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Cultural Adaptability of Students Attending Culturally Diverse and Non-Culturally Diverse Dental Hygiene Programs

Katrina White Magee
Old Dominion University

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CULTURAL ADAPTABILITY OF STUDENTS ATTENDING CULTURALLY DIVERSE AND NON-CULTURALLY DIVERSE DENTAL HYGIENE PROGRAMS

by

Katrina White Magee
B.S. May 1997, West Virginia University

A Thesis Submitted
to the Faculty of Old Dominion University in Partial Fulfillment of the Requirements for the Degree of

MASTER OF SCIENCE
DENTAL HYGIENE

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May 1999

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ABSTRACT

CULTURAL ADAPTABILITY OF STUDENTS ATTENDING CULTURALLY DIVERSE AND NON-CULTURALLY DIVERSE DENTAL HYGIENE PROGRAMS

Katrina White Magee
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The purpose of this descriptive investigation was to determine the cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs throughout the U.S. The dental hygiene schools were identified according to their ethnic diversity as reported by the ADA Commission on Dental Accreditation in the 1996-1997 Survey of Dental Hygiene Education Programs. Once the programs were identified, a random sample was taken from the diverse and non-diverse dental hygiene programs. A 50-item inventory, the Cross-Cultural Adaptability Inventory (CCAI), was mailed to the participating dental hygiene programs. One-hundred eighty-eight students represented U.S. dental hygiene programs in the following regions: Mid-Atlantic, South, Southeast, Southwest, Central, Northcentral and Northwest. The unpaired t-test was utilized to examine the differences between the groups on overall cultural adaptability and on its four dimensions: emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy. Group mean and standard deviation scores were compared with the CCAI norm group scores. The results revealed no significant difference in the
overall cultural adaptability of students attending either a culturally diverse or non-culturally diverse dental hygiene program. However, both groups' overall scores were significantly lower than the CCAI norm group. The culturally diverse group had significantly lower scores in flexibility/openness ($p = .054$) and perceptual acuity ($p = .021$) and significantly higher scores in emotional resilience ($p = .000$) when compared to the non-culturally diverse group. Scores in the dimension of emotional resilience and flexibility/openness were lower than the CCAI norm group, and scores in the dimension of perceptual acuity and personal autonomy were comparable with the CCAI norm group. There was no statistically significant difference between the culturally diverse and non-culturally diverse groups in the personal autonomy dimension. Findings suggest that dental hygiene students need more education in and experience with diversity issues. With low scores in the dimension of emotional resilience and flexibility/openness, students may lack the confidence and knowledge to cope with cross-cultural healthcare situations. However, the similar personal autonomy scores of the culturally diverse and non-culturally diverse students suggest that they already possess a strong sense of identity, responsibility, and respect for others.
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My family, for their moral support and constant encouragement throughout my education.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ABSTRACT ................................................................................................. ii</td>
</tr>
<tr>
<td>ACKNOWLEDGMENT ................................................................................ iv</td>
</tr>
<tr>
<td>LIST OF TABLES .................................................................................... vii</td>
</tr>
<tr>
<td>LIST OF FIGURES ................................................................................ viii</td>
</tr>
</tbody>
</table>

## CHAPTER

### I. INTRODUCTION ............................................................................ 1

- STATEMENT OF THE PROBLEM ................................................ 2
- SIGNIFICANCE OF THE PROBLEM ............................................. 3
- DEFINITION OF TERMS ............................................................... 5
- ASSUMPTIONS ............................................................................ 7
- LIMITATIONS ............................................................................. 8
- HYPOTHESES ........................................................................... 8
- METHODOLOGY .......................................................................... 9

### II. REVIEW OF THE LITERATURE .................................................. 11

- UNDERSTANDING THE CONCEPT OF CROSS-CULTURAL ADAPTABILITY ....................... 11
- COMMUNICATION COMPETENCE IN CULTURAL ADAPTATION ..................................... 14
- CULTURAL DIVERSITY IN HEALTH SCIENCE PROGRAMS STUDENT ENROLLMENT ............... 17
- CHALLENGES ENCOUNTERED BY CULTURALLY DIVERSE STUDENTS IN HIGHER EDUCATION ................................................................. 19
- COPING STRATEGIES AFFECTING ADAPTATION ..................................................... 22
- UNDERSTANDING THE IMPORTANCE OF CULTURAL AWARENESS IN HEALTHCARE .......... 25
- RECRUITMENT AND RETENTION OF CULTURALLY DIVERSE STUDENTS .................... 29
- CULTURAL COMPETENCE OF HEALTH SCIENCE STUDENTS .................................... 31
- SUMMARY ..................................................................................... 33
III. METHODS AND MATERIALS .................................................... 35
    SAMPLE DESCRIPTION ..................................................... 35
    RESEARCH DESIGN .......................................................... 36
    METHODOLOGY ............................................................... 37
    PROTECTION OF HUMAN SUBJECTS ................................ 38
    INSTRUMENT .................................................................. 39
    STATISTICAL TREATMENT .............................................. 42

IV. RESULTS AND DISCUSSION ............................................... 43
    RESULTS ............................................................................. 43
    DISCUSSION ..................................................................... 66

V. SUMMARY AND CONCLUSIONS ........................................... 81
    SUMMARY .......................................................................... 81
    CONCLUSION ....................................................................... 84

    BIBLIOGRAPHY ............................................................ 88
    APPENDICES ................................................................. 93
        A. CROSS-CULTURAL ADAPTABILITY INVENTORY .... 94
        B. DIRECTOR AND STUDENT COVER LETTER ..... 100
        C. DEMOGRAPHIC DATA COLLECTION FORM .. 103
        D. DESCRIPTIVE STATISTICS SCALE FOR CCAI... 105
        E. ADA COMMISSION ON DENTAL
           ACCREDITATION SURVEY ON DENTAL
           HYGIENE EDUCATION PROGRAMS:
           ITEM #30 ............................................................. 107
# LIST OF TABLES

<table>
<thead>
<tr>
<th>TABLE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimension Scores of Dental Hygiene Students From Various Ethnic Backgrounds</td>
<td>50</td>
</tr>
<tr>
<td>2. One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimension Scores of Dental Hygiene Students According to their Past Educational Levels</td>
<td>52</td>
</tr>
<tr>
<td>3. One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimensions of Dental Hygiene Students According to Past Cultural Diversity Training</td>
<td>54</td>
</tr>
<tr>
<td>4. Descriptive Statistics of the Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>56</td>
</tr>
<tr>
<td>5. Overall Cultural Adaptability Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>57</td>
</tr>
<tr>
<td>6. Emotional Resilience Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>60</td>
</tr>
<tr>
<td>7. Flexibility/Openness Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>62</td>
</tr>
<tr>
<td>8. Perceptual Acuity Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>64</td>
</tr>
<tr>
<td>9. Personal Autonomy Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>67</td>
</tr>
</tbody>
</table>
### LIST OF FIGURES

<table>
<thead>
<tr>
<th>FIGURE</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Ethnic Backgrounds of Dental Hygiene Students in the Culturally Diverse Group</td>
<td>45</td>
</tr>
<tr>
<td>2. Ethnic Backgrounds of Dental Hygiene Students in the Non-Culturally Diverse Group</td>
<td>46</td>
</tr>
<tr>
<td>3. Education Levels of Students from Culturally Diverse and Non-Culturally Diverse Dental Hygiene Programs</td>
<td>47</td>
</tr>
<tr>
<td>4. Cultural Diversity Training of Students from Culturally Diverse and Non-Culturally Diverse Programs</td>
<td>48</td>
</tr>
<tr>
<td>6. Overall Cultural Adaptability Scores of Students from Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>49</td>
</tr>
<tr>
<td>6. Emotional Resilience Scores of Students from Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>60</td>
</tr>
<tr>
<td>7. Flexibility/Openness Scores of Students from Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>63</td>
</tr>
<tr>
<td>8. Perceptual Acuity Scores of Students from Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>65</td>
</tr>
<tr>
<td>9. Personal Autonomy Scores of Students from Culturally Diverse and Non-Culturally Diverse Groups on the <em>Cross-Cultural Adaptability Inventory</em></td>
<td>68</td>
</tr>
</tbody>
</table>
CHAPTER I

INTRODUCTION

The racial and ethnic composition of the United States population is in constant transition. In 1995, 700,000 immigrants entered the United States legally, while 300,000 crossed the borders illegally (Spector, 1996). According to Andrews (1992), more than one-fourth of the United States population will consist of individuals from culturally diverse groups by 2000. By the year 2020, more than one-third of the United States residents will be non-white. These predicted demographic trends will augment the multiracial and multicultural status of the United States.

With this apparent change in the United States population comes the demand for culturally sensitive healthcare providers who can meet the needs of ethically diverse clients. It has been documented that culturally bound beliefs and values concerning wellness, illness, and treatment affect client comprehension, and can affect the outcome of care. The lack of cultural sensitivity by healthcare providers can lead to invalid diagnosis, miscommunication and barriers to care for the ethically diverse client (Andrews, 1992).

Two prevalent theories represent the cultural diversity of the United States. The first, the melting pot theory, is based on the assumption that culturally different individuals gradually assimilate into the mainstream of the White Anglo-Saxon culture. This theory has not materialized because realistically, ethnic groups prefer to maintain their uniqueness, contributing their diversity to society (Lewis, 1996). According to Fuller and Schaller-Ayers, the second theory, the salad bowl theory, identifies cultural differences and acknowledges the unequal status of different groups in society. The salad bowl theory applauds society’s diversity, and credits heterogeneity as society’s strength (Ahmioessau & Trommsdorff, 1996). To exist harmoniously as a multicultural
nation, it is imperative that the United States move from the melting pot theory and embrace the salad bowl theory.

Dental hygiene programs need to address cultural differences represented in a multicultural society in both admission policies and in the educational curriculum. Moreover, it is important for dental hygiene programs to prepare dental hygiene students who are capable of treating culturally diverse clients. Integrating cultural information and experience into dental hygiene curriculum may help to prepare diverse dental hygienists with the skills necessary to provide culturally sensitive healthcare. Dental hygiene students must become providers who understand how culture and socialization affect the health status, beliefs and behaviors of their clients (Connolly, 1995). This research investigated whether dental hygiene students attending culturally diverse or non-culturally diverse dental hygiene programs have the potential to adapt to cross-cultural environments.

Statement of the Problem

The purpose of this study was to determine the cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs. Specific research questions included:

1. What is the overall cultural adaptability level of students attending culturally diverse and non-culturally diverse dental hygiene programs?

2. Is there a difference in the cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs in terms of the four research-based dimensions: emotional resilience, flexibility/openness, perceptual acuity and personal autonomy?
Significance of the Problem

The United States population is rapidly becoming more diverse. In 1990, the minority population represented 25% of the United States population, and is expected to increase 35% by the year 2000, and 50% by the year 2025 (Berry, 1996). In California and Florida, the minority populations already represents 50% or more of the population (Benjamin, 1996). The United States Bureau of Census (1995) projects the Asian population to be the fastest growing racial group and the Caucasian to be the slowest growing group, for all regions of the United States. The Hispanic/Latino population is estimated to be the largest ethnic group in the United States by the year 2000.

Over the last decade, the number of culturally diverse students enrolled in health science programs in the United States has increased by more than 10% (Spector, 1996). These students typically are in the United States for a short period of time making it difficult to know which programs are best suited for their educational needs or what support services are available to assist them during their duration in the United States. Institutions of higher education in the United States need to be responsive to culturally diverse students' needs to ensure future recruitment and retention levels for all students.

The demographic trends for the future of the United States suggest a continuing increase in a culturally diverse population. These demographic trends will have a significant effect on the United States oral healthcare system. The dental hygienist must incorporate this information into treatment planning, diagnosis and oral hygiene education for all clients. Individuals from different cultural backgrounds will possess a variety of values, beliefs, and behaviors concerning the client's oral health, but also the client's total health. Unfortunately, culturally diverse clients sometimes experience a lack of trust when the oral healthcare provider is not a member of their culture (Andrews, 1992). To overcome this problem, dental hygiene programs need to focus on educating
students to be aware of and adaptable to culturally diverse clients' values, beliefs and behaviors to ensure their return for further treatment in dental hygiene care.

The presence of culturally diverse students studying in dental hygiene programs across the United States presents an enriching opportunity for all students and faculty in higher education. Dental hygiene programs may want to promote interactions between students from different cultural backgrounds to encourage culturally diverse perspectives. After dental hygiene students complete their education, they may find themselves providing oral healthcare in multicultural settings in America or aboard. These cross-cultural higher education experiences prepare today's dental hygiene students for employment in a multicultural world.

Understanding cultural diversity and the factors that facilitate cultural adaptability may be helpful in creating educational opportunities for students. Encouraging students from different cultures to interact with each other and the community, can improve multicultural communication skills for both parties. Unfortunately, only a small number of oral healthcare providers communicate regularly with individuals of different ethnic and national backgrounds (Andrews, 1992). To meet the demands for multicultural oral healthcare in the practice of dental hygiene, it is essential that all students develop cultural adaptability and have opportunities to provide culturally sensitive oral healthcare as part of the learning process.

This study was conducted to analyze the cultural adaptability levels of students attending culturally diverse and non-culturally diverse dental hygiene programs. Little is known about the development of students' cultural adaptability or if the cultural characteristic of the learning environment influences cultural adaptability. Before dental hygiene students can render culturally sensitive healthcare, they must first understand their own levels of cultural adaptability. Knowing one's own cultural adaptability levels can lead to awareness and appreciation of cultural diversity.
Definitions of Terms

Terms significant to this study were defined as following:

1. **Cultural Adaptability**: The ability to accustom oneself to culturally different situations or environments when required. In healthcare, this term refers to the ability of a healthcare provider to assess culturally diverse clients considering their beliefs, values, and feelings without discrimination during the process of delivering care (Connolly, 1996). The construct was measured using the *Cross-Cultural Adaptability Inventory*.

2. **Dental Hygiene Students**: Persons currently enrolled full or part-time in a culturally diverse or non-culturally diverse dental hygiene program.

3. **Item #30 of ADA Commission on Dental Accreditation 1996-1997 Survey of Dental Education Programs**: This item identifies each dental hygiene programs in terms of students' ethnicity as reported for the 1996-1997 school year (see Appendix E). In regards to answering this item, ethnicity was defined using the following definitions:

   - **White** (not Hispanic origin): Persons having origins in any of the original peoples of Europe, North Africa or the Middle East.

   - **Black** (not of Hispanic origin): Persons having origins in any of the black racial groups of Africa.

   - **Hispanic**: Persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish cultures or origins regardless of race.

   - **American Indian/ Alaskan Native**: Persons having origins in any of the original peoples of North America and who maintain cultural identification through tribal affiliation or community recognition.

   - **Asian/Pacific Islander**: Persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.
4. Culturally Diverse Dental Hygiene Program: A program's diversity identified by item #30 of the ADA Commission on Dental Accreditation 1996-1997 Survey of Dental Hygiene Education Programs (see Appendix E). For a program to be considered culturally diverse the response to this item indicated the enrollment of students in four of the five ethnic resulting a culturally diverse dental hygiene student body of 40% or more.

