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Dental Hygiene Students' Perceptions About the Behavioral Characteristics of the Effective Clinical Teacher

Frances Gaby Carson
Old Dominion University

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DENTAL HYGIENE STUDENTS' PERCEPTIONS ABOUT THE BEHAVIORAL
CHARACTERISTICS OF THE EFFECTIVE CLINICAL TEACHER

by

Frances Gaby Carson

A.S., May 1980, East Tennessee State University

B.S., May 1980, East Tennessee State University

A Thesis Submitted to the Faculty of
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Approved by:

Michele L. Darby (Director)

Janet L. Scharer

Deanne S. Allen

ABSTRACT

DENTAL HYGIENE STUDENTS' PERCEPTIONS ABOUT THE BEHAVIORAL CHARACTERISTICS OF THE EFFECTIVE CLINICAL TEACHER

Frances Gaby Carson
Old Dominion University, 1982
Director: Michele L. Darby

A descriptive research approach and a self-designed questionnaire were used to obtain information about the effective clinical teacher as perceived by first and second year dental hygiene students. The Effective Teaching Behaviors Questionnaire was reviewed critically by several Old Dominion University dental hygiene faculty who's comments were used for revision. Once revisions were made, a pilot study was conducted on a sample of Old Dominion University dental hygiene students to determine the reliability and validity of the instrument.

The sample consisted of the entire student population of five accredited dental hygiene programs: three baccalaureate degree university programs and two associate degree community college programs, in varying geographical areas (N=291). Data obtained from the responses were analyzed using chi square at the 0.01 significance level. Results indicated that first and second year dental hygiene students are similar in their perceptions of

what constitutes the effective clinical instructor; however, first year students, students in age extremes of 18 to 19, and 26 and above, and students scoring in the low range (-1 to 3) on the Dental Hygiene Aptitude Test appear more sensitive to instructor behavioral characteristics and involvement than other students.

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Chapter 1

INTRODUCTION

Teaching is considered to be a performing art, not a science, too subtle and complex to be defined as a set of teacher competencies or behaviors.³⁶ Research findings on effective teaching behaviors are inconclusive and contradictory. Some researchers have been extremely pessimistic in their conclusions theorizing that teacher behavior cannot be analyzed,¹⁴ that good teaching can be defined anyway one desires,² and that judgements on teachers are socially biased.⁴³ Other researchers have been successful in delineating areas which could be used to measure teaching behaviors.^{3,4,16-18,21,25,27,38,40}

No research could be found which examined effective versus ineffective teaching behaviors in dental hygiene clinical teaching. Because the dental hygiene student spends a significant amount of time in the clinic to achieve clinical competence, an investigation on effective teaching behaviors would be purposeful in guiding the educator to improve clinical instruction.

Statement of the Problem

This research was concerned with answering the following questions:

1. What behavioral characteristics are perceived by first year dental hygiene students regarding the effective clinical teacher?

2. What behavioral characteristics are perceived by second year dental hygiene students regarding the effective clinical teacher?

3. Does a student's age affect his/her perceptions of what constitutes the effective clinical teacher?

4. Does a student's DHAT scores affect his/her perceptions of what constitutes the effective clinical teacher?

Significance of the Problem

In dental hygiene and other health professions, the relationship between students and instructors is significant because the student is strongly influenced by teacher behaviors; therefore, student response is a pertinent measure of teacher effectiveness.²⁴ Behaviors which would facilitate, motivate and hinder student learning could be identified by soliciting student input. The effective teaching behaviors which students consider important to their learning are not always the same effective teaching behaviors identified by faculty. For example, Evans and Massler⁷ conducted a study in which faculty rated technical competence (showing the student how) as first priority for contributing most to student's learning; however, students identified immediate availability as the prime requirement for contributing the

most to student learning. Upon presenting this discrepancy to the faculty, the student's priority for immediate presence in the clinic was agreed to be more accurate and important to the student's learning than that which the faculty originally identified, technical competence.

Both students and instructors could benefit from recognizing effective clinical teaching behaviors. Students might show a higher level of satisfaction in the program, and therefore, a decline in the rate of student attrition from dental hygiene program enrollment could result. Teachers might feel more satisfied as wasteful, ineffective efforts could be replaced by more effective behaviors which are better directed to student learning needs. Also, as the ineffective behaviors are replaced by the effective behavioral characteristics, a more efficient and economic use of the employed teachers could result.

None of the research reviewed in the literature dealt solely with dental hygiene clinical instruction and few with clinical instruction alone; therefore, an investigation into effective clinical teaching was warranted. Further research might indicate differences between student and faculty perceptions of effective and ineffective clinical teaching behaviors, and results could reveal implications for the way dental hygiene educators are prepared in graduate schools. For faculty who are currently teaching, the research data might suggest a

need for faculty development programs, and indicate ways to improve in-service programs for the effective clinical instructor. Finally, identification of effective and ineffective teaching behavior could be helpful in the construction of valid components in a guide for teacher evaluations.

Definition of Terms

The following terms were defined:

Effective clinical teacher -- A dental hygiene educator who's activities, actions and verbalizations facilitate student learning in the clinical setting³⁷ and who by nature of her position is a role model.

Role model -- A person who, by virtue of membership in or an incumbent of a position in an organization, exemplifies the standard of behavior which has been based on expectations.³⁷ A role model in dental hygiene would be a dental hygienist who is recognized by students to be effective and who students want to emulate.^{7,30}

Ineffective clinical teacher -- A dental hygiene educator who's activities, actions and verbalizations interfere with student learning in the clinical setting.³⁷

Expectations -- The standards of behavior that one believes should be demonstrated by an individual who is an incumbent of the position in an organization.³⁷

Behavioral characteristics -- Observable activities displayed by the instructor during a teaching-learning

interaction in the clinical setting as measured by the Effective Teaching Behaviors Questionnaire.

First year dental hygiene student -- An individual who is enrolled in the first year of an accredited dental hygiene program.

Second year dental hygiene student -- An individual who is enrolled in the second year of an accredited dental hygiene program.

Dental Hygiene Aptitude Test (DHAT) -- A standardized test designed by the American Dental Hygienists' Association which is often used as criteria for entrance into a dental hygiene program. Line A scores identify performance relative to other applicants with the same level of education.

Assumptions

The following assumptions were made:

1. First and second year students expect their clinical teacher to be a role model.^{17,21,22,37}
2. Behavioral characteristics of clinical dental hygiene instructors are measurable constructs.
3. Behavioral characteristics of the effective clinical dental hygiene instructor change according to the level of dental hygiene students within the curriculum.
4. The instrument, Effective Teaching Behaviors Questionnaire, is a valid and reliable measure of the

behavioral characteristics of effective clinical dental hygiene instructors.

5. Students answered the questionnaire honestly and completely.

6. Standardized instructions were provided to each of the five institutions and used to control for variation in test administration.

Limitations

The validity of the results might be limited by the following:

1. The self-designed questionnaire does not have established reliability and validity coefficients; however, a pilot study was conducted to establish content validity and test-retest reliability.

2. Subject-selection bias might exist as respondents to the questionnaire were volunteers and comprised intact groups.

Hypotheses

The null hypotheses tested were:

1. There are no statistically significant differences at the 0.01 level in the perceptions of first year and second year dental hygiene students regarding the behavioral characteristics portrayed by the effective clinical teacher as measured by the Effective Teaching Behaviors Questionnaire.

2. There is no statistically significant difference at the 0.01 level between student's age and his/her perceptions of what constitutes the effective clinical instructor.

3. There is no statistically significant difference at the 0.01 level between student's DHAT scores and what constitutes the effective clinical instructor.

Methodology

A self-designed questionnaire was used to collect information on first and second year dental hygiene students' perceptions of the effective clinical instructor. The questionnaire was reviewed by dental hygiene faculty members from Old Dominion University and then revised and tested in a pilot study. Five schools were selected for study on the basis that they were accredited baccalaureate degree and associate degree dental hygiene programs and on the basis of geographic location. Prior to initiating any procedures, a faculty member from each participating institution was contacted by telephone to clarify their roles as test administrators in the study. A faculty member from each of the five participating dental hygiene programs administered the questionnaire to students within a predetermined time period using a set of standardized instructions. Data were analyzed using frequencies, percentages and chi square.

Chapter 2

REVIEW OF LITERATURE

The historical development of research on teaching followed distinct stages. From the early 1900's to approximately 1952 the majority of studies concentrated on the relationship between teacher characteristics and effective teaching.³² In the remainder of the 1950's and early 1960's the study of teacher personality was of dominant interest.⁴⁵ From the late 1960's to the early 1970's teacher behavior investigations predominated.⁴⁴

In looking for the relationship between teachers' characteristics, personality and behavior, and learner achievement, the following variables emerge consistently:

1. enthusiasm (vigor and power),
2. clarity (organization),
3. criticism (negative achievement relationship),
4. task oriented attitude (business-like),
5. flexibility, and
6. positive feedback.

Teacher traits of personality and characteristics are given little value in the issue of effective teaching probably because few studies have produced

significant results.^{13,15} This literature review progresses from general personality characteristics in the classroom/clinical teaching behavior to clinical behaviors, and finally to characteristics of baccalaureate and associate degree students.

Personality and Personal Characteristics of the Effective Teacher -- Classroom and Clinic

Solomon, Bezdek, and Rosenberg⁴¹ related teaching behavior to learning outcomes and were successful in identifying eight characteristics which are related to two measures of learning and to student's evaluations of their teachers. The methodology used was factor analysis in which it is possible to evaluate empirically the accuracy of the theoretical construct, effective teaching behaviors.

In an evening introductory college credit course, classroom behavior of 24 teachers from 13 colleges was measured by means of student descriptive questionnaires, teacher questionnaires, observer rating of two class sessions of teachers' behaviors and a detailed analysis of tape recordings of the same two observed class sessions. The results showed that "clear and expressive" behavior related to cognitive gain, that "energetic and flamboyant" behavior related to comprehension gain, and the "clear, expressive and warm" behavior related to positive student evaluation.^{19,41} Results were clear, but the small sample limited the findings' generalizability.

Solomon⁴² continued the study and rectified the limitations by using a larger sample of teachers (N=229) and a broader range of adult evening courses at five colleges; however, the results remained much the same.

Houston²² used a modified form of judgement analysis on selected students from the University of Northern Colorado who were grouped according to grade level, reasons for taking the course and major school in which they were enrolled. The number of evaluations of individual faculty members by the students was 20,247; for the study's purpose the students were grouped into named subsets to determine if the different policies would emerge according to the three groups. Regardless of the groupings, student concern for the following personal characteristics of the instructor emerged: instructor's interest, enthusiasm, interpersonal relationships, ability to communicate, and ability to stimulate interest and motivate students.^{1,15,17,19,22-26,31-34,36}

Jensen²⁵ summarized critical requirements of effective classroom teachers into three general categories:

1. Personal qualities -- cheerfulness, self-control, sense of humor, admits mistakes and fairness;

2. Professional qualities -- flexibility, stimulates interest, clarity, encouraging, disciplines fairly and quietly, gives constructive criticism and foresees and resolves potential difficulties; and

3. Social qualities -- shows understanding, sympathetic, democratic, helpful in educational and personal problems, gives praise to those deserving, anticipates reactions and encourages.

Flanagan⁹ formulated a method of data collection he called the critical incident technique. Barham,¹ a nurse educator, was one of the first to use critical incidents in identification of effective and ineffective classroom and clinical teaching behavior. Out of 19 behaviors, 80 percent of the critical incidents used dealt with behaviors which involved an aspect of interpersonal relationship with the instructors. Checks on the reliability of the categorical placement of the incidents were recorded; however, these checks were based on the subjective judgements of several experts using only a sample of the collected responses.

In a nursing study using modified critical incidents, Jacobson²⁴ found the following effective behaviors for the classroom and clinic:

1. is available to students;
2. demonstrates own ability as nurse and teacher;
3. shows skill in interpersonal relationships;
4. demonstrates organized teaching practices;
5. exhibits personal characteristics of warmth, flexibility, sense of humor and enthusiasm; and
6. demonstrates fair evaluation practices.

The population sample included 85.57 percent of the

undergraduate students in five of the eight universities in the southern region, and the student participation was voluntary. Twenty-one group interviews were conducted by one person using a standard manner and oral instructions in which the students wrote as many recent effective and ineffective incidents as possible in a 50 minute time period.

A total of 1,345 critical incidents were collected; 1,182 were usable according to criteria of recency, specificity and the definition of a nursing course. The coded data were transferred to computer cards, analyzed for frequency and percentage and tested for significance of relationships by using chi square and the Kendall Tau C. The critical requirements were derived from the effective and ineffective incidents by content analysis, categorization and a final review by three judges.

Jacobson²⁴ evaluated only the placement of items into categories, not the formation of the categories themselves. Another criticism is the need to expand the study to varying geographical areas. An interesting fact noted from this study was that the number of ineffective incidents increased as faculty-student ratio increased.

Kiker²⁶ "loosely grouped" 12 effective teacher characteristics into three categories:

1. Professional competence -- which included items such as flexibility, creativity, encouragement of

independent thinking and learning and confidence in self as a professional;

2. Relationships with students -- such as fairness; and

3. Personal attributes -- which included appearance, voice and sense of humor, especially in the anxiety relief of clinical situations.

