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Relationship Between the Empathy Levels of Dental Hygiene Students and Their Teachers

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RELATIONSHIP BETWEEN THE EMPATHY LEVELS OF DENTAL HYGIENE STUDENTS AND THEIR TEACHERS

by

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ABSTRACT

RELATIONSHIP BETWEEN THE EMPATHY LEVELS
OF DENTAL HYGIENE STUDENTS AND THEIR TEACHERS

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This investigation assessed empathy in first year, second year, and graduate dental hygiene students, and dental hygiene educators. Change in empathy levels of students and educators over one academic year was determined by taking repeated measures of the dependent variable, empathy, as measured by the Hogan Empathy Scale. A convenience sample of subjects from two universities was included in this study.

Empathy scores were compared and analyzed by a three-way analysis of variance at the .05 level of significance and also three separate one-way analyses. Results established that graduate students and educators score significantly higher in empathy than first and second year students, and that empathy scores of students and educators do not significantly change over a one academic year period. Results also established that empathy scores do not significantly differ between the two universities, and that an interaction effect is associated with the second year students.

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INTRODUCTION

Empathy can be thought of as the ability to experience another person's emotions through one's own imagination.[21] From empathic ability one person can come to an understanding of another person's feelings. Therapists have identified empathy as a necessary ingredient in helping relationships; therefore, empathy is a vital characteristic of therapists in the helping professions.[3,25,29]

Empathy has been investigated by researchers from many disciplines, but few have explored the influence empathy has on therapists in the dental hygiene profession. Because dental hygiene is a helping profession[42] empathy might be fundamental to assist the dental hygienist in providing quality client care. The relationship of empathy to the dental hygiene profession should be investigated.

Statement of the Problem

This investigation was concerned with answering the following questions:

1. Do empathy levels of dental hygiene students and educators change over an academic year period?

2. What are the main effects of an educational setting on the empathy levels of dental hygiene students and educators?

3. Do dental hygiene students and dental hygiene educators differ on the construct empathy?

4. Is there an interaction among the variables of time, school, and status of dental hygiene students and educators as measured by empathy scores?

5. Is there a relationship between empathy levels of dental hygiene educators and empathy levels of students taught by those educators?

Significance of the Problem

Recently, dental hygiene curricula began to reflect interpersonal skills training.[20] Previously, the academic emphasis had been oriented to basic and clinical sciences, with no deliberate attempt to guide students in developing empathic responses. Most dental hygiene professionals strive to motivate their clients and modify client behavior;[42] therefore, interpersonal functioning might be a critical component of the dental hygienist's education. Characteristics within the dental hygienist necessary for achieving client behavioral change are positive regard, genuineness, and empathic understanding.[40] Dental hygiene education should include empathic training if such training is found to be valuable in modifying client behavior. The

study of empathy in dental hygiene education might be beneficial in (1) providing a basis for expanding the scope of subject matter presented in dental hygiene education, (2) guiding dental hygienists to develop those responding skills required for quality client-practitioner relationships, and (3) assessing the extent to which dental hygiene students acquire attitudes and values from their instructors.

Definition of Terms

The following terms were used in this study:

1. Empathy: The ". . . intellectual or imaginative apprehension of another's condition or state of mind."[16] This variable was measured by the 39-item Hogan Empathy Scale.

2. Helping Profession: A profession which serves mankind by concerning itself with helping people achieve more effective relationships between themselves and others.[5]

3. Dental Hygiene Student: A general term used for convenience; includes first and second year dental hygiene students and graduate level dental hygiene students.

4. First Year Dental Hygiene Student: An individual enrolled in the first semester of a two-year and/or four-year accredited dental hygiene program.

5. Second Year Dental Hygiene Student: An individual enrolled in the third semester of a two-year and/or four-year accredited dental hygiene program.

6. Graduate Level Dental Hygiene Student: An individual enrolled in an accredited graduate dental hygiene program.

7. Dental Hygiene Educator: A dental hygienist who is employed to instruct dental hygiene students who are in pursuit of a dental hygiene certificate or degree.

8. Dental Hygienist:

> A ". . . licensed, professional, oral health educator and clinical operator who, as an auxiliary to the dentist . . . (employs) preventive, therapeutic, and educational methods for the control of oral diseases to aid individuals and groups in attaining and maintaining optimum oral health."[12]

9. Time: A one academic year period during which dental hygiene students and educators were assessed for change in empathy levels.

10. School: An institution of higher learning which is unique in its particular educational setting and in the dental hygiene students and educators who study and work there.

11. Status: The relative rank of students and educators in a school of dental hygiene.

Assumptions

The following assumptions were made in this study:

1. Empathy is a measurable construct.[16]

2. The Hogan Empathy Scale is an appropriate, valid, and reliable instrument for measuring empathy in dental hygiene students and faculty.[16]

3. All subjects understood the directions and responded to the measuring instrument to the best of their ability.

4. The measuring instrument was scored properly, and results were tabulated correctly.

Limitations

The following limitations might have affected the validity of this study:

1. Intact groups of subjects were used; therefore, results might have been biased from chance differences occurring in the sample groups.

2. The setting in which all subjects responded to the Hogan Empathy Scale could not be standardized; therefore, environmental variables might have affected the results.

3. The study was conducted over one academic year without random sampling techniques; therefore, maturation, statistical regression, and history might have affected the results.

Hypotheses

The following null hypotheses were tested at the .05 level:

Ho_1 There is no statistically significant change in the empathy levels of dental hygiene students and educators as measured by scores on the Hogan Empathy Scale over a one academic year period.

Ho_2 There is no statistically significant difference among empathy levels of dental hygiene students and educa-

tors at two different educational institutions as measured by scores on the Hogan Empathy Scale.

Ho_3 There is no statistically significant difference among empathy levels of dental hygiene student groups and educator groups as measured by scores on the Hogan Empathy Scale.

Ho_4 There is no statistically significant interaction among the variables time, school, and status of dental hygiene students and educators as measured by scores on the Hogan Empathy Scale.

Ho_5 There is no statistically significant relationship in empathy levels among dental hygiene students and educators within the same educational institution as measured by scores on the Hogan Empathy Scale.

Methods

A convenience sample of dental hygiene students and educators from a school in the Midwest and a school in the Southeast were requested to complete the 39-item Hogan Empathy Scale. The inventory was administered to subjects at three separate times. Data were organized according to a 3 x 2 x 4 factorial design utilizing empathy scores as the dependent variable. The nonmanipulated independent variables were time, school, and status of dental hygiene students and educators. A three-way analysis of variance and three separate one-way analyses were used to analyze the

data. Significant differences among the groups were located using the Bonferroni method of pairwise comparisons.[37]

Chapter 2

REVIEW OF THE LITERATURE

Empathy is essential to the helping professions. The review of the literature incorporates research findings on empathy from medicine, nursing, dentistry, and education and is grouped according to empathy, empathy in medical education, empathy in nursing education, empathy in dental education, and empathy in education.

Empathy

Empathy is defined by Hogan[16] as "the intellectual or imaginative apprehension of another's condition or state of mind." Empathy also can be conceived as the ability to know what other people are feeling while the person is feeling the emotion,[32] as an extension of sympathy or experiencing the emotions of another through one's own imagination,[21] and/or as a vicarious response in which one can predict another's feelings and thoughts by imaginatively taking his or her role.[21] Not only does the empathic person have the capacity to imagine another's feelings, he or she also has the sensitivity to arrange numerous possibilities of concepts simultaneously.[21] The empathic person has the ability to sort out meanings to come to an understanding of another

person. Empathy has been identified as a necessary ingredient in any helping relationship and, thus, a critical quality of therapists in helping professions.[3,25,29]

The question of how empathy is acquired has puzzled many educators and therapists. Numerous authorities feel that a person's empathic response may be intensified through training.[2,3,8,12,15,26,39] Hodge[15] organized a study to assess the learning of empathy according to training method and also the type of training experience the program facilitator possessed. Four professional and four non-professional supervisors were each assigned three groups of subjects to train in empathy. The first group of three subjects received programmed instruction in empathy training. The second group of three members had individual empathy training, and the third group of three subjects served as the control which received no empathy training. Two independent judges scored each subject in pre- and posttest score responses on the Carkhuff 5-Point Empathy Scale, which measures the quality of empathic response. Results of an analysis of covariance indicated that individually supervised subjects achieved a significantly higher level of empathy than both the control groups and the subjects who received programmed instruction in empathy training. The programmed trained subjects also achieved a significantly higher level of empathy than the control groups. Whether the supervisor had professional or non-professional experience was not found to be a significant factor in training

groups in empathy. Results of this study indicated that empathy training by individually supervised trainers is effective. Also supported was the use of non-professionals to teach subjects interpersonal skills training.