5. Non-Culturally Diverse Dental Hygiene Program: A program's homogeneity was identified by item #30 of the ADA Commission on Dental Accreditation 1996-1997 Survey of Dental Hygiene Education Programs (Appendix E). The non-culturally diverse programs enrolled students in 1 or less of the five ethnic categories.

6. Cross-Cultural Adaptability Inventory (CCAI): A standardized inventory designed to determine the extent of a person's cross-cultural adaptability. The 50-item inventory is comprised of four dimensions: emotional resilience, flexibility/openness, perceptual acuity and personal autonomy (Kelly & Myers, 1992). The four dimensions were defined as:

**Emotional Resilience.** Characteristics associated with emotional resilience include one's ability to cope with stress, maintain positive feelings toward new experiences, and keep one's self-esteem and confidence. Emotional resilience measures one's ability to "fit in" a new culture (Searle & Ward, 1990).

**Flexibility/Openness.** This dimension deals with one's adaptation to diverse ways of thinking and behaving which requires one's openness toward different cultures. These individuals are ready to listen to others, and seek to understand different cultural views and communication styles.

**Perceptual Acuity.** Individuals strong in this dimension relate the context of communication to sense others' thoughts, feelings and experiences. Also individuals learn to communicate nonverbally and verbally to improve interpersonal relationships. Perceptual acuity is not merely a matter of getting along with different people, but relates to perceptiveness and receptiveness.
**Personal Autonomy.** Individuals with high personal autonomy take responsibility for their actions while respecting themselves and the decision of others. These individuals have a strong sense of identity and respect for other's values and cultures different. The first step toward understanding another culture is to become aware of one's own culture and values, so they will not interfere with the learning of others' cultural differences (Sikkema & Nijekawa, 1987).

7. **Cultural Sensitivity:** Healthcare providers obtain information on cultural beliefs, work within the client’s belief system and knowledge base, and adapt this information to the treatment protocol to meet the client’s healthcare needs (Talabere, 1996).

8. **Culture:** The shared patterns, values, beliefs, norms, and practices of a particular group that are learned and guide a patterned way of thinking, feeling, and behaving (Leininger, 1994). In healthcare, cultural is the context for the human experience of health, illness, wellness and sickness; therefore, quality of life is culturally constituted and patterned (Leininger, 1994).

**Assumptions**

The following assumptions were made for this study:

1. Administrators at the dental hygiene programs surveyed followed directions and distributed the Cross-Cultural Adaptability Inventory during class time.

2. Students truthfully answered the Cross-cultural Adaptability Inventory because responses were kept confidential. The Cross-Cultural Adaptability Inventory is a self-scoring instrument, therefore, facilitating self-assessment and improvement in cultural adaptation within the students.

3. The Cross-Cultural Adaptability Inventory is a valid and reliable instrument for the measurement of dental hygiene students' cultural adaptability.
Limitations

The following limitations were identified as possible threats to the internal and external validity and reliability of this investigation:

1. The items on the Cross-Cultural Adaptability Inventory may be answered ideally rather than how respondents actually behave in a cultural diverse situation. The standardized letter to each student asked subjects to answer all items truthfully based on their beliefs and feelings.

2. Due to the cluster random sample, dental hygiene students serving as subjects are not representative of all dental hygiene students in the United States; therefore, all findings are limited to dental hygiene students who possess characteristics similar to those sampled in this study.

3. Unfortunately, situational-relevant difference during inventory administration could not be controlled due to the different dental hygiene programs involved. To decrease this threat to internal validity, each inventory was accompanied with a letter explaining the instructions for taking the Cross-Cultural Adaptability Inventory and the significance of this study.

4. The researcher could not obtain the 1997-1998 data from the ADA Commission on Dental Accreditation Survey on Dental Hygiene Education Programs. The researcher utilized data from the 1996-1997 annual survey assuming the data would be similar.

Hypotheses

The following null hypotheses were tested:

1. There is no statistically significant difference, at the .05 level, in the overall cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the Cross-Cultural Adaptability Inventory.
2. There is no statistically significant difference, at the .05 level, in the emotional resilience dimension students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the emotional resilience scale of the Cross-Cultural Adaptability Inventory.

3. There is no statistically significant difference, at the .05 level, in the flexibility/openness dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the flexibility/openness scale of the Cross-Cultural Adaptability Inventory.

4. There is no statistically significant difference, at the .05 level, in the personal acuity dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the personal acuity scale of the Cross-Cultural Adaptability Inventory.

5. There is no statistically significant difference, at the .05 level, in the personal autonomy dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the personal autonomy scale of the Cross-Cultural Adaptability Inventory.

Methods

The Cross-Cultural Adaptability Inventory (CCAI) created by Kelley and Meyers (1992) was utilized to measure the cross-cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs throughout the United States. Data collected from the CCAI was continuous in nature and intervally scaled. The random cluster sample contained 108 diverse and 80 non-diverse dental hygiene students attending programs located in seven regions of the United States. The CCAI inventory consists of 50-items, and takes approximately 30 minutes to complete; participants had the time to self-score their responses and record the scores on the interpretation profile. Differences among students attending culturally diverse and non-culturally diverse dental hygiene
programs were analyzed on the variable of cultural adaptability and the four research-based dimensions by the unpaired t-test analysis. One-way analysis of variance examined for differences among the scores related to the demographic variables. Line graphs were utilized to summarize visually and identify unique features among the student groups.
CHAPTER II

REVIEW OF LITERATURE

To conceptualize cultural adaptability and the development of a culturally diverse health profession, the literature was reviewed according to the following topics: understanding the concept of cultural adaptability, communication competence and cultural adaptability, cultural diversity student enrollment in the health science programs, coping strategies affecting cultural adaptability, international students' challenges in higher education, cultural awareness in healthcare, recruitment and retention of cultural diverse students, and cultural competence of healthcare students.

Understanding the Concept of Cultural Adaptability

In healthcare, the concept of cultural adaptation, in healthcare, is the ability of healthcare providers to understand and administer treatment with consideration of the individual’s culture without discrimination or miscommunication. Mead (1985) states: “If we are to achieve richer culture, rich in contrasting values, we must recognized the whole gamut of human potentialities so that each diverse human gift will find a fitting place.” The increasing wave of immigration in the past two decades and the continuing increase in the numbers of births among minority and ethnic groups has stimulated research in cultural adaptability. Recent studies of cultural adaptability have been conducted in psychology, sociology, psychiatry, communication, healthcare, and other related fields (Connolly, 1996).

The need to provide all healthcare students with culturally diverse perspectives during their higher education experience is becoming increasing apparent. Smucker and Sommenrs (1995) declared that average citizens, as well
as world leaders, need to have an understanding of the multicultural world which we are all apart of; therefore, colleges and universities have a major responsibility to help prepare students to live and work in a fast growing multicultural society.

The American Association of State Colleges and Universities in 1985 declared, “Culturally diverse education as a fundamental part of general and professional studies. It is the preparation for social, political, and economic realities that humans experience a culturally diverse and competitive interdependent world.” If students are educated in the international arena with knowledge of the cultural diversity and the client’s adaptation, then working in a global community with diverse clients may be accomplished much easier.

For years the scientific community has elucidated the differences between cultures by four erroneous perceptions: homogeneity, similarity, parochialism, and ethnocentrism (Benjamin, 1996). These perceptions, no longer suitable for reality, instead are viewed as dysfunctional and mislead individuals to generate incorrect conclusions associated with individuals from other cultures (Benjamin, 1996). According to Benjamin (1996), many researchers have replaced these four misleading perceptions with more appropriate perceptions for today’s society. The first misleading perception, “homogeneity”, suggests that one believes that all others are the same as oneself. “Homogeneity”, replaced by “heterogeneity”, suggests one understands that all individuals are different from oneself. The “similarity” perception, that one perceives others as equivalent, is based on the golden rule, “Do unto others as you would have them do unto you”. Replacing “similarity” with “difference” enables one to perceive that what is appropriate for oneself may be inappropriate for others. The next perception, “parochialism”, explains one’s own culture is the only way of life, and all other ways of life are inferior. Parochial individuals have a negative evaluation of people who are culturally different. Replacing this perception is “equifinality”, which explains there are numerous culturally distinct ways of
living one’s life. The final perception, “ethnocentrism”, assumes there are many ways of accomplishing anything; however, “my way” is the best way. “Ethnocentrism” was replaced by “cultural contingency”, which explains numerous ways of living one’s life and achieving goals. From the literature, it is evident that misleading perceptions exist that ignore cultural diversity. These new perceptions, heterogeneity, differences, equifinality, and cultural contingency, replacing the traditional perceptions, are appropriate concepts for understanding cross-cultural adaptation in today’s world.

When a student enters a new culture, all that was familiar has vanished. According to Yoshikawa (1987), each individual adapts to a new culture by passing through five stages of cross-cultural adaptation. In the first stage, the honeymoon or “contact”, one discovers a new culture either fascinating or threatening due to lack of familiarity. In the second stage, “disintegration”, one may experience conflicts between the different cultures lasting for weeks up to months. Individuals successful in this stage continue in the new culture; those individuals less fortunate leave before potentially having a nervous breakdown (Benjamin, 1996). If students are unable to leave the new culture, counseling will be needed to help the student adjust. In the third stage, “reintegration”, one begins to open up to a new culture by stereotyping and utilizing generalization to find a solution for the problem. In the fourth stage, “autonomy”, one is ready to accept cultural differences or similarities and to adapt to a new way of life. In the final stage, “double-swing”, one becomes independent and interdependent, simultaneously focusing on the interactions between the original and new culture (Yoshikawa, 1987). As an individual enters the final stage of cross-cultural adaptation, complete cultural acceptance has been reached. It is at this level that one finally begins to enjoy and respond to a new culture.

The world today consists of several hundred national and regional cultures that healthcare providers need to be aware of when providing treatment. These cultures reflect significant behavioral characteristics, which Lewis (1996)
classifies as linear-active, multi-active, and reactive. The first category, linear-active (task-oriented), includes introverted individuals who do one project at a time, compartmentalizing the project to near perfection according to a time schedule. Next are multi-active cultures, where extroverted individuals carry out numerous projects interlacing all projects and activities at once with no time schedule. The final cultural category, reactive (respect-oriented), is famous for producing excellent listeners. Persons from reactive cultures prefer to listen to what a speaker is saying, then react with a period of silence to formulate their ideas before communicating (Lewis, 1996). These individuals not only demonstrate a period of silence before answering, but excel in nonverbal communication. Nonverbal communication is utilized more than verbal communication among people in reactive cultures, which is confusing to persons from linear and multi-active cultures. These three separate cultural categories contain diverse behavioral characteristics affecting one’s ability to adapt to a new culture (Lewis, 1996).

*Cultural adaptability* is influenced by numerous conditions such as: attitudes, beliefs, behaviors, interpersonal relationships, and economic conditions. These conditions have diverse elements within themselves making the development of cross-cultural adaptability difficult and challenging to understand and measure (Connolly, 1996).

**Communication Competence in Cultural Adaptation**

International and ethnic/racial students enrolling in American colleges and universities have generated unceasing academic interest in multicultural communication experiences. Higher education is concerned with cultural diversity issues both to enhance students’ experiences on campus and to prepare them to function effectively in careers in a multicultural society (Zimmermann, 1995). Understanding how persons from different ethnic backgrounds communicate is a growing concern for the increasingly culturally diverse
multicultural communication and relationships across ethnic boundaries are not simply issues, but problems in communication affecting the adaptation phase to a new culture; therefore, this needs to be experienced, researched and improved (Kim & Gudykunst, 1991).

When exploring the concepts of communication and cultural adaptation, different terminology are frequently utilized. Two common terms observed throughout the literature are intercultural communication and multicultural communication. Intercultural communication suggests a limited recognition of the number of cultural perspectives involved in communication (Kreps, 1994). In contrast, the term multicultural communication recognizes the complex influences of the multiple cultural nature of human communication. To communicate effectively with others, it is important to understand and respect the cultural orientation from which each individual thinks, acts and communicates (Kreps, 1992).

Spitzberg (1994) relates intercultural communication competence with success in meeting each individual's goals or objectives. Kim (1991) disagrees with Spitzberg. Kim believes that intercultural communication competence should be independent from success and related to an individual's capability to adapt and acknowledge communication. Kim defines intercultural communication competence as one's capacity to suspend or modify old cultural ways to learn and accommodate new cultural styles. Individuals learn to manage the dynamics of cultural differences, unfamiliarity and the accompanying stress. According to Kim (1994), there are three dimensions related to intercultural communication, which each individual must transverse before cross-cultural adaptation can occur. The first dimension, cognitive, refers to one's interpretation of verbal and non-verbal messages. The second dimension, affective, is concerned with the motivation, attitudes and readiness of others to accommodate intercultural challenge. The final dimension,
operational or behavioral, is concerned with how individuals communicate and interact within intercultural contexts.

Banks, Gao, and Baker (1991) believe that cultural communication must embrace a group's logic of expression and that the new members accept the group's natural and foundational way of being. Moreover, any model of intercultural communication competence must take into account the communicators' interpretations and motivations as well as communication skills. Understanding the communicator's values, norms, language, and verbal and non-verbal characteristics of ethnicity will help one understand and conquer communication barriers. This approach places individual meaning and motivation at the center of intercultural miscommunication.

Zimmermann (1995) conducted a study analyzing the affective dimensions and behavioral flexibility of intercultural communication and the extent to which these dimensions affect adaptation to a new culture. One-hundred one international students, enrolled from one to twelve semesters at a Midwestern university, were interviewed face-to-face utilizing open-ended questions in four categories: affective dimensions, behavioral flexibility, frequency of interaction with students born in the United States, and tenure. Chi square analysis revealed no significant differences between affective dimensions and behavioral flexibility affecting the overall adaptation process. However, this study revealed that the frequency of interaction with American students was an important factor affecting international students adaptation to a new culture. Students willing to accommodate to intercultural challenges and spend time building relationships with American students decrease their feelings of alienation and accelerate the cross-cultural adaptation process.

The demonstration of interest and respect in cultural perspectives of other students can serve as a good foundation for supportive and cooperative relationships between students. Kreps (1991) stated that the "norm of reciprocity", a general rule of human behavior, enables us to feel obligated to
respond to others in a manner that is complementary to the way individuals act toward us. By showing interest and respect in learning about other cultures, expectations and behaviors, the tendency to violate other’s can be decreased.

**Cultural Diversity in Health Science Programs’ Student Enrollment**

Healthcare, in the past ten years, has becoming a cultural melting pot consisting of patients and practitioners from different cultural backgrounds. Its becoming increasingly common to encounter international and minority students studying in health science fields. Simultaneously, an increasing number of culturally diverse individuals seek healthcare in America. According to the United States Census Bureau, 20.2% of all United States residents in 1994 were foreign-born residents. If predictions hold true, by the year 2020, minorities will comprise half the population, and the United States will be a multicultural nation (Cross, 1995).