In two Texas universities, Kiker²⁶ conducted an exploratory study to compare the characteristics of teaching effectiveness in the classroom and clinic considered most essential by the following three groups of students (N=107): graduate nursing students enrolled in a nursing education course, undergraduates enrolled in a junior-level nursing course and undergraduates enrolled in a junior-level education course. Participation was voluntary and random selection was not used because the researcher believed the students would be representative of their fellow students. A questionnaire was used in testing 12 characteristics which the students ranked in order of most essential to least essential. Percentages were tabulated as ranked by the three groups for each characteristic. The findings showed that undergraduate students in nursing and education regard instructor's relationships with students and personal attributes as being slightly less important than professional competence. These students were more likely to rank relationships with students within the top quarter than

were the graduate students who were assumed to be teachers or future teachers.

Using a three-stage study to identify and validate constructs, Dixon and Koerner⁶ defined two factors essential for classroom teachers of nursing: (1) individualized prescriptive growth which included items relating to teachers' ability to use evaluation as a method of fostering student interaction and growth, and (2) systematic-theoretical orientation which centered on classroom presentations. The study was conducted in three stages. Two small-scale preliminary studies were used to define theoretical constructs and behavioral items before the major factor analytic component of the project was undertaken. Stage one dealt with content validity as determined by judgemental data submitted by faculty members. Stage two involved a known-groups validity procedure. Stage three examined dimensions of teaching effectiveness used by students as revealed by factors analysis of large-response data matrix. Because a small sample was used, replication is necessary before considering the results generalizable.

Hilderbrand²⁰ conducted a study at the University of California in which students were asked to nominate best and worst teachers as a beginning step in defining teacher effectiveness. Items for a questionnaire were formulated from the information and were then completed in 51 classes taught by the "best" and "worst" teachers.

Items found to discriminate between these teachers included the ability to make a subject easy to understand, and the demonstration of enthusiasm and scholarship. The 91 items on the questionnaire were analyzed; five clusters were defined:

1. Analytic/Synthetic approach,
2. Organization and clarity,
3. Instructor-group interaction,
4. Instructor-individual student interaction, and
5. Dynamism and enthusiasm.

Independent groups of students, as well as students and faculty, agreed closely in their identification of "best" and "worst" teachers.

Teacher Behavior -- Clinical Instruction

Some researchers identified the teacher's availability to students as being of primary importance in aiding students' learning.^{7,33,34,45} Technical skill and professional competence ranked a close second as an aid to student learning.^{7,26,45} Judgement and evaluation skills also predominate in importance.^{6,7,33,34,45} Treating students with respect and avoiding humiliating them in front of a patient were identified frequently by researchers.^{8,22,33} Other behaviors cited by researchers as being effective include being a professional role model;^{7,30,37} providing positive, honest and clear feedback on progress;^{6,33,34,45} being organized^{6,26,33,35} and having a sense of humor.^{26,45}

In summary, some researchers contend that teaching is an art which cannot be measured or defined. However, in reviewing the research, the characteristics of effective teaching have been delimited with some success. Although former studies deal with general college teachers and latter studies with nursing instructors in the classroom and clinical setting, one can note similarities in the findings. Nursing students seem to evaluate their instructors in an almost identical manner as students within the general college population; perhaps these research studies might have significance in helping dental hygiene educators to define behaviors characteristic of the effective clinical instructor.

Student Characteristics --Baccalaureate versus Associate Degree

Few studies have been done to determine characteristic differences between dental hygiene students of two and four year programs. Frank and Kirk¹² described the typical dental hygiene student in a four year program as being strong in science aptitude, mechanical ability and spacial visualization; however, the four year dental hygiene student demonstrated low interest in domestic activities, business and linguistics. Generally, baccalaureate degree students are achievement oriented, conforming, well adjusted, and socially outgoing.

Martinez et al.²⁹ compared students of two and four year dental hygiene programs using the following three instruments:

1. past academic achievement by computation of high school rank,
2. aptitude measures using the DHAT scores, and
3. personality characteristics as measured by the Adjective Check List (ACL).

From a large Midwestern urban university and large urban area technical college, 191 female dental hygiene students were surveyed. One hundred seven students had completed the baccalaureate degree program of the surveyed university; 36 of the 191 students had completed the two year technical college program in question, and the remaining 48 students had completed two of the four years at the university in question. The latter group was included to determine if true personality differences as measured by the ACL existed rather than their being effects of maturation or education levels.

Data were analyzed using a multivariate analysis of variance which showed significant differences between baccalaureate and technical college students on high school rank; two of the four DHAT subtests (science and verbal); and the following ACL scales: total number of adjectives checked, personal adjustment, endurance, nurturance, affiliation and aggression. No significant differences existed between the two groups of baccalaureate

degree students; therefore, one can conclude that true descriptive differences exist between two and four year dental hygiene students not attributed to maturational or educational levels.

Associate degree students were found to have significantly lower high school rank, aptitude scores and ACL scores than the two groups of baccalaureate students. Lower high school rank and aptitude scores were attributed to technical college admission requirements, but low scores on ACL scales appear to indicate relative moodiness, dissatisfaction with others (personal adjustment), less tolerance of prolonged effort or difficulties (endurance), and less awareness of feelings of others (nurturance). Associate degree dental hygiene students are characterized as more competitive, aggressive, enthusiastic, and emotionally open when compared to baccalaureate degree dental hygiene students.

Finally, when looking at ACL scores for both the baccalaureate and associate degree dental hygiene students, the scores implied that, overall, dental hygiene students are relatively individualistic, self-centered, and somewhat dissatisfied with others.²⁹ In summary, results from Frank and Kirk¹² and Martinez et al.²⁹ revealed descriptive characteristics which differentiate between successful baccalaureate and associate degree students. Results showed that associate degree students scored lower on high school rank, aptitude and personality

characteristics as measured by the ACL than did baccalaureate degree students.

Whether teaching is too complex to be defined as a set of teacher behaviors or competencies is yet to be resolved. However, the following variables can be defined and emerge consistently when relating teacher traits to positive learner achievement: enthusiasm or dynamism,^{13,15,20,22,24} organization,^{6,20,24,26,33,35} clarity in teaching and feedback to students,^{6,13,15,20,25,33,34,41,45} and ability to communicate and interact with an individual or group.^{20,22,24,25} Additional behavioral characteristics of a clinical teacher which can be identified as having a positive relationship to student learning are a teacher's availability to students,^{7,24,33,35,45} professional competence^{7,24-26,45} and evaluation skills.^{6,7,33,34,45} Perhaps if the clinical dental hygiene instructor would consider the teacher variables defined in the literature and the students' characteristics, dental hygiene educators could make their teaching efforts more effective.

Chapter 3

METHODS AND MATERIALS

A self-designed questionnaire was sent to three accredited baccalaureate dental hygiene degree programs and two accredited associate degree community college dental hygiene programs in three varying locations within the United States (see Appendix A). Data were obtained from first and second years students about their perceptions of the behavioral characteristics of effective clinical teachers.

Sample Description

The sample included the entire population of first and second year students in each of the five accredited dental hygiene schools (N=291). Three accredited baccalaureate degree dental hygiene programs, University of Minnesota (N=93), University of West Virginia (N=43), and Ohio State University (N=90) and two associate degree community college accredited dental hygiene programs, Lakeland Community College (N=38) and Des Moines Area Community College (N=27) were chosen because of geographical location to make results applicable to several geographical areas. In order to question students at

similar developmental levels, the instrument was administered to the first and second year dental hygiene students in each institution within a three week period. Of the selected sample of 277 dental hygiene students, all were females within the age range of 18 to 36 years. Identified most frequently were the ages 19, 20, 21 and 22 with the majority of 19 year olds in the first year class and the majority of 22 year olds in the second year class. Of the 277 questioned, 120 were first year and 157 were second year students. Also, only 65 students were from community colleges. The remaining 212 dental hygiene students were from baccalaureate degree institutions (see Table 1).

Methodology

A descriptive research approach and a self-designed questionnaire were used to obtain information regarding first and second year students' perceptions of what constitutes the effective clinical teacher. Data were grouped by student age and DHAT scores (Line A) to determine if these variables were related to students' perceptions. Measurements of the variable, behavioral characteristics of the effective clinical teacher, were achieved by analyzing the nominal and ordinal items on the questionnaire.

A purposive sample of the five dental hygiene programs was obtained according to varying geographical location. Consent for administering the instrument was

Table 1

First and Second Year Dental Hygiene Students' Ages Listed by
Age Category and Participating School

Age	First Year Class	Second Year Class	Total
18	6	0	6
19	33	6	39
20	36	43	79
21	18	54	72
22	6	29	35
23	8	7	15
24	3	5	8
25	2	3	5
26	1	5	6
27	1	0	1
28	1	0	1
29	1	0	1
30	2	1	3
31	0	2	2
32	2	0	2
33	0	0	0
34	0	0	0
35	0	1	1
36	0	1	1
			<u>1</u>
		TOTAL	277
University of Minnesota	31	48	79
Ohio State University	30	60	90
University of West Virginia	22	21	43
Lakeland Community College	23	15	38
Des Moines Area Community College	<u>14</u>	<u>13</u>	<u>27</u>
TOTALS	120	157	277

obtained from each dental hygiene program director prior to mailing the questionnaire packets to the institutions. To control for extraneous variables, standardized oral instructions were given by a faculty member from each of the five participating institutions to first and second year dental hygiene students before administering the instrument (see Appendix B). A cover letter was included in the packet explaining the purpose of the study and assuring confidentiality of the responding students (see Appendix C). Each institution returned the answer sheets and student consent forms to the researcher.

Human Subjects

The rights of the human subjects were protected by using the following guidelines:

1. Subject population -- The research investigation required the utilization of all first and second year dental hygiene students within the five chosen accredited dental hygiene programs. The populations were selected because of their respective geographical location.

2. Potential risks -- The descriptive procedure involved no risks to the subjects. All responses remained confidential and the data were reported in group form only.

3. Consent procedures -- Subject participation was voluntary. Consent of each institution to be in the research study was obtained prior to mailing the questionnaire packets.

4. Potential benefits -- The data gathered in the study provided information on first and second year dental hygiene students' perceptions of the behavioral characteristics of a clinical instructor. This information proved to be beneficial in defining effective behavioral characteristics of clinical instructors. It may be beneficial to students and instructors in the following ways: a lower attrition rate could result as students' satisfaction with effective teaching increases; teacher satisfaction could result as more effective behaviors could be directed to student needs; a guide for identifying components in teacher evaluations could result; changes in a dental hygiene educator's preparation could be indicated; new faculty development programs and the improvement of existing in-service programs could be indicated.

5. Risk-benefit ratio -- When no risk is involved, the outcome of the study can only be beneficial.

Instrumentation

Faculty members from Old Dominion University critically reviewed the self-designed questionnaire; their comments were used to revise the questionnaire. Once revisions were made, a pilot study was conducted on the first and second year students of Old Dominion University to determine test-retest reliability and validity of the instrument. The students were given the questionnaire

one week apart and the results were correlated. The test-retest reliability coefficient for first year and second year students was $r=+.85$ and $r=+.89$, respectively.

Background information for the questionnaire identified the student's age, DHAT scores (Line A), dental hygiene school and class status. Questions 1 thru 10 tested the assumption that clinical instructors are perceived as role models. Question 1 directly identified who the students perceive to be the primary role model. Question 2 was related to 1; however, the students determined who the primary role model is under ideal conditions. Questions 4 thru 10 were rated on an ordinal scale to determine what the students' opinions were of the clinical instructor's function in case it was not as a role model. Question 3 assessed the kind of behavior students were most likely to learn from their clinical instructors. The remaining questionnaire items (11 thru 98) were rated on an ordinal scale of measurement to identify behavioral characteristics of effective clinical teachers as defined by first and second year dental hygiene student's perceptions.

The questionnaire was designed by using and modifying several items from the following three instruments: "Role Models in Nursing: Student Questionnaire" by Melick;³⁰ "Teacher Evaluation Opinion Form" by Lowery;²⁸ and the "Teacher Effectiveness Rating Scale" by Davidson.⁵

Melick's³⁰ role model instrument has established some degree of content validity which is ensured by the procedures used in developing the instrument; no empirical data relevant to reliability were found (questions 1 thru 10 were taken from this instrument). Lowery's instrument from which questions 11 thru 35 were taken has construct validity²⁸ using 386 undergraduate nursing students, 74 graduate nursing students and 74 nursing faculty from four colleges in a metropolitan area in the east. Responses were factor analyzed using a principle components method.²⁸ Factors with latent roots greater than 100 were retained. The four factors were interpersonal elements in teaching practices, personal warmth in the teacher, teacher's inspiration of the students and teacher's knowledge of the subject matter. Data relevant to reliability were not provided. Questions 85 thru 97 were taken from Davidson's instrument.⁵ Although no reliability data were provided, the instrument was reported to have some degree of content validity.⁵ A letter requesting permission for the use of several items was sent to the authors prior to initiating any of the study procedures; permission was granted (see Appendix D).

Statistical Treatment

Descriptive statistics, frequencies and percentages were used in analyzing questions 1 thru 10. Data obtained from responses relating to the hypotheses

(questions 11 thru 98) were analyzed using chi square (cross tables) at the 0.01 significance level.

Chapter 4

RESULTS AND DISCUSSION

Two hundred ninety-one dental hygiene students completed the Effective Teaching Behaviors Questionnaire. All data (291 questionnaires) were used in analyzing results by age; however, only 277 questionnaires were used to analyze results by class (first and second year) and DHAT scores (science, numerical, verbal and reading). All hypotheses were tested at the 0.01 level of significance.

Results

Questions 1 thru 10. Question 1 identified who dental hygiene students perceive as their primary role model. Students (N=277) most frequently identified full-time clinical instructors (54.2%), followed by clinical supervisor (27.4%), part-time clinical instructors (13.4%), non-clinical dental hygiene faculty (2.9%) and a combination of full and part-time clinical instructors and clinical supervisor (2.2%) (see Table 2).