Perhaps an equally important question associated with the accentuation of empathy training is whether the development of empathy levels in educators and professionals is related to a resulting increase in the empathy levels of people that they come in contact with and influence. This teacher-student empathic relationship has importance in the field of education where teachers are striving to instill values and affective concerns in their students. The construct empathy has significance for dental hygiene educators because the profession's educators influence students and instill values.

Empathy is basic to any helping relationship.[24] Empathic communication is significantly associated with high client satisfaction and the type of care received.[8,43] Moreover, positive therapeutic outcomes depend on relationships based on empathy.

The person in the helping role is responsible for developing empathic relationships with clients.[8] As helping professionals,[42] dental hygienists could strive to increase their potential for developing empathy and interpersonal communication, thereby improving the quality of care rendered.

Empathy in Medical Education

Medical education has acknowledged the fact that the person in the helping role must display empathic responses to encourage positive outcomes for patients treated by physicians. In a study conducted by Fine and Therrien,[8] a systematically designed program was developed to help medical students develop empathy. Results of the program indicated that medical student empathy could be increased by a systematic empathy training program and that medical education might include systematic empathy training and teach respect for patients. The authors suggested that follow-up studies be conducted to determine if interpersonal skills acquired in a training program are maintained over time.

Research in medical science has investigated the relationship of empathy to the prediction of students' ability to form physician-client associations. Kupfer et al.[22] conducted a study at the University of Pittsburgh, School of Medicine to assess whether empathy and personality style were personal qualities related to being a good physician. Each student in the four classes of 1976-79 was mailed a packet during the winter term 1975-76. The following year the same packet was mailed to each new freshman. The packet contained an information questionnaire, a short version of the Hogan Empathy Scale (HES), and a brief personality measurement scale (KDS-3A) written by the researchers. The personality measurement scale was designed to assess such

traits as anxiety, depressive style, and obsessiveness. The overall response rate was 80 percent.

The mean empathy score for all five classes of students (n = 533) was 30.38; the mean for all female students (n = 121) was 30.74; and the mean score for all males (n = 412) was 30.27. The results showed no significant differences between classes or between males and females. Relationships between Medical College Admission Test (MCAT) scores and HES, and MCAT scores and KDS-3A, were examined using Pearson correlational analysis and were insignificant. Lack of a strong relationship between MCAT scores and HES suggested that a multitude of factors produce a "good physician." The authors reasoned that high MCAT scores and high empathy scores might predict which students would make the best doctors. The negative relationship between HES and KDS-3A suggested that certain personality styles, such as persons who show high anxiety might be less successful in forming positive interpersonal relationships which are vital in rendering health care.

These studies in medical education support the contention that the responsibility for developing empathic physician-client relationships lies within the clinician. The clinician's training in empathic communication accentuates positive health care and success as a health care provider.

Empathy in Nursing Education

Empathy has been identified as a "basic ingredient" in nursing.[24,25,29,43] LaMonica and Karshmer[24] indicated that if a helper cannot respond with empathy, the helper-client relationship is not merely ineffective, but it can actually be detrimental to the client. LaMonica and Karshmer and LaMonica et al.[24,25] also found that many nurses are operating on dangerously low levels of empathy. In a dissertation, Williams[43] concluded that clients of nurses with high empathy had a higher self-concept than clients of nurses determined to have low empathy. Whether or not the client perceived empathic communication to be related to his or her self-concept was not explained in the study.

Forsyth[9] used the Hogan Empathy Scale to execute descriptive research which tested variables of nurse empathy. Results suggested that clients did not perceive empathic ability in nurses. Results also suggested that although the nursing profession attracts people with a high level of empathy, that empathic ability decreased as a nurse's length of practice increased. Interestingly, Forsyth[9] suspected that empathy increased as nurses' level of education increased.

Law[26] conducted a short-term empathy communications development program for nurses on a hospital staff. Results showed that subjects in the experimental group which received the program significantly increased their empathy levels compared to a control group which did not receive

training in communications. LaMonica and Karshmer[24] posed a similar staff development program, testing student and practicing nurses on Carkhuff's Index of Communication, an instrument testing the quality of empathic responses, and concluded that a short-term, inexpensive communications training program significantly increased empathy levels of staff nurses. LaMonica and Karshmer[24] further suggested that the responsibility of such communications training rested heavily on educators and administrators of helping professions.

MacDonald,[29] a male nurse, explored the area of student empathic ability in males and male nurses as compared to females and female nurses. Sixty students were included as subjects in the study. The female nursing students were selected at random from the nursing class list. All of the 15 junior and senior male nursing students in the class were included in the study. The non-nursing male and female students were randomly selected from the student directory and represented 16 disciplines. Each group had a mean age of 23 years; all were students enrolled in a university in southwestern United States. The students agreed by letter to complete the Hogan Empathy Scale and thus remained anonymous. Findings showed that men in nursing scored higher than any other group on the empathy scale. (Nursing males mean = 41.5; non-nursing males mean = 35.8.) Females not in nursing scored slightly higher (mean = 40.3) in empathy than females in nursing (mean = 38.7). The results of this study

also demonstrated that the nursing profession could profit from empathy training.

The nursing education system was tested by Wong[45] to assess whether nursing students displayed more empathy than psychology students. Female graduate nursing students and female graduate psychology students were tested using Carkhuff's Index of Communication. Both groups received low scores on empathy responses. Results showed that nursing and psychology curricula failed to provide opportunities for student development in communication skills or that the instrument failed to detect existence of these skills. This study contradicts Forsyth's[9] study perhaps because of the different populations studied. Forsyth[9] studied empathy in practicing nurses; Wong[45] studied empathy in graduate nursing students.

Two training programs have been reported as successful in developing communication skills. Farrel et al.[7] recognized the need for a systematic approach to teaching, measuring, and evaluating interpersonal skills in nursing. A training course which taught communication through role-playing and self-pacing videotape vignettes was presented to an experimental group of nursing students (n = 21). An equivalent control group (n = 21) received a didactic communications course with lecture and assigned readings on interviewing techniques. Both groups were pretested with Carkhuff's 16 Helpee Stimulus Expression Test which measures

ability to encourage responses, and the Personality Orientation Inventory (POI) which tests one's ability to be of help to another. Posttest scores indicated that on a 5.0 scale, with 3.0 designated as a minimum level of facilitative interpersonal ability, the experimental group gained about two levels of competence. This group, however, still only reached a level average of 2.8. The control group posttest mean score was 1.0 compared to the pretest mean of 1.04. No significant differences in POI scores for either group were found. Results of this study indicated that a concise and systematic approach to teaching interpersonal communication training should lead to a greater ability in helpers to respond to clients.

LaMonica et al.[25] also tested a communication skills training program which measured empathy using Carkhuff's Index of Communication. Again, data obtained revealed that a training program, in this instance utilizing didactic and experiential methods but no videotapes, was effective in increasing subjects' empathic response. The investigators further suggested that nursing education should include theory and experience in helping skills in the curriculum.

Turner[38] hoped to design a learning experience which would help reduce anxiety in students involved in a nursing training program with strict academic requirements and regimen. Personal growth groups, based on interpersonal communication skills training and development of empathic responses, were offered to students in a hospital diploma

program in nursing. Results indicated that the program was effective in teaching students interpersonal skills and in reducing anxiety in students.

Research in nursing has shown that the construct empathy is important to the profession. Not only is empathy related to satisfactory patient care, but nurses' self-awareness depends on acquiring this attribute. Nursing education is beginning to include empathy training.

