Basic Information Questionnaire

<table>
<thead>
<tr>
<th>School</th>
<th>Group</th>
<th>Materials Administered</th>
<th>Returned Materials Analyzed</th>
<th>Returned Materials Not Analyzed+</th>
<th>% of Return Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Dominion University</td>
<td>Adm. Cand.</td>
<td>48</td>
<td>48</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>First Year</td>
<td>41</td>
<td>41</td>
<td>0</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>40</td>
<td>38</td>
<td>1</td>
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<td>Subtotal</td>
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</tr>
<tr>
<td>University of Pennsylvania</td>
<td>Adm. Cand.</td>
<td>41</td>
<td>27</td>
<td>3</td>
<td>73%</td>
</tr>
<tr>
<td></td>
<td>First Year</td>
<td>39</td>
<td>37</td>
<td>1</td>
<td>97%</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>36</td>
<td>32</td>
<td>2</td>
<td>94%</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>116</td>
<td>96</td>
<td>6</td>
<td>88%</td>
</tr>
<tr>
<td>Idaho State University</td>
<td>Adm. Cand.</td>
<td>30</td>
<td>24</td>
<td>1</td>
<td>83%</td>
</tr>
<tr>
<td></td>
<td>First Year</td>
<td>28</td>
<td>26</td>
<td>0</td>
<td>93%</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>27</td>
<td>22</td>
<td>0</td>
<td>82%</td>
</tr>
<tr>
<td></td>
<td>Subtotal</td>
<td>85</td>
<td>72</td>
<td>1</td>
<td>86%</td>
</tr>
<tr>
<td>TOTAL</td>
<td></td>
<td>330</td>
<td>295</td>
<td>8</td>
<td>92%*</td>
</tr>
</tbody>
</table>

Key: Adm. Cand. = Dental Hygiene Admissions Candidates
First Year = First Year Dental Hygiene Students
Second Year= Second Year Dental Hygiene Students

+Materials not analyzed included male respondents and incomplete inventories
*Discrepancy due to rounding
Table 3

Two-Way Analysis of Variance Among Hogan Empathy Scale Scores of All Groups

<table>
<thead>
<tr>
<th>Source of Variation</th>
<th>Sum of Squares</th>
<th>Degrees of Freedom</th>
<th>Mean Square</th>
<th>F</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main Effects</td>
<td>223.972</td>
<td>4</td>
<td>55.993</td>
<td>2.145</td>
<td>0.075</td>
</tr>
<tr>
<td>School</td>
<td>190.532</td>
<td>2</td>
<td>95.266</td>
<td>3.649</td>
<td>0.027*</td>
</tr>
<tr>
<td>Status</td>
<td>38.363</td>
<td>2</td>
<td>19.182</td>
<td>0.735</td>
<td>0.481</td>
</tr>
<tr>
<td>Two-Way Interactions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>School x Status</td>
<td>189.719</td>
<td>4</td>
<td>47.430</td>
<td>1.817</td>
<td>0.126</td>
</tr>
<tr>
<td>Explained</td>
<td>413.694</td>
<td>8</td>
<td>51.711</td>
<td>1.981</td>
<td>0.049*</td>
</tr>
<tr>
<td>Residual</td>
<td>7467.258</td>
<td>286</td>
<td>26.109</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>7880.949</td>
<td>294</td>
<td>26.806</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Key: School = Educational setting
Status = Student status

* p < 0.05
<table>
<thead>
<tr>
<th>Group</th>
<th>No. of Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Minimum Score</th>
<th>Maximum Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Dominion University</td>
<td>127</td>
<td>38.16</td>
<td>4.16</td>
<td>0.37</td>
<td>28.00</td>
<td>49.00</td>
</tr>
<tr>
<td>University of Pennsylvania</td>
<td>96</td>
<td>39.99</td>
<td>5.53</td>
<td>0.56</td>
<td>27.00</td>
<td>51.00</td>
</tr>
<tr>
<td>Idaho State University</td>
<td>72</td>
<td>38.75</td>
<td>6.06</td>
<td>0.71</td>
<td>26.00</td>
<td>50.00</td>
</tr>
<tr>
<td>Total</td>
<td>295</td>
<td>38.90</td>
<td>5.18</td>
<td>0.30</td>
<td>26.00</td>
<td>51.00</td>
</tr>
</tbody>
</table>
Table 6
Scheffé's a posteriori Comparison Among Dental Hygiene Students Based on Educational Setting as Measured by Scores on the Hogan Empathy Scale