Question 2 determined who the students (N=277) thought should function as primary role model under ideal conditions (see Table 3). Listed in order of highest to

Table 2

Dental Hygiene Students' Opinions Regarding Their
Primary Role Model for Providing Quality
Dental Hygiene Care in Clinic

Question 1 Identified Primary Role Model	Highest to Lowest Frequency	Percent
1. Full-Time Instructors	150	54.2
2. Clinical Supervisor	76	27.4
3. Part-Time Instructors	37	13.4
4. Non-Clinical Dental Hygiene Faculty	8	2.9
5. Combination of 1, 2, 3	6	2.2
TOTAL	277	100.0

Table 3

Dental Hygiene Students' Opinions Regarding
Their Primary Role Model in Clinic
Under Ideal Conditions

Question 2 Preferred Primary Role Model	Highest to Lowest Frequency	Percent
1. Full-Time Instructors	157	56.7
2. Clinical Supervisors	89	32.1
3. Part-Time Instructors	20	7.2
4. Combination of 1, 2, 3	7	2.5
5. Non-Clinical Dental Hygiene Faculty	4	1.4
TOTAL	277	100.0

lowest frequency were full-time clinical instructors (56.7%), clinical supervisor (32.1%), part-time clinical instructors (7.2%), a combination of the three listed (2.5%) and non-clinical dental hygiene faculty (1.4%).

The skills students identified as most frequently emulated from their instructor included client/patient care (67.5%), problem solving skills (21.3%), interpersonal relations with health care members (4.7%), emotional support of client/patient (3.2%) and instrumentation skills and a combination of all those listed (3.2%) (see Table 4).

Questions 4 thru 10 (ordinally scaled) determined the student's opinions regarding the instructor's function in clinic. The 277 students questioned contended that the clinical instructor functioned always as evaluator (61.7%), role model (43.0%), supervisor (48.7%), and expert on dental hygiene care (55.6%); usually and always as consultant (usually 38.6%, always 41.9%) and client/patient caregiver (usually 34.7%, always 32.5%); and sometimes as a counselor (42.2%) (see Table 5).

Hypothesis 1. Data were analyzed to test the hypothesis that there are no statistically significant differences in the perceptions of first and second year dental hygiene students regarding the behavioral characteristics portrayed by the effective clinical teacher as measured by the Effective Teaching Behaviors Questionnaire.

Table 4

Dental Hygiene Students' Opinions of What Skills They
Are Most Likely to Learn From a Clinical
Dental Hygiene Instructor

Question 3 Skills Modeled from Instructors	Highest to Lowest Frequency	Percent
1. Client/Patient Care	187	67.5
2. Problem Solving Skills	59	21.3
3. Interpersonal Relationships with Health Team Members	13	4.7
4. Emotional Support of Client/Patient	9	3.2
5. Instrumentation and All Above	9	3.2
TOTAL	277	100.0

Table 5

Dental Hygiene Students' Ideas of the Functions of the Clinical Instructor

Question	Never		Hardly Ever		Sometimes		Usually		Always	
	#Students	Percent	#Students	Percent	#Students	Percent	#Students	Percent	#Students	Percent
4. Functions as Counselor	5	1.8	13	4.7	117	42.2	91	32.9	51	18.4
5. Functions as Evaluator	1	0.4	3	1.1	17	6.1	85	30.7	171	61.7
6. Functions as Role Model	3	1.1	6	2.2	48	17.3	101	36.5	119	43.0
7. Functions as Supervisor	0	0.0	5	1.8	41	41.8	96	34.7	135	48.7
8. Functions as Expert on Dental Hygiene Care	1	0.4	4	1.4	26	9.4	92	33.2	154	55.6
9. Functions as Consultant	1	0.4	3	1.1	50	18.1	107	38.6	116	41.9
10. Functions as Client/Patient Caregiver	2	0.7	23	8.3	66	23.8	96	34.7	90	32.9

Using chi square, data revealed a statistically significant difference between first and second year dental hygiene students' perceptions on nine of the 88 (10.22%) clinical instructor's behavioral characteristics. The nine clinical instructor's behavioral characteristics were: formulates precise objectives, gives correction at time of error, is aware when students are not keeping up with the rest of the class, creates atmosphere conducive to learning, conducts group discussions which are productive and encouraging, participates in research, interprets abstract ideas and theories clearly, is able to direct learning situations and relates underlying theory to clinical situations (see Table 6). First year dental hygiene students viewed all of the listed behaviors as being significantly more important than did second year students. All of the behaviors were considered to be of "extreme importance" to first year students with one exception, participates in research, which was "very important" to first year students. Data revealed seven additional significant differences at the 0.05 level in the perceptions of first and second year dental hygiene students regarding the behavioral characteristics portrayed by the effective clinical teacher: corrects tactfully without devaluating, is scholarly, speech is fluent and understandable, voice is well modulated and non-distracting, presents subject matter in an informative manner, stimulates intellectual curiosity, and

Table 6

Questionnaire Data Percentage Results of the Significant Differences at the 0.01 Level Between Students' Class Status and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance		Moderate Importance		Very Important		Extreme Importance		No Opinion		χ^2
	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	
11. Formulates Precise Objectives	0.0	3.2	3.3	15.9	27.5	31.8	66.7	45.2	2.5	3.8	0.0004
22. Gives Correction at Time of Error	0.0	0.0	2.5	12.1	26.7	44.6	67.5	42.0	3.3	1.3	0.0000
48. Is Aware When Students are not Keeping Up with the Rest of the Class	0.0	0.6	2.5	14.0	30.8	35.7	64.2	49.7	2.5	0.0	0.0014
49. Conducts Group Discussions Which are Productive and Encouraging	1.7	0.6	6.7	16.6	35.8	45.2	54.2	38.9	1.7	0.6	0.0125
53. Participates in Research	6.7	15.3	26.7	35.7	33.3	30.6	28.3	14.6	5.0	3.8	0.0130
77. Interprets Abstract Ideas and Theories Clearly	0.8	1.9	4.2	16.6	36.7	37.6	55.8	42.0	2.5	1.9	0.0128
84. Is Able to Direct Learning Situations	0.0	0.6	2.5	4.5	21.7	37.6	75.0	54.8	0.8	2.5	0.0135
85. Creates Atmosphere Conducive to Learning	0.0	0.0	1.7	2.5	15.0	31.2	82.5	64.3	0.8	1.9	0.0103
94. Relates Underlying Theory to Clinical Situations	0.0	1.9	4.2	14.0	20.0	39.5	65.0	44.6	0.9	0.0	0.0016

refers student to additional resource persons and materials (see Table 7). The rest of the 72 clinical instructor behavioral characteristics were viewed similarly by both first and second year dental hygiene students.

Hypothesis 2. Data were examined to determine if a statistically significant difference existed between student's age and his/her perceptions of what constitutes the effective clinical instructor at the 0.01 significance level. From questions 11 thru 98, the following three teacher behaviors were found significant: alleviates student anxiety, conducts group discussions which are productive and encouraging (also identified as significant in hypothesis 1) and sets realistic goals for the students. The group of 23 year old students was the outlier age rating the teacher behavior, alleviates student anxiety, as being "very important" as compared to the age groups of 19 and under, 20, 21, 22 and 24 and above who rated the behavior of "extreme importance." Individuals in the age bracket 19 and under showed the highest percentage of students who contend that the teacher trait, conducts group discussions which are productive and encouraging, to be of "extreme importance." The other age groups were found to rate group discussions in the range of "little to no importance" to "extreme importance."

Table 7

Questionnaire Data Percentage Results of the Significant Differences at the 0.05 Level Between Students' Class Status and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance		Moderate Importance		Very Important		Extreme Importance		No Opinion		χ^2
	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	1st yr	2nd yr	
19. Corrects Tactfully Without Devaluating	0.0	0.0	6.7	1.3	21.7	18.5	71.7	78.3	0.0	1.9	0.0363
52. Is Scholarly	4.2	4.5	15.8	28.0	40.8	43.3	38.3	22.3	0.8	1.9	0.0256
55. Speech is Fluent and Understandable	0.0	0.6	3.3	10.8	26.7	33.1	67.5	55.4	2.5	0.0	0.0152
65. Voice is Well Modulated and Non-distracting	14.3	85.7	6.7	12.1	33.3	42.0	55.8	40.8	3.3	1.3	0.0341
67. Presents Subject Matter in an Informative Manner	0.0	0.6	1.7	7.6	26.7	34.4	71.7	56.1	0.0	1.3	0.0260
68. Stimulates Intellectual Curiosity	0.0	0.6	6.7	10.2	34.2	46.5	57.5	42.7	1.7	0.0	0.0419
93. Refers Student to Additional Resource Persons and Materials	0.8	1.3	8.3	17.8	36.7	40.1	51.7	40.8	2.5	0.0	0.0327

Setting realistic goals for students was rated by the younger students (18-21) and older students (24-36) as being of "extreme importance." The age groups of 22 and 23 contended the teacher trait of setting realistic goals for the students as "very important" (see Table 8). One additional characteristic, is able to interest students in subject matter, was found to be significant at the 0.05 level between students' age and their perceptions of what constitutes the effective clinical instructor (see Table 9). The remaining 84 clinical instructor behavioral characteristics were viewed similarly by all age groups.

Hypothesis 3. Data were analyzed to determine if a statistically significant difference occurred between the DHAT scores of first and second year students and their perceptions of the behavioral characteristics of the effective clinical teacher. Reading scores showed a statistically significant difference between high (7-9), mid-range (4-6) and low (-1 -3) scoring dental hygiene students on 14 of 88 (15.9%) clinical instructor's behavioral characteristics. The 14 teacher behaviors the students identified were the following: provides opportunity for practice before evaluation, gives assignments related to clinic, is a resource person, encourages students to think for themselves, inspires to extra effort, speech is fluent and understandable, is flexible,

Table 8

Questionnaire Data Percentage Results of the Significant Differences at the 0.01 Level
Between Students' Age and Their Perceptions of the Behavioral Characteristics
as Portrayed by the Effective Clinical Teacher

	Little to No Importance						Moderate Importance						Very Important						Extreme Importance						No Opinion						χ^2
	19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	
41. Alleviates Student Anxiety	2.0	0.0	0.0	0.0	11.8	0.0	6.1	3.6	10.8	2.8	5.9	9.4	30.6	38.6	23.0	22.2	52.9	28.1	57.1	57.8	60.8	75.0	23.5	62.5	4.1	0.0	5.4	0.0	5.9	0.0	0.0008
49. Conducts Productive and Encouraging Group Discussions	0.0	0.0	0.0	2.8	11.8	0.0	2.0	13.3	14.9	22.2	5.9	9.4	36.7	39.8	48.6	30.6	29.4	50.0	57.1	47.0	35.1	44.4	52.9	40.6	4.1	0.0	1.4	0.0	0.0	0.0	0.0013
86. Sets Realistic Goals for the Students	0.0	0.0	0.0	0.0	5.9	0.0	0.0	1.2	2.7	2.8	11.8	3.1	14.3	19.3	12.2	30.6	17.6	12.5	83.7	79.5	83.8	63.9	58.8	84.4	2.0	0.0	1.4	2.8	5.9	0.0	0.0118

Table 9

Questionnaire Data Percentage Results of the Significant Differences at the 0.05 Level
Between Students' Age and Their Perceptions of the Behavioral Characteristics
as Portrayed by the Effective Clinical Teacher

Little to No Importance						Moderate Importance						Very Important						Extreme Importance						No Opinion						x ²
19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	19	20	21	22	23	24	
0.0	0.0	0.0	0.0	5.9	0.0	2.0	2.4	2.7	2.8	11.8	0.0	22.4	36.1	33.8	41.7	47.1	40.6	73.5	61.4	62.2	52.8	35.3	59.4	2.0	0.0	1.4	2.8	0.0	0.0	0.0394

voice is well modulated and non-distracting, gives assignments which are pertinent to clinical objectives, anticipates or quickly perceives student difficulties, is a counselor and advisor, demonstrates willingness to help with questions, has a sympathetic attitude toward students and evidences willingness to help with problems.