Empathy in Dental Education

Researchers and professionals in the field of dentistry customarily address the topic of empathy in terms of interpersonal skills training. Dental investigators have asked themselves if the quality of dental care is a result of client-practitioner relationships, [19,27,36,40] and if it is, how can interpersonal communications training be incorporated effectively in the dental education program.[34,41]

Hornsby et al.[19] studied interpersonal relationships in dentistry and concluded that poor relationships between patient and dental personnel lead to low effectiveness of the personnel. Linton et al.[27] took a positive approach and when investigating teaching behavioral principles to dental students found that improvement of client-practitioner relationships leads to continuance of dental care.

Dental personnel are concerned with providing satisfactory dental care and introducing client attitude change. Wallace and Wallace[40] found the conditions necessary for

client behavior change to be positive regard, genuineness, and empathetic understanding. Therapists call these attributes the core components on which interpersonal relationships are based. Perhaps dental personnel require these attributes to assist them in changing behaviors and attitudes in dental clients.

Two studies have been cited for developing successful communication skills programs for dental students. Wepman[41] designed a skills training program for second year dental students at the College of Medicine and Dentistry of New Jersey. Two important features of the program were (1) the use of videotaped communication vignettes, derived from actual dental office situations and (2) the use of clinical dental faculty as group facilitators. Prior to introducing course material to dental students, the dental faculty took the program under the direction of a psychologist. After the dental faculty members were trained as facilitators, they then proceded to teach skills training to the second year dental students. Students considered the course to be a worthwhile learning experience. Pre- and posttest scores on a videotaped transactions demonstrated student improvement in communication skills. Seime and Ingersoll[34] in a study conducted at the West Virginia University School of Dentistry also concluded that human behavior courses for dental students were effective for teaching interpersonal communication skills.

Studies in communication skills have been conducted in dental hygiene education programs. Interpersonal skills training has been included in dental hygiene curricula in varied forms.[20] Results of one study[38] suggested that practicing hygienists who display more empathy are better able to build rapport with their clients and, therefore, induce more positive therapeutic outcomes than dental hygienists with less empathy. Hornsby et al.[20] conducted a study to determine if a systematic training program in communication skills is effective for dental hygiene students. An experimental group of students received didactic and communication skills training; the control group received no training. Because the students in the experimental group significantly improved their levels of interpersonal functioning, it was concluded that interpersonal skills can be improved through didactic and experiential methods. A favorable attitude of the students toward communication instruction was additionally indicated.

Mason,[30] in a master's thesis undertaken at Old Dominion University, executed research to study the construct, empathy, in dental hygiene students. An intact group of subjects was selected from three educational settings: Old Dominion University, offering a bachelor of science in dental hygiene degree, situated in urban Virginia; the University of Pennsylvania, offering a two-year certificate, situated in urban Pennsylvania; and Idaho State University, offering a bachelor of science in dental hygiene degree,

situated in residential Idaho. An additional independent variable of student status, which included admissions candidates and first and second year dental hygiene students, was also considered. Using a 3 x 5 factorial design, a total of 295 female students were scored on the Hogan Empathy Scale. Three group, two-way analysis of variance indicated no statistically significant empathy differences at the .05 level among levels of student status. However, a statistically significant difference at the .05 level was found in empathy levels of students from the three different settings; no significant interaction was found among levels of students and settings. The investigation suggested that the present educational system does not appear to develop empathy in students. Training in interpersonal helping skills might therefore be a beneficial addition to dental hygiene curricula. Further study was recommended to compare empathy scores to aptitude and achievement test scores and to compare empathy scores of dental hygiene students and scores of dental hygiene educators. Research on empathy in dental and dental hygiene education is needed to assess the need for student training in empathic responses.

Empathy in Education

Empathy is considered an important aspect of overall teaching performance.[1,12,14,32,44] Results of a study by Wisdom[44] indicated that teachers who scored high in empathy had fewer time spans of student silence or confusion in

their classrooms. The study failed to indicate, however, if high empathy teachers had increased student involvement in their classrooms.

In a study conducted by Morgan,[32] teacher empathic response was defined as the ability of a teacher to know what another person is feeling before the feeling is identified verbally by that person. High teacher empathy was found to be related to low truancy rates, fewer behavior problems, high grades, less confusion, better reading scores, and higher student motivation. Teacher empathic response involves (1) a sensitivity to another's feelings and (2) a verbal facility to communicate an understanding of those feelings. Four ways in which a teacher expresses empathy are (1) management of instruction, (2) organization of the environment, (3) verbal response and actions, and (4) employing one's own human qualities as a model for students. A descriptive research study conducted by Wong[45] indicated that first year students in a two-year nursing program were very sensitive to how teachers made them feel. Although second-year students also were sensitive in this area, instructor competence in teaching was more important to them. Teachers might utilize empathy to create a satisfactory learning environment.

Studies have demonstrated that training programs in human relations and communication can increase the quality of teacher response to student problems. Long et al.[28] studied a training program in which an experimental group of

teachers received training consisting of facilitative listening and responding skills presented in a microcounseling format. The experimental group subjects then practiced responding to written student statements. The control group did not receive training in the skills. All subjects were rated at the conclusion of the study according to Carkhuff's 5-Point Scale. Results demonstrated a significantly higher response quality in the experimental group, which indicated that facilitative communications training is effective for teachers. The authors suggested that perhaps the level of responding could have been even higher if the training program had been long-term and repeatedly reinforced the skill training.

A study conducted by Black[3] extended the training question a step further to address the impact of empathy levels of teachers on their students. A quasi-experimental, cross-sectonal design was implemented at Catholic University of American in Washington, D. C. Entering social work graduate students (n = 112) and graduating social work graduate students (n = 83) were compared with entering (n = 81) and graduating (n = 69) graduate students in the School of Library Science, which served as the control. Also compared were social work graduate faculty (n = 76). All subjects were scored in empathy using the Hogan Empathy Scale. Data were subjected to covariance analyses and yielded evidence that graduate social work education had a positive impact on empathy. Graduating social work students were significantly

more empathic than entering social work students. No significant difference between entering and graduating library science students was found. Findings also suggested that when comparing empathy levels of graduating social work students and their teachers that the scores converged, indicating that the higher empathy scores of the students might have been acquired through contact with the teachers. A similar dissertation by Hardey and Nadig[13] also found that increased empathy levels in graduate instructors positively affected an increase in empathy levels of associated students.

Perhaps a proper place to begin training in empathic responses is with educators. A teacher's ability to communicate understanding can build a positive relationship that can apply to all students having contact with that teacher.[12] Teachers might concentrate on strengthening interpersonal relationships with students based on respect as persons.[1]

Summary

Literature from medical education, nursing education, dental education, and education has been presented. Past research has shown that empathy is a critical attribute of the helping and teaching professions. Findings have been presented to support the contention that empathic ability can be enhanced through training and through contact with persons who display high levels of empathy. Dental hygiene

education has much to gain from reviewing the advances other educational programs have made in interpersonal communication. Empathy is a construct that all helping and teaching professions, such as dental hygiene, can profit from by developing in themselves.

Chapter 3

METHODS AND MATERIALS

First and second year undergraduate dental hygiene students, graduate dental hygiene students, and dental hygiene educators from two different educational institutions teaching dental hygiene were requested to complete the Hogan Empathy Scale at three designated periods of time. Data were analyzed by an analysis of variance to establish if differences exist in empathy levels of the sample groups, if differences exist in empathy levels at different schools, and if empathy levels of the sample groups changed over a period of time. Also tested were interaction effects among the variables and any relationship existing between educators and students taught by those educators.

Sample Description

Seven hundred twenty-two female participants were grouped according to student or educator status: (1) first year dental hygiene students, (2) second year dental hygiene students, (3) graduate dental hygiene students, and (4) dental hygiene educators. Participants were also grouped according to educational setting, or school: (1) school A, located in the Midwest and (2) school B, located in the

Southeast. The variable of time, (1) October, 1980, (2) January, 1981, and (3) April, 1981 designated the final grouping of participants. For ease in scoring, color coded copies of the Hogan Empathy Scale were distributed by test administrators from each school. The color coding distinguished between each student or educator group. Intersubject differences were minimized by including only those subjects meeting the sample description.