Howard (1997) conducted a descriptive study to investigate dental hygiene schools and the diversity among the student population. Two-hundred sixteen accredited schools received a questionnaire. Of the 71% of the schools who responded, 45% reported an international student enrollment. Howard (1997) found that in 1995, a total of 281 international students were enrolled in United States dental hygiene schools, the majority of which were from Canada followed by Asia, Europe, Central America, South America, Africa, and Caribbean. Based on a 27-item questionnaire returned from 156 programs, Howard concluded that United States dental hygiene programs do not place enough emphasis on internationalization. Dental hygiene schools need to participate in the multicultural movement and work to increase cultural diversity in student enrollment (Johnson, 1992). These findings are substantiated by the ADA who reported that, 92% of all dental hygiene students were White (ADA,CODA, 1997). In 1994/95, dental hygiene programs reported that 96% of the graduates were United States citizens, whereas 4% were from other countries
In dental hygiene programs, enrolling culturally diverse students is one way to increase cultural awareness among students.

Minority ethnic and racial groups are underrepresented in physical therapy (Haskins, Rose-St. Prix, & Elbaum, 1996). Currently, the majority (94%) of physical therapists are non-Hispanic whites. Since the early 1980's, the number of international and minority students in physical therapy has increased by 10% due to aggressive recruitment and retention efforts. However, with the increase in international and minority students in the program, the faculty has reported an increase in the number of problems with students in clinical settings, i.e., "personality clashes" between traditional and nontraditional students. This finding might reflect a lack of cultural adaptability in the student body.

Haskins, Rose-St. Prix, and Elbaum (1996) were concerned that the problems culturally diverse students experience might be related to covert ethnic bias. If there is covert ethnic bias in the evaluation of students' clinical skills, it could be possible that these students are being excluded or discouraged from the profession. Haskins et al. (1996) conducted a study at the Florida Physical Therapy Association Conference to measure covert or ethnic bias against international and minority students among physical therapy instructors. Physical therapy students of different ethnic and racial backgrounds acted out identical scripts and then recorded three different videotapes for instructors to view. Data were obtained by having instructors read the case study, view the videotape and rate the student's performance. Results revealed that African-American and Hispanic students consistently received low ratings, despite reciting the identical script as the Asian and White students. Although there was no statistically significant difference in ratings among Asian and Hispanic students, these students received proportionately more negative comments than positive comments when compared with the White students. The results suggest
that physical therapy practitioners in the United States may be disenfranchising culturally diverse students from the profession.

For decades, nursing has strived for greater cultural diversity, but has achieved only modest gains. In 1992, 91% of all RN's reported their ethnicity or race as white, compared with 80% of the total United States population (Koerner, 1992). As of 1995/96, 84% of all nursing students were of the white race or ethnicity (Lewis & Kleiman, 1994). Although there has been a slight increase since 1992, numbers are still unrepresentative as compared to the current population of minorities in the United States. With the projected increase in minority populations, along with the projected decrease in the number of registered nurses in the next century, nursing schools will need to recruit and retain racial, ethnic and international students (Campbell & Davis, 1996).

Challenges Encountered by Culturally Diverse Students in Higher Education

The number of culturally diverse students studying in the United States is steadily increasing. Unfortunately, these students encounter challenges from the start of their academic careers. Many students who are new citizens of the United States or internationals can read, write, and speak English; however, most of these students have a difficult time translating the language and understanding fast paced lectures. Therefore, thinking abstractly, synthesizing information and completing analytical writing assignments can be challenging.

Research has shown that cultural characteristics and backgrounds can influence the type of challenges students encounter. Church (1982) found that international students with good language competence experience less discomfort when arriving to a new culture because they can relate and understand the new culture. Manese (1988) concluded that female international undergraduate students experience more problems than male international undergraduate students. Female students fail to see themselves as leaders when
compared to male international students; however, this trait can also be considered culturally related to the roles of females and males in other countries. It is important for male and female international students to see themselves as leaders because these students may have the opportunity to promote culturally sensitive healthcare in the United States. Another study revealed that students from European countries adapt quickly when compared to students from Third World Countries (Brislin, 1981; Church, 1982). All of these studies were conducted on one college campus which limits the external validity of the research.

Parr, Bradly and Bingi (1992) observed that international students felt determined, thankful, confident and cautious when attending their first year of college in America. However, these positive feelings run out during the second year, but after the second year the positive feelings return and the students remain relatively positive throughout the completion of their education. Special efforts need to focus on helping these students maintain positive feelings through their second year. During this time, creative efforts such as displaying international information, and pictures on bulletin boards and in school newspapers can help these students through their rough times. Policies and actions need to convey the message that international students enrich the campus and are cherished students.

Saad and Jones (1981) conducted a study on problems encountered by international nursing students' during their education in America. In a descriptive study, international nursing students answered open-ended questions to identify difficulties in adaptation to nursing. Results revealed that communication deficiencies are fundamental to numerous social and academic problems the students encounter. Language ability may contribute to the success or failure in their classroom. International students who receive low scores or fail exams lose self-confidence, which consequently can be devastating for these students. Even during lectures, class participation may be minimal for
international students because of the language barrier. In clinical settings, communication with patients, instructors and other healthcare worker was challenging and students were misunderstood, leading to poor evaluations by instructors.

Colling and Liu (1995) designed a study to gather information on how international nursing students learned about various schools in the United States, and barriers they encounter when coming to the United States to study. A survey was developed to gather data from international students. The basis of the survey came from questions asked during an interview with international students and faculty identifying areas of concern that might be helpful to international students. A pilot study was conducted and minor changes made to the survey. The instrument was then mailed to 84 accredited nursing schools within the United States. Forty-five nursing schools responded and a total of 239 international students, from 49 different countries were sampled; however, only 83 of these students responded to the survey. Students from Asia accounted for almost 50% of the total international student body (Colling & Liu, 1995).

According to the results, students indicated that their decision on where to study was influenced by a variety of sources: friends and family located near the school, literature provided by the school in the United States, their professors or a visit from professors or students from the United States. The four main barriers these students encountered after coming to study in the United States included English language barriers (53.7%), financial problems (34.2%), enculturation (24.4%) and information on academic programs (14.4%). Overall, speaking and understanding English was the most frequently identified barrier by both students and faculty at these nursing schools; however, obtaining adequate financing was identified as the greatest barrier to coming to the United States to study (Colling & Liu, 1995).

Zwingmann and Gunn (1983) discussed the inevitable as well as avoidable problems and challenges international students face. Among those
classified as inevitable were language difficulties, separation reactions, climate and diet. Zwingmann and Gunn classified avoidable problems under miscommunication and misunderstandings. Unfortunately, faculty and students who have contact with international students do not realize the problems or challenges these students face.

International students need personal contact with feedback from faculty to ensure their successful progression. International students commented that the faculty was too busy to spend time with them (Abu-Saad & Kayser-Jones, 1981). International students require more time and attention, and faculty working with these students need a reduction in their workload or support from teaching assistants to alleviate the problem. There also has been a plea for more clinical experience by international students, not surprising because US students had the same request (Abu-Saad & Kayser-Jones, 1981), it seems time might be the problem. However, international students are expected to be proficient in the clinical aspect of the curriculum so when returning home they will be role models for others in their country. The success of international students among educational programs will attract future students enriching the profession with cultural diversity and preparing all students for their roles in the provision of culturally sensitive healthcare.

**Coping Strategies Affecting Adaptation**

Individuals entering a new culture are faced with numerous demands making successful coping strategies essential for adaptation. Successful coping strategies develop from prior life experiences and circumstances that are utilized to solve problems in a new culture. For students attempting to adapt to a new college or university settings, the students' self-confidence is augmented by good coping strategies and acceptance by others (Cross, 1995). Consequently, the self plays an important role in one's psychological well-being during the adaptation process.
The aspect of cultures influencing a person relates to the importance of individualism verse collectivism. Individualist cultures encourage members to be unique, to "stand out", and to express one's abilities to resist social pressure (Cross, 1995). Individualists are independent and place high emphasis on self and separation from group membership. Collectivists are interdependent and believe the group's needs are superior to the needs of the individual. Individualism and collectivism have different cultural perceptions of cognition, emotion and behavior characteristics. For example, individualist western cultures are unique for using self-expressions, taking direct action and confronting others on one's own behalf. These are direct attempts or problem-focused strategies which are utilized to influence the existing situation through one's effort. Collectivist Asian cultures prefer harmony with others. These individuals adapt to social situations by changing oneself rather than altering the situation. Among collectivist cultures, one's goals are subordinated to group goals. Direct coping strategies may be viewed as immature or selfish and threaten harmony in relationships (Cross, 1995).

According to some cross-cultural studies (Ahmoiessau & Trommsdorff, 1996), coping strategies in collectivist Asian and individualistic American cultures differ. Caucasian Americans utilize "personal" and "social" direct coping strategies, while Japanese Americans utilize "social support", related to the tendency of the Japanese to suppress personal and emotional feelings and accept one's circumstances in life. Chartaway and Berry (1989) found that English Canadians were more inclined than French Canadians to utilize "positive thinking". French and English Canadians scored slightly higher on problem-focused or direct coping strategies and scored lower on several emotional-focused or indirect coping subscales than Chinese students. German students utilize problem-focused strategies whereas Israeli students utilize "internal" and "religion" coping strategies. Individuals in collectivist cultures
Culturally diverse, international and minority, nursing students attending a college in the southwestern United States were interviewed on concerns and coping strategies utilized everyday to meet the demands of adapting to a new culture (Alexander, 1991). The interview, which lasted three hours, contained open-ended questions that were recorded and transcribed to collect accurate data analysis. Analysis revealed culturally diverse nursing students' concerns about long distant relationships between loved ones, and facing "cultural shock" or "migration disease" when trying to adapt to a new culture. Managing these concerns requires internal and external coping strategies to help individuals meet cultural and internal demands. Internal strategies bring to a new situation patterns of successful coping that work such as exercise and meditation (Alexander, 1991). External strategies are initiated by others to enhance coping. For example international students' self-confidence is increased when instructors or native born students call international students by name making them feel valued and less alienated.

Coping with a new culture can influences one's health and well-being. According to Ahmoiessau and Trommsdorff (1996), psychosomatic problems such as gastrointestinal disorders are rare among individuals with high problem-focused coping as compared with those with emotional-focused coping strategies. In contrast with emotional coping, problem-focused coping actively influences one's health and empowers one to take responsibility for situations. Emotional coping tends to be passive and inclined to accommodate existing realities. For successful cross-culture adaptation, a balance between problem-focused and emotional-focused coping strategies is necessary to achieve adaptation and positive relationships in a new culture.

Albee (1985) created a model for the prevention of psychopathology, which utilizes the analogy of a fraction, with stress factors as the numerator and
coping factors as the denominator. As coping factors in the denominator increase, the stress factor in the numerator decrease; conversely, the fewer coping skills one has the greater amount of stress one experiences (Albee, 1985). There are many problems that contribute to stress such as communication deficiency, uncertainty, financial difficulties, relationships, employment and environment. According to Albee (1985), the model for the prevention of psychopathology has developed coping factors that can work to decrease stress factors. These coping strategies include communication proficiency, economic assistance, education, and preventive healthcare. The model, when applied, enables one to develop and build supportive relationships in a new environment which is necessary for cultural adaptation to occur.

Table 2-1
Model for the Prevention of Psychopathology (Ablee, 1985)

<table>
<thead>
<tr>
<th>Stress Factors (numerator)</th>
<th>Coping Factors (denominator)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication Deficiency</td>
<td>Communication Proficiency</td>
</tr>
<tr>
<td>Change, Uncertainty</td>
<td>Financial Assistance</td>
</tr>
<tr>
<td>Relationship Problems</td>
<td>Support Systems</td>
</tr>
<tr>
<td>Employment Problems</td>
<td>Preventive Health Care</td>
</tr>
<tr>
<td>Environmental Problems</td>
<td>Education</td>
</tr>
</tbody>
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Understanding the Importance of Cultural Awareness in Healthcare

The lack of cultural awareness among future healthcare providers can waste millions of dollars each year due to misdiagnosing culturally diverse clients (Andrews, 1992). To observe clients without attention to the context from which the person has drawn previous and current experience is to ignore the
foundation upon which the individual's life has been built (Buhl, 1996). Student healthcare providers need to be educated to recognize cultural heritage as a key component through which all people respond to healthcare problems and treatment. Understanding the clients' cultural background provides an important basis for assessing the client's needs. Students must be educated to assess the clients' needs from their culturally different perspectives.

Morey and Leung (1993) conducted a descriptive study to determine dental hygienists' knowledge of values, beliefs and health practices of Asian Americans, African Americans, Native American, and Hispanics/Latinos. Also the investigation determined whether age or education had an impact on the multicultural knowledge of dental hygienists (Morey & Leung, 1993). The study utilized two instruments for data collection: a 20-item Knowledge of Cultures Test, and a demographic questionnaire. Thirty female dental hygienists participated; all reported treating clients from each of the four minority/ethnic groups included in the study. Morey and Leung (1993) found no differences in multicultural knowledge according to age, education, or professional experience. Results indicated that dental hygienists have a low level of multicultural knowledge when working with culturally diverse clients. Only 53% (10.6) of the items were answered correctly on the Knowledge of Cultures Test. To increase the cross-cultural adaptability of students, dental hygiene programs need to include multicultural curriculum content so that students can understand, assess and deliver culturally sensitive healthcare to clients.

All cultures have extensive and complex beliefs about health, treatment, illness and disease. Culture determines health and illness behaviors such as self-care, pain-tolerance and compliance to healthcare recommendations come from the practice of folk medicine. The following examples were documented by Mecardo (1995). Hispanics or Latinos believe spirits can protect and harm individuals, or prevent and cause illness. They also believe disease is cause by
natural or supernatural forces and that, an imbalance of heat and cold can result in emotional upset and death. Most Native Americans believe that ill individuals need three foci of treatment: the mind, the body, and the spirit. All of these parts must be in harmony for an individual to heal.

Jackson (1993) describes three major health belief categories that can be utilized when understanding and negotiating with multicultural client's beliefs. The biomedical system often referred to as western medicine, was developed in the United States and is the dominant health belief. The biomedical system is based on the assumption that disease results from abnormalities in the structure and function of the body and organs; disease is primarily caused by infections with microorganisms, trauma, heredity or the degenerative process. Treatment is aimed at destroying or removing the etiology of the disease through medications, diet, rest, exercise, or surgery, if needed. Healthcare providers cannot be experts on every culturally diverse client they encounter; however, healthcare providers can prevent frustration by openly discussing the belief systems and negotiating the treatment for the client. Jackson (1993) believes it is essential to have an understanding of the health belief system as a framework for understanding culturally diverse healthcare beliefs.