The low and mid-range scoring students contended that all of the 14 teacher characteristics were "very important" to "extreme importance"; whereas, high scorers felt the behaviors ranged from "moderate importance" to "extreme importance." In all cases except for one (provides opportunity to practice before evaluation), individuals in the low and mid-range scoring categories considered each behavior of more importance than did students with high scores (see Table 10). Data revealed 12 additional significant differences at the 0.05 level between students scoring high, mid-range and low on reading DHAT scores and their perceptions of the effective clinical teacher. The characteristics were formulates precise objectives, explains how each topic fits into the clinical course outline, takes advantage of new or unexpected situations when they occur to show relationships to subject under study, demonstrates technical skills where required, is aware when students are not keeping up with the rest of the class, uses clinic time efficiently, participates in research, is physically capable, mentally alert, is well informed and able to

Table 10

Questionnaire Data Percentage Results of the Significant Differences at the 0.01 Level Between Students' Reading DHAT Scores and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			x ²
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	
26. Provides Opportunity for Practice Before Evaluation	0.0	0.0	1.9	1.9	1.8	1.9	30.8	12.3	33.3	65.4	84.8	61.1	1.9	1.2	1.9	0.0061
31. Gives Clinic Related Assignments	1.9	1.8	5.6	9.6	8.8	31.5	40.5	46.8	38.9	46.2	40.2	24.1	1.9	2.3	0.0	0.0016
34. Is a Resource Person	0.0	0.0	1.9	3.8	5.8	13.0	26.9	25.7	48.1	65.4	65.5	35.2	3.8	2.9	1.9	0.0047
35. Encourages Students to Think for Themselves	1.9	0.0	0.0	1.9	5.3	11.1	30.8	32.2	53.7	61.5	62.6	35.2	3.8	0.0	0.0	0.0004
37. Inspires to Extra Effort	0.0	1.2	1.9	3.8	5.8	16.7	40.4	41.5	53.7	50.0	50.3	22.2	5.8	1.2	5.6	0.0047
55. Fluent and Understandable Speech	0.0	0.0	1.9	7.7	4.7	16.7	28.8	26.9	42.6	61.5	67.3	38.9	1.9	1.2	0.0	0.0056
59. Is Flexible	0.0	0.0	1.9	9.6	4.1	3.7	30.8	25.7	53.7	56.9	68.4	37.0	0.0	1.8	3.7	0.0013
65. Well Modulated and non-distracting Voice	0.0	3.5	1.9	13.5	7.0	14.8	32.7	34.5	55.6	53.8	52.6	24.1	0.0	2.3	3.7	0.0096

Table 10 (Concluded)

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			X ²
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	
70. Gives Assignments Which are Pertinent to Clinical Objectives	0.0	0.0	0.0	5.8	5.3	20.4	42.3	33.3	38.9	51.9	60.2	40.7	0.0	1.2	0.0	0.0093
74. Anticipates or Quickly Perceives Student Difficulties	0.0	0.0	1.9	1.9	1.8	9.3	32.7	25.1	40.7	65.4	71.9	48.1	0.0	1.3	0.0	0.0106
79. Is a Counselor and Advisor	0.0	0.6	5.6	3.8	5.3	24.1	30.8	31.2	33.3	65.4	61.8	35.2	0.0	1.2	1.9	0.0001
80. Demonstrates Willingness to Help With Questions	0.0	0.0	0.0	3.8	0.6	11.1	21.2	21.1	24.1	75.0	77.2	63.0	0.0	1.2	1.9	0.0125
81. Has a Sympathetic Attitude Towards Students	0.0	1.2	0.0	3.8	6.4	24.1	40.4	35.1	38.9	55.8	55.6	35.2	0.0	1.8	1.9	0.0054
88. Evidences Willingness to Help With Problems	0.0	0.0	0.0	1.9	1.2	5.6	21.2	24.0	40.7	76.9	74.9	51.9	0.0	0.0	1.9	0.0124

communicate information, is available to students in stressful situations, shows understanding and recognition of individuality of the student, and establishes an environment conducive to discussion and venting of feelings (see Table 11).

Verbal scores showed a statistically significant difference at the 0.01 level between high (7-9), mid-range (4-6) and low (-1 -3) scoring dental hygiene students on the following five of 88 (5.68%) clinical instructor's behavioral characteristics: formulates precise objectives (also identified as significant in hypothesis 1), stresses important materials, is concerned with learning versus testing, shows interest in making contributions to the improvement of dental hygiene and is well informed and able to communicate information.

The two teacher behaviors, formulates precise objectives and stresses important materials, were identified by low scoring students as being of "extreme importance" and evenly viewed by high scoring students as "extreme importance" and "very important." The two instructor characteristics, is well informed and able to communicate information, were found to be of "extreme importance" to low scorers, and of "extreme importance" to "very important" by mid-range scorers. High scoring students felt that showing interest in making contributions to the improvement of dental hygiene was "very important" to "moderate importance." Students with high

Table 11

Questionnaire Data Percentage Results of the Significant Differences at the 0.05 Level
Between Students' Reading DHAT Scores and Their Perceptions of the Behavioral
Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			χ^2
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	
11. Formulates Precise Objectives	3.8	0.0	5.6	5.8	9.9	16.7	26.9	29.8	33.3	55.8	57.9	42.6	7.7	2.3	1.9	0.0237
12. Explains How Each Topic Fits Into the Clinical Course Outline	0.0	1.2	5.6	11.5	7.0	20.4	34.6	37.4	42.6	51.9	53.8	31.5	1.9	0.6	0.0	0.0160
30. Takes Advantage of New or Unexpected Situations When They Occur to Show Relationship to Subject Under Study	0.0	0.0	1.9	1.9	8.8	13.0	23.1	31.0	42.6	73.1	56.7	42.6	1.9	3.5	0.0	0.0227
32. Demonstrates Technical Skill Where Required	0.0	0.0	0.0	7.7	0.6	9.3	17.3	21.1	27.8	73.1	77.2	61.1	1.9	1.2	1.9	0.0235
48. Is Aware When Students are Not Keeping Up With the Rest of the Class	1.9	0.0	0.0	9.6	7.6	13.0	40.4	29.2	40.7	44.2	62.6	46.3	3.8	0.6	1.9	0.0384

Table 11 (Concluded)

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			X ²
	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	
51. Uses Clinic Time Efficiently	0.0	0.0	0.0	5.8	1.2	9.3	25.0	22.2	22.2	65.4	76.0	66.7	3.8	0.6	1.9	0.0549
53. Participates in Research	5.8	11.1	18.5	25.0	29.8	44.4	38.5	33.3	20.4	21.2	22.8	13.0	9.6	2.9	2.7	0.0336
62. Is Physically Capable, Mentally Alert	0.0	0.0	0.0	3.8	0.0	7.4	26.9	23.4	22.2	67.3	76.0	68.5	1.9	0.6	1.9	0.0410
76. Is Well Informed and Able to Communicate Information	0.0	0.0	0.0	1.9	1.3	9.3	21.2	24.0	35.2	76.9	73.1	53.7	0.0	1.2	1.9	0.0360
78. Is Available to Students in Stressful Situations	1.9	0.6	1.9	3.8	5.3	11.1	15.4	18.7	35.2	78.8	73.7	48.1	0.0	1.8	3.7	0.0326
90. Shows Understanding and Recognition for Individuality of the Student	0.0	0.0	0.0	3.8	2.9	9.3	19.2	23.4	38.9	76.9	71.9	50.0	0.0	1.8	1.9	0.0406
97. Establishes an Environment Conducive to Discussion and Venting of Feelings	0.0	0.0	0.0	1.9	6.4	1.1	19.2	26.9	40.7	78.8	65.5	46.3	0.0	1.2	1.9	0.0372

scores were split between "very important" and "extreme importance" on the perception that an effective clinical instructor should be well informed and able to communicate information. Individuals with high and mid-range scores rated concern with learning versus testing as more important (extreme importance) than did low scoring students who felt the teacher trait was of "extreme importance" to "very important" (see Table 12). Eight additional significant differences were found at the 0.05 significance level between students scoring high, mid-range and low on verbal DHAT scores and their perceptions of the behavioral characteristics of the effective clinical instructor. These behavioral characteristics include: explains how each topic fits into the clinical course outline, is a resource person, inspires to extra effort, is sensitive to students' needs and feelings, participates in research, speech is fluent and understandable, is able to interest students in subject matter, and creates atmosphere conducive to learning (see Table 13).

Numerical scores showed a statistically significant difference between high (7-9), mid-range (4-6) and low (-1 - 3) scoring dental hygiene students on one of the 88 (1.13%) clinical instructor's behavioral characteristics. Students with low and mid-range numerical scores contended that instructor scholarliness was "very important"; whereas, high scorers felt instructor scholarliness was of "moderate importance" (see Table 14). Three additional

Table 12

Questionnaire Data Percentage Results of the Significant Differences at the 0.01 Level Between Students' Verbal DHAT Scores and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			X ²
	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	
11. Formulates Precise Objectives	0.0	1.2	8.6	8.3	10.0	17.1	33.8	28.2	31.4	51.4	59.4	37.1	6.9	1.2	5.7	0.0057
12. Stresses Important Material	0.0	0.0	0.0	2.8	0.6	5.7	22.2	11.2	22.9	75.0	87.6	65.7	0.0	0.6	5.7	0.0023
21. Is Concerned With Learning Versus Testing	5.6	0.0	2.9	5.6	4.1	0.0	29.2	18.2	22.9	54.2	75.3	74.3	5.6	2.4	0.0	0.0108
54. Shows Interest in Making Contributions to the Improvement of Dental Hygiene	1.4	0.0	0.0	4.2	17.6	28.6	30.6	35.9	45.7	62.5	45.3	27.7	1.4	1.2	0.0	0.0045
76. Is Well Informed and Able to Communicate Information	0.0	0.0	0.0	2.8	2.9	5.7	13.9	26.5	45.7	83.3	68.8	48.6	0.0	1.8	0.0	0.0126

Table 13

Questionnaire Data Percentage Results of the Significant Differences at the 0.05 Level
Between Students' Verbal DHAT Scores and Their Perceptions of the Behavioral
Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			x ²
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	
12. Explains How Each Topic Fits Into the Clinical Course Outline	2.8	0.6	5.7	6.9	10.6	17.1	41.7	33.5	51.4	47.2	54.7	25.7	1.4	0.6	0.0	0.0473
34. Is a Resource Person	0.0	0.0	2.9	5.6	5.3	17.1	29.2	30.0	34.3	59.7	62.4	45.7	5.6	2.4	0.0	0.0243
37. Inspires to Extra Effort	0.0	1.2	2.9	2.8	6.5	22.9	47.2	43.5	37.1	45.8	46.5	34.3	4.2	2.4	2.9	0.0284
43. Is Sensitive to Students' Needs and Feelings	0.0	1.2	0.0	4.2	3.5	5.7	26.4	19.4	48.6	69.4	74.1	45.7	0.0	1.8	0.0	0.0314
53. Participates in Research	4.2	14.7	11.4	23.6	31.8	48.6	37.5	31.2	22.9	27.8	18.8	14.3	6.9	3.5	2.9	0.0514
55. Speech is Fluent and Understandable	0.0	0.6	0.0	6.9	7.1	11.4	19.4	30.0	54.3	70.8	61.8	34.3	2.8	0.6	0.0	0.0159
66. Is Able to Interest Students in Subject Matter	0.0	0.0	2.9	4.2	1.8	5.7	23.6	37.1	45.7	72.2	59.4	45.7	0.0	1.8	0.0	0.0222
85. Creates Atmosphere Conducive to Learning	0.0	0.0	0.0	4.2	0.6	5.7	27.8	20.0	37.1	68.1	77.1	57.1	0.0	2.4	0.0	0.0331

Table 14

Questionnaire Data Percentage Results of the Significant Differences at the 0.01 Level Between Students' Numerical DHAT Scores and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			X ²
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	
	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	(-1-3)	(4-6)	(7-9)	
52. Is Scholarly	4.5	4.8	2.2	22.7	17.6	41.3	40.9	46.1	30.4	27.3	31.5	23.9	4.5	0.0	2.2	0.0129

significant differences at the 0.05 level between students scoring high, mid-range and low on numerical DHAT scores and their perceptions of the effective clinical teacher were revealed by data which were holds high expectations for students, is flexible, and is physically capable, mentally alert (see Table 15).

Data revealed no significant differences at the 0.01 or 0.05 level between science DHAT scores and students' perceptions of the behavioral characteristics portrayed by an effective clinical instructor. To conclude, 33 significant differences were revealed by data at the 0.01 significance level between students' perceptions of the behavioral characteristics portrayed by an effective clinical instructor and the students' class status, age and DHAT scores. An additional 30 significant differences were found at the 0.05 level between students' perceptions of behavioral characteristics that constitutes an effective clinical teacher and students' class status, age and DHAT scores. Table 16 shows a summary of the number and percentages of significant differences found at the 0.01 and 0.05 level between students' class status, age and DHAT scores and their perceptions of the behavioral characteristics portrayed by the effective clinical teacher.

Table 15

Questionnaire Data Percentage Results of the Significant Differences at the 0.05 Level
Between Students' Numerical DHAT Scores and Their Perceptions of the Behavioral
Characteristics as Portrayed by the Effective Clinical Teacher

Question	Little to No Importance			Moderate Importance			Very Important			Extreme Importance			No Opinion			X ²
	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	Low (-1-3)	Med (4-6)	High (7-9)	
20. Holds High Expectations for Students	6.1	2.4	0.0	12.1	17.6	15.2	51.5	40.6	65.2	30.3	37.6	19.6	0.0	1.8	0.0	0.0528
59. Is Flexible	0.0	0.6	0.0	7.6	3.6	6.5	18.2	32.7	50.0	72.7	61.2	41.3	1.5	1.8	2.2	0.0510
62. Is Physically Capable, Mentally Alert	0.0	0.0	0.0	1.5	0.6	8.7	22.7	26.1	17.4	72.7	72.7	73.9	3.0	0.6	0.0	0.0175

Table 16

Number of Significant Differences Found at the 0.01 and 0.05 Levels Between Students' Class Status, Age, and DHAT Scores and Their Perceptions of the Behavioral Characteristics as Portrayed by the Effective Clinical Teacher

Independent Variable	Number of Significant Differences		Number Not Significant		Percentage	
	0.01 Level	0.05 Level	0.01 Level	0.05 Level	0.01 Level	0.05 Level
Class	9	16	79	72	10.22	18.18
Age	3	4	85	84	3.40	4.54
Reading DHAT Scores	14	26	74	62	15.90	29.54
Verbal DHAT Scores	5	13	83	75	5.68	14.77
Numerical DHAT Scores	1	4	87	83	1.13	4.54
Science DHAT Scores	0	0	88	88	0.00	0.00

Discussion

Questions 1 thru 10. The results of analyses support the assumption that the clinical instructor functions as a role model. Forty-three percent of the students felt that the clinical instructor "always" functioned in clinic as a role model. Thirty-six point five percent contended the clinic instructor "usually" functioned as a role model; therefore, one could conclude that the assumption, the clinical teacher functions as role model, was supported by the results. Data also revealed that students believe the clinical teacher functions "always" as evaluator (61.7%) and as an expert on dental hygiene care (55.6%). Students perceived that the clinical instructor functions more often as a supervisor than as a client/patient caregiver, consultant or counselor (see Table 4; p. 31). Data suggested that students expect their clinical instructor to function "always" in the roles of evaluator, expert on dental hygiene care, supervisor and role model. Students depend on their clinical instructor to function "usually" or "always" as a consultant and a caregiver to patients. Perhaps students feel that the services to be rendered to patients are a responsibility that they have been given and accept. Also, students expect their clinical instructor to act as a counselor but that counseling is a secondary role in which the clinical instructor functions.