Non-probability sampling techniques were utilized, because samples were chosen for convenience. Subjects displayed both similarities and differences attributed to educational settings and the type of student and educator each institution attracts.

Research Design

A 3 x 2 x 4 factorial research design was used (see Table 1). The attribute independent variables were time, school, and status. The 39-item Hogan Empathy Scale measured the dependent variable, empathy.

The research design provided for observation of each group of data, observation of any significant interactions that occurred, and observation of relationships found among educators and students taught by those educators. Three separate periods of administration of the inventory and collection of the data were used although Table 1 could not depict the third dimension, time.

Table 1

3 X 2 X 4 Factorial Research Design*

Student or Educator Status	School A	School B
First Year Dental Hygiene Students	HES Scores	HES Scores
Second Year Dental Hygiene Students	HES Scores	HES Scores
Graduate Dental Hygiene Students	HES Scores	HES Scores
Dental Hygiene Educators	HES Scores	HES Scores

HES = Hogan Empathy Scale

* The variable time could not be depicted on this two dimensional table.

Methodology

Program directors at schools A and B agreed to participate in the study. A letter was submitted to verify their commitment. Faculty support at both institutions was obtained to provide a standardized in-class time for students to complete the inventory and a standardized period for faculty members to complete the inventory. Graduate students at school B could not be assembled as a class entity and therefore were mailed the inventory along with instructions (see Appendices E, H, K). A packet containing the Hogan Empathy Scale and the consent form was distributed to students and educators at the first testing session. A designated assistant at school A distributed the packets, read instructions, and collected the completed materials for return to the researcher. The researcher administered the materials to participants at school B. All information remained confidential. Identical procedures for administration of the inventory packet were followed in January and April of 1981, measuring empathy levels at the beginning, middle, and end of one academic year. Copies of the Hogan Empathy Scale were color coded to denote student or educator status and used for scoring ease only.

Human Subjects

Prior to initiation of this study, the principal researcher submitted to the Human Subjects Review Boards at

both schools A and B the following proposal for the protection of subjects in this investigation:

1. Subject Population -- The investigation used participants who were accessible and convenient to the researcher and who basically were similar. Subjects included first and second year undergraduate dental hygiene students, graduate dental hygiene students, and dental hygiene educators at schools A and B.

2. Potential Risks -- Some subjects may have sensed an invasion of privacy on completing the inventory. However, potential risks were minimized by thoroughly explaining the procedures and the need for subject participation in the instructions. Confidentiality was safeguarded by keeping responses anonymous and coding the inventory by color merely for ease in handling and scoring.

3. Consent Procedures -- Subjects granted informed consent by signing and returning the consent form (see Appendix B). Instructions were read to participants for all in-class testing sessions (see Appendices C, D, F, G, I, J). Graduate students at school B, received their instructions via a letter, which also provided information on the return of the completed inventory (see Appendices E, H, K). All subjects were informed regarding the nature of the study. Any subjects who wished to participate in the study for the first time during the second or third testing sessions were asked to complete a consent form at that time. During the first testing session consent forms were distributed to

participating groups at large. Participation in the study was on a volunteer basis.

4. Protection of Subject's Rights -- Subject responses remained anonymous. Results were reported in group form only. No penalty was issued if subjects withdrew from the study.

5. Potential Benefits -- Subjects should benefit from developing an increased awareness of empathic attributes and an increased understanding of current empathy levels in dental hygiene students and educators. Dental hygiene education will benefit most from the study by assessing current needs for empathy response training in dental hygiene students and educators.

6. Risk-Benefit Ratio -- Potential benefits greatly outweighed any sense of invasion of privacy perceived by some subjects.

Instrumentation

The 39-item Hogan Empathy Scale was used to measure empathy in dental hygiene students and educators. This scale is a shortened form of the full 64-item scale which is composed largely of items from the California Psychological Inventory.[18] Permission to use the 39-item Hogan Empathy Scale was granted by the test publisher,[6] the author of the test items, Harrison G. Gough,[11] and Robert Hogan, Ph.D., who constructed the scale.[17] Responses to the full scale's

items have been analyzed from high-rated groups and low-rated groups. The instrument was developed to attempt to measure empathy by item-analysis of the 64 true-false items and relating this information to low- and high-rated groups.[16] The Institute of Personality and Assessment and Research of the University of California at Berkeley found the test-retest reliability coefficient to be $r = 0.84$.[16] The internal consistency has been estimated at 0.71.[16] Test items were grouped according to three factors: (1) displaying a tolerant, even-tempered disposition, (2) being outgoing and socially ascendent leading to self-possession, and (3) displaying a humanistic and tolerant set of sociopolitical attitudes. As a whole, the scale relates most closely to measures of interpersonal effectiveness and social adequacy. Measures also moderately related to the scale are flexibility and independence.[10] Silbereisen and Schulz[35] devised a German version of the Hogan Empathy Scale. Their results indicated that the scale reflects empathy, extraversion, and sociability. The empathy scale appears to be adequately reliable and valid in measuring social sensitivity and perception of interpersonal cues.[16] The Hogan Empathy Scale has been used to measure empathy in medical education,[30] nursing education,[9,29] dental hygiene education,[30] and general education.[3] The instrument is easy to administer and score, is self-reporting, and requires about eight to ten minutes to complete.[30] Hogan recommends using the shortened 39-item scale.[17] Several researchers have

found the shortened form to correlate about .90 with the full 64-item scale for various types of research.[10,17,30]

Statistical Treatment

A three-way analysis of variance was employed to determine group differences in mean empathy scores. Three separate one-way analysis of variance procedures were used to determine differences among the variables time, school, and status. Interactons among groups and the relationship between educators and students taught by those educators were also analyzed. Comparisons were tested at the .05 level of significance. The Hogan Empathy Scale utilizes an interval scale of measurement.[30] Pairwise comparisons using the Bonferroni method, which uses an experimentwise error rate, identified significant differences among student and educator groups.

Chapter 4

RESULTS AND DISCUSSION

Of the 821 inventories administered, 722 inventories were completed for an 88 percent response rate (see Tables 2-4, pp. 33-35). Each inventory was evaluated and assigned an empathy score. A three-way analysis of variance analyzed differences and interactions among the effects of time, school, and status. Exact differences among the levels of time, school, and status were investigated further using three one-way analysis of variance procedures. All hypotheses were tested at the .05 level of significance.

Results

Data were analyzed to determine if there was a statistically significant change in empathy levels of dental hygiene students and educators over one academic year. Results fail to reject the hypothesis in the three-way analysis of variance ($F = 0.081$, $df = 2/698$, $p = 0.923$) (see Table 5). The same hypothesis was also rejected using a one-way analysis of variance ($F = 0.099$, $df = 2/719$, $p = 0.9061$) (see Table 6). Mean scores on the effect of time only are presented in Table 7. Empathy mean scores for all

Table 2

Hogan Empathy Scale Response Rate for Dental Hygiene Students and Educators for the First Testing Period

School	Status	Inventories Administered	Inventories Completed	Percentage Response
A	Graduate Student	3	3	100
	Educator	17	17	100
	First Year Student	64	63	98
	Second Year Student	79	60	76
B	Graduate Student	18	17	94
	Educator	10	10	100
	First Year Student	42	41	98
	Second Year Student	42	42	100
TOTALS		275	253	92.0

Table 3

Hogan Empathy Scale Response Rate for Dental Hygiene Students and Educators for the Second Testing Period

School	Status	Inventories Administered	Inventories Completed	Percentage Response
A	Graduate Student	3	3	100
	Educator	17	13	77
	First Year Student	64	54	84
	Second Year Student	79	64	81
B	Graduate Student	16	15	94
	Educator	10	10	100
	First Year Student	42	42	100
	Second Year Student	42	38	91
TOTALS		273	239	87.5

Table 4

Hogan Empathy Scale Response Rate for Dental Hygiene Students and Educators for the Third Testing Period