<table>
<thead>
<tr>
<th>Source</th>
<th>Degrees of Freedom</th>
<th>Sum of Squares</th>
<th>Mean Squares</th>
<th>F-Ratio</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Between Groups</td>
<td>2</td>
<td>185.6111</td>
<td>92.8055</td>
<td>3.522</td>
<td>0.0308*</td>
</tr>
<tr>
<td>Within Groups</td>
<td>292</td>
<td>7695.3400</td>
<td>26.3539</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>294</td>
<td>7880.9511</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*p < 0.05
yield more definitive information on the relationship between dental hygiene curricula and student empathy levels.

The findings of this research imply that dental hygiene curricula are not enhancing student empathy levels. Dental hygiene educators might need to evaluate community dentistry, ethics, practice management, and clinical courses with empathy-oriented learning objectives to determine whether these courses are actually accomplishing their intended goals. The present method of enhancing student empathy skills appears to be insufficient. Wallace and Wallace reported that communication training is needed in dental hygiene education. Perhaps training specifically oriented toward the development of empathy should be incorporated within dental hygiene curricula.

Implied from the aforementioned results is that dental hygiene educators might need to assess their own levels of empathy.

In education, the dental hygiene educator provides direction for the student and has some degree of control over the education process and the students being educated in the setting. Rosendahl concluded that teachers should be selected for personal attributes such as empathy because student growth toward self-actualization might be encouraged. Since the results of this study indicate that no growth toward empathy in dental hygiene students occurred, dental hygiene educators might be deficient in the quality, empathy, and thereby be unable to serve as effective role
female college students surveyed by Hogan. In contrast to the findings of Christiansen, this result implies that health professionals are not innately endowed with interpersonal helping skills.

Findings from the analysis reject the null hypothesis that there is no statistically significant difference at the 0.05 level among dental hygiene students at Old Dominion University, the University of Pennsylvania, and Idaho State University as measured by scores on the [Hogan Empathy Scale](#). Based on the results of this study, dental hygiene students with higher empathy levels might be attracted to the University of Pennsylvania while dental hygiene students with lower empathy levels might be attracted to Old Dominion University. Data suggest that dental hygiene students with different degrees of empathy might be attracted to a particular setting. These findings appear to be related to the results of Sparling and Jones, who found that hospital setting is related to measured empathy in nurses. Measured empathy might be related to the educational setting of dental hygiene students. Replication of this study employing different instruments, different dental hygiene student subjects, and different dental hygiene educational settings might provide answers.

Upon completion of the data analysis, another possible explanation for the results was revealed. Personal communication with the University of Pennsylvania, Department of Dental Hygiene, indicated that non-grade
student levels within the dental hygiene curriculum and educational setting do not affect empathy scores differentially. Evidence for a conclusion on these findings has not been observed. Examination of three educational settings might be an insufficient number to identify a pattern. Perhaps more institutions needed to be included within the study. Investigations exploring the empathy levels of dental hygiene students in additional educational settings should be continued.

Several factors might have influenced the overall results. The Hogan Empathy Scale might not be a valid measure of empathy in dental hygiene students. An alternate instrument might have yielded dissimilar results. In addition, the results were entirely dependent on the sample populations selected for this study. Different dental hygiene student groups might have rendered a dissimilar outcome. Future research is needed to enhance the generalizabilities of these findings.