As assessed by question 1, the students' perceived the primary role model was the full-time clinical instructor. Under ideal conditions, the students again chose full-time clinical instructors as their preferred role model. The students' second choice of both the perceived and ideal role model was the clinical supervisor, and the third choice was part-time clinical instructors. Students perceived the non-clinical dental hygiene faculty as their fourth choice of role model; however, under ideal conditions would prefer to emulate a combination of full and part-time clinical instructors and clinical supervisors. Data implied that students prefer to have and perceive that the full-time clinical instructors function as role model in the clinic, suggesting that students will emulate their full-time instructors, clinical supervisor and part-time instructors more often than non-clinical dental hygiene faculty.

The majority of the students reported that they were most likely to emulate the clinical instructor's client/patient care and problem solving skills. These results concur with the former responses (from questions 4 thru 10) that, although the clinical instructor does not function frequently as the client/patient caregiver, he/she is, when evaluating or supervising the student, performing as the expert on dental hygiene care. Therefore, the clinical instructor should be aware that when he/she is interacting with the patient, the students

are observing and hoping to learn from the services and problem-solving skills provided by the clinical instructor.

Hypothesis 1. Data revealed a statistically significant difference at 0.01 level between first and second year dental hygiene students' perceptions of clinical teachers' behavioral characteristics: formulates precise objectives, gives correction at the time of error, is aware when students are not keeping up with the rest of the class, conducts group discussions which are productive and encouraging, participates in research, interprets abstract ideas and theories clearly, is able to direct learning situations, creates atmosphere conducive to learning and relates underlying theory to clinical situations. The results from each question will be discussed separately.

Question 11 revealed that first year students believed that an effective clinical teacher should formulate precise objectives. First year dental hygiene students perceived this teacher behavior as being of "extreme importance"; whereas, second year dental hygiene students were more likely to believe that formulating precise objectives ranged from "very important" to "extreme importance." Perhaps this difference is caused by the perceived need of first year students to have a more structured course curriculum than is needed by a

second year student who is striving for independent thought and skill processes. Several researchers found that students rate clinical instructor's evaluation skills of predominate importance.^{6,7,33-35} One could relate students' anxiety of being evaluated to the need of students to understand what skill is expected and at what performance level. Therefore, results suggested that the formulation of precise objectives should be practiced by clinical instructors, especially when teaching first year dental hygiene students.

Jensen's²⁵ research revealed that giving constructive criticism to students as well as foreseeing and resolving potential difficulties was an important teacher behavior. Providing students with positive, honest and clear feedback on progress was identified in several research findings as important to students learning.^{6,33-35} Data revealed that correction at time of error was a factor which was of "extreme importance" to first year students, but only of "moderate" to "extreme importance" to second year students. If a student wants immediate feedback, indications are that the students in first year clinic would need a smaller student/faculty ratio than second year dental hygiene students so that an instructor would be available to that student. Also, first year students are expected to make more errors than second year students; therefore, correction of errors is foremost in their minds at this time. This interpretation is

supported by other research results which show teacher's availability to students as being of primary importance to student achievement levels.^{7,24,33-35}

Generally attrition rate from the dental hygiene program is higher in the first year of enrollment than the second year; therefore, it is not surprising to find first year students perceiving that teachers be aware when students are not keeping up with the rest of the class of "extreme importance." Second year students felt the importance ranged between "moderate" and "extreme." Perhaps data results could be interpreted to mean that dental hygiene students are competitive within their own curriculum. Frank and Kirk's¹² study indicated that associate degree dental hygienists are more competitive than baccalaureate degree hygienists. Although only 37 of 120 first year students and 28 of 157 second year students were from community colleges, perhaps data suggest that all dental hygiene students, especially those in first year clinic, are of competitive natures and need to know the level of ranking at which they are in comparison to their peers within the dental hygiene curriculum. The normal curve or t-test would be a tool which could be used to let students know their ranking in the dental hygiene program. This researcher does not contend that clinical instructors should use the normal curve to evaluate students, but the curve could be used as the basis for a monthly report to first year students

to inform them of their class rank in clinic. When using a computer-based grading system, a report based on a normal curve is not difficult to obtain for each student.

Results suggested first year students contend that conducting group discussions which are productive and encouraging is a teacher behavior of "extreme importance"; whereas, second year students felt that group discussions were "very important." Perhaps the teacher behavior, establishing discussions which are productive and encouraging, in first year class is of "extreme importance" because this allows students to express views which may or may not be the same as the instructor's opinions and the students may learn from one another. Discussion may encourage independent thinking, learning and building of the student's self-confidence as a member of the dental hygiene profession. Perhaps hearing other students voice concerns and opinions helps first year students validate their own concerns. Encouragement appears to be a significant teacher behavior.^{25,26} Implications for dental hygiene teaching strategies in first year class could be the inclusion of more group discussion, seminar or debates rather than the traditional lecture method. For example, at the end of a clinic session the first year students could have small group discussions concerning their experiences. If time may be a limiting factor, perhaps group clinical counseling sessions would be more time efficient than would conducting whole class

meetings at the end of clinic sessions. Group discussion may aid fellow students in an academic sense and relieve the anxiety that they were the only one experiencing a specific difficulty. Discussion or counseling sessions may be an accessory method of informing a student of the skill level at which he/she is performing compared with classmates. Additionally, faculty in-services could be indicated to improve the productivity of instructors' in-class (clinic) discussion techniques.

A teacher behavior found to be of "little to no importance" to "moderate importance" to second year dental hygiene students and "moderate importance" to "very important" to first year students was an instructor's participation in research. One could infer from this finding that participation in research reflects upon the enthusiasm, interest and scholarship of the instructor. The inference from this result would concur with other research studies which found an instructor's enthusiasm, energy level, scholarliness and interest in their profession to be of importance to students.^{20,22}
^{24,41} However, no study reviewed identified teacher participation in research as being an effective teaching behavior.

First year students perceived that an instructor's interpretation of abstract ideas and theories clearly was of "extreme importance"; whereas, second year

students' views were split roughly between of "moderate importance" to "very important." Hilderbrand²⁰ noted the teaching behavior, making the subject easy to understand, continually appeared as a behavior which discriminated between a "best" and "worst" teacher. Clarity is a second effective teaching practice frequently identified by students.^{20,25,41} Data implied that teachers, especially those instructing first year students, should be organized and present a lesson plan which is clear and understood by each student.

Data showed a significant difference between first and second year dental hygiene students' perceptions of the importance of an instructor's ability to direct a learning situation. Seventy-five percent of the first year students reported that effective directing of a learning situation was of "extreme importance" as compared to 54.8 percent of the second year students. This result suggests that a higher degree of student dependence on the teacher exists in the first year rather than second year. Directing a learning situation effectively encompasses the majority of effective teacher behaviors discussed in the review of the literature which includes good skill in motivation of student,^{1,7,15,19,22-26,31-34,36} communication and interpersonal relationships with students and evaluation of students.^{6,7,24,33,34,45}

Instructors' ability to create an atmosphere conducive to learning was found to be of "extreme importance"

to first year students and ranged from "very important" to "extreme importance" to the second year class. For example, presenting a well developed lesson plan with visual aids and some discussion appears to be characteristic of the effective teacher. Teacher personality may also be a part of first year student concern. Teachers' personal characteristics identified in the review of the literature include relief of anxiety in clinical situations, warmth,^{24,41} cheerfulness,²⁵ flexibility,^{24,25} a sense of humor,^{24-26,45} and avoidance of humiliating the student in front of the patient.^{8,22,33} One could infer from data that first year instructors need to exhibit professional competence and be sensitive to the effects that their personal traits may have upon students.

One of the most difficult tasks for first year students is to comprehend and then apply in clinic all of the theories and skills taught to them. Data revealed that first year dental hygiene students indicate that a teacher's ability to relate underlying theory to clinical situations is of "extreme importance." The majority of second year students were split roughly between the belief that relating underlying theory to clinical situations is of "moderate" to "extreme importance." Students in first year clinic have an increased dependency on instructor aid and problem solving skills than do second year students who have developed some amount of independence and confidence in their skills. Therefore, faculty in

first year clinic should provide more informational input to the students, have a smaller faculty/student ratio, and be available to give more support and assistance than is necessary in second year clinic.

In summary, nine of the 88 teacher behaviors listed on the questionnaire (10.22%) showed a significant difference at the 0.01 level between the perceived needs of the first and second year dental hygiene students. First year students rated eight of the nine teacher behaviors as being of "extreme importance." While second year students found all nine behaviors from "moderate" to "extreme importance." Data revealed at the 0.05 level of significance only one behavior which was perceived as being more important to second year students than first year students. This teacher behavior, corrects tactfully without devaluating, was found to be of "extreme importance" to second year students and "very important" to first year students. Treating students with respect and avoiding humiliating them in front of a patient were identified as being important teacher behaviors in several research studies reviewed.^{8,22,23} Jensen²⁵ also identified the related teacher behavior, disciplining fairly and quietly, as being of importance to students. Because second year students consider themselves as growing professionals, having surpassed the efficiency level and developing clinical skill proficiency, second year students want their peers and instructors to aid

the development of their image of professional competency.

The literature findings of an instructor's enthusiasm,^{13,15,20,22,24} warmth,^{24,41} cheerfulness,²⁵ sense of humor,^{24,26,45} encouragement of independence of thinking and learning,^{25,26} clarity of teaching and feedback to students on their progress,^{6,13,15,20,25,33,34,41,45} energy level,⁴¹ ability to communicate,²² ability to make a subject easy to understand,²⁰ organization,^{6,20,24,26,33,35} interpersonal relationships,^{20,22,24,25} ability to stimulate interest and motivate,^{1,7,15,19,22-26,31-34,36} ability to foresee and resolve potential student difficulties,²⁵ availability to students,^{7,24,33-35} technical skill and competence,^{7,24,25,45} and interest in their profession²² are teacher behavior characteristics which are supportive of results. However, this study further delineates between first and second year dental hygiene students' perceptions of the effective clinical teacher's behavioral characteristics.

According to results, first year dental hygiene students want teacher availability and a structured curriculum as they are more dependent upon instructors' aid than second year students. Discussion sessions may provide for good interpersonal relationships between instructors and fellow classmates which are encouraging and motivating to first year students. A first year instructor should be made aware that according to

perceived needs of first year students, personality traits such as warmth, cheerfulness and a sense of humor may affect student attitude and, therefore, result in positive student performance.

Hypothesis 2. Data revealed a statistically significant difference between students' age and his/her perceptions of the effective clinical teachers' behavioral characteristics: alleviating student anxiety, conducting group discussions which are productive and encouraging (also identified in hypothesis 1) and setting realistic goals for students. The age groupings analyzed were 19 and under (18-19), 20, 21, 22, 23 and 24 and over. The majority of participating students were 19-22 years of age (see Table 1, p. 22). Each instructor behavior will be discussed separately.

Question 41, alleviating student anxiety, showed a difference in the age group 23 from the remaining five age groups. The group of 23 year old students was the outlier age bracket who contended that alleviating student anxiety was "very important" as compared to the other age brackets who rated the behavior of "extreme importance." Perhaps if the age groups 24, 25 and 26 were analyzed separate from the grouping of 24 and over, the results might have been different. With a different grouping, instead of the age group 23 being an outlier statistic, data might have shown that the mid-twenty

range did not believe that alleviating student anxiety was as important as the age extremes of 18-22 and 28-36. Possibly the older and younger students are not as confident in their academic skills as the mid-twenty group.

According to results, students in the age category of 19 and under revealed that the teacher characteristic, conducts group discussions which are productive and encouraging, was of "extreme importance." The other age groups rated "conducting group discussions which are productive and encouraging" of "moderate" to "extreme importance." The 23 year old students rated group discussions which are productive and encouraging between "little to no importance" and "extreme importance." Worth noting is that when the greatest percentage of students rated group discussions as "very important," the majority were second year students; if half the students were first year and half were second year, the results were split roughly between "very important" and "extreme importance"; when the majority of the students were first year status, the teacher behavior was rated of "extreme importance." This analysis suggested that the predominate variable affecting students' perceptions about the teacher characteristic, conducting group discussions which are productive and encouraging, might be student class status rather than student age.

The third instructor trait which revealed a significant difference between age and perceived need was setting realistic goals for students. The two extremes of the age groupings showed the highest percentages, with setting realistic goals for students as being a teacher behavior of "extreme importance." Ages 22 and 23 were the two age brackets which were divided on opinion of the trait being "very important" to "extreme importance." Findings imply that ages 22 and 23 are relatively comfortable with student habits and do not depend on teacher aid in setting realistic goals as much as the younger (18-21) and older college students (24-36) who may both be new to college scholastic endeavors.