School	Status	Inventories Administered	Inventories Completed	Percentage Response
A	Graduate Student	3	3	100
	Educator	17	13	77
	First Year Student	64	56	88
	Second Year Student	79	60	76
B	Graduate Student	16	13	81
	Educator	10	10	100
	First Year Student	42	34	81
	Second Year Student	42	41	98
TOTALS		273	230	84.3
GRAND TOTALS		821	722	88.0

Table 5

Three-Way Analysis of Variance of Hogan Empathy Scale Scores of Dental Hygiene Students and Educators As Affected by Time, School, and Status

Source of Variation	Sum of Squares	df	Mean Square	F	P-Value
Main Effects	374.48	6	62.41	3.84	0.001*
Time	2.63	2	1.31	0.08	0.923
School	21.12	1	21.12	1.30	0.255
Status	368.46	3	122.82	7.55	0.000*
2-Way Interactions	226.93	11	20.63	1.27	0.239
Time School	8.83	2	4.41	0.27	0.763
Time Status	55.98	6	9.33	0.57	0.752
School Status	165.77	3	55.26	3.40	0.018*
3-Way Interactions					
Time School Status	23.07	6	3.85	0.24	0.965
Explained	624.48	23	27.15	1.67	0.026
Residual	11360.65	698	16.28		
TOTAL	11985.13	721	16.62		

* Indicates Significance

Table 6

One Way Analysis of Variance of Hogan Empathy Scale Scores of Dental Hygiene Students and Educators Over Three Different Points in Time (Time Effect)

Source	Sum of Squares	df	Mean Squares	F-ratio	P-Value
Between Groups	3.2856	2	1.6428	0.099	0.9061
Within Groups	11981.8380	719	16.6646		
TOTAL	11985.1235	721			

Table 7

Mean Hogan Empathy Scale Scores of All Dental Hygiene Student and Educator Groups at Three Different Points in Time (Time Effect)

Group	Count	Mean	Standard Deviation	Standard Error	Minimum Score Obs.
	95% conf. int. for mean				
TIME 1	253	24.84	4.0403	0.2540	14.0
	24.34 to 25.34				
TIME 2	239	24.71	4.0827	0.2641	13.0
	24.19 to 25.23				
TIME 3	230	24.69	4.1274	0.2722	12.0
	24.16 to 25.23				
TOTAL	722	24.75	4.0771	0.1517	12.0
	24.45 to 25.05				

Table 8

Empathy Score Means for All Student and Educator Groups

School A	Graduate Students	Educators	First Year Students	Second Year Students
TIME 1	28.33	25.71	24.68	24.68
TIME 2	30.00	26.69	24.46	24.59
TIME 3	30.00	26.08	24.57	24.17
TOTALS	29.44	26.16	24.57	24.48

School B	Graduate Students	Educators	First Year Students	Second Year Students
TIME 1	26.12	25.10	23.98	24.98
TIME 2	26.33	26.60	23.10	24.82
TIME 3	24.46	26.20	23.85	25.20
TOTALS	25.64	25.97	23.64	25.00

groups for each testing period are presented in Table 8. Data in Table 8 indicate that overall, empathy scores decreased with each subsequent testing period but that these differences were not significant.

Results failed to reject the hypothesis that no statistically significant difference exists among empathy scores of students and educators at two different schools. Data from the three-way analysis ($F = 1.297$, $df = 1/698$, $p = 0.255$) (see Table 5) and from the one-way analysis calculating the effect of school ($F = 0.163$, $df = 1/720$, $p = 0.6861$) (see Tables 9 and 10) found school A as having slightly higher empathy scores than school B; however, this difference in school empathy mean scores is not significant.

Analysis of the data supports rejection of the hypothesis that no statistically significant difference exists among empathy levels of dental hygiene student and educator groups. Table 5 presents results of the three-way analysis ($F = 7.546$, $df = 3/698$, $p = 0.000$), and Table 11 presents results of the one-way analysis of variance testing the effect of student and educator status ($F = 7.215$, $df = 3/718$, $p = 0.0001$). Mean scores of the effect of status are presented in Table 12. Pairwise comparisons using the Bonferroni method, which uses an experimentwise error rate, identified significant differences among graduate students and first and second year students, and educators and first and second year students (see Figure 1 and Table 13). Data also support rejection of the hypothesis of no statistically

Table 9

One Way Analysis of Variance of Hogan Empathy Scale Scores of Dental Hygiene Students and Educators by Two Different Schools (School Effect)

Source	Sum of Squares	df	Mean Squares	F-ratio	P-Value
Between Groups	2.7198	1	2.7198	0.163	0.6861
Within Groups	11982.4028	720	16.6422		
TOTAL	11985.1226	721			

Table 10

Mean Hogan Empathy Scale Scores of All Dental Hygiene Student and Educator Groups by Two Different Schools (School Effect)

Group	Count	Mean	Standard Deviation	Standard Error	Minimum Score Obs.
	95% conf. int. for mean				
School A	409	24.80	4.0609	0.2008	12.0
	24.41 to 25.20				
School B	313	24.68	4.1036	0.2320	13.0
	24.22 to 25.14				
TOTAL	722	24.75	4.0771	0.1517	12.0
	24.45 to 25.05				

Table 11

One Way Analysis of Variance of Hogan Empathy Scale Scores of Dental Hygiene Students and Educators by Level of Education (Status Effect)

Source	Sum of Squares	df	Mean Squares	F-ratio	P-Value
Between Groups	350.7461	3	116.9154	7.215	0.0001*
Within Groups	11634.3768	718	16.2039		
TOTAL	11985.1229	721			

Table 12

Mean Hogan Empathy Scale Scores of All Dental Hygiene Student and Educator Groups by Level of Education (Status Effect)

Group	Count	Mean	Standard Deviation	Standard Error	Minimum Score Obs.
	95% conf. int. for mean				
Graduate Students	54	26.33	4.1979	0.5713	15.0
	25.19 to 27.48				
Educators	73	26.06	4.0066	0.4689	16.0
	25.12 to 26.99				
First Year Students	290	24.19	4.0538	0.2380	13.0
	23.73 to 24.66				
Second Year Students	305	24.69	3.9717	0.2274	12.0
	24.24 to 25.14				
TOTAL	722	24.75	4.0771	0.1517	12.0
	24.45 to 25.05				

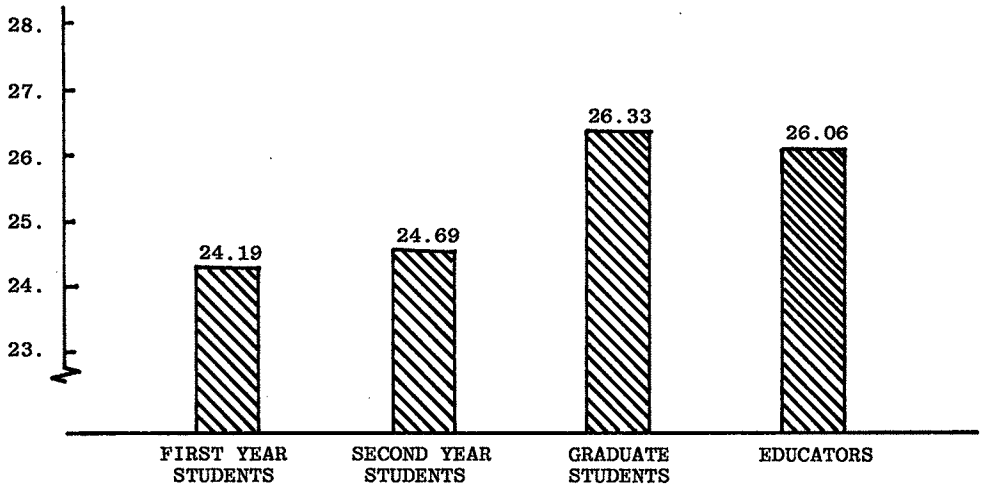

Figure 1. Bar Graph of Empathy Mean Scores Among First Year and Second Year Students, Graduate Students and Educators

Table 13

Pairwise Comparisons of Differences in Means and Critical Values for Students and Educators

Groups Compared	Difference in Means	Critical Value
Graduate Students, educators	0.2785	1.8653
Graduate students, first year students	2.1402*	1.5411
Graduate students, second year students	1.6448*	1.5336
Educators, first year students	1.8617*	1.3613
Educators, second year students	1.3663*	1.3549
First year students, second year students	0.4954	0.8556

* Indicates significance

significant interaction in empathy levels among the variables time, school, and status of dental hygiene students and educators. Results in Table 5 present a two-way interaction among the variables school and status (F = 3.395, df = 3/698, p = 0.018). Table 14 and Figure 2 identify the interaction among the variables school and status associated with the second year students at school B who scored unusually high. Further inspection of Table 5 indicates that all other two or three-way interactions produce nonsignificant results.