The secondary belief system, referred to as personalistic, is believed to be caused by the active purposeful intervention of a supernatural being, a nonhuman being (ghost or evil spirit) or a human being (a witch). Illness is a result of aggression or punishment directed at the individual for some reason concerning only them and the spirits. Treatment involves identifying the cause through trances or other divinatory techniques. In this system of health beliefs, a divinator often makes the diagnoses and a herbalistalist treats the physical symptoms. Personalistic beliefs can be found among small tribes such as indigenous inhabitants of America, African tribes of the Sahara Desert and Oceanic regions.
In the third belief system, naturalistic, illness results from a break down in the equilibrium of intrinsic elements in the human body mainly hot and cold. The naturalistic systems were developed from the great medical traditions of ancient classical civilizations such as China, India and Greece. Cures in the naturalistic system involve physicians or herbalists who are the specialists in symptomatic treatment and know how to restore the equilibrium of hot and cold. The naturalistic health belief can be found in several Asian countries including Japan, Vietnam, Korea, Taiwan, Singapore, Hong Kong and China. Cultural awareness is important in understanding the client's health beliefs to response to their illness and to motivate them to comply with recommendations.

Chinese folk medicine bases many of its beliefs on maintaining a harmonious balance between two opposing forces: hot and cold or yin and yang. Yin is a female negative energy, passive and unassertive, that stores the vital strength of life. The yang is male positive energy that is active, excited and assertive. When an imbalance between yin and yang occurs within the human body, the result is bodily disjunction or a disease. Yin conditions such as pregnancy are treated with yang (hot) foods and yang conditions such as hypertension and venereal diseases are treated with yin (cold) foods. It is usual for members of cultures to treat illnesses with balances of hot and cold foods. Foods also can be used to improve or cure specific conditions, e.g., consuming liver to cure problems of the liver or consuming animals' brains to gain wisdom.

Southerners in the United States, African Americans, Hispanics/Latinos, Native Americans and Asian/Pacific Islanders may integrate western medicine and indigenous therapies to resolve illness (Scott, 1974). The student's lack of knowledge about clients' cultural beliefs can hamper the healthcare practitioner's ability to understand and give optimum care. Students must realize the culturally diverse beliefs of their client, understand these cultural beliefs and administer care without stereotyping. A basic understanding of the
three healthcare belief systems can help healthcare professionals plan treatment acceptable by both the client and healthcare professional. Students need to be educated to understand that healthcare beliefs and practices of other cultures may be neither harmful nor helpful (Jackson, 1993). Therefore, the practitioner simply needs to respect the beliefs and practices of the client. If culturally diverse clients are respected and their beliefs taken into account for treatment, clients are less likely too drop out of the treatment (Jackson, 1993).

Recruitment and Retention of Culturally Diverse Students

Recruitment and retention of culturally diverse students, international students and minority students, is a critical issue in the healthcare professions. The lack of culturally diverse healthcare students can hinder the education of future healthcare professionals, and the future quality of healthcare received by diverse clients (Dowell, 1996). Representation of culturally diverse students is critical for quality healthcare in serving culturally diverse clients (Crawford & Olinger, 1988). With the increasing diversity in the population, healthcare issues have become more complex. According to Andrews (1992), the lack of culturally sensitive healthcare and ethnocentrism of healthcare providers has resulted in poor quality of care for culturally diverse clients.

At this time many institutions of higher education reflect uniformity and homogeneity in the student, faculty and administrative populations (Dowell, 1996). According to Dowell (1996), external and internal relationships among these populations are directly affected by the lack of diversity. These types of environments hinder the viability of higher education (Betters-Read, 1990). For institutions of higher education to remain viable, the institution needs to become more flexible, increase numbers of employees with a culturally diverse background, work to improve the recruitment and retention of culturally diverse students, and support culturally sensitive healthcare throughout the curriculum.
A study conducted by Naylor and Sherman (1988) discovered that traditional strategies for recruitment have been ineffective in recruiting culturally diverse students. Traditional strategies utilized in the past include personal contact with faculty, alumni and students meeting to discuss the program, open houses or career days at school or institutions of higher education and brochures (Naylor & Sherman, 1988). Results of the study indicated barriers to recruitment of culturally diverse students such as lack of full paying scholarships, scarcity of particular groups in geographic areas, lack of successful recruitment strategies, lack of positive attitudes from administrators, and lack of culturally diverse role models in institutions of higher education.

An informal survey conducted by Minner (1995) indicated barriers that Native American students face when trying to complete a college degree. The sample included 22 Native American students who had dropped out of Northern Arizona University. These students indicated that family influences and responsibilities, lack of financial resources, campus attitudes toward Native Americans, poor academic preparation, and language barriers were the reasons for dropping out of higher education. Additional support services, such as professors who demonstrated a caring attitude, would have made a difference in their decision to withdraw (Minner, 1995).

Barriers to the retention of culturally diverse students include institutional, economical and personal factors (Campbell & Davis, 1996). High attrition rates have been linked to the lack of affiliation from social support groups, student or peer study groups, and peer support groups; lack of faculty support, commitment or contact; low availability of financial aid, and poor advisement or counseling for these students (Campbell & Davis, 1996).

A study conducted by Kalkwarf (1995) showed that faculty commitment was the key to the successful retention of culturally diverse students. Even if there are no organized programs to address retention of students, when faculty
are committed to students’ success, students are more likely to be successful. The lack of international and minority faculty, administrators and role models can hamper student recruitment and retention levels (Dowell, 1996). Other factors affecting recruitment and retention include organizational culture, climate, state and public polices, and administrative leadership styles (Simmion & Santos, 1987; Dowell, 1996).

Culturally diverse students are at risk of dropping out in majority institutions of higher education, and recruitment and retention rates of these student should not be dismissed. When these students feeling connected to their institution of higher education, they are able to be persistent and succeed, thus increasing the number of international and minority students in health science to representative levels. The future of treating culturally diverse clients rest on the availability and success of these diverse student as healthcare practitioners.

Cultural Competence of Health Science Students

It is clear that the concept of culture plays an important role in understanding the total person. According to Talabere (1996), knowledge and awareness of the clients culture is not always enough. Thus, educating future healthcare professionals to be culturally competent needs to be the focus, with the full recognition that cultural competence goes beyond providing culturally sensitive healthcare. Culturally competent care means neither abdication of the healthcare provider’s culture or assimilation to another culture by the client, but rather the ability of two or more individuals to interact within a common cultural identity in a mutually appropriate, respectful, and effective manner to provide healthcare services (Galvis, 1995).

Alpers and Zoucha (1996) conducted a study to compare the cultural competence and confidence level of senior nursing students (n=32) who had received instruction on treating culturally diverse clients during their Psycho-Social Nursing course. These students were compared to senior nursing
received instruction on treating culturally diverse clients during their Psycho-Social Nursing course. These students were compared to senior nursing students who had not received instruction on treating culturally diverse clients (n=31). The instrument utilized was the *Bernal and Forman Cultural Self-Efficacy Scale (CSES)*. This instrument was developed to measure the individual's confidence and perceived competence in his/her knowledge and skills for delivering culturally appropriate care to African-American, Hispanic/Latino and Southeast Asians. The instrument consisted of 26 items with three different Likert type response categories. Content, construct and factorial validity and reliability have been established for this instrument.

Results revealed that student receiving instruction on treating culturally diverse clients possessed low confidence and competence when treating Asian clients and a much greater level of confidence and competence with African-American and Hispanic/Latino cultures, which these students had encountered during their rotations. The students receiving no instruction on treating culturally diverse clients had more confidence and competence in treating Asian clients; however, these student never treated any Asian clients while on rotation. Following the administration of the *CSES*, a two hour course was presented to the students who had not received any content on treating diverse clients, but had self-identified greater confidence and competence in providing culturally appropriate healthcare. These students appeared to have a difficult time in understanding the multicultural nursing concepts (Alpers & Zoucha, 1996). The students asked to have terminology repeated several times and also for more examples to explain the concept clearly. This exercise revealed a true lack of cultural knowledge on their part, suggesting that their cultural confidence and competence may be a weak assumption that they knew how to treat these clients. The low scores in the students receiving content on treating culturally diverse clients suggest that exposure to cultural content and their
Alpers and Zouch (1996) recommended that healthcare students' education include in its curriculum a comprehensive multicultural healthcare course which covers the different cultures, teaches cultural assessment, and encourages students to explore and understand their feeling and values for cultural diversity. In addition, students must be introduced clinically to culturally diverse clients to prepare them for working in a multicultural environment upon graduation. However, before healthcare students can become culturally confident and competent, they must first understand their own cultural adaptability. Understanding one’s own cultural adaptability is the basis for providing culturally competent healthcare to all clients.

Summary

There is limited literature on the cultural adaptability of healthcare students; however, several investigations explored topics such as cultural awareness, cultural competence and cultural sensitivity. According to the literature, students need to embraced multiculturalism to be able to provide proper treatment to culturally diverse clients. Before healthcare students can successfully treat culturally diverse clients, they need to become aware of their own cultural adaptability. Once students have a concept of their cultural adaptability, they can apply this knowledge to their clients. To achieve multiculturalism, healthcare students need to be provided with cultural diverse perspectives throughout their higher education experiences.

A limited number of health science programs have incorporated cultural awareness or cultural competence instruction into the curriculum; however, there is no standardization of instruction. Evidence in the literature illustrates scant international or minority student enrollment in dental hygiene, physical therapy and nursing. Recruitment and retention of culturally diverse students is a critical issue observed throughout the professional literature. The representation of these students is critical for providing quality treatment to
therapy and nursing. Recruitment and retention of culturally diverse students is a critical issue observed throughout the professional literature. The representation of these students is critical for providing quality treatment to culturally diverse clients. With the United States demographic changes, healthcare students must be prepared to meet the challenges of working in a multicultural environment.
CHAPTER III

METHODS AND MATERIALS

This descriptive study utilized the *Cross-Cultural Adaptability Inventory (CCAI)* to measure the *cultural adaptability* of 188 students attending culturally diverse and non-culturally diverse dental hygiene programs. The participating dental hygiene programs were selected from the following regions of the United States: Mid-Atlantic, Northwest, Northcentral, Central, Southwest, South, and Southeast.

Sample Description

The cultural diversity for all dental hygiene programs was evaluated according to the responses to item #30 (see Appendix E) of the ADA Commission on Dental Accreditation 1996-1997 Survey of Dental Hygiene Education. A program was considered culturally diverse if its response to item #30 indicated students in four of the five ethnic categories and culturally diverse dental hygiene student enrollment of 40% or greater. A random cluster sample was then taken from 15 culturally diverse dental hygiene programs. Non-culturally diverse programs were identified if their response to item #30 revealed students in 1 or less ethnic categories. A random cluster sample was then taken from the 101 homogenous dental hygiene programs.

To obtain the sample, phone calls were made by the researcher in the Fall of 1998 to the directors of the selected dental hygiene programs to invite their respective school to participate in the study. During the Fall of 1998, all students attending these dental hygiene schools were asked to participate in the study; participation was voluntary.

The culturally diverse sample consisted of 108 students attending a program located in one of the following regions: Southwest, Southeast and Mid-Atlantic. The non-diverse sample consisted of 80 students attending a
program in one of the following regions: Northwest, Northcentral, Central and South. The researcher selected four non-diverse programs to make the student number as even as possible in both groups; however, the non-diverse programs had less students in each class. The dental hygiene programs in the sample offered the following degrees: certificate, associate, baccalaureate, and masters in dental hygiene. This sample size allowed for an adequate response rate and enabled the results to be used in future research on cultural adaptability.

**Research Design**

A descriptive research approach was utilized to measure the cross-cultural adaptability of 188 students attending culturally diverse and non-culturally diverse dental hygiene programs in selected areas of the United States. The independent variables included students attending culturally diverse and non-culturally diverse dental hygiene programs and the dependent variable was cultural adaptability and its four research dimensions: emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy. This study also analyzed the extent to which these variables differed between students attending culturally diverse and non-culturally diverse dental hygiene programs.

This research design controlled key extraneous variables:

1. Selection of all dental hygiene students at each participating dental hygiene school minimized subject-selection bias.
2. Situation relevant variables were minimized by utilizing standardize instructions for the administration of the CCAI at all dental hygiene schools. (see Appendix B)
3. Truthful responses to the CCAI were encouraged by assuring the anonymity and confidentiality of the dental hygiene students' responses.
4. Since students attending culturally diverse and non-culturally diverse dental hygiene programs from specific geographical areas were being studied,
no attempts were made to generalize findings beyond this population.

5. Unfortunately, data from 1997-1998 could not be obtained from the ADA Commission on Dental Accreditation Survey on Dental Hygiene Education Programs. Due to this situation, a demographic question was included to investigate each student’s race. The researcher then could verify if school met the criteria for being a culturally diverse or non-culturally diverse dental hygiene program.

**Methodology**

The ADA Commission on Dental Accreditation was contacted in the Fall of 1998 to obtain ethnicity data from the 1996-1997 Survey of Dental Hygiene Education Programs. From this data, dental hygiene programs with students representing four of the five ethnic categories (White, Black, Hispanic/Latino, American Indian/Alaskan Native and Asian/Pacific Islander) were categorized as culturally diverse. Dental hygiene programs with students representing 1 or less of the ethnic categories were categorized as non-diverse. Once the programs had been categorized, a random cluster sample was taken from 15 diverse and 101 non-diverse programs. By randomly selecting the programs, researcher bias was controlled.

Phone calls were made in the Fall of 1998 to the directors of these dental hygiene programs to invite their school to participated in the study. In October 1998, the CCAI, instructions for taking the CCAI, and demographic data collection forms were mailed to the participating dental hygiene programs. Faculty allotted 30 minutes for the students to complete the inventory during classroom time. Students immediately had the opportunity to view their cultural adaptability scores while recording the self-scores on the interpretation profile sheet. The faculty members at the participating dental hygiene schools returned the results to the principal investigator at Old Dominion University for analysis.
Protection of Human Subjects

Prior to the study, the investigator submitted the research protocol to the Old Dominion University Committee on the Protection of Human Subjects for Approval, which was granted on March 9, 1998.

1. Subject Population: The research required the utilization of students attending culturally diverse and non-culturally diverse dental hygiene programs.

2. Potential Risk: There was no potential risk to the participants since the research was a descriptive study. All responses were kept anonymous and confidential to protect subjects' rights of privacy.

3. Consent Procedures: The participants were informed of the study's purpose and that there were no potential risks involved in the study. They were informed that the person collecting the data was Katrina White Magee, a dental hygienist working toward her Master Degree at Old Dominion University School of Dental Hygiene under the direction of Michele Darby, Graduate Program Director. If they require further information they could contact Professor Darby at 757-683-5232. Participation in the study was voluntary and by completing and returning the CCAI, the students' were providing their informed consent to participate in the study.

4. Protection of Subjects Rights: Data obtained were kept confidential and anonymous. All data were secured in a locked cabinet in the School of Dental Hygiene at Old Dominion University. Only the individual student and the principal investigator knew how they scored on the inventory. All results were reported in group form.

5. Potential Benefits: All students benefited immediately. These individuals learned about their cultural adaptability, and examine their own readiness to interact with other culturally diverse students. Weakness in the cultural adaptability of dental hygiene students may lead to the development of courses or orientation programs for future dental hygiene students.
6. **Risk-Benefit Ratio:** There were no potential risks in this study; participates benefit by learning about their cross-cultural adaptation. If a student discovers a weakness on cultural adaptation, she can request further information by contacting the principal investigator.