An additional factor that might have influenced the results is the environment in which the subjects responded to the questionnaire and inventory. Although each subject received similar instructions, different environments might have influenced the results. First and second year dental hygiene students, in particular, were administered the materials in the classroom setting. Perhaps the atmosphere of the classroom was not conducive to answering personal questions on the Hogan Empathy Scale.
Chapter 5
SUMMARY AND CONCLUSIONS

Few investigations have been concerned with empathy in dental hygiene students. Empathy might be an integral part of effective helping relationships and be related to the quality of dental hygiene services rendered. The specific aim of this study was to assess empathy in female dental hygiene students.

Two hundred ninety-five respondents appropriately completed the Hogan Empathy Scale and the basic information questionnaire designed to determine student status and educational setting. Data were organized according to a 3 x 3 factorial research design. Two-way analysis of variance was used to determine the main the interaction effects of the non-manipulated independent variables, student status and educational setting, on the dependent variable, dental hygiene students' empathy scores. In addition, Scheffé's method of a posteriori comparison was employed to locate any statistically significant empathy differences among the dental hygiene student groups.

The results obtained in this study failed to reject the null hypothesis that there is no statistically significant difference at the 0.05 level among dental hygiene admissions candidates, first year dental hygiene
study are made:

1. Replication of this study using different dental hygiene student populations, different educational settings, and different empathy data-collection instruments.

2. Establishment of the validity and reliability of the basic information questionnaire developed for this study.

3. Conduction of a longitudinal study assessing empathy changes in dental hygiene students prior to and subsequent to dental hygiene education so one may have more direct control over the variables.

4. Conduction of experimental studies measuring the short-term and long-term effects of specific empathy training programs on dental hygiene students.

5. Conduction of a correlational study examining the relationship among dental hygiene student empathy scores, Dental Hygiene Aptitude Test scores, Scholastic Achievement Test and American College Test scores, and high school and college grade point averages.

6. Conduction of a study comparing dental hygiene student empathy scores with the empathy scores of dental hygiene educators and practitioners.

7. Conduction of an investigation exploring empathy in levels of dental hygiene students in a greater number of educational settings.

8. Replication of this study examining the relationship of age, birth order, number of total college
Directions: Please indicate your personal preference to each statement by circling True (T) or False (F).

1. A person needs to "show off" a little now and then. T F
2. I liked "Alice in Wonderland" by Lewis Carroll. T F
3. Clever, sarcastic people make me feel very uncomfortable. T F
4. I usually take an active part in the entertainment at parties. T F
5. I feel sure that there is only one true religion. T F
6. I am afraid of deep water. T F
7. I must admit I often try to get my own way regardless of what others may want. T F
8. I have at one time or another in my life tried my hand at writing poetry. T F
9. Most of the arguments or quarrels I get into are over matters of principle. T F
10. I would like the job of a foreign correspondent for a newspaper. T F
11. People today have forgotten how to feel properly ashamed of themselves. T F
12. I prefer a shower to a bathtub. T F
13. I always try to consider the other fellow's feelings before I do something. T F
14. I usually don't like to talk much unless I am with people I know very well. T F
15. I can remember "playing sick" to get out of something. T F
33. I enjoy the company of strong-willed people. T F
34. Disobedience to the government is never justified. T F
35. It is the duty of a citizen to support this country, right or wrong. T F
36. I have seen some things so sad that I almost felt like crying. T F
37. I have a pretty clear idea of what I would try to impart to my students if I were a teacher. T F
38. As a rule, I have little difficulty in "putting myself into other people's shoes." T F
39. I am usually rather short-tempered with people who come around and bother me with foolish questions. T F
40. Once in a while I think of things too bad to talk about. T F
41. I feel that it is certainly best to keep my mouth shut when I'm in trouble. T F
42. I am a good mixer. T F
43. I am an important person. T F
44. I like poetry. T F
45. My feelings are not easily hurt. T F
46. I have met problems so full of possibilities that I have been unable to make up my mind about them. T F
47. Often I can't understand why I have been so cross and grouchy. T F
48. What others think of me does not bother me. T F
49. I would like to be a journalist. T F
50. I like to talk about sex. T F
51. My way of doing things is apt to be misunderstood by others. T F
Portions of this inventory have been:

Reproduced by special permission from The California Psychological Inventory by Harrison G. Hough, Ph.D., Copyright 1957. Published by Consulting Psychologists Press, Inc.