As a result of the analysis, the hypothesis that there is no statistically significant relationship in empathy levels among dental hygiene students and educators within the same educational institution was retained. Figure 3 illustrates the scattergram produced when plotting empathy mean scores of educators with empathy mean scores of students taught by those educators at the same school. The lack of linearity indicates that there is very little or no relationship between student empathy scores and empathy scores of teachers of those students.

Discussion

Data analysis testing the hypothesis of no significant change in empathy levels of dental hygiene students and educators indicates that empathy scores decrease over the period of the academic year although all group means do not show this trend. These differences between the group means are

Table 14

Group Empathy Means Used to Plot Interaction

Effect of School and Status

School	Status	$\bar{X}$
A	Graduate Students	29.44
	Educators	26.16
	First Year Students	24.57
	Second Year Students	24.48

School	Status	$\bar{X}$
B	Graduate Students	25.64
	Educators	25.97
	First Year Students	23.64
	Second Year Students	25.00

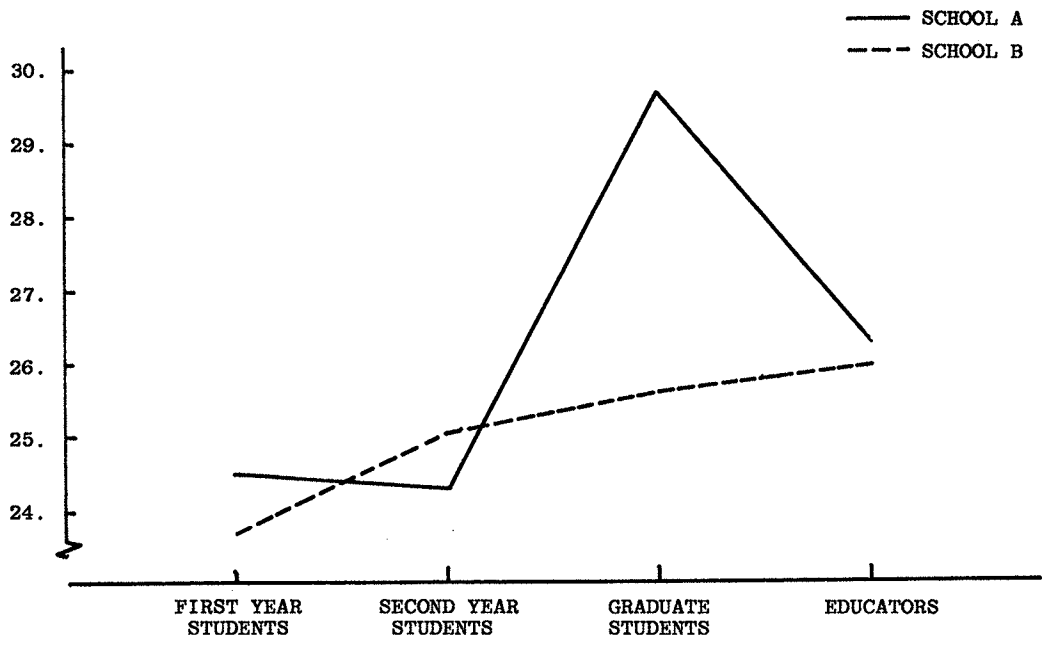

Figure 2. Two-way Interaction Plot of Effects of School and Status

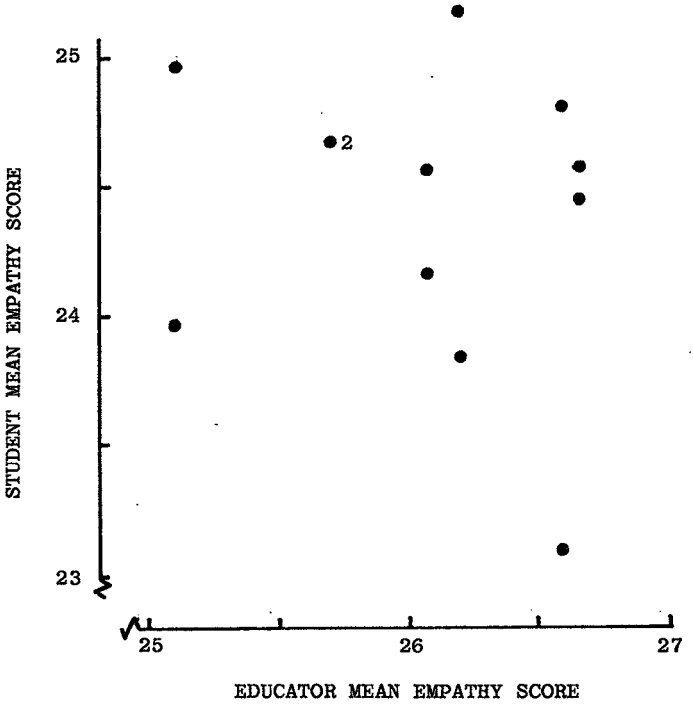

Figure 3. Relationship Between Mean Empathy Scores of First Year and Second Year Students and Educators of those students

not significant. The overall decreases in empathy scores might be attributed to a "tiredness" of the academic routine as the school year progresses or to some type of testing effect resulting from the use of the same instrument for each testing period. Further research on the use of repeated measures of the Hogan Empathy Scale might offer some insight into this question; however, no research could be found to support this interpretation. The reliability of the Hogan Empathy Scale when used in a repeated measures design might have been a limitation in this study.

The hypothesis testing significant difference among empathy scores of students and educators at two different schools was retained. Schools A and B were selected for study because their populations were convenient and accessible and because they contained all possible levels of dental hygiene students. Although results of this study do not suggest a significant difference between the schools, the schools chosen for testing might have affected the results. Perhaps the geographical area of the country where a school is situated influences a person's response or attracts a unique type of student. However, no studies measuring empathy in different geographical areas were found to clarify this question. Graduate research conducted by Mason[30] compared empathy scores of three levels of dental hygiene students at three different schools. The purpose of her investigation was to assess empathy according to student status

and educational setting. Results from Mason's study contrast with the results of this study in that the former found a significant difference among schools. Upon close examination, Mason found that affecting a school's "type" of student might be the orientation program an applicant attends before committing herself/himself to the particular dental hygiene program. Results of Mason's research disclosed that the school displaying the highest empathy mean scores oriented admitting students with values-clarification exercises. Perhaps both schools A and B chosen for this study attract similar types of student, and, therefore, did not produce significantly different empathy mean scores as might be found if other schools were compared. One additional factor might explain the conflicting results produced by the two studies. Mason's study was conducted cross-sectionally while this study was conducted longitudinally; therefore, the longitudinal approach probably controlled certain variables among the groups.

The hypothesis testing if a significant difference exists among empathy levels of dental hygiene student and educator groups was rejected. Data suggest that empathy scores increase according to status. For example, dental hygiene educators and graduate students tend to have higher empathy scores than undergraduate dental hygiene students. The increase in empathy scores might be attributed to an increase in age and responsiveness as each individual matures. As students gain experience in perceiving others

and responding to them, an increase in empathic ability might result. When empathic skills training courses are presented consecutively throughout the dental hygiene curriculum, these courses might encourage students to respond more fully as persons. Results from other studies, however, conflict with these findings. Mills and Bohannan[31] utilized a short form of the Hogan Empathy Scale to assess empathy scores of persons who had served on a city's jury panels. The researchers found that empathy scores decreased with age; however, because the study was cross-sectional in nature, the researchers could not determine whether empathy was actually changing or whether it remained static within members of the population. Research conducted by Mason[30] presented findings that also contrast; empathy scores of dental hygiene students did not significantly increase with level of education.