**Instrumentation**

A standardized instrument, the *Cross-Cultural Adaptability Inventory* (see Appendix A), was utilized to measure the *cultural adaptability* of students attending culturally diverse and non-culturally diverse dental hygiene programs. The *CCAI* by Kelley & Meyers (1992) was selected as the data collection instrument because it does not target one particular culture; instead, it is designed to be culture-general and it does not address specific differences between cultures (Kelley & Meyers, 1992). The *CCAI* is not used to predict success or failure in *cultural adaptability*, instead it examines one's assets and liabilities in *cultural adaptability* and helps one make decisions about his/her readiness to interact with people of different cultures.

It takes approximately 30 minutes to administer, complete, and self-score responses to the *CCAI*. The inventory measures cultural adaptability and its four dimensions: *emotional resilience, flexibility/openness, perceptual acuity and personal autonomy*. The inventory yields an overall score and scores for each dimension representing a characteristic of the individual that may be modified through training and experience. Individuals with low *cultural adaptability* have more responses located in the *emotional resilience* dimension and individuals who adapt easily to a new cultural have more responses located in the *personal autonomy* dimension. These dimensions are included on the *CCAI* profile and interpretation sheet as follows:

**Emotional Resilience.** (18 items) Individuals can become frustrated, confused and lonely when among persons from a different culture. Individuals with emotional resilience face new experiences with a positive attitude, which gives
them the confidence to recover quickly from ambiguity and stress. Emotionally resilient individuals have courage, take risks, and possess positive self-esteem.

**Flexibility/Openness.** (15 items) Individuals adapting to a new culture face different ways of thinking and behaving from their own culture. Flexible individuals enjoy interacting with others from different cultures. Flexible and open individuals are tolerant, lack rigidity, and feel comfortable with all kinds of persons.

**Perceptual Acuity.** (10 items) Individuals sometimes find communication with other cultures challenging because of confusing assumptions, customs, and languages. Individuals possessing perceptual acuity are attentive to verbal and nonverbal behaviors and interpersonal relationships. These individuals have the ability to read others' emotions, and are sensitive to one's impact on others. Individuals with perceptual acuity are accurate communicators and seldom distort information based on their own needs.

**Personal Autonomy.** (7 items) Individuals who interact with those of other cultures may not encounter the type of reactions or reinforcement they are accustomed to. Personally autonomous individuals have respect for cultural beliefs and values different from their own and at the same time have a strong sense of identity, confidence, and clear personal values. These individuals enjoy making their own decisions while respecting the decisions of others.

The CCAI consist of 50 statements relating to cross-cultural adaptability that are measured utilizing a six-point response scale ranging from "Definitely true about me" to "Definitely not true about me". The inventory contains nine negatively worded items throughout the instrument to reduce response bias. Responses are circled on the answer sheet and tallied on the score sheet to obtain scores in each of the four dimensions (Kelley & Meyers, 1992).

Kelley and Meyers (1992) developed the CCAI to meet the needs...
expressed by cross-cultural trainers and teachers for a well-constructed and easily obtained self-assessment of cross-cultural adaptability. Individuals with specialization in *cultural adaptability* constructed a list of traits and skills associated with the construct. This list was then tested with a sample population (N=25) who already possessed cross-cultural knowledge or experiences. The skills and traits rated highest were compared to the findings in the cross-cultural literature. Experts in the field then categorized the skills and traits into the four cross-cultural dimensions. In 1987, a field testing on 635 people resulted in shifting traits from one dimension to another, and the present instrument was published in January of 1992.

There are several aspects of validity which may be worth examining in relation to the *CCAI*. The *CCAI* has face validity, making the purpose of the instrument obvious to the people who read it and respond. Content validity was established by identifying the most consistently identified traits and skills associated with *cultural adaptability* established Kelley and Meyers (1992). Construct validity was established by identifying the most consistently identified traits and skills associated with cultural adaptability, as cited in the professional literature. Through expert analysis, generalized least-squares factor analyses and additional statistical analyses, the outcome was a list of traits and skills associated with adaptability to other cultures, resulting in the four research-based dimensions presently within the *CCAI*.

The *CCAI* has an overall reliability of .90. The reliability was established by computing coefficient alphas for internal consistency on each research-based dimension of the *CCAI*. Individuals who score high on one item within the scale tend to score high on all other items within the scale. Kelley and Meyers (1992) report that the four research-based dimensions manifest high internal consistency.
Statistical Treatment

Several statistical methods were utilized to evaluate data from students attending culturally diverse and non-culturally diverse dental hygiene programs. Parametric procedures were appropriate because the sample was randomly selected and data from the CCAI were continuous in nature and intervally scaled. Data from both groups were pooled together for each response on the demographic data collection sheet (see Appendix D). One-way analysis of variance was conducted to examine for difference in overall cross-cultural adaptability and the four research-base dimension among the demographic variables.

Differences between students attending culturally diverse and non-culturally diverse dental hygiene programs were analyzed on the variables of cultural adaptability, emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy by utilizing an unpaired t-test analysis. Hypotheses were tested at the .05 level of significance.
CHAPTER IV

RESULTS AND DISCUSSION

This study was conducted to determine the cross-cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs in the United States. The Cross-Cultural Adaptability Inventory, by Kelley and Meyers (1992) measured cross-cultural adaptability and its four research-based dimensions of cross-cultural adaptability: emotional resilience, flexibility/openness, perceptual acuity and personal autonomy. The Microsoft Excel statistical program was the key analytical tool for data analysis. Results are discussed in relation to demographic findings, and the five research hypothesis in this study.

Results

Demographic

Participants were directed to complete the demographic data collection form before starting the CCAI. The data collection form contained three items indicating the student's race or ethnic background, degree in dental hygiene they currently were working to complete and if any culturally diverse training had been received. The information collected from each school was then pooled together creating two groups: culturally diverse dental hygiene programs and non-culturally diverse dental hygiene programs. The culturally diverse group consisted of three schools located in the Southeast, Mid-Atlantic, and Southwest regions of the United States. The non-culturally diverse group was comprised of four schools located in the Northcentral, South, Northwest, Central regions of the United States. All participants of the study completed the demographic data collection form.
The cultural diverse groups' (n = 108) ethnic/racial background was 47% (n=51) White; 31% (n = 34) Hispanic/Latino; 9% (n = 10) Asian; 5% (n = 5) other; 4% (n = 4) Black; and 4% (n = 4) Native American/Alaska Native (see Figure 1). Participating students indicating “other” specified Caribbean Black, Russian, Haitian, and Canadian with West Indian descent. The non-culturally diverse group (n = 80) was comprised of 97% (n = 78) White; 1% (n = 1) Black and 1% (n = 1) Native American/Alaska Native students (see Figure 2).

The students completing the inventory were pursuing various dental hygiene degrees. In the culturally diverse group, 49% (n = 53) of the students were working to complete bachelor’s degrees; 48% (n = 52) were working toward associates degrees; and 3% (n=3) were working to complete master’s degrees. There were no students in the culturally diverse group working toward a certificate in dental hygiene. In the non-culturally diverse group, 55% (n = 44) of the students were working to complete their bachelor’s degrees; 39% (n = 31) were working toward their associates; and 6% were working toward a certificate in dental hygiene. No students in the non-culturally diverse group were working toward a masters degree in dental hygiene (see Figure 3).

Students were asked if they had received any training or courses on treating culturally diverse patients. Fifty-three percent (n = 57) of the students in the culturally diverse group had received training while 47% (n = 51) had not. In the non-culturally diverse group, 51% (n = 41) of the students had received training and 49% (n = 39) had not (see Figure 4).
FIGURE 1
Ethnic Backgrounds of Dental Hygiene Students in the Culturally Diverse Group

- Black: 31% (34)
- White: 4% (4)
- Asian/Pacific Islander: 9% (10)
- Hispanic/Latino: 5% (5)
- Native American/Alaska Native: 5% (5)
- Other: 47% (51)
FIGURE 2
Ethnic Backgrounds of Dental Hygiene Students in the Non-Culturally Diverse Group

98% (78)

1% (1) 1% (1)

Black
Native American/Alaskan Native
White
FIGURE 3
Education Levels of Students From Culturally Diverse and Non-Culturally Diverse Dental Hygiene Programs
FIGURE 4
Cultural Diversity Training of Students From Culturally Diverse and Non-Culturally Diverse Dental Hygiene Programs
To analyze unhypothesized findings, the demographic variables were pooled together and regrouped according to race, educational level, and prior training on treating culturally diverse clients to determine if the demographic variables might be related to cultural adaptability. One-way analysis variance examined the overall cultural adaptability score and scores on each research-based dimension. If a significant different was revealed, a t-test was conducted to locate the difference among the groups.

The results of the one-way analysis of variance revealed a statistically significant difference among the six ethnic/racial groups in terms of overall cultural adaptability (see Table 1). The overall mean score for cross-cultural adaptability ranged from 219.21 to 246.50. White students (n = 129) scored 219.21; Hispanic/Latino students (n = 34) scored 226.90; Asian/Pacific Islander students (n = 10) scored 228.11; Black students (n = 5) scored an overall mean of 230.2; Native American/Alaskan Native students (n = 4) scored 234.42; and students responding “other” (n = 4) scored an overall mean of 246.50. A statistically significant difference was found between white students and “other”.

The one-way analysis of variance revealed a significant difference among the six ethnic/racial groups in the dimension of emotional resilience, perceptual acuity, and personal autonomy. White students scored 74.24; Hispanic/Latino students scored 81.03; Asian/Pacific Islander students scored 82.3; Black and Native American/Alaskan Native students scored 83; and students responding “other” scored 91 (see Table 1). Significant differences were found between white students and “other” in the dimensions of emotional resilience and perceptual acuity, between Black students and “other” and between Native American/Alaskan Native and “other” in the dimension of personal autonomy. No statistically significant difference among the six ethnic/racial groups were discovered in the dimensions of flexibility/openness (see Table 1).
### TABLE 1
One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimension Scores of Dental Hygiene Students from Various Ethnic Backgrounds

<table>
<thead>
<tr>
<th>Overall Scores</th>
<th>Group</th>
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<th>Median</th>
<th>Standard Deviation</th>
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The one-way analysis of variance revealed a statistically significant difference in overall cultural adaptability among certificate, associate, baccalaureate and masters' level dental hygiene student. Students respective mean scores follow: certificate (n = 5) scored 212.60; associate (n = 85) scored 227.86; bachelor's (n = 127) scored 225.36; and master's (n = 3) scored 236.00 (See Table 6). There was no statistically significant difference among certificate, associate, bachelor's and master's level students on any of the four-research based dimensions (see Table 2). Therefore, level of dental hygiene education is related to students' cultural adaptability but not the four research dimensions.
TABLE 2
One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimension Scores of Dental Hygiene Student According to their Past Educational Levels

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<th>Overall Scores</th>
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<th>Standard Deviation</th>
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<td>235</td>
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Table 2 Continued

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<thead>
<tr>
<th>Group</th>
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<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
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<tbody>
<tr>
<td>Certificate</td>
<td>5</td>
<td>31.6</td>
<td>31</td>
<td>2.88</td>
<td>1.86</td>
<td>0.13</td>
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<tr>
<td>Associates</td>
<td>84</td>
<td>32.81</td>
<td>32</td>
<td>3.81</td>
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<tr>
<td>Bachelors</td>
<td>96</td>
<td>34.03</td>
<td>34</td>
<td>4.73</td>
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<tr>
<td>Masters</td>
<td>3</td>
<td>35.66</td>
<td>35</td>
<td>5.13</td>
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</table>

One-way analysis of item 3 revealed no statistically significant difference in the overall cultural adaptability of students who have received training to treat culturally diverse clients or those who have not received training (F=1.88, p=.13, df=188). The overall cultural adaptability score of students with training (n = 98) was 225.34, while the students without training (n = 90) scored 222.16 (see Table 11). However, a statistically significant difference was revealed by the one-way analysis of variance in the dimension of flexibility/openness (F= 11.46, p = .002, df=188) between the students receiving training and students who had not (see Table 3). No statistically significant differences were identified between students with or without cultural diversity training in the dimension of emotional resilience, perceptual acuity and personal autonomy (see Table 3). Therefore, past cultural diversity training appears to increase dental hygiene students' flexibility/openness, but not overall cultural adaptability, emotional resilience, perceptual acuity or personal autonomy.
TABLE 3
One-Way Analysis of Variance for Overall Cultural Adaptability and Four Dimension Scores of Dental Hygiene Students According to Past Cultural Diversity Training

<table>
<thead>
<tr>
<th>Overall Scores</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received Training</td>
<td>98</td>
<td>225.34</td>
<td>224</td>
<td>18.12</td>
<td>.04</td>
<td>.83</td>
</tr>
<tr>
<td></td>
<td>No Training</td>
<td>90</td>
<td>222.16</td>
<td>221</td>
<td>18.76</td>
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<td></td>
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</table>

<table>
<thead>
<tr>
<th>Emotional Resilience Scores</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received Training</td>
<td>98</td>
<td>75.93</td>
<td>73</td>
<td>11.0</td>
<td>.07</td>
<td>.78</td>
</tr>
<tr>
<td></td>
<td>No Training</td>
<td>90</td>
<td>76.36</td>
<td>75</td>
<td>9.44</td>
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<td></td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Flexibility/Openness Scores</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received Training</td>
<td>98</td>
<td>70.47</td>
<td>69</td>
<td>11.6</td>
<td>11.46</td>
<td>.00</td>
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<td></td>
<td>No Training</td>
<td>90</td>
<td>65.12</td>
<td>64</td>
<td>9.86</td>
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<table>
<thead>
<tr>
<th>Perceptual Acuity Scores</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Received Training</td>
<td>98</td>
<td>45.4</td>
<td>45</td>
<td>5.78</td>
<td>1.04</td>
<td>.30</td>
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<tr>
<td></td>
<td>No Training</td>
<td>90</td>
<td>46.4</td>
<td>45</td>
<td>7.05</td>
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</table>

<table>
<thead>
<tr>
<th>Personal Autonomy Scores</th>
<th>Group</th>
<th>Number</th>
<th>Mean</th>
<th>Median</th>
<th>Standard Deviation</th>
<th>F-Value</th>
<th>p-Value</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Received Training</td>
<td>98</td>
<td>33.67</td>
<td>31</td>
<td>4.70</td>
<td>.29</td>
<td>.59</td>
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<td></td>
<td>No Training</td>
<td>90</td>
<td>34.32</td>
<td>35</td>
<td>4.26</td>
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</table>
Hypothesis One

Data were examined to test the hypothesis that no statistically significant difference, at the .05 level, existed in the overall cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the Cross-Cultural Adaptability Inventory.

Descriptive statistics were computed and line graphs were generated with summaries for each group (see Table 4 and Figure 5). Unpaired t-test analysis revealed no statistically significant differences in the overall cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs (F = -.1203, df = 718, p = .9042) (see Table 5); therefore, the null hypothesis was retained. The diversity of the dental hygiene program is not related to the cultural adaptability of its students.

Hypothesis Two

Data were examined to test the hypothesis that no statistically significant difference, at the .05 level, existed in the emotional resilience dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the emotional resilience scale of the Cross-Cultural Adaptability Inventory.