Reproduced from the Minnesota Multiphasic Personality Inventory by permission for research purposes only. Copyright 1943, renewed 1970 by the University of Minnesota. Published by The Psychological Corporation.

Reproduced from Dr. Donald W. Mackinnon, Institute of Personality Assessment and Research, University of California, Berkeley. Permission granted by Dr. Wallace B. Hall, Associate Research Psychologist.
In completing this questionnaire, kindly check the statement which best describes yourself.

1. What is your sex?
   ______ Female
   ______ Male

2. What is your age at time of last birthday?
   ______ Under 18 years old
   ______ 18-22 years old
   ______ 23-27 years old
   ______ 28-32 years old
   ______ 33-65 years old

3. What is your birth order?
   ______ First-born, only child
   ______ First-born with younger siblings
   ______ Middle-born
   ______ Last-born

4. What is your current student status?
   ______ A dental hygiene admissions candidate with no formal dental hygiene education.
   ______ A dental hygiene student with approximately two semesters of dental hygiene education.
   ______ A dental hygiene student with approximately four to five semesters of dental hygiene education.

5. What is your present college experience?
   ______ No previous college education
   ______ Have completed 1-26 college credit hours
   ______ Have completed 27-58 college credit hours
   ______ Have completed 59-90 college credit hours
   ______ Have completed more than 90 college credit hours

6. How many college credit hours have you completed in psychology?
   ______ None
   ______ Have completed 1-3 college credit hours
   ______ Have completed 4-6 college credit hours
   ______ Have completed 7-12 college credit hours
   ______ Have completed more than 12 college credit hours
Dear Colleague:

The Department of Dental Hygiene is interested in determining certain personality traits that characterize dental hygiene students and would appreciate your response. Attached is a brief questionnaire and inventory that should take you approximately 15-20 minutes to complete. Please carefully read the directions and complete the forms in a relaxed environment.

Your response will be confidential. Findings will be reported in group form only so your individual replies will not be discernible.

Results of the study will be made available to you upon request.

Thank you for your support and cooperation.

Sincerely,

Patricia R. Mason, R.D.H., B.S.  
Graduate Student
Dear Colleague:

The Department of Dental Hygiene is interested in determining certain personality traits that characterize dental hygiene students and would appreciate your response. Enclosed is a brief questionnaire and inventory that should take you approximately 15-20 minutes to complete.

Please read the directions and complete the forms in a relaxed environment. Use the enclosed self-addressed, stamped envelope to return the information by __________. To determine which questionnaires have been returned, the stamped envelopes have been numbered. Numbers will not be identified with individual questionnaires. Individual responses will be confidential.

Results of the study will be made available to you upon request.

Thank you for your support and cooperation.

Sincerely,

Patricia R. Mason, R.D.H., B.S.
Graduate Student
Dear Colleague:

As you might recall, I am conducting a study on the personality characteristics of dental hygiene students. Your participation in this study is very important.

Please promptly return the completed forms in the addressed, postage-paid envelope. All responses will be confidential and the information will be reported in group form only. Results of the study will be made to you upon request. If you have already forwarded the forms, please ignore this reminder.

Sincerely,

Patricia R. Mason, R.D.H., B.S.
Graduate Student
Old Dominion University
Dear Colleague:

I have not received your completed questionnaire. Your response is very important.

Please complete and return the forms promptly so you may be included in my study.

Thank you.