Results from several studies, however, support the finding that empathy scores increase with the length of education. Forsyth[9] conducted research on practicing nurses and found that as a nurse's length of practice increased, empathic ability decreased. Results also suggested, however, that as education level advanced for nurses, empathy increased. Results of research by Mills and Bohannon[31] found that empathy scores increased with educational level. Moreover, they postulated that intelligence is a necessary ingredient in empathy development. In contrast, research results by Murphy[33] found that intelligence has no effect on

empathic ability. Additional research in this area is needed to determine the factors, such as age, education, and intelligence, that encourage development of empathy both in practicing professionals and in students in helping professions, such as dental hygiene.

Data support rejection of the hypothesis that no statistically significant interaction exists in empathy levels among the variables time, school, and status of dental hygiene students and educators. A significant two-way interaction of the combined effects of shcool and status was found. Table 14, page 48, and Figure 2, page 49 illustrate that at school B the second year students as a group scored higher in empathy than the second year students at school A. One might interpret these results to mean that second year students at school A might have experienced pre-graduation stress levels that inhibited them from attaining the school's consistently higher empathy scores, while experiences at school B might have encouraged the second year students to respond with more empathy. Although both schools offer courses in interpersonal skills training throughout the curricula, course experience in community oral health, which required student interaction with clients in a non-academic environment, might have affected the second year student's ability to respond more empathically at school B.

Analysis of results supports retention of the hypothesis that no statistically significant relationship exists in empathy levels among dental hygiene students and educators

within the same educational institution. This finding was surprising because it was expected that educators scoring high in empathy might contribute to high empathy scores in their students attributed to role modeling. If this study had been comprised of educators at different schools displaying a wider deviation in mean empathy scores, a correlation between student and educator scores might have been more apparent. Educator total mean empathy score at school A was 26.16 (see Table 14); at school B the total mean empathy score was 25.97. Had these empathy mean scores differed more for educators, a relationship among their corresponding student mean empathy scores might be discernible. Research results by both Black[3] and Hardey and Nadig[13] found that instructors of graduate students increased empathy levels of their students. Further research comprising more varied groups and schools would be valuable in assessing this type of student-educator relationship.

Certain limitations might have affected the results of this study. The questionable reliability of the Hogan Empathy Scale when used in a repeated measures design was mentioned previously. Another limiting factor is the uncertain reliability of scores of the graduate students participating in the study. At school B, the subject population actually changed from the first to the third testing periods as some students graduated and others entered the graduate program. This occurrence was not a problem at school A where the graduate student population remained constant.

Moreover, because of the nature of the master's degree program at school B, graduate students could not be assembled as a class entity for testing. Therefore, graduate students at school B were mailed testing instructions along with the inventory. The various environments in which these students responded to the testing instrument could not be controlled and might have affected the results. Educators studied at both schools also were affected to a smaller degree by these factors.

Another limitation concerns the uniformity of the test administration. Uniform test instructions were read to all the participating groups in a classroom setting except for the graduate students at school B and some of the educator groups. Although the researcher administered all of the tests at school B, a different test administrator had to be used at school A. Participants might have responded differently to the different test administrators.

A final limitation concerns the ex post facto nature of the design. Variables in this study could not be directly manipulated; therefore, functional rather than causal relationships resulted.

Chapter 5

SUMMARY AND CONCLUSIONS

Interpersonal skills training is a relatively recent addition to dental hygiene curricula.[20] Academic emphasis had previously been placed on teaching basic and clinical sciences, without encouraging dental hygiene students to develop skills necessary to motivate and respond to dental clients empathetically. However, if the intent of the dental hygienist is to modify client behavior and respond to each client's needs, then the development of empathy is a critical element in the dental hygiene student's education. If empathy training is valuable in encouraging dental hygiene students to develop responding skills, then empathy training might be included in the curriculum to promote positive client-practitioner relationships and improve the effectiveness of dental hygiene education. Investigation on empathy might also be valuable in assessing the extent that dental hygiene students acquire professional values, attitudes, and behaviors from their instructors.

The purpose of this investigation was to assess dental hygiene students' and educators' empathy. The 39-item Hogan

Empathy Scale, which is comprised of 39 true-false statements, was used as the testing instrument. Subjects were asked to respond to the inventory at three designated periods of time during one academic year. The same testing instrument was used for all three testing periods to assess change in empathy levels over time. Subjects at two different institutions of higher education, one in the Midwest and one in the Southeast, were tested to assess if empathy levels of subjects varied at different schools. Subjects also were grouped according to increasing level of education, or status: first year dental hygiene students, second year dental hygiene students, graduate dental hygiene students, and dental hygiene educators. Therefore, differences among empathy levels of each group were assessed according to status. Also, any interaction effects among time, school, or status were investigated. A final objective of this study was to assess the relationship among the empathy levels of educators and students taught by those educators at each of the schools.

Seven hundred twenty-two empathy scores were analyzed in the 3 x 2 x 4 factorial research design, with time, school, and status being the attribute independent variables. A three-way analysis of variance was used to analyze the effects of time, school, and status and also interactions among the various levels of these variables. Three separate one-way analyses further tested each main effect. Pairwise comparisons using the Bonferroni method identified

significant differences between student and educator groups. An interaction plot identified the interaction among the variables school and status associated with the second year students.

Results of the statistical analyses failed to reject the hypothesis that there is no statistically significant change in empathy levels of dental hygiene students and educators as measured by the Hogan Empathy Scale over a one academic year period. Results also failed to reject the hypothesis that there is no statistically significant difference among empathy levels of dental hygiene students and educators at two different educational institutions as measured by scores on the Hogan Empathy Scale. The hypothesis that there is no statistically significant difference among empathy levels of dental hygiene student and educator groups as measured by scores on the Hogan Empathy Scale was rejected. Results rejected the hypothesis that there is no statistically significant interaction in empathy levels of dental hygiene students and educators among the variables of time, shcool, and status as measured by scores on the Hogan Empathy Scale. Results failed to reject the hypothesis that there is no statistically significant relationship in empathy levels among dental hygiene students and educators within the same educational institution as measured by scores on the Hogan Empathy Scale. All hypotheses were tested at the .05 level of significance.

Findings from this study suggest that empathic ability of dental hygiene students and educators does not vary greatly within the short time span of one academic year. What is suggested, however, is that empathic ability does increase as students progress through the dental hygiene educational program. One might speculate that it is the interpersonal skills training aspect of the dental hygiene curricula that encourages development of empathy; however, this was not tested empirically. Other researchers feel that empathic ability increases with level of educaton and intelligence but decreases with age.[31] Another factor that might have affected the overall mean level of student empathy at the educational institutions is the manner in which the school orients students.[30] Thus, an institution which orients students with exercises in values formation might attract more empathic students, which a school's mean empathy score might reveal. Although findings from this study do not support that empathic ability might be affected by student-educator relationships, further investigation of educator role modeling might yield information on how student values, attitudes, and empathic ability are formed and developed.

The findings from this study lead to the following conclusions:

(1) Empathy levels of dental hygiene students and educators do not significantly change over an academic year.

(2) Educational setting does not appear to affect empathy levels of dental hygiene students and educators.

(3) Dental hygiene graduate students and educators score significantly higher in empathy than first and second year undergraduate dental hygiene students.

(4) An interaction effect is associated with the second year dental hygiene students at school B who scored unusually high in empathy.

(5) Dental hygiene educators do not appear to influence the empathy levels of their students.

Considering the potential and the limitations of this study, the following recommendations for future study are:

(1) Use of a different testing instrument to assess empathy or establishing validity and reliability for use of the Hogan Empathy Scale in a repeated measures design.

(2) Replication of this study using more educational settings to further test if different teaching environments produce different levels of empathy in students.

(3) Replication of this study using more educational settings to further test the relationship among student and educator empathy scores.

(4) Use of posttests on groups scoring higher in empathy to study long term effects of skills training programs.

Results of this research might have bearing on the goals established for students by dental hygiene educators.