The emotional resilience dimension of the CCAI yields a possible range from 18 to 108. The mean, standard deviation, range and median were computed for both groups (see Table 4). Line graphs were produced with summaries for each group (see Figure 6). Unpaired t-test analysis revealed that dental hygiene students attending culturally diverse dental hygiene schools had significantly higher emotional resilience than students attending non-culturally diverse schools (F = -3.4405, df = 181, p = .0007) (see Table 6); therefore, the null hypothesis was rejected. A culturally diverse environment is related to the emotional resilience of dental hygiene students.
<table>
<thead>
<tr>
<th></th>
<th>Culturally Diverse (N=108)</th>
<th>Non-Culturally Diverse (N=80)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>OA</td>
<td>ER</td>
</tr>
<tr>
<td>Mean</td>
<td>217.39</td>
<td>77.07</td>
</tr>
<tr>
<td>Median</td>
<td>216</td>
<td>76</td>
</tr>
<tr>
<td>Standard Deviation</td>
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<tr>
<td>Range</td>
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<td>36-106</td>
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</table>
TABLE 5
Overall Cultural Adaptability Scores of Students From Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Cultural Adaptability Inventory (N = 188)

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culturally Diverse</td>
<td>108</td>
<td>217.39</td>
<td>7.44</td>
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<td>.90</td>
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<tr>
<td>Non-Culturally Diverse</td>
<td>80</td>
<td>216.56</td>
<td>6.34</td>
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</tbody>
</table>
FIGURE 5
Overall Cultural Adaptability Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the *Cross-Cultural Adaptability Inventory* (N = 188)
TABLE 6
Emotional Resilience Scores of Students From Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Culturally Adaptability Inventory

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culturally Diverse</td>
<td>108</td>
<td>77.07</td>
<td>12.40</td>
<td>-3.44</td>
<td>.00</td>
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<td>Non-Culturally Diverse</td>
<td>80</td>
<td>72.01</td>
<td>7.71</td>
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</table>
FIGURE 6
Emotional Resilience Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Cultural Adaptability Inventory
Hypothesis Three

Data were analyzed to examine the hypothesis that no statistically significant difference, at the .05 level, existed in the flexibility/openness dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the flexibility/openness scale of the Cross-Cultural Adaptability Inventory.

The flexibility/openness dimension of the CCAI yields a possible range of scores from 15 to 90. The mean, standard deviation, range and median were found for both groups (see Table 4). Line graphs were produced with summaries for each group (see Figure 7). Unpaired t-test analysis revealed that dental hygiene students attending non-culturally diverse dental hygiene schools had significantly higher flexibility/openness scores than students attending culturally diverse dental hygiene schools (F = 1.9371, df = 169, p = .0543) (see Table 7); therefore, the null hypothesis was rejected.

Hypothesis Four

Data were examined to test the hypothesis that no statistically significant difference, at the .05 level, existed in the perceptual acuity dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs, as measured by the perceptual acuity scale of the Cross-Cultural Adaptability Inventory.

The perceptual acuity dimension of the CCAI yields a possible range of scores from 10 to 60. The mean, standard deviation, range and median were found for both groups (see Table 4). Line graphs were produced with summaries for each group (see Figure 8). Unpaired t-test analysis revealed that dental hygiene students attending culturally diverse dental hygiene schools had slightly lower perceptual acuity than students attending non-culturally diverse schools (F = 2.4221, df = 181, p = .0164) (see Table 8); therefore, the null hypothesis was rejected.
<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culturally Diverse</td>
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<td>62.73</td>
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<tr>
<td>Non-Culturally Diverse</td>
<td>80</td>
<td>65.05</td>
<td>8.15</td>
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</table>
FIGURE 7
Flexibility/Openness Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Cultural Adaptability Inventory
Table 8
Perceptual Acuity of Students From Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Culturally Adaptability Inventory

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-Value</th>
<th>p-Value</th>
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</thead>
<tbody>
<tr>
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<td>5.88</td>
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<tr>
<td>Non-Culturally Diverse</td>
<td>80</td>
<td>47.03</td>
<td>5.14</td>
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</table>
FIGURE 8
Perceptual Acuity Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Cultural Adaptability Inventory
Hypothesis Five

Data were also examined to test the hypothesis that no statistically significant difference, at the .05 level, existed in the personal autonomy dimension of students attending culturally and non-culturally diverse dental hygiene programs, as measured by the personal autonomy dimension scale of the Cross-Cultural Adaptability Inventory.

The personal autonomy dimension of the CCAI consisted of 7 items and the possible scores ranged from 7 to 42. The mean, standard deviation, range and median were found for both groups (see Table 4). Line graphs were produced with summaries for each group (see Figure 9). Unpaired t-test analysis revealed no statistically significant difference in the personal autonomy dimension of students attending culturally diverse and non-culturally diverse dental hygiene programs (F = -.1193, df = 150, p = .9051) (see Table 9); therefore, the null hypothesis was retained. The diversity of the program does not appear to be related to the personal autonomy of its dental hygiene students.

Discussion

Demographics

The students sampled were comprised mainly of White students, followed by Hispanic/Latino, and Asian/Pacific Islander students; there were only five Native/American and Black student, and four "other" students responded, i.e., Russia and Caribbean Islands. The diverse group contained students in each category: White, Black, Hispanic/Latino, Asian/Pacific Islander, Native American/Alaskan Native and "other". The non-diverse group had a white majority with one Black and one Native American/Alaskan Native student. However, 101 schools had one or less students in non-white ethnic categories. Demographic findings suggest that dental hygiene schools are not culturally
TABLE 9
Personal Autonomy of Students From Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Culturally Adaptability Inventory

<table>
<thead>
<tr>
<th>Group</th>
<th>N</th>
<th>Mean</th>
<th>Standard Deviation</th>
<th>t-Value</th>
<th>p-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Culturally Diverse</td>
<td>108</td>
<td>32.51</td>
<td>3.45</td>
<td>-.12</td>
<td>.90</td>
</tr>
<tr>
<td>Non-Culturally Diverse</td>
<td>80</td>
<td>32.45</td>
<td>4.18</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
FIGURE 9
Personal Autonomy Scores of Students from Diverse and Non-Diverse Dental Hygiene Programs on the Cross-Cultural Adaptability Inventory
diverse environments. This finding supports the work of Howard (1997) who stated that United States dental hygiene programs do not place enough emphasis on the multicultural movement taking place in this country. Although, enrolling students from different cultural backgrounds enables all students to learn in a multicultural environment and increase cultural awareness (Howard, 1997), this philosophy has yet to take hold in dental hygiene programs.

The majority of the students surveyed were completing either associate's degrees or bachelor's degrees in dental hygiene. Five students were working on their certificate in dental hygiene and three students were studying for a master's degree in dental hygiene (see Figure 3). These findings compare favorably with national statistics of dental hygiene students working on associate, baccalaureate and master's degrees, respectively (ADHA, 1998).

Fifty-three percent (n=57) of the students in the diverse group and 51% (n=41) of the non-diverse group indicated receiving cultural diversity training. However, the question on cultural diversity training may have been unclear because students from the same programs provided conflicting responses. Perhaps some students are unaware of their cultural diversity training (see Figure 4) or believe that one or two lectures on the subject does not constitute “training”. The question should be revised in future studies so that respondents can quantify the extent of their training.

**Question 1  What is your primary race or ethnic background?**

One-way analysis of variance revealed a statistically significant difference among the six ethnic/racial groups on the overall cultural adaptability score. The t-test revealed a significant difference between students responding “other” and White. Students responding “other” had the highest score of 246.50, White students had the lowest score of 219.21, while the mean score for the CCAI norm group was 225.85. Except for white, all ethnic/racial groups' overall mean scores were higher than the CCAI norm group mean score (see Table 1 and Appendix D).
The norm group from Kelley and Meyers study consisted of 653 persons who took the CCAI, in conjunction with cross-cultural training, education, or team building (Kelley & Meyers 1992). As reported from the demographic statistics of the CCAI, the norm group had experience living abroad, and had relatively higher educational levels than found in the dental hygiene sample studies.

These findings suggest that White students may not have as many cross-cultural experiences as other racially different dental hygiene students. Since the White students are the majority, they have little need to interact beyond their racial group. Scores of the ethnic/racial groups appear to be inversely related to the size of the minority group. Perhaps persons from the smallest ethnic/racial groups are most experienced with cross-cultural interactions, and by necessity, must be cross-culturally competent. All ethnic/racial groups exceeded the scores of the CCAI norm group, suggesting that dental hygiene students, regardless of their ethnic/racial identity possess qualities cross-cultural experts cite as necessary to be successful in cultural adaptation (Kelley and Meyers, 1992). However, white dental hygiene students are most in need of cultural diversity training and practice.

A statistically significant difference among the six ethnic/racial groups on emotional resilience and perceptual acuity was found. The t-test revealed a statistically significant difference between students responding “other” and those responding White in the dimensions of emotional resilience and perceptual acuity. On emotional resilience, students responding “other” had a mean score of 91, white students had a mean score of 74.24 and the CCAI norm group mean was 79.58 (see Table 1 and Appendix D). All ethnic/racial groups scored higher than the CCAI norm group in emotional resilience, except for the White students. This finding suggests that dental hygiene students who are Black, Hispanic/Latino, Native American/Alaskan Native and “other” possess the ability to be confident and cope with new experiences, whereas White students are more likely to lack the ability to cope or relate with others from ethnic/racial backgrounds different from
their own. Since White students are in the majority, they perceive little need to relate to minorities. White students might subconsciously believe that minorities should be the ones assimilating. White students might benefit from cultural diversity training and practice.

In the dimension of perceptual acuity, "other" students scored 53.0, while White students scored a 46.02 and the CCAI norm group mean was 46.67. Black, Asian/Pacific Islander, Native American/Alaska Native, and "other" students had higher perceptual acuity scores than the CCAI norm group (see Table 1 and Appendix D); White and Hispanic/Latino students scored slightly lower, but comparable to the CCAI norm group. Perceptual acuity is the ability to be sensitive to others, read their emotions through non-verbal communication, and conduct accurate communication with others (Kelley & Meyers, 1992). Not only a matter of getting along with different people, perceptual acuity also relates to perceptiveness and receptiveness of getting along. Findings suggest that White and Hispanic/Latino students might have less perceptual acuity because they comprise the majority or are closely approaching majority group status. Also, both of these groups use the major languages spoken in the United States (English and Spanish) making their communication easier and perceptual acuity less important.

No statistically significant differences were found in the dimension of flexibility/openness. Students responding "other" had the highest mean of 70.25, Black and Native American/Alaskan Native students scored a mean of 68.8, both of which are slightly higher than the CCAI norm group mean score of 66.92. Hispanic/Latino and Asian/Pacific Islander students were comparable to the CCAI norm group (see Table 1 and Appendix D). White students had the lowest mean score of all ethnic/racial groups with a mean of 64.68.

This finding suggests that White students, on average, are not as comfortable with developing or maintaining relationships in cross-cultural situations. Dental hygiene students might be best described as lacking the skills and the ability to understand different cultural views and communication styles
(Hannigan, 1990). White students are the majority race on college campuses and can easily avoid other cultures to survive.

The significant differences in the dimension of personal autonomy were found between students responding “other” and Native American/Alaskan Native, and also between “other” and Black students. The mean score for “other” was 39.25, while the mean score for Native American/Alaskan Native was 30.8; Black students scored 30.81. The CCAI norm group mean was 32.88. Students responding “other” were higher than the CCAI norm group, while Black, Native American/Alaskan Native scored lower (see Table 1 and Appendix D). Students responding “other” may have more experience with cross-cultural situations. The high personal autonomy scores may be related to the skills emphasized in the dental hygiene curricula such as decision-making, client advocacy, and personal and professional responsibility. Perhaps the low scores of the Native American/Alaskan Native and Black students reflect decades of repression that evolved with the federal government’s reservation systems and slavery.

Question 2 What credential in dental hygiene are you currently working to complete?

Students working to complete their master’s degrees exhibited a substantially greater overall mean cultural adaptability score (236) than the other four groups. Students working to complete their certificates scored 212.60, the lowest score of all the groups. A t-test revealed a significance difference between the master’s and the certificate groups. Scores of students responding “associates” and “bachelor’s” were comparable with the CCAI norm groups overall score of 225.85. This finding suggests that students with higher education have a better potential for cross-cultural adaptation. Perhaps education in itself makes one more culturally adaptability
In the four research-based dimensions, no statistically significant differences were revealed among the four dental hygiene credential groups by the one-way analysis of variance. Students completing their certificate scored lowest of all four groups in the research dimensions of emotional resilience, flexibility/openness, perceptual acuity and personal autonomy and master students scored highest in the four research-based dimensions. Masters students scored a 86.33 in the dimension of emotional resilience, while certificate students scored a mean of 73.40 compared with the CCAI norm group mean of 79.58 (see Table 2 and Appendix D). The master students were the only group to score higher than the CCAI group suggesting that these students posses the ability to cope with unfamiliar situations. Advanced levels of education or the fact that these students are just older might contribute to their emotional resilience. In the dimension of flexibility/openness, masters students scored a mean of 68.33, which was lower than the bachelor’s and associate level students, but higher than the CCAI norm group mean of 66.92. All groups scored higher than the norm group, except for the certificate level students whose mean score was 64.20 (see Table 2 and Appendix D). In the dimension of perceptual acuity, all credential groups scored a 45 except for certificate students who scored 43.60. Given the CCAI norm group mean of 46.47, all groups were compatible with this score (see Table 2 and Appendix D) suggesting that dental hygiene students’ educational level may not be related to their ability to maintain relationships with culturally diverse individuals.

In the dimension of personal autonomy, master students scored a mean of 35.66, higher than the CCAI norm group mean of 32.88. Certificate students scored the lowest, with a mean of 31.60. Associates scored a mean of 32.81 and bachelors students scored a mean of 34.03 (see Table 2 and Appendix C). This dimension measures one’s ability to take responsibility for personal action and to respect oneself and others (Kelley and Meyers, 1992). These findings indicate that higher educational levels may increase one’s sense of responsibility and respect...
for others; therefore, advanced levels of education are important for increasing one's personal autonomy.

**Question 3 Have you received any training or courses on treating culturally diverse patients?**

One-way analysis of variance revealed no statistically significant difference in cultural adaptability of students who had received or who had not received cultural diversity training. Students who had received cross-cultural training had an overall mean of 225.34, while students who had no training scored 222.16, suggesting that training has little effect on one's cultural adaptability. However, because training was not clearly defined for the respondents, this interpretation may be erroneous.

*Emotional resilience* scores for both groups were similar. Students who received some type of training scored a mean of 75.93, while students who had no training received a 76.36, both groups were below the CCAI norm group of 79.58 in the dimension of emotional resilience (see Table 3 and Appendix D). Perhaps emotional resilience is more affected by life experience or some yet to be identified variables rather than by formal training programs. The somewhat low emotional resilience scores of dental hygiene students might suggest that students have a difficult time relating to cross-cultural situations.