Summarizing the results for hypothesis two, one could conclude that instructors should direct their efforts of relieving student anxiety and setting realistic goals to the younger (18-19) and older (24-26) students rather than to 22 and 23 year olds who, in comparison, seem to be more self-confident and self-reliant in scholastics. Having encouraging and productive group discussions showed a significant difference between age (hypothesis two), class status (hypothesis one) and perception of an effective clinical teacher. Because of the overlapping results, one would suspect this finding is related more to class status than to student age.

Hypothesis 3. Data revealed a statistically significant difference between students' DHAT scores and their perceptions about what constitutes the effective clinical instructor. Of the 20 significant differences found, 14 were reading scores (15.9%), five were verbal scores (5.68%) and one was a numerical score (1.13%). No significant differences were found among science scores. The following three arbitrary divisions of the students' DHAT scores were made to perform the analysis: 1-3 were low scores, 4-6 were mid-range scores and 7-9 were high scores. The majority of scores achieved by the students questioned fell in the mid-range. Reading score analyses are discussed first, followed by verbal and numerical scores.

Reading DHAT scores. Data revealed a significant difference in 14 effective teacher behaviors between students' reading DHAT scores and their perceptions of the effective clinical teacher's behavioral characteristics. Clinical teacher behaviors identified as being of "extreme importance" by low (N=52) and mid-range (N=171) scoring students included fluent and understandable speech and a well modulated non-distracting voice. Voice and speech traits were "very important" to the high scoring students. Although the students with high reading scores (N=54) felt it was "very important," perhaps they could depend less on the instructor and,

if needed, rely more on other resources than could the low and mid-range scorers.

Of "extreme importance" to students with low reading scores (N=52) was for the clinical instructor to give assignments which are related to pertinent clinical objectives. As students' scores improved the data showed students placing less importance on clinical objectives and clinically related assignments than those with low scores. Possibly students with better reading aptitude depend to a lesser degree on outside assignments to learn clinical skills than do students with lower reading scores. Another explanation is that lower scoring students need assignments related to clinic and to clinical objectives to aid them in understanding how the objectives relate to the class and, thus, to the dental hygiene curriculum.

Encouraging students to think for themselves and inspiring them to extra effort were two teacher behaviors which were of "extreme importance" to "very important" to students scoring in the low and mid-range; a higher percentage of these students wanted the former over the latter. High reading aptitude scorers contended that both instructor behaviors were "very important." Perhaps low scoring students need to be encouraged to independence and inspired to make that extra effort; whereas, high scorers need to be given encouragement and inspiration but to a less extent.

Low and mid-range scoring students placed "extreme importance" on a clinical teacher's willingness to help with questions and problems. However, "extreme" to "moderate importance" was on the two clinical instructor traits by the high reading aptitude category. Results imply that students with lower reading scores might have more questions or problems, thus need more help with both than do the high scoring students.

Anticipation or quick perception of student difficulties by the clinical instructor was identified as being of "extreme importance" to those in the low and mid-range scoring categories. Those with high reading aptitude indicated the behavior to range between "extreme importance" and "very important." Correcting a clinical skill problem is harder than identifying it early. All students contended that this teacher behavior is of great importance, but, as indicated by the data results, the students in the lower categories depend more on instructor perception of their difficulties than on their own perceptions of their performance. Jensen²⁵ found that foreseeing and resolving potential difficulties was a professional quality which students identified as being an important teacher behavior.

Students scoring in the low and mid-range feel it is of "extreme importance" that the effective clinical instructor acts as a counselor and advisor. Related to this teacher behavior is a second behavior, that is, an

instructor should have a sympathetic attitude toward his/her students. The latter instructor characteristic was found to be of "extreme importance" to "very important" to low scoring students. However, to high student scorers, the sympathetic attitude was from "extreme" to "moderate importance." High reading aptitude scoring students felt advising and counseling by the instructor was split between "extreme importance" and "very important." Counseling and advising students appears to be of great importance to all students but of somewhat lesser importance to high scorers. A sympathetic attitude held by the instructor toward students was felt to be "very important" to students.

Flexibility in a clinical instructor was found to be of "extreme importance" to low and mid-range scoring students; however, high scorers showed the teacher trait as "very important." Implications of this finding could be that students with a reading aptitude score in the range of -1 -6 perceive an effective clinical instructor to be flexible or, possibly, more lenient with a student who is experiencing an average to excessive number of clinical skill problems.

Students scoring within the -1 -6 range (low and mid-range categories) attached "extreme importance" to the effective clinical instructor as a resource person, while students scoring in the 7-9 range thought the teacher characteristic was of "moderate importance."

Results suggested that those students with high reading aptitude have and rely upon their own resource references; whereas, those with lower scores rely upon instructors to provide resources.

Providing opportunity to practice before an evaluation was revealed as "very important" to being of "extreme importance" to students with low and high reading scores and of "extreme importance" to those with mid-range scores. Fairness may be the predominant factor, or perhaps, providing time for students to practice before evaluation relieves test anxieties.

Verbal DHAT scores. Data showed a significant difference between student verbal scores on the DHAT and their perceptions of the effective clinical instructor. The following five teacher behaviors were identified as characteristics of an effective clinical instructor: formulates precise objectives (also identified in hypothesis one), stresses important materials, is concerned with learning versus testing, shows interest in making contributions to the improvement of dental hygiene and is well informed and able to communicate information. Of the students questioned, 72 had low verbal scores (-1 - 3), 170 had mid-range scores (4-6) and 35 had high scores (7-9). Division between high, mid-range and low scores were made arbitrarily. Each of the teacher behaviors are discussed.

Of "extreme importance" to those students who had low and mid-range verbal scores was that the clinical instructor formulate precise objectives and stress important materials. High scoring students, however, were split between "extreme importance" and "very important" on both teacher behaviors. Data suggested that students with high verbal scores depend less on guidelines (objectives) and can better differentiate between important versus supplemental materials given by instructors than can students with low and mid-range verbal scores.

Students with low scores perceive the effective clinical teacher as being well informed and able to communicate information. But, students who had mid-range scores were split between "extreme importance" to "very important" and the high scorers tended to lean toward "very important." Data supported the idea that low scoring students depend on the clinical instructor as their main information resource, and as scores progressively improved, less dependence might be noted. An instructor's concern for learning versus testing was a teacher behavior found to be of "extreme importance" to students scoring in the high and mid-range categories. Low scoring students felt the behavior to be "very important" to "extreme importance." Data imply that students with higher verbal aptitude consider that the effective clinical teacher should be more concerned with teaching rather than the

testing aspect of academics. Higher scoring students may have the goal of learning and applying clinical theory and skill versus lower scoring students who may be aspiring only to pass tests.

Showing interest in making contributions to the improvement of dental hygiene was perceived by low scoring students as being of "extreme importance," "extreme importance" to "very important" to mid-range scoring students and "very important" to "moderate importance" to high scorers. Perhaps one can infer from this data that high scoring students believe an effective clinical instructor should focus his/her efforts on teaching instead of improving their professional field.

Numerical DHAT scores. Sixty-six students had low scores (-1 - 3), 165 had mid-range scores (4-6), and 46 had high scores (7-9) on the numerical portion of the DHAT's. Only one significant result found from the data is discussed.

Students scoring low and mid-range on the numerical portion of the DHAT's contend that instructor scholarliness is "very important." Students scoring within the high range (7-9) appeared to believe that teacher scholarliness was of "moderate importance." This could be explained by the fact that dental hygiene instructors tend to be more teaching oriented than research oriented,

giving students the idea that research is not that important.

Science DHAT scores. No significant differences between science scores and students' perceptions of the effective clinical instructor were found at the 0.01 or 0.05 levels. Because dental hygiene is a science-oriented profession, one would expect that data would have revealed a large number of significant findings in the science category. However, one also should note that only one significant difference at the 0.01 level was found in the numerical DHAT score category; whereas, five were found in verbal and 15 in reading DHAT scores at the 0.01 level. Possibly because both science and the numerical portions could be considered quantitative-based and the reading and verbal portions qualitative-based, one might change their perceptions upon what success in the dental hygiene curriculum is based.

To conclude, data showed that dental hygiene students do not differ significantly on what they perceive as an effective clinical instructor. Because the terms "extreme," "very," "moderate," and "little to no" importance were not defined for the students, the definitions for these terms probably were as varied as the 277 dental hygiene students answering the questionnaire. Therefore, one should question if the significant differences found between "extreme importance" and "very important" are of

any practical significance. One should note that because of the large number of significant findings (33) at the 0.01 significance level, some results might be a result of type I error. Because arbitrary categorization of age and high, mid-range and low scores on DHAT's were made, perhaps some resulting significances were not clearly delineated. Also, one should note that in each of the three hypotheses, either first year, age extremes, or low DHAT scoring students were found to be more sensitive to instructor behaviors, usually rating each behavior with a higher importance than second year, mid-range age categories (21-23) or high DHAT scoring students. This finding might imply that first year students, younger (18-19) and older (24 and above) students and those who had low DHAT scores (-1 - 3) are more sensitive to, apprehensive of and dependent upon instructor behavior than the other students. Furthermore, it is the weaker student who benefits most from quality teaching.¹³

Chapter 5

SUMMARY AND RESULTS

A limited number of research studies have examined clinical dental hygiene education. No investigation could be found on effective clinical dental hygiene instruction from students' perceptions. The purpose of this study was to examine dental hygiene students' perceptions about the behavioral characteristics portrayed by an effective clinical teacher according to class status, age and Dental Hygiene Aptitude Test scores. A self-designed questionnaire, student consent forms and standardized instructions which were read aloud to the student participants were mailed to a selected group of five accredited dental hygiene schools (three baccalaureate degree universities and two associate degree community colleges). Two hundred ninety-one students completed the questionnaire.

Frequencies and percentages were used to analyze the first ten questions which were testing the assumption that the clinical dental hygiene instructor was a role model for students. Chi square was employed to analyze the remaining 88 questions. The independent variables were class status, age and DHAT (Line A) scores.

The dependent variable was the students' perceptions about the behavioral characteristics of the effective clinical teacher.

Questions 1 thru 10

Data supported the assumption that first year and second year dental hygiene students expect their clinical teacher to be a role model. Approximately one half of the students contended that their clinical instructors functioned "always" as role model. Over one half of the students chose as their role model the full-time clinical instructors. Patient care was the instructor skill most frequently emulated by students. Based upon the perceptions of first and second year dental hygiene students, the full-time clinical instructor should be aware of the role model function he/she portrays when demonstrating such skills as patient care.

Hypothesis 1

The results of the study failed to reject the null hypothesis that there is no statistically significant difference at the 0.01 level in the perceptions of first year and second year dental hygiene students regarding the behavioral characteristics portrayed by the effective clinical teacher as measured by the self-designed questionnaire. However, data revealed a statistically significant difference at the 0.01 level between first and second year dental hygiene students' perceptions on

the following nine of the 88 (10.22%) clinical teachers' behavioral characteristics: formulates precise objectives, gives correction at time of error, is aware when students are not keeping up with the rest of the class, conducts group discussions which are productive and encouraging, participates in research, interprets abstract ideas and theories clearly, is able to direct learning situations, creates atmosphere conducive to learning and relates underlying theory to clinical situations. First year students viewed the nine listed behaviors as being significantly more important than did second year students; therefore, results might suggest that the first year dental hygiene student is more dependent upon a structured curriculum and the clinical instructor's availability, aid and interpretations than is the second year dental hygiene student. Seven additional significant differences were found at the 0.05 level in the perceptions of first and second year dental hygiene students regarding the behavioral characteristics portrayed by the effective clinical teacher (see Table 7). The remaining 72 clinical instructor behavioral characteristics were viewed similarly by both first and second year dental hygiene students.

Hypothesis 2

The results of this investigation fail to reject the null hypothesis that there is no statistically significant difference at the 0.01 level between student's age

and his/her perceptions of what constitutes the effective clinical dental hygiene instructor as measured by the self-designed questionnaire. However, from questions 11 thru 98, data showed a statistically significant difference at the 0.01 level between student's age and his/her perceptions of the behavioral characteristics the effective clinical instructor possesses on the following three of 88 (3.4%) clinical teachers' behavioral characteristics: alleviates student anxiety, conducts group discussions which are productive and encouraging (also identified as significant in hypothesis 1) and sets realistic goals for students. Results suggest that instructors should make attempts to alleviate student anxiety and set realistic goals for the older (24-36) and younger (18-21) students rather than to 22 and 23 year olds, who seem to be more confident in their study skills. The third teacher behavioral characteristic, conducts group discussions which are productive and encouraging (also identified in hypothesis 1), was of "extreme importance" to younger students (18-19), "moderate" to "extreme importance" to older students (24-36) and ranged from "little to no importance" to "extreme importance" to the 22 and 23 year olds. Again, older and younger students may feel less comfortable with their scholastic endeavors than 22 and 23 year old students. Conducting encouraging and productive group discussions was also found significant in hypothesis 1.

The overlap of age and class status suggested that the findings are related more to class status than to student's age. One additional significant difference was found at the 0.05 level between student's age and his/her perceptions of what constitutes the effective clinical teacher (see Table 9, p. 39). The remaining 84 clinical instructor behavioral characteristics were viewed similarly by all age groups.

Hypothesis 3

The results failed to reject the null hypothesis that there is no statistically significant difference at the 0.01 level between student's DHAT scores and what constitutes the effective clinical dental hygiene teacher as measured by the self-designed questionnaire. A total of 20 of 88 significant differences were found at the 0.01 level of which 14 were reading scores (15.9%), five were verbal scores (5.68%), one was a numerical score (1.13%) and none were significant for science scores.