Dental hygiene educators might designate development in empathic responding skills an important goal in the curricula for enhancing the student's ability to render client care. Dental hygiene students are also future dental hygiene educators, and empathy training may enhance the future effectiveness of the profession's teachers.

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APPENDIX A

HOGAN EMPATHY SCALE

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
16.	I like to keep people guessing what I'm going to do next.	T	F
17.	Before I do something I try to consider how my friends will react to it.	T	F
18.	I like to talk before groups of people.	T	F

19.	When a man is with a woman he is usually thinking about things related to her sex.	T	F
20.	Only a fool would try to change our American way of life.	T	F
21.	My parents were always very strict and stern with me.	T	F
22.	Sometimes I rather enjoy going against the rules and doing things I'm not supposed to do.	T	F
23.	I think I would like to belong to a singing club.	T	F
24.	I think I am usually a leader in my group.	T	F
25.	I like to have a place for everything and everything in its place.	T	F
26.	I don't like to work on a problem unless there is the possibility of coming out with with a clear-cut and unambiguous answer.	T	F
27.	It bothers me when something unexpected interrupts my daily routine.	T	F
28.	I have a natural talent for influencing people.	T	F
29.	I don't really care whether people like me or dislike me.	T	F
30.	The trouble with many people is that they don't take things seriously enough.	T	F
31.	It is hard for me just to sit still and relax.	T	F
32.	I frequently undertake more than I can accomplish.	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

APPENDIX B

CONSENT FORM TO STUDENTS AND EDUCATORS FOR PARTICIPATION IN STUDY

CONSENT FORM

I understand that participation in this study includes completion of the inventory at three designated periods of time.

I understand that I am free to withdraw from the study at any time without fear of penalty.

I understand that although results of this study may be published or orally presented, that I will in no way be identified.

I understand that participation in this study is strictly voluntary and no monetary compensation will be given.

Information received from this study will be used to assist researchers in determining personality traits which are characteristic of dental hygiene students and educators.

I_____ DO DO NOT give my consent to
(signature)
participate in this study.

Date_____

APPENDIX C

INSTRUCTIONS TO FIRST AND SECOND YEAR STUDENTS FOR FIRST TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS

(Distribute one packet to each student)

Today I would like to ask your assistance in a research study. The dental hygiene department is interested in determining personality traits which are characteristic of dental hygiene students and educators. Your response would be very much appreciated. In the packet that you have each been given is a questionnaire which should take you approximately ten minutes to complete. This questionnaire will be distributed to you on two more occasions during this academic year.

Also in your packet is a consent form which you must each complete with your signature and the date before participating in the study. Please take out your consent form now, and I will read it with you. (Read consent form.) Are there any questions? (Answer questions, if any.) Those of you who wish to participate in the study please complete the consent form with your signature and today's date at this time. (Pause.)

Now let us take out the questionnaire. Please follow these directions when completing the questionnaire:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

Those who are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect packets.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX D

INSTRUCTIONS TO EDUCATORS FOR FIRST TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS

(Distribute one packet to each educator). Today I would like to ask your assistance in a research study. The dental hygiene department is interested in determining personality traits which are characteristic of dental hygiene students and educators. Your response would be very much appreciated. In the packet that you have each been given is a questionnaire which should take you approximately ten minutes to complete. This questionnaire will be distributed to you on two more occasions during this academic year.

Also in your packet is a consent form which you must sign and date before participating in the study. Please take out your consent form now, and I will read it with you. (Read consent form.) Are there any questions? (Answer questions if any.) Those of you who wish to participate in the study please complete the consent form with your signature and today's date at this time. (Pause.)

You each have two questionnaires to complete. First, read the "Experience Questionnaire for Dental Hygiene Educators" and check the appropriate responses as they apply to you. (Pause until educators have competed this form.)

Next, complete the second questionnaire following these directions:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).

2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.

3. Keep questionnaire free of stray marks.

4. There are no right or wrong responses.

Those who are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect packets.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX E

INSTRUCTIONS TO GRADUATE STUDENTS FOR FIRST TESTING SESSION

Dear Colleague:

I would like to ask your assistance in a study on personality traits of dental hygiene students and educators. Your response would be very much appreciated. In the packet you have been sent is a questionnaire which should take you approximately ten minutes to complete. These materials will be distributed to you on two more occasions during this academic year. Also enclosed is a consent form which you must each read and sign before participating in the study.

When completing the questionnaire please follow these directions:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

Thank you again for your help in this study. Results will be available to you upon request later this year.

Sincerely,

Claudia Sanderlin, R.D.H., B.S.

Graduate Student

APPENDIX F

INSTRUCTIONS TO FIRST AND SECOND YEAR STUDENTS FOR SECOND TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS (STUDENTS)

(Distribute one questionnaire to each student.) Today I would like to ask your assistance in completing phase II of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of these questionnaires would be very much appreciated. If you are participating for the first time, please complete a consent form (available from the test administrator). The questionnaire will be distributed to you on one more occasion during this academic year.

Please follow these directions when completing the questionnaire:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

If you are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect papers.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX G

INSTRUCTIONS TO EDUCATORS

FOR SECOND TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS (EDUCATORS)

(Distribute one questionnaire to each educator.) Today I would like to ask your assistance in completing phase II of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of these questionnaires would be very much appreciated. If you are participating for the first time, please complete a consent form (available from the test administrator). The questionnaire will be distributed to you on one more occasion during this academic year.

You each have two questionnaires to complete. First, read the "Experience Questionnaire for Dental Hygiene Educators" and check the appropriate responses as they apply to you. (Pause until educators have completed this form.)

Next, complete the second questionnaire following these directions:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

If you are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect papers.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX H

INSTRUCTIONS TO GRADUATE STUDENTS FOR SECOND TESTING SESSION

Dear Colleague:

I would like to ask your assistance in completing phase II of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of this questionnaire would be very much appreciated. The questionnaire will be distributed to you on one more occasion during this academic year.

Please follow these directions when completing the questionnaire:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

Thank you again for your help in this study. Results will be available to you upon request later this year.

Sincerely,

Claudia Sanderlin, R.D.H., B.S.

Graduate Student

APPENDIX I

INSTRUCTIONS TO FIRST AND SECOND YEAR STUDENTS FOR THIRD TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS (STUDENTS)

(Distribute one questionnaire to each student.) Today I would like to ask your assistance in completing phase III of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of these questionnaires would be very much appreciated. If you are participating for the first time, please complete a consent form (available from the test administrator). This is the last time the questionnaire will be distributed to you.

Please follow these directions when completing the questionnaire:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

If you are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect papers.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX J

INSTRUCTIONS TO EDUCATORS FOR THIRD TESTING SESSION

INSTRUCTIONS TO PARTICIPANTS (EDUCATORS)

(Distribute one questionnaire to each educator.) Today I would like to ask your assistance in completing phase III of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of these questionnaires would be very much appreciated. If you are participating for the first time, please complete a consent form (available from the test administrator). This is the last time the questionnaire will be distributed to you.

You each have two questionnaires to complete. First, read the "Experience Questionnaire for Dental Hygiene Educators" and check the appropriate responses as they apply to you. (Pause until educators have completed this form.)

Next, complete the second questionnaire following these directions:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

If you are participating please begin answering the questionnaire at this time. (Allow ten to fifteen minutes for participants to finish. Collect papers.)

Thank you again for your help in this study. Results will be available to you upon request later this year.

APPENDIX K

INSTRUCTIONS TO GRADUATE STUDENTS FOR THIRD TESTING SESSION

Dear Colleague:

I would like to ask your assistance in completing phase III of the study on personality traits of dental hygiene students and educators. Since you kindly agreed to participate in the study last October, completion of this questionnaire would be very much appreciated. This is the last time the questionnaire will be distributed to you.

Please follow these directions when completing the questionnaire:

1. Read each statement and indicate your personal preference by circling True (T) or False (F).
2. If you wish to change an answer, please erase thoroughly if using pencil, or mark a large X over the incorrect answer and circle the correct one if using pen.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses.

Thank you again for your help in this study. Results will be available to you upon request later this year.

Sincerely,

Claudia Sanderlin, R.D.H., B.S.

Graduate Student