Sincerely,

Patricia R. Mason, R.D.H., B.S.
Graduate Student
Old Dominion University
APPENDIX G

Hogan Empathy Scale Mean Scores, Standard Deviations, Standard Errors, and Minimum and Maximum Scores for All Groups

<table>
<thead>
<tr>
<th>School</th>
<th>Group</th>
<th>No. of Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>Standard Error</th>
<th>Minimum Score</th>
<th>Maximum Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Old Dominion</td>
<td>Adm. Cand.</td>
<td>48</td>
<td>38.38</td>
<td>4.35</td>
<td>0.63</td>
<td>28.00</td>
<td>49.00</td>
</tr>
<tr>
<td>University</td>
<td>First Year</td>
<td>41</td>
<td>37.63</td>
<td>4.32</td>
<td>0.68</td>
<td>29.00</td>
<td>46.00</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>38</td>
<td>38.45</td>
<td>3.78</td>
<td>0.61</td>
<td>31.00</td>
<td>47.00</td>
</tr>
<tr>
<td>University of</td>
<td>Adm. Cand.</td>
<td>27</td>
<td>39.44</td>
<td>6.05</td>
<td>1.16</td>
<td>27.00</td>
<td>51.00</td>
</tr>
<tr>
<td>Pennsylvania</td>
<td>First Year</td>
<td>37</td>
<td>40.57</td>
<td>5.26</td>
<td>0.87</td>
<td>30.00</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>32</td>
<td>39.78</td>
<td>5.48</td>
<td>0.97</td>
<td>28.00</td>
<td>49.00</td>
</tr>
<tr>
<td>Idaho State</td>
<td>Adm. Cand.</td>
<td>24</td>
<td>40.04</td>
<td>5.34</td>
<td>1.09</td>
<td>26.00</td>
<td>50.00</td>
</tr>
<tr>
<td>University</td>
<td>First Year</td>
<td>26</td>
<td>39.62</td>
<td>5.76</td>
<td>1.13</td>
<td>31.00</td>
<td>50.00</td>
</tr>
<tr>
<td></td>
<td>Second Year</td>
<td>22</td>
<td>36.32</td>
<td>6.67</td>
<td>1.42</td>
<td>26.00</td>
<td>49.00</td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td>295</td>
<td>38.90</td>
<td>5.18</td>
<td>0.30</td>
<td>26.00</td>
<td>51.00</td>
</tr>
</tbody>
</table>

Key: Adm. Cand. = Dental Hygiene Admissions Candidates
     First Year = First Year Dental Hygiene Students
     Second Year = Second Year Dental Hygiene Students
<table>
<thead>
<tr>
<th>Summary Statistics for All Dental Hygiene Groups on the Hogan Empathy Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean 38.90</td>
</tr>
<tr>
<td>Mode 37.00</td>
</tr>
<tr>
<td>Kurtosis -0.27</td>
</tr>
<tr>
<td>Minimum 26.00</td>
</tr>
<tr>
<td>Valid Cases 295</td>
</tr>
<tr>
<td>Missing Cases 0</td>
</tr>
</tbody>
</table>
APPENDIX I

Bar Graph of Hogan Empathy Scale Mean Scores Among Dental Hygiene Students Based on Student Status

Key:
- = Old Dominion University
- = University of Pennsylvania
- = Idaho State University
- = Overall Mean Score for Each Student Status
APPENDIX J

Bar Graph of Hogan Empathy Scale Mean Scores Among Dental Hygiene Students Based on Educational Setting

Key:  
- = Dental Hygiene Admissions Candidates
- = First Year Dental Hygiene Students
- = Second Year Dental Hygiene Students
- = Overall Mean Score for Each Educational Setting
**APPENDIX K**

Hogan Empathy Scale Scores for Dental Hygiene Female Students, Nursing Female Students, College Females (All Levels), College Female Seniors, and Occupational Therapy Female Students (Masters Level)

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of Observations</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental Hygiene Female Students</td>
<td>295</td>
<td>38.9</td>
<td>5.2</td>
</tr>
<tr>
<td>Nursing Female Students^5^</td>
<td>15</td>
<td>38.7</td>
<td>3.6</td>
</tr>
<tr>
<td>College Females (All Levels)^33^</td>
<td>93</td>
<td>40.7</td>
<td>5.9</td>
</tr>
<tr>
<td>Occupational Therapy Female Students (Masters Level)^16^</td>
<td>21</td>
<td>41.1</td>
<td>5.7</td>
</tr>
<tr>
<td>College Female Seniors^33^</td>
<td>143</td>
<td>41.5</td>
<td>5.1</td>
</tr>
</tbody>
</table>


34. _______. Professor, Department of Psychology, The Johns Hopkins University, Baltimore, Md., Personal Correspondence, Mar. 5, 1979.