Reading DHAT Scores

Reading scores showed a statistically significant difference between high (7-9), mid-range (4-6) and low (-1 -3) scoring dental hygiene students on 14 of 88 (15.9%) clinical instructor's behavioral characteristics listed as follows: provides opportunity for practice before evaluation, gives assignments related to clinic, is a resource person, encourages students to think for

themselves, inspires to extra effort, speech is fluent and understandable, is flexible, voice is well modulated and non-distracting, gives assignments which are pertinent to clinical objectives, anticipates or quickly perceives student difficulties, is a counselor and advisor, demonstrates willingness to help with questions, has a sympathetic attitude toward students and evidences willingness to help with problems. High scorers rated the behaviors from "moderate" to "extreme importance" while low and mid-range scorers contended that all 14 characteristics were "very important" to "extreme importance." The low and mid-range scoring students considered each behavior of more importance than high scorers except for "providing opportunity to practice before evaluation." Data revealed an additional 12 significant differences at the 0.05 level between students scoring high, mid-range and low on reading DHAT scores and their perceptions of what constitutes the effective clinical teacher (see Table 11, p. 44).

Verbal DHAT Scores

Data showed a statistically significant difference at the 0.01 level between high (7-9), mid-range (4-6) and low (-1 - 3) scoring dental hygiene students on the following five of 88 (5.68%) clinical instructor's behavioral characteristics: formulates precise objectives (also identified in hypothesis 1), stresses important

materials, is concerned with learning versus testing, shows interest in making contributions to the improvement of dental hygiene and is well informed and able to communicate information.

The two behavioral characteristics, formulates precise objectives and stresses important materials, were found to be of "extreme importance" to low and mid-range scorers and of "extreme importance" to "very important" to high scoring students. Perhaps the high scorers depend less on guidelines to discern what is important material than low and mid-range scoring students. Data implied that low scoring students are more dependent upon their instructor as the main information source than high or mid-range scorers as demonstrated by the finding that low scorers indicated that the instructor should be well informed and able to communicate information. One might also infer from data that high and mid-range scoring students are more concerned with learning versus testing than low scorers, who may be more test anxious students. High and mid-range scorers rated the teacher characteristic, instructor concern for learning versus testing of "extreme importance"; whereas, low scorers contended that the trait was "very important" to "extreme importance."

Instructor contribution to the improvement of dental hygiene was of "extreme importance" to low scorers, "very important" to "extreme importance" to

mid-range scorers and of "moderate importance" to "very important" to high scorers. Perhaps students in the high scoring category were concerned that instruction efforts would be decreased if teachers directed efforts into the improvement of dental hygiene. At the 0.05 level, eight additional significant differences were found between the high, mid-range and low verbal DHAT scoring students and their perceptions of the behavioral characteristics that constitute the effective clinical teacher (see Table 13, p. 48).

Numerical DHAT Scores

The one statistically significant difference (1.13%) found was that students scoring in the low and mid-range categories felt that instructor scholarliness was very important"; whereas, high scorers contended the behavior was of "moderate importance." Possibly instructors have given students the impression that research is not as important as is teaching because most instructors are more teaching oriented than research oriented. Data revealed three additional significant differences at the 0.05 level between students scoring high, mid-range and low on numerical DHAT scores and their perceptions of the effective clinical instructor (see Table 15, p. 51).

Science DHAT Scores

Data revealed no statistically significant differences at the 0.01 and 0.05 levels between science DHAT scores and student's perceptions about the behavioral characteristics portrayed by the effective clinical teacher. Because dental hygiene is a science-based profession, one would have expected more differentiating results than were shown.

The findings of this study lead to the following conclusions:

1. First and second year dental hygiene students hold similar perceptions of what behavioral characteristics comprise the effective clinical teacher.

2. Generally, students in first year, older and younger age categories and with low DHAT scores are more likely to rate teacher's behavioral characteristics as being of "extreme importance" than second year students in median age categories and students with mid to high range DHAT scores.

Based on the study's results, the following implications for dental hygiene teaching theory could be made:

1. First year dental hygiene students appear to want more teacher availability in the clinic; perhaps a smaller student/faculty teacher ratio for first year clinics should be provided than for second year clinics.

2. Research results suggest that first year dental hygiene students want structure in their curriculum;

however, structure does not necessarily equate to traditional methods of teaching. Possibly group discussion in the classroom or after clinical sessions would serve to relieve student apprehension and give perspective to the student regarding academic performance. Furthermore, faculty in-service programs to improve alternative teaching methods may be useful for teachers. Perhaps dental hygiene teacher training should include preparation on nontraditional teaching methods.

3. Faculty should be made aware that in addition to concentration on their teaching behaviors, they should also concern themselves with presenting a positive, open attitude especially to first year and the older (25 and above) and younger (19 and under) age students. Positive teacher attitude might have an effect on positive student performance.

4. The findings imply that faculty should be sensitive to the extreme age groups of 19 and under and 25 and above. These students seem to be more anxious about scholastic endeavors, needing more structure in their curriculum and guidance from instructors, than do other age groups of students.

Considering the study's results and limitations, it is recommended that a future investigation be conducted at a later time in the first year student's curriculum so that they have more experience upon which

to base their opinions about the behavioral characteristics of the effective clinical teacher.

A pioneer investigation has been made into effective teaching behaviors in the dental hygiene clinic based on student's perceptions. Although teaching may not be considered a science by some,³⁶ the dental hygiene profession can be improved by soliciting and applying the ideas that students give instructors. The student is the recipient of teaching effort and his/her achievement is contingent upon effective instruction given either in the classroom or dental hygiene clinic.

BIBLIOGRAPHY

1. Barham, V. "Identifying Effective Behaviors of the Nursing Instructor Through Critical Incidents." Nursing Research, 14:65-9, Winter 1936.
2. Broudy, H. S. "Can We Define Good Teaching?" Record, 70:25, 1969.
3. Cogan, M. L. "The Behavior of Teachers and the Productive Behavior of Their Pupils." Journal of Experimental Education, 27:59, 1958.
4. Combs, A. W. The Professional Education of Teachers. Boston: Allyn and Bacon, 1965.
5. Davidson, J. M. "Teacher Effectiveness Rating Scale." In Instruments for Use in Nursing Education, eds. M. J. Ward and M. E. Fetler. Boulder, Col.: Western Interstate Commission for Higher Education, 1979.
6. Dixon, J., and B. Koerner. "Faculty and Student Perceptions of Effective Classroom Teaching in Nursing." Nursing Research, 25:300-5, July/August 1976.
7. Evans, J. R., and M. Massler. "The Effective Clinical Teacher." Journal of Dental Education, 41:613-17, 1977.
8. Field, M. "Student Growth and the Clinical Teacher." Journal of Dental Education, 35:306-7, May 1971.
9. Flanagan, J. C. "The Critical Incident Technique." Psychology Bulletin, 51:327-358, 1954.
10. Flanders, N. A. "Teacher Influence Pupil Attitudes and Achievement: Studies in Interaction Analysis." University of Minnesota, Minneapolis, 1960.
11. Flanders, N. A., and A. Sincon. "Teacher Effectiveness." Encyclopedia of Educational Research, ed. R. L. Ebel. New York: Macmillan, 1969.

12. Frank, A. C., and B. A. Kirk. "Characteristics of Dental Hygiene Students." Vocational Guidance Quarterly, 3:25, March 1970.
13. Gage, N. L. Handbook of Research of Teaching. Chicago: Rand McNally, 1963.
14. Goheen, R. F. "The Teacher and the University." American Scientist, 54:60, 1966.
15. Guba, E. G., and J. E. Getzels. "Personality and Teacher Effectiveness: A Problem in Theoretical Research." Journal of Educational Psychology, 46: 330-4, 1955.
16. Hart, F. W. Teachers and Teaching. New York: Macmillan, 1934.
17. Hassenplug, L. W. "The Good Teacher." Nursing Outlook, 13:24-7, October 1965.
18. Heil, L. M., M. Powell, and I. Fiefer. "Characteristics of Teacher Behavior, Related to the Achievement of Children in Several Elementary Games." Washington, D.C.: U.S. Department of Health, Education and Welfare, 1960.
19. Heitzmann, W. R. "Teacher Characteristics and Successful Teaching." Education, 95:298-9, Spring 1965.
20. Hilderbrand, H. "The Characteristics and Skills of the Effective Professor." Journal of Higher Education, 44:41-50, January 1973.
21. Hinshaw, A. S. "Socialization and Resocialization of Nurses for Professional Nursing Practice." NLN, Publication No. 15-1659.
22. Houston, S. R., C. E. Crosswhite, and R. S. King. "The Use of Judgement Analysis in Capturing Student Policies of Rated Teacher Effectiveness." Journal of Experimental Education, 43:28-34, Winter 1974.
23. Isaacson, R. L., W. J. McKeachie, and J. E. Milholland. "Correlations of Teacher Personality Variables and Student Ratings." Journal of Educational Psychology, 54:110-17, April 1963.
24. Jacobson, M. D. "Effective and Ineffective Behavior of Teachers of Nursing as Determined by Their Students." Nursing Research, 15:218-24, Summer 1966.

25. Jensen, A. C. "Determining Critical Requirements for Teachers." Journal of Experimental Education, 20:79-85, Summer 1951.
26. Kiker, M. "Characteristics of Effective Teacher." Nursing Outlook, 21:721-3, November 1973.
27. Leven, K., R. Lippitt, and R. K. White. "Patterns of Aggressive Behavior in Experimentally Created Social Climates." Journal of Social Psychology, 10:33, 1939.
28. Lowery, B. J. "Teacher Evaluation Opinion Form." Nursing Research, 20:5, 1971.
29. Martinez, N. P., J. M. Ivanoff, M. A. Pushkash, and T. D. Ginsburg. "Descriptive Differences Between Baccalaureate and Associate Degree Dental Hygiene Students." Dental Hygiene, 54:326-9, July 1980.
30. Melick, M. E., and K. Bellinger. "Role Modeling in Nursing: A Comparison of Baccalaureate Students and Faculty Beliefs." Journal N.Y.S.N.A., 10:22-33, August 1979.
31. Mesolella, D. W. "Caring Begins in the Teacher-Student Relationships." Canadian Nurse, 70:15-6, December 1974.
32. Morsh, J. E., and E. W. Weeder. Identifying the Effective Instructor: A Review of Quantitative Studies, 1900-1952. Research Bulletin No. AFPTRC-TR-54-44. USAF Personnel Training Research Center, 1954.
33. Myers, B. "Beliefs of Dental Faculty and Students About Effective Clinical Teaching Behaviors." Journal of Dental Education, 44:68-76, 1977.
34. O'Shea, H. S., and M. K. Parsons. "Clinical Instruction: Effective and Ineffective Teacher Behaviors." Nursing Outlook, 27:411-5, June 1979.
35. Page, E. P. "Teacher Comments and Student Performance." Journal of Educational Psychology, 49:56, 1958.
36. Raff, B. "Evaluation of Teaching Effectiveness: Purpose, Process and Problems." NLN, Publication 15-1680.
37. Rauen, K. "The Clinical Instructor as Role Model." Journal of Nursing Education, 13:33-40, August 1974.

38. Reed, H. B. "Implications for Science Education of a Teacher Competence Research." Science Educator, 44:72, 1962.
39. Richardson, J. A., and K. B. Mathney. "Concepts and Components of Effective Teaching: Teaching Effectiveness -- The Science of the Art." NLN, Publication 16-1750.
40. Ryans, D. G. "Research on Teacher Behavior in the Context of the Teacher Characteristics Study." Contemporary Research on Teacher Effectiveness, eds. B. J. Biddle and W. J. Ellena. New York: Holt, Rinehart and Winston, 1964.
41. Solomon, D., L. Rosenburg, and W. E. Bezdek. "Teacher Behavior and Student Learning." Journal of Educational Psychology, 55:23-30, 1964.
42. Solomon, D. "Teacher Behavior Dimensions, Course Characteristics and Student Evaluations of Teachers." American Educational Research Journal, 3:35-47, 1966.
43. Turner, R. L. "Teaching as Problem Solving Behavior: A Strategy." Contemporary Research on Teacher Effectiveness, eds. B. J. Biddle and W. J. Ellena. New York: Holt, Rinehart and Winston, 1964.
44. Wallace, G. R. "Concepts and Components of Effective Teaching: Effective Teaching." NLN, Publication 16-1750.
45. Wong, Shirley. "Nurse Teacher Behaviors in the Clinical Field: Apparent Effect on Nursing Student's Learning." Journal of Advanced Nursing, 3:369-72, July 1978.

APPENDICES

APPENDIX A

EFFECTIVE TEACHING BEHAVIORS QUESTIONNAIRE

EFFECTIVE TEACHING BEHAVIORS QUESTIONNAIRE

Directions: The purpose of this study is to determine first and second year dental hygiene students' perceptions of the effective clinical instructor. Read each question carefully and respond by blackening in the appropriate A, B, C, D or E block on your answer sheet. Remember to use only a No. 2 pencil and fill in the whole block when recording your answer. Also, keep your answer sheet free of stray marks. Think about each question, be honest and discriminating when answering as there are no right or wrong responses. You will need approximately 30 minutes to complete the questionnaire. Carefully read the set of directions provided at the beginning of each part of the questionnaire. You may begin answering the questions at this time. Start with question 1 on your answer sheet. Leave no items blank! When finished, return the consent form, answer sheet, and the questionnaire to the test administrator. Thank you for your participation.

Part I

Read each question carefully and respond by blackening in the appropriate A, B, C, D or E block on your answer sheet. If you choose E (other) on questions 1, 2, or 3, please specify your "other" on the back of the answer sheet.