There was a statistically significant difference in the dimension of flexibility/openness between the two groups. Students who had received training scored higher in flexibility/openness with a mean of 70.47 than those students who had no training with a mean of 65.12. The CCAI norm mean for this dimension was 66.92 (see Table 3 and Appendix D). Training may increase awareness of personal bias and diversity issues, and motivate individuals to build relationships with culturally different individuals. This finding should be cautiously interpreted since the diversity training was not a controlled variable.
The perceptual acuity dimension mean score for students who had received training was 45.40 and students who had no training was 46.36. These scores were comparable to the CCAI norm group mean of 46.47 (see Table 3 and Appendix D) suggesting that diversity training does not affect a dental hygiene students ability to communicate cross-culturally. Communication skills are emphasized in the dental hygiene curriculum. According to Banks, Gao and Baker (1991), understanding the communicator's values, norms, language, and verbal and non-verbal characteristics will help one understand and overcome barriers existing between them. Dental hygiene students, via the dental hygiene curriculum, may already have the potential to overcome communication barriers with cultural diverse clients. Perhaps dental hygiene programs attract students who are already good communicators with an above average ability to understand people or the knowledge and experience within the curriculum develop effective communicators.

The mean scores in the personal autonomy dimension for students who had received training were 33.67 and 34.32, respectively. These mean scores were slightly higher than the CCAI norm group mean of 32.88 (see Table 3 and Appendix D), indicating that diversity training seems to have little affect on students' ability to take responsibility for their actions and to respect the decisions of individuals from a cultural background different from their own. This finding should be cautiously interpreted since the diversity training was not a controlled variable.

Students without training may have scored slightly higher in all four research-based dimensions, than students with training because they have higher opinions of their cross-cultural abilities when in reality their abilities have yet to be tested in cross-cultural situations. The scores in the CCAI dimensions may indicated that students without training assume they have the ability to interact in multicultural situations. The students might make this assumption because they
have never encountered a multicultural situation or have never faced these challenges through cross-cultural training, courses, or experience.

In future studies, the demographic data should be obtained on subjects' nationality, citizenship, international versus domestic student status, experience abroad, age and satisfaction with experience abroad. Such data would allow the researchers to determine if these variables are related to cultural adaptability. Also, by asking subjects' their age, it can be determined if age effects cross-cultural adaptation.

Hypothesis One

Unpaired t-test analysis for the overall cultural adaptability of students attending a culturally diverse or non-culturally diverse dental hygiene programs revealed no significant difference between the groups. The total mean score for the culturally diverse group was 217.39 and the non-diverse 216.56 (see Table 5, Figure 5) and the mean score for the norm group of the CCAI was 225.85 as reported by Kelley and Meyers (1992) (see Appendix C). The norm group from Kelley and Meyers study consisted of 653 persons who took the CCAI, in conjunction with cross-cultural training, education, or team building (Kelley & Meyers, 1992). As reported from the demographic statistics of the CCAI, the norm group had experience living abroad, and had relatively higher educational levels than found in the dental hygiene sample studies. Therefore, cross-cultural adaptability was lower in the diverse and non-diverse groups when compared to the CCAI norm group (Kelley & Meyers, 1992). The CCAI scores of students attending both culturally diverse and non-culturally diverse dental hygiene programs suggest that they, on average, might not possess the characteristics to be successful in adapting to cross-cultural healthcare situations. With the United States evolving as a multicultural nation, dental hygiene students need competencies to work with culturally diverse clients. According to Healthy People 2000 (1996), minority populations such as Native American, Pacific Islanders,
Hispanic/Latino and African Americans are most in need of healthcare. This fact is supported by the Bureau of Census (1996) projection that the Asian population is the fastest growing racial group in the United States and the Caucasian is the slowest. The Hispanic/Latino population is estimated to be the largest ethnic group in the United States by the year 2000. With the population becoming increasingly multicultural, dental hygiene faculty offer learning experiences and educational opportunities to help students acquire an understanding of their own cultural adaptability which will allow them to function in a culturally diverse global community.

**Hypothesis Two**

Unpaired t-test analysis revealed a significant difference (p = .001) in the *emotional resilience* scores of the culturally diverse and non-culturally diverse groups. The non-diverse group's mean *emotional resilience* score was 72.01 and the diverse group was 77.07; both groups fell below the *CCAI* group norm of 79.58 (see Table 6, Figure 6, and Appendix D). The *emotional resilience* dimension measures the ability to "fit in" to a new culture and interact positively among others (Searle & Ward, 1990). This dimension also evaluates the ability to maintain self-esteem, confidence and a positive attitude when dealing with an unfamiliar situation or new experience. The lower scores of the non-diverse group may be attributed to the fact that these students had not experienced a multicultural situation or environment, unlike the culturally diverse dental hygiene programs. Regardless, both groups scored below the *CCAI* norm group, suggesting that, on average, dental hygiene students lack confidence to deal with others from multicultural backgrounds. This interpretation is supported by the work of Howard (1996), who found that only 4% of dental hygiene students were international students. Howard, concluded that United States dental hygiene programs needed to participate in the multicultural movement and work to increase international enrollment. By enrolling culturally diverse students into
dental hygiene programs, cultural awareness can increase among the student and faculty.

**Hypothesis Three**

Unpaired t-test analysis revealed that the culturally diverse group exhibited significantly lower flexibility/openness scores than the non-culturally diverse group. The mean flexibility/openness score of the non-diverse and diverse groups was 65.05 and was 62.73, respectively. Both groups fell below the CCAI group norms of 66.92 (see Table 7, Figure 7, and Appendix D). This finding suggests that dental hygiene students might lack the ability to maintain a liking for and comfort with different philosophies and people from unfamiliar cultures (Kelley & Meyers, 1992), and may lack the ability to maintain relationships with those who are from different cultures. Alpers and Zoucha (1996) discovered that nursing students exposed to or working in a multicultural environment tended to possess low confidence levels regarding their ability to provide treatment to culturally diverse clients. Culturally diverse group may have scored slightly lower because they perceive a need for more experiences in relating to individuals from multicultural backgrounds and have faced the challenges of treating culturally diverse clients. Students from the culturally diverse group might have scored lower in this dimension because minority and international students often perform poorly on standardized test.

**Hypothesis Four**

Unpaired t-test analysis revealed that the culturally diverse groups exhibited a significantly lower perceptual acuity score than the non-culturally diverse group. The mean score of the non-diverse group was 47.03, the diverse group was 45.08 and the CCAI norm groups scored 46.47 in the dimension of perceptual acuity (see Table 8, Figure 8 and Appendix D). Perceptual acuity measures the context of communication, reading others’ emotions, sensitivity to
one's impact on others and accuracy in communicating with others (Kelley & Meyers, 1992). A person scoring high in perceptual acuity seldom distorts information based on his or her own inner needs or ideas; these characteristics are highly encouraged in all healthcare professionals (Kelley & Meyers, 1992). The non-culturally diverse group, on average, may have scored higher because many of these students have not experienced the challenge of communicating with culturally diverse individuals. Andrews (1992) stated that only a small number of oral healthcare providers communicate regularly with individuals of different ethnic and national backgrounds. Perhaps people who have had multicultural experiences realize the problems, barriers, and difficulties encountered when communicating with culturally diverse individuals, which decreases their confidence and causes them to evaluate themselves lower in this area. According to a study conducted by Zimmermann (1995), students interacting with students from different ethnic/racial groups would increase their ability to communicate with culturally diverse individuals and accelerate the cross-cultural adaptation process. Dental hygiene students seem to have a difficult time communicating across cultures. To overcome this problem, students need to have cross-cultural experiences to develop the ability to communicate with culturally diverse clients.

**Hypothesis 5**

Unpaired t-test analysis revealed no significant differences \( p = .90 \) in the mean scores of the culturally diverse and non-culturally diverse groups. The mean score of the non-diverse group was 32.45 and diverse was 32.51 in the dimension *personal autonomy*; both groups were compatible with the CCAI group norm of 32.88 (see Table 9, Figure 9, and Appendix C). *Personal autonomy* is characterized by a strong sense of identity. This dimension measures one's ability to take responsibility for personal action and to respect oneself and others (Kelley & Meyers, 1992). According to Kelley and Meyers (1996), individuals scoring high in this dimension know how to make and act on their personal decisions while
respecting the decisions of others. Both groups of dental hygiene students scored high in *personal autonomy* because dental hygiene curricula emphasizes decision-making, client advocacy, and assumption of personal and professional responsibility. Another explanation for the similarities among the dental hygiene and the CCAI norm group may lie in the fact that the responsibility and achievement of most dental hygiene students is self-directed.
CHAPTER V

SUMMARY AND CONCLUSION

In healthcare, cultural adaptation is the ability of healthcare providers to understand and administer treatment with consideration of the individual's culture without discrimination or miscommunication (Andrews, 1992). Mead (1985) states "If we are to achieve richer culture, rich in contrasting values, we must recognized the whole gamut of human potentialities so that each diverse human gift will find a fitting place." The increasing wave of immigration in the past two decades and the continuing increase in the numbers of births among minority and ethnic groups has stimulated research in cross-cultural adaptability.

With these apparent demographic changes in the United States population, comes a demand for culturally sensitive healthcare professionals who can meet the needs of ethnically diverse clients. It has been documented that culturally bound beliefs and values concerning wellness, illness, and treatment affect client comprehension, participation in healthcare, and the outcome of care. The lack of cultural sensitivity by healthcare providers can lead to invalid diagnosis, miscommunication and barriers to care for the ethnically diverse client (Andrews, 1992). The environment in which healthcare professionals are educated might affect their ability to practice as culturally sensitive providers of care.

The purpose of this investigation was to determine the cross-cultural adaptability of students attending culturally diverse and non-culturally diverse dental hygiene programs. Identifying the cultural adaptability of dental hygiene students from different educational environments might help faculty understand how a diverse verses a non-diverse environment affects students' cultural adaptation. Increasing students' cross-cultural adaptation
may affect their potential to be successful in a multicultural environment and in providing culturally sensitive healthcare.

This research used a random cluster sample of students attending culturally diverse and non-culturally diverse dental hygiene programs. The programs were divided according to their program directors' responses to item #30 of the ADA Commission on Dental Accreditation 1996-1997 Survey of Dental Hygiene Education Programs. Students participating (n=188) represented United States dental hygiene programs located in the following regions: Mid-Atlantic, Southeast, South, Central, Northcentral, Northwest, and Southwest. The Cross-Cultural Adaptability Inventory (CCAI) by Kelley and Meyers (1992) was utilized to determine the students' potential for cross-cultural adaptation. All data were analyzed by descriptive and parametric statistics. The unpaired t-test was utilized to examine group differences on overall cultural adaptability, emotional resilience, flexibility/openness, perceptual acuity, and personal autonomy. Analysis of variance was used to determine difference in the research variables among the various levels of demographic variables.

The results obtained in this study determined that there was no statistically significance difference in the overall cultural adaptability scores among the culturally diverse and non-culturally diverse dental hygiene programs. The diversity of the dental hygiene programs' enrollment does not appear to be related to students' cultural adaptability. When compared with the Cross-Cultural Adaptability Inventory (CCAI) norm group, the two dental hygiene groups had lower scores than the CCAI norm group, comprised of persons who had experience living abroad and adjusting to multicultural situations. Students from diverse and non-diverse dental hygiene programs possess similar levels of cross-cultural adaptability, and students from both environments may need more diversity education and experiences than currently found in the dental hygiene curriculum if they are to be successful in cross-cultural situations.
In terms of emotional resilience, which reflects one's ability to fit into a new culture, a significant difference was identified between the diverse and non-diverse groups. Dental hygiene students in the culturally diverse group had significantly higher emotional resilience than students in the non-culturally diverse group. The lower scores of the non-diverse group may be explained by students' lack of experience with multicultural encounters or environments. However, both groups scored below the CCAI norm, suggesting that the average dental hygiene student may lack the ability to interact successfully with people of other cultures.

In the dimension of flexibility/openness, which reflects one's ability to maintain confidence and comfort when encountering individuals from other cultures, the unpaired t-test revealed that dental hygiene students attending diverse programs had significantly higher flexibility/openness scores than students in the culturally diverse dental hygiene programs. This finding suggests that dental hygiene students might lack the ability to maintain a liking for and comfort with different philosophies and people from unfamiliar cultures, and may lack the ability to maintain relationships with those who are from a different culture. The non-culturally diverse group may have scored slightly lower because they perceive a need for more experiences in relating to individuals from multicultural backgrounds to feel competent.

The dimension of perceptual acuity reflects the context of communication, reading others' emotions, sensitivity to one's impact on others, and the accuracy of communication with others (Kelley & Meyers, 1992). Although, the culturally diverse group scored lower than the CCAI norm group and the non-diverse group scored slightly higher than the CCAI norm group, there were no significant differences between the diverse and non-diverse dental hygiene groups. A person scoring high in perceptual acuity seldom distorts information based on his or her own inner needs or ideas; these characteristics are highly encouraged in all healthcare professionals (Kelley & Meyers, 1992). The non-
culturally diverse group, on average, might have scored higher because many of these students have little experience communicating with culturally diverse individuals; therefore, they are unaware of their own cultural limitations. However, communication skills are emphasized in all dental hygiene curricula and may explain why both groups scored similarly in this dimension.

*Personal autonomy* is characterized by a strong sense of identity. This dimension measures one's ability to take responsibility for personal action and to respect oneself and others (Kelley and Meyers, 1992). Both groups of dental hygiene students scored similarly high in *personal autonomy*, most likely related to the fact that dental hygiene curricula develop students' skills in decision-making, client advocacy, and personal and professional responsibility.

**Conclusion**

Selecting dental hygiene programs with culturally diverse and non-culturally diverse student bodies allowed the researcher to compare the cross-cultural adaptability scores of these groups. According to the literature, students not involved with culturally diverse individuals tend to believe erroneously that they have an understanding of cross-cultural adaptation. However, many of these students have not encountered cross-cultural environments and do not have a basis for making this assumption correctly. Cultural diversity in itself does not appear to be related to cross-cultural adaptability. Additionally, the cultural adaptability of dental hygiene students is not related to the diversity of the dental hygiene programs in which they are enrolled.

The results of this study lead to the conclusion that dental hygiene students need a variety of cross-cultural educational experiences and training incorporated into the dental hygiene curriculum and more opportunities to engage in cross-cultural experiences during client care. Students from the diverse and non-diverse groups possess similar overall levels of cross-cultural
adaptable; however, these levels are lower than the cross-cultural adaptability found in the CCAI norm group. Students from non-diverse programs feel less confident and knowledgeable when faced with a new cross-cultural environments. On the other hand, students from diverse programs have difficulty feeling comfortable in relationships with individuals from a different culture. The similar personal autonomy scores of the culturally diverse and non-culturally diverse students suggest that both already have a strong sense of identity, responsibility, and respect for people of different cultures. Since students scores seemed to indicate a strong sense of identify, by increasing the cultural adaptability the students would be more effective in providing culturally sensitive healthcare in a multicultural environment.

The following recommendations for future studies include:

1. A study using the CCAI as a pre-test and post-test to determine if cross-cultural training does increase dental hygiene students' cross-cultural adaptability.

2. A replication of this study using a larger sample size with dental hygiene students from each region of the United States to reveal if geographical location is associated with cross-cultural adaptability.