35. _______. Professor, Department of Psychology, The Johns Hopkins University, Baltimore, Md., Personal Communication, April 23, 1979.


CURRICULUM VITAE

NAME: Patricia Rivers Mason

EDUCATION:

1969-1970 Radford College
Radford, Virginia
Major: General Studies

1974-1977 Old Dominion University
Norfolk, Virginia
Degree: Bachelor of Science in Dental Hygiene

1977-1979 Old Dominion University
Norfolk, Virginia
Degree: Master of Science in Dental Hygiene
(to be conferred in August, 1979)

Dental Hygiene Board Certification:

March 1977--National Board Examination
May 1977--Southeast Regional Board Examination
May 1977--Virginia State Board Examination

EXPERIENCE:

May 1977--August 1977 Dental Hygienist, full-time employment
Employer: Joseph M. Kline, D.D.S.
Medical-Dental Building
3801 N. Fairfax Drive
Arlington, Virginia
(703) 527-7777

September 1977--April 1978 Substitute Dental Hygienist
Employers: Tidewater area dentists
MEMBERSHIP IN
PROFESSIONAL SOCIETIES:

1975-present American Dental Hygienists' Association, Student Membership
1977-present Tidewater Dental Hygienists' Association, Student Membership
1977-present American Association of Dental Schools, Student Membership

PROFESSIONAL CONFERENCES ATTENDED:

September 1975 Virginia Dental Association and Virginia Hygienists' Association Annual Session, Hampton, Virginia
September 1976 Virginia Dental Association and Virginia Hygienists' Association, Richmond, Virginia
September 1977 Virginia Dental Association and Virginia Hygienists' Association, Arlington, Virginia

UNIVERSITY SERVICE:

1976-1977 President, Dental Hygiene Class of 1977, Old Dominion University
1978-1979 Graduate Student Representative
Student Input Committee
Department of Dental Hygiene and Dental Assisting, Old Dominion University

COMMUNITY SERVICE:

January-February 1977 Presentation of Dental Health Educational Units in public schools of Norfolk, Virginia Grades: 2nd and 5th
March 1977 Observation and clinical participation at institutions for the mentally and physically disabled, Norfolk, Virginia
ADDENDUM

TEACHING AND CURRICULUM DEVELOPMENT:

April 1977
Old Dominion University
Course Development: Designed a course entitled: Applied Techniques for Patients with Special Needs for dental hygienists pursuing a Bachelor's and/or Masters Degree

April 1978
Designed a manual for administrators and educators in dental hygiene: A Tenure and Promotion Manual for the Dental Hygiene Educator, Old Dominion University, Norfolk, Virginia

PART-TIME

FACULTY EXPERIENCES:

1977-1978
Dental Anatomy Laboratory Instructor
Clinical Dental Hygiene Instructor, first-year students

GRADUATE TEACHING ASSISTANTSHIP EXPERIENCES:

1978-1979
Community Dentistry, Field Instruction
Clinical Dental Hygiene, second-year students
Co-Instructor in course entitled: Preventive Dentistry (Lecture/Laboratory Experience, Spring 1979)
Media Production: Videotaping, photography, and slide reproduction
Participation in computerized managed instruction and prescriptive testing.
Participation in admissions procedures for Old Dominion University dental hygiene candidates.

PRACTICUM EXPERIENCE:

Fall Semester 1978
Practicum in teaching course entitled:
Community Dentistry (DNT-H 331);
Duties included: delivering lectures, supervising laboratory and field experiences, evaluating student community services, designing examinations, and evaluating student lesson-plans.
Semester Project: Developed a trigger slide series entitled: "Thought Provoking Situations in Community Dentistry."