1. Who would you identify as being your primary role model for providing quality dental hygiene care? (Check only one)
 - A. Clinical Supervisor
 - B. Part-time Clinical Instructors
 - C. Full-time Clinical Instructors
 - D. Non-clinical Dental Hygiene Faculty
 - E. Other (specify on the back of the answer sheet) _____

2. Under ideal conditions, who do you think should function as the primary role model for dental hygiene students? (Check only one)
 - A. Clinical Supervisor
 - B. Part-time Clinical Instructor
 - C. Full-time Clinical Instructors
 - D. Non-clinical Dental Hygiene Faculty
 - E. Other (specify on the back of the answer sheet) _____

3. What behaviors/skills are you most likely to learn from a dental hygiene clinical instructor? (Check only one)
- A. Client/patient care
 - B. Emotional support of client/patient
 - C. Interpersonal relation with health team members
 - D. Problem solving skills
 - E. Other (specify on the back of the answer sheet) _____

Part II

For each question, respond by blackening in A, B, C, D or E on your answer sheet to identify what best indicates your idea of the functions of the clinical instructor.

	Never	Hardly Ever	Some- times	Usually	Always
4. Functions as counselor.	A	B	C	D	E
5. Functions as evaluator.	A	B	C	D	E
6. Functions as role model.	A	B	C	D	E
7. Functions as supervisor.	A	B	C	D	E
8. Functions as expert on dental hygiene care.	A	B	C	D	E
9. Functions as consultant.	A	B	C	D	E
10. Functions as client/patient caregiver.	A	B	C	D	E

Part III

The following is a list of teacher behaviors. We are interested in your opinion regarding the relative importance of these teacher behaviors in clinical teaching. Please read each behavior and evaluate its importance to your clinical learning. Try to be discriminating in your opinions. For each question, respond by blackening in A, B, C, D or E on your answer sheet using the scale on the following page.

Little to no Importance	Moderate Importance	Very Important	Extreme Importance	No Opinion
A	B	C	D	E

11. Formulates precise objectives.
12. Explains how each topic fits into the clinical course outline.
13. Adjusts to individual's level of comprehension.
14. Is able to express thoughts clearly.
15. Stresses important material.
16. Is fair in grading.
17. Gives encouragement and praise.
18. Informs students of their progress.
19. Corrects tactfully without devaluing.
20. Holds high expectations for students.
21. Is concerned with learning versus testing.
22. Gives correction at time of error.
23. Is realistic in expectations.
24. Clearly defines clinical responsibilities.
25. Respects confidentiality of student relationships.
26. Provides opportunity for practice before evaluation.
27. Has thorough knowledge of subject matter.
28. Identifies principles basic to dental hygiene practice.
29. Plans for depth and continuity in clinic.
30. Takes advantage of new or unexpected situations when they occur to show relationship to subject under study.
31. Gives assignments related to clinic.
32. Demonstrates technical skills where required.
33. Is enthusiastic about clinical teaching.
34. Is a resource person.

Little to no Importance	Moderate Importance	Very Important	Extreme Importance	No Opinion
A	B	C	D	E
35.				
36.				
37.				
38.				
39.				
40.				
41.				
42.				
43.				
44.				
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57.				
58.				

<u>Little to no Importance</u>	<u>Moderate Importance</u>	<u>Very Important</u>	<u>Extreme Importance</u>	<u>No Opinion</u>
A	B	C	D	E

59. Is flexible.
60. Avoids annoying repetitive mannerisms.
61. Controls feelings, avoids anger.
62. Is physically capable, mentally alert.
63. Has a sense of humor and proportion.
64. Is neat in appearance.
65. Voice is well modulated and non-distracting.
66. Is able to interest students in subject matter.
67. Presents subject matter in an informative manner.
68. Stimulates intellectual curiosity.
69. Gives responsibility when student is ready.
70. Gives assignments which are pertinent to clinical objectives.
71. Fairly evaluates clinical performance.
72. Holds constructive evaluation conferences.
73. Skillfully evaluates student's ability.
74. Anticipates or quickly perceives student difficulties.
75. Continues to develop in own field.
76. Is well informed and able to communicate information.
77. Interprets abstract ideas and theories clearly.
78. Is available to students in stressful situations.
79. Is a counselor and advisor.
80. Demonstrates willingness to help with questions.
81. Has a sympathetic attitude toward students.
82. Is considerate of student's time.

Little to no Importance	Moderate Importance	Very Important	Extreme Importance	No Opinion
A	B	C	D	E

83. Likes students and is interested in them.
84. Is able to direct learning situations.
85. Creates atmosphere conducive to learning.
86. Sets realistic goals for the students.
87. Admits limitations of function honestly.
88. Evidences willingness to help with problems.
89. Allows expression of diverse points of view.
90. Shows understanding and recognition of individuality of the student.
91. Asks thought provoking questions.
92. Shares own ideas with students.
93. Refers student to additional resource persons and materials.
94. Relates underlying theory to clinical situations.
95. Is well-informed on technical and professional advances.
96. Gives constructive evaluation without humiliating the student.
97. Establishes an environment conducive to discussion and venting of feelings.
98. Follows the outlined grading scales when assigning final grade for performance on a single client/patient.

APPENDIX B

STANDARDIZED ORAL INSTRUCTIONS READ TO PARTICIPANTS

STANDARDIZED ORAL INSTRUCTIONS READ TO PARTICIPANTS

Today, I would like to ask your assistance in completing a questionnaire to determine your perceptions of the behavioral characteristics of the effective clinical instructor. Participation in this study should yield valuable information which educators could use to develop theories of clinical dental hygiene teaching. [DISTRIBUTE QUESTIONNAIRE PACKETS -- questionnaire, consent form and computer answer sheet.]

If you elect to participate in this study, please read, sign, and date the consent form. [Continue after students have completed the consent form.] Before continuing to the directions on the top of the questionnaire, please take out the answer sheet on which some background information needs to be recorded. DO NOT bend or fold these answer sheets; use only a No. 2 pencil when answering the questions.

Turn your attention to the block labeled "student number" on the answer sheet. Note that column 1 has been coded for you with the number _____. Continue to column 2 and blacken in the 1 or 2 depending on your status in the dental hygiene curriculum. For example, if this is your first year in the dental hygiene curriculum, you would blacken in the 1 in column 2.

Column 3a and 3b is for your age. For example, if you are 19 years old, column 3a would have a 1 blackened in and column 3b would have a 9 blackened in.

The next four columns are for recording your DHAT scores. Record only your scores from the line of scores marked "A" on your Dental Hygiene Aptitude Testing Program. In the column marked 5, blacken in the number which corresponds to your "SCI" DHAT score on line A. In the column marked 6, blacken in the number which corresponds to your "VER" DHAT score on line A. In the column marked 7, blacken in the number which corresponds to your "NUM" DHAT score on line A. In the column marked 8, blacken in the number which corresponds to your "RDG" DHAT score on line A.

Make no mark in the last column. If there are no questions or if no one needs the directions repeated, continue to the directions on the top of the questionnaire.

APPENDIX C

COVER LETTER TO PARTICIPATING INSTITUTIONS

September 15, 1981

Dear

A research study is being conducted to assess first and second year dental hygiene students' perceptions of the effective clinical dental hygiene instructor. Your participation in this study will provide information presently unavailable to dental hygiene educators about effective clinical teaching from the students' perspective.

I am enclosing a rough draft of my research proposal, a copy of the "General Instructions for Questionnaire Administration" a copy of the questionnaire, computer sheet, and "Instructions to Participants" which the test administrator reads aloud to the students. Please understand these are still undergoing changes and are provided only to give you an idea of what the study involves.

After the appropriate changes are made, I plan to send you all of the needed materials (questionnaire, consent forms, and answer sheets) by October 20, 1981. I would like to have sent back to me by November 1, 1981 the answer sheets and consent forms (boxed, C.O.D.). I am asking all six participating institutions to administer the questionnaire within the October 20th to November 1st time frame so that the students will be questioned at similar developmental levels in the dental hygiene curriculum.

I hope a time can be worked out so that one of your faculty members (or dental hygiene counselor) can administer the questionnaire. Please let me know what date you can work the questionnaire into your curriculum and how many first and second year students are enrolled in your institution's program.

Please contact me as soon as possible, and I will be happy to answer any further questions which you may have. I greatly appreciate your time and cooperation.

Sincerely,

Frances G. Carson

Enclosure

APPENDIX D

LETTER OF PERMISSION TO AUTHORS TO USE AND MODIFY
ITEMS FROM THEIR QUESTIONNAIRES

September 15, 1981

Dear

I am a graduate student pursuing a Master's Degree from Old Dominion University, Norfolk, Virginia. I am interested in researching first and second year dental hygiene students' perceptions of the effective behavioral characteristics of the clinical teacher. The study should yield valuable information which dental hygiene educators could use to make their teaching efforts more effective and in developing effective theories of clinical dental hygiene teaching.

The reason I am contacting you is to ask permission to use items _____ from _____ which I found in _____.

If you have any questions or would like a copy of my thesis proposal, I would be happy to send it to you. Please respond as soon as possible as I would like to begin my research.

Thank you for your time and cooperation.

Sincerely,

Frances G. Carson

APPENDIX E
PILOT STUDY CONSENT FORM

PILOT STUDY CONSENT FORM

I understand that participation in this study includes completion of the questionnaire at two 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 dental hygiene educators in making their teaching efforts more effective and in developing effective theories of clinical dental hygiene teaching.

I, _____, (do / do not) give my
(Signature)
consent to participate in this study.

Date _____

APPENDIX F

COVER LETTER -- FIRST SET OF INSTRUCTIONS TO
PARTICIPANTS (STUDENTS) IN PILOT STUDY

INSTRUCTIONS TO PARTICIPANTS
(Students)

Today I would like to ask your assistance in completing Phase I of the study on first and second year dental hygiene students' perceptions of effective behavioral characteristics of the clinical instructor. Participation in this study should yield valuable information which dental hygiene educators could use to develop effective theories of clinical dental hygiene teaching. The intent of this phase of the study is to establish reliability of the instrument. Because you are participating for the first time, please read, sign and date the consent form. 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 carefully and indicate your personal preference.
2. Please use a pencil. If you wish to change an answer, please erase thoroughly.
3. Keep questionnaire free of stray marks.
4. There are no right or wrong responses. Answer these questions honestly.

If you are participating, please begin answering the questionnaire at this time. Allow yourself 30 to 45 minutes for completing the questionnaire. When finished return to the test administrator the consent form and the questionnaire.

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

APPENDIX G

COVER LETTER -- SECOND SET OF INSTRUCTIONS TO
PARTICIPANTS (STUDENTS) IN PILOT STUDY

INSTRUCTIONS TO PARTICIPANTS
(Students)

I would like to ask your assistance in completing Phase II of the study on first and second year dental hygiene students' perceptions of effective behavioral characteristics of the clinical instructor. Because you kindly agreed to participate in the study last week, 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 carefully and indicate your personal preference.
2. Please use a pencil. If you wish to change an answer, please erase thoroughly.
3. Keep the questionnaire free of stray marks.
4. There are no right or wrong responses. Please answer these questions honestly.

Please begin answering the questionnaire at this time. Allow yourself approximately 30 minutes for completing the questionnaire. When finished please return the questionnaire to the test administrator.

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

APPENDIX H
CONSENT FORM

CONSENT FORM

I understand that participation in this study includes completion of this questionnaire.

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 dental hygiene educators in making their teaching efforts more effective and in developing effective theories of clinical dental hygiene teaching.

I, _____, (do / do not) give my
(Signature)
consent to participate in this study.

Date _____

APPENDIX I

GENERAL INSTRUCTIONS FOR QUESTIONNAIRE ADMINISTRATION

GENERAL INSTRUCTIONS FOR QUESTIONNAIRE ADMINISTRATION

1. Each group of students (whether first or second year in the dental hygiene curriculum) should be given the questionnaire at the same time, at a predetermined date, and in a classroom type setting. This procedure is important for research consistency.
2. The questionnaire should be administered preferably by a dental hygiene counselor in order to make the situation as non-threatening as possible for the students.
3. The questionnaire should take the students approximately 30 minutes to complete.
4. Each student will be given a questionnaire, a consent form to be signed and dated, and a computer answer sheet. Please collect all materials; however, return (C.O.D. via mail) only the computer answer sheets and the consent forms. Please box these materials because they cannot be bent or folded.
5. A sample computer form is enclosed. Please instruct the students to use the following format in the "student number" block on the answer sheet:
 - Column 1 is premarked in a code for your school.
 - Column 2 is for marking the student's status in the dental hygiene curriculum. Mark 1 for first year students; mark 2 for second year students.
 - Columns 3a and 3b are for marking the student's age.
 - Columns 5, 6, 7 and 8 are for the student's DHAT scores (LINE A).
 - The last column should not be marked.

Example Provided:

The school code is marked 1. (COLUMN 1)
 The student's status in the dental hygiene curriculum is first year. (COLUMN 2)
 The student's age is marked 20. (COLUMN 3a and 3b)
 The student's DHAT scores (Line A only)

SCI	<u>8</u>	(COLUMN 5)
VER	<u>6</u>	(COLUMN 6)
NUM	<u>4</u>	(COLUMN 7)
RDG	<u>9</u>	(COLUMN 8)

The last column has no mark.

6. Please note that the students need to know their DHAT scores (Line A only). This information is an important part of the research data. If possible have this information available for the students' reference.

7. For your convenience "Instructions to Participants" are provided for you to read aloud at the time of test administration.