3. A study using the CCAI as a pre-test and post-test to determine if personal encounters with culturally diverse individuals increase students' knowledge of cross-cultural adaptation.

4. An investigation to determine how students feel about treating culturally diverse individuals?

5. A study using the CCAI as a pre-test and post-test to determine if the number of hours treating culturally diverse clients will increase dental hygienists' cultural adaptation.

Efforts need to be made by dental hygiene programs to prepare dental hygiene students to treat multicultural clients. A feasible way to educate both the students and faculty is through experience-based training courses. The
following are suggestions for cross-cultural training that can be incorporated into the dental hygiene curriculum to increase cross-cultural competence:

1. Focusing on intercultural communication and its application in society. Students explore communication concepts and apply these concepts when treating multicultural clients.

2. Focusing on cultural variations in healthcare. Students explore the influences of culture on health beliefs, values and healthcare practice and to help themselves and others interact more effectively in multicultural healthcare settings.

3. Focusing on multicultural issues and what the future will bring for healthcare. Students explore the growing multicultural population, challenges, characteristics and opportunities of the twenty-first century and consider what type of healthcare will be needed.

4. Focusing on the individual’s communication, personal identity, and social context. Students explore their own gender, class, religion, sexual orientation, and geographic origin of ethnicity/race. They examine their cultural history, privileges or disadvantages of their ethnicity and race and finally learn to incorporate their personal cultural identity into cross-cultural settings.

All dental hygiene students must be educated to understand that the culture of their clients can affect oral health status. By being aware of cultural differences among each client, the dental hygiene students may be able to increase their client’s trust in the oral healthcare profession and environment. Integrating cross-cultural courses, training, and personal experiences into dental hygiene curricula can help future dental hygienists provide effective healthcare to culturally diverse clients.

Dental hygienists play an important role in providing oral healthcare and guiding clients to accomplish their oral health goals. Without awareness or knowledge of the beliefs and behaviors of culturally diverse clients, the dental hygienist will be less effective in a multicultural society. For this
reason, it is important that dental hygiene education begins to incorporate educational strategies and develop learning environments that provide future dental hygienists with multicultural expertise.
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APPENDICES
APPENDIX A

THE CROSS-CULTURAL ADAPTABILITY INVENTORY

CCAI SCORING SHEET

THE CROSS-CULTURAL ADAPTABILITY INVENTORY PROFILE

THE CROSS-CULTURAL ADAPTABILITY INVENTORY INTERPRETATION
The CROSS-CULTURAL ADAPTABILITY INVENTORY
Dr. Colleen Kelley and Dr. Judith Meyers

This inventory is designed to help you assess your ability to adapt to other cultures. Answer each item as it relates to you. Please respond to each item by circling your answer in the box on the CCAI Scoring Sheet containing the corresponding item number. For example, if you think that an item is true about you, circle the “T” in that item’s answer box. Do not worry about being consistent. Some items may seem to be similar. Simply answer each item as it best describes you.

1. I have ways to deal with the stresses of new situations.
2. I believe that I could live a fulfilling life in another culture.
3. I try to understand people’s thoughts and feelings when I talk to them.
4. I feel confident in my ability to cope with life, no matter where I am.
5. I can enjoy relating to all kinds of people.
6. I believe that I can accomplish what I set out to do, even in unfamiliar settings.
7. I can laugh at myself when I make a cultural faux pas (mistake).
8. I like being with all kinds of people.
9. I have a realistic perception of how others see me.
10. When I am working with people of a different cultural background, it is important to me to receive their approval.
11. I like a number of people who don’t share my particular interests.
12. All people, of whatever race, are equally valuable.
13. I like to try new things.
14. If I had to adapt to a slower pace of life, I would become impatient.
15. I am the kind of person who gives people who are different from me the benefit of the doubt.
16. If I had to hire several job candidates from a background different from my own, I feel confident that I could make a good judgment.
17. If my ideas conflicted with those of others who are different from me, I would follow my ideas rather than theirs.
18. I could live anywhere and enjoy life.
19. Impressing people different from me is more important than being myself with them.
20. I can perceive how people are feeling, even if they are different from me.
21. I make friends easily.
22. When I am around people who are different from me, I feel lonely.
23. I don’t enjoy trying new foods.
24. I believe that all cultures have something worthwhile to offer.
25. I feel free to maintain my personal values, even among those who do not share them.
26. Even if I failed in a new living situation, I could still like myself.
27. I am not good at understanding people when they are different from me.
28. I pay attention to how people's cultural differences affect their perceptions of me.
29. I like new experiences.
30. I enjoy spending time alone, even in unfamiliar surroundings.
31. I rarely get discouraged, even when I work with people who are very different from me.
32. People who know me would describe me as a person who is intolerant of others' differences.
33. I consider the impact my actions have on others.
34. It is difficult for me to approach unfamiliar situations with a positive attitude.
35. I prefer to decide from my own values, even when those around me have different values.
36. I can cope well with whatever difficult feelings I might experience in a new culture.
37. When I meet people who are different from me, I tend to feel judgmental about their differences.
38. When I am with people who are different from me, I interpret their behavior in the context of their culture.
39. I can function in situations where things are not clear.
40. When I meet people who are different from me, I am interested in learning more about them.
41. My personal value system is based on my own beliefs, not on conformity to other people's standards.
42. I trust my ability to communicate accurately in new situations.
43. I enjoy talking with people who think differently than I think.
44. When I am in a new or strange environment, I keep an open mind.
45. I can accept my imperfections, regardless of how others view them.
46. I am the kind of person who gives people who are different from me the benefit of the doubt.
47. I expect that others will respect me, regardless of their cultural background.
48. I can live with the stress of encountering new circumstances or people.
49. When I meet people who are different from me, I expect to like them.
50. In talking with people from other cultures, I pay attention to body language.
### CCAI SCORING SHEET

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### Scoring Criteria

- **DT**: Definitely true about me right now
- **T**: True
- **TT**: Tends to be true
- **TNT**: Tends to be not true
- **NT**: Not true
- **DNT**: Definitely not true about me right now
Profile
Copy your totals from the Scoring Sheet into the appropriate boxes and shade in the corresponding portion of each quadrant.
The CROSS-CULTURAL ADAPTABILITY INVENTORY
Dr. Colleen Kelley and Dr. Judith Meyers

Interpretation

The concept of cross-cultural adaptability has been found to involve both personal characteristics and learnable behavior. The CCAI is designed to assist you in determining the extent to which you have acquired those characteristics which are correlated with effectiveness in working in another culture or with people from another culture. The inventory yields four scores, each representing an aspect of yourself which can be modified through training and experience. These four dimensions are listed below.

The graph on your CCAI Profile is a global representation of your scores on the CCAI relative to one another. The dimensions are: Emotional Resilience (ER), Flexibility/Openness (FO), Perceptual Acuity (PAC) and Personal Autonomy (PA).

Emotional Resilience

Being among people from another culture can be frustrating, confusing and lonely. In this situation, the ability to maintain a positive, buoyant, and non-depressed state, to tolerate strong emotion, and to cope with ambiguity and stress are important. Also important is the ability to maintain self-esteem and self-confidence, and to "keep an even keel." Other characteristics associated with emotional resilience include confidence in one's ability to cope with the unfamiliar and the ability to maintain positive feelings toward new experiences. This can involve courage, risk taking, and a sense of adventure.

Flexibility/Openness

Adapting to different ways of thinking and acting requires an ability to maintain a liking for and openness toward different thoughts and people. These characteristics are also helpful in developing and maintaining relationships with those who are different from oneself. Characteristics associated with this ability include tolerance, lack of rigidity, and liking for and comfort with all kinds of people.

Perceptual Acuity

Unfamiliar language—verbal or nonverbal—makes communication more challenging and difficult. Perceptual sensitivity is the key to meeting this challenge. Perceptual acuity is associated with attentiveness to verbal and nonverbal behaviors, as well as to interpersonal relations. It is also associated with attention to the context of communication, the ability to read others' emotions, sensitivity to one's impact on others and accuracy in communication with others. In addition, a person scoring high on perceptual acuity seldom distorts information based on his or her own inner needs.

Personal Autonomy

When others hold values and beliefs different from one's own, self-knowledge is important. The main characteristic associated with personal autonomy is a strong sense of identity. It includes the ability to maintain one's own personal values and beliefs, to take responsibility for one's actions, and to respect oneself and others. People with high personal autonomy feel empowered. They know how to make and act on their own decisions while respecting the decisions of others.
APPENDIX B

COVER LETTER FOR DIRECTORS
INSTRUCTION LETTER FOR DENTAL HYGIENE STUDENTS
Dear Dental Hygiene Student,

This is a study being conducted by Katrina White Magee for the completion of her Masters Degree in Dental Hygiene. The purpose of this study is to determine the cultural adaptability of dental hygiene students attending culturally diverse and non-culturally diverse dental hygiene programs. The Cross-Cultural Adaptability Inventory (CCAI) by Kelley and Meyers (1992) will be used to measure your cultural adaptability. The CCAI does not target one particular culture, but is designed to be culturally general. Your participation in this study is strictly voluntary, and in no way affects your status within the dental hygiene program. The survey will help indicate whether further education might be necessary to prepare dental hygiene students for treating multicultural clients. Please stay if you are willing to participate. It will take no more than 20 minutes of your time.

The inventory is made up of two booklets, an answer sheet for recording your response, and a demographic data collection form. Please fill out the demographic information before starting the CCAI. This information is located on the front of the answer sheet inside the inventory. The first booklet consist of 50 statements related to cultural adaptability. Please read through the directions carefully. Indicate your responses to the statement as it applies to you and your personal experiences. Please answer each question honestly. There is no right or wrong answer. Just answer each question to the best of your ability. Complete anonymity and confidentiality is assured.

Once you have completed the 50 statements related to cultural adaptability, you can then move on to the second booklet for self-scoring your own results. At this time you may lift up the scoring sheet and add up your responses for each column. Once you have added up your totals for each column you will then place your responses on the Cross-Cultural Adaptability Inventory Profile. The reason for shading in your responses on the profile page is to demonstrate visually your overall cultural adaptability. The largest number is your strength and the lowest number may be an area that needs improvement.

Thank you for participating in this study. I hope that you will discover some interesting information about yourself and how you adapt or might adapt to culturally diverse situations. If you are interested in the results please contact me through the School of Dental Hygiene at Old Dominion University, or my faculty advisor, Michele Darby at 757-683-5232 or mdarby@odu.edu. Thank you for your time; it is greatly appreciated!

Sincerely,

Katrina A. White Magee  
Master Degree Candidate  
Old Dominion University  
(h) 757-531-0622  
e-mail: dougmagee@mindspring.com
Dear Director:

Thank you for allowing your school to participate in my study of cross-cultural adaptability of dental hygiene students attending culturally diverse and non-culturally diverse dental hygiene programs. I have contacted seven other dental hygiene programs across the US to participate in this study. Through this study, I hope to determine the cross-cultural adaptability levels of dental hygiene students and specific areas that may need development for students to treat culturally diverse clients successfully.

The instrument being utilized to collect data is the *Cross-Cultural Adaptability Inventory (CCAI)* by Kelley & Meyers (1992). The inventory, on average, takes about 30 minutes to complete. The inventory consists of 50 statements related to how an individual responds in a culturally different situation. After the students have answered the 50 statements, they can self-score their results which will take another 15 minutes. A letter for each student with standardized instructions for taking the CCAI has been enclosed with the inventory. Please collect both booklets and answer sheet from the students and return to me by November 20, 1998.

If you are interested in the results or have any questions, you can contact Michele Darby or myself at 757-683-5232 or mdarby@odu.edu at Old Dominion University. If there are any remaining CCAIs, please return them with the completed inventories by November 20, 1998.

Thank you for allowing your dental hygiene students to participate in this study. Your involvement has been greatly appreciated.

Sincerely,

Katrina A. White Magee
Master Degree Candidate
Old Dominion University
(h) 757-531-0622
e-mail: dougmagee@mindspring.com
APPENDIX C
DEMOGRAPHIC DATA COLLECTION FORM
DEMOGRAPHIC DATA COLLECTION FORM

DIRECTIONS: Please complete the following information before starting the Cross-Cultural Adaptability Inventory.

1. What is your primary race or ethnic background?
   - Black
   - White
   - Asian /Pacific Islander
   - Hispanic/Latino
   - Native American/Alaskan Native
   - Other Please specify _______________________

2. What credential in dental hygiene are you currently working to complete?
   - Certificate
   - Associates
   - Bachelors
   - Masters

3. Have you received any training or courses on treating culturally diverse patients?
   - No
   - Yes
APPENDIX D
CCAI DESCRIPTIVE STATISTICS BY SCALE
CCA1 DESCRIPTIVE STATISTICS BY SCALE

N=653

<table>
<thead>
<tr>
<th>SCALE RANGE</th>
<th>MEAN</th>
<th>MEDIAN</th>
<th>STANDARD DEVIATION</th>
<th>RANGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ER</td>
<td>79.58</td>
<td>79</td>
<td>8.28</td>
<td>45-103</td>
</tr>
<tr>
<td>FO</td>
<td>66.92</td>
<td>67</td>
<td>7.76</td>
<td>42-89</td>
</tr>
<tr>
<td>PAC</td>
<td>46.47</td>
<td>46</td>
<td>4.69</td>
<td>28-60</td>
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<tr>
<td>PA</td>
<td>32.88</td>
<td>33</td>
<td>3.78</td>
<td>20-42</td>
</tr>
<tr>
<td>TOTAL SCORE</td>
<td>225.85</td>
<td>225</td>
<td>19.63</td>
<td>167-278</td>
</tr>
</tbody>
</table>

Kelley/Meyers
APPENDIX E
ADA COMMISION ON DENTAL ACCREDIATION SURVEY ON DENTAL HYGIENE EDUCATION PROGRAMS: ITEM #30
30. For all full-time students listed in Q. 21a., 21b. and 21c., indicate the number of students in the following categories. Include third and/or fourth year full-time students with second-year full-time students. (If none, enter zero for each.)

<table>
<thead>
<tr>
<th>First-Year</th>
<th>Second-Year (If applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Men</td>
<td>Women</td>
</tr>
<tr>
<td>a. White</td>
<td></td>
</tr>
<tr>
<td>b. Black</td>
<td></td>
</tr>
<tr>
<td>c. Hispanic</td>
<td></td>
</tr>
<tr>
<td>d. American Indian or Alaskan Native</td>
<td></td>
</tr>
<tr>
<td>e. Asian or Pacific Islander</td>
<td></td>
</tr>
</tbody>
</table>

NOTE: For all questions regarding ethnicity, use the following definitions:

White (not Hispanic origin) - persons having origins in any of the original peoples of Europe, North Africa or the Middle East.

Black (not of Hispanic origin) - persons having origins in any of the black racial groups of Africa.

Hispanic - persons of Mexican, Puerto Rican, Cuban, Central or South American or other Spanish cultures or origins regardless of race.

American Indian or Alaskan Native - persons having origins in any of the original peoples of North America and who maintain cultural identification through tribal affiliation or community recognition.

Asian or Pacific Islander - persons having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands.