I, Katie Wusik, hereby submit this work as part of the requirements for the degree of:

Masters of Science

in:

Medical Genetics

It is entitled:

CCA Measurement of Cultural Competency in a Genetic Counseling Student Population

This work and its defense approved by:

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Andrea Wall
CCA Measurement of Cultural Competency in a Genetic Counseling Student Population

A thesis submitted to the
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ABSTRACT

In an effort to better serve a diverse client population, genetic counselors can improve their cultural competence. Approximately 45% of clients are non-Caucasian, but the genetic counseling community is only 9% non-Caucasian. This study utilized the Cultural Competence Assessment (CCA), an online survey, to measure genetic counseling students’ cultural competency. The CCA contains two subscale scores: Cultural Awareness and Sensitivity (CAS) and Cultural Competency Behaviors (CCB). The baseline cultural competency score for students was 5.11, with 7.00 being the highest score. Mean CAS scores were found to be higher than mean CCB scores (6.14 vs. 4.25). No differences in cultural competency scores were found between 1st and 2nd year students or between Caucasian and non-Caucasian students. Genetic counseling students exhibit high levels of cultural awareness and sensitivity; however, their reported behaviors fail to reach the same levels. Recommendations for increasing students’ cultural competency behaviors, such as curriculum mapping, are discussed.
ACKNOWLEDGEMENTS

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INTRODUCTION

Cultural competency for health professionals has been defined as “the process in which a healthcare provider continuously strives to achieve the ability to effectively work within the cultural context of a client, individual, family, or community” (Campinha-Bacote, 2003). Cross et al. (1989) also highlights that the achievement of cultural competence is a complex process which includes six stages: cultural destructiveness, cultural incapacity, cultural blindness, cultural pre-competence, cultural competency, and cultural proficiency. As individuals or organizations increase their cultural competency, they may move forward on the continuum. Cultural destructiveness implies the practices of a provider or the organization are detrimental to various cultural groups. Cultural incapacity indicates culturally diverse groups may not be receiving the services they need because the service providers can not effectively respond to those needs. Cultural blindness refers to individuals who treat all people as the same, regardless of their cultural group. Cultural pre-competence describes a level of awareness of strengths and weaknesses while providing services to culturally diverse groups without having a plan for improvement; cultural competence, on the other hand, indicates a plan is in place which addresses weaknesses in care. Cultural proficiency describes individuals or organizations which use culture to direct their future ventures (Cross, Bazron, Isaacs, & Dennis, 1989).

Culture may refer to a person’s age, gender, sexual orientation, race, ethnicity, profession, or religion. It can also be applied to almost any other aspect of a person’s life. Culture is dynamic, changing over time, and functions on many levels including personal, familial, and community (Goode, 2006). Culture has previously been defined as “an integrated pattern of human behavior that includes thoughts, communications, languages, practices, beliefs, values, customs, courtesies, rituals, manners of interacting, roles, relationships, and expected behaviors of a racial, ethnic, religious or social group” which can be transmitted to subsequent
generations (Goode, 1997). As indicated by Weil (2000), one’s own cultural responses are often unconscious due to their innate nature. However, when a person views others’ cultural responses, they appear more apparent and often become labeled as “specific characteristics” of those individuals or groups (Weil, 2000). Genetic counselors are taught to assess many aspects of a client’s life and personalize the genetic counseling session based on the information a client shares. By performing these individual assessments, genetic counselors also begin to assess, explore, and understand the numerous cultural groups to which a client belongs.

By addressing issues of cultural competency at the individual level, genetic counselors can also begin to address the health disparities which exist in the United States and Canada at the population level. Disparities in health care are documented in the United States through the National Healthcare Disparities Report and in Canada by the Public Health Agency. The major health care disparities in Canada are related to socio-economic status, Aboriginal identity, and geographic location (Health Disparities Task Group of the Federal/Provincial/Territorial Advisory Committee on Population Health and Health Security, 2004). The death rate of Aboriginal infants is four times higher than the death rate of all Canadian infants. Medicare services for Aboriginals have not decreased or eliminated the disparities (Health Disparities Task Group of the Federal/Provincial/Territorial Advisory Committee on Population Health and Health Security, 2004). African Americans, Asians, and Hispanics have more limited access to health care than do Caucasians in the United States (U.S. Department of Health and Human Services & Agency for Healthcare Research and Quality, 2005). In addition, the quality of care provided to African Americans and Hispanics is reported to be poorer 43% of the time and 53% of the time, respectively, when compared to Caucasian, non-Hispanic individuals (U.S. Department of Health and Human Services & Agency for Healthcare Research and Quality,
Patients who are African American have been found to receive fewer suitable medical services than patients who are Caucasian, both within managed health care plans such as Medicare and outside of health care plans (Long, Chang, Ibrahim, & Asch, 2004; Schneider, Zaslavsky, & Epstein, 2002). These data indicate access to services is not the sole contributor to racial disparities in health care (Health Disparities Task Group of the Federal/Provincial/Territorial Advisory Committee on Population Health and Health Security, 2004; Long, Chang, Ibrahim, & Asch, 2004; Schneider, Zaslavsky, & Epstein, 2002). The experiences of non-Caucasian clients in the health care system have also been explored (Cooper, Roter, Johnson, & al., 2003). African American patients are more likely to disclose distrust of the system, describe instances of being treated disrespectfully during appointments, and to voice that they may benefit from a provider who is not Caucasian (Cooper, Roter, Johnson, & al., 2003). In contrast, Saha found neither physician race, nor physician cultural sensitivity, account for variability in patient satisfaction (Saha, Arbelaez, & Cooper, 2003).

Providing culturally competent health care to non-Caucasians could reduce current inequalities in quality and access to health care currently seen in the United States (Ely & Thomas, 2001). The US Office of Minority Health (2001) recognizes organizational barriers inherent in health care services alter the health care experience of minorities. The Bureau of Primary Health Care mandates health care service providers must “respect and respond to the cultural diversity of communities and clients served” (Department of Health and Human Services, Health Resources and Services Administration, & Care, 1998). Likewise, the Healthy People 2010 Objectives emphasize the importance of cultural competency (Ahmann, 2002). Matters involving race and culture have been implicated as obstacles for clients seeking health care (Wang, 2001). Cultural competency can help eliminate these barriers by enabling the
organizations and providers to “respond effectively to the cultural and linguistic needs brought by patients…” (Office of Minority Health, 2001). Exhibiting cultural competency could facilitate the development of a trusting relationship and allow clients to take advantage of genetic counseling services or to share important information they did not feel comfortable telling other health professionals.

Cultural competency is especially important in genetic counseling because of the diverse backgrounds of clients. Genetic counseling clients are more diverse than the general population (45% of genetic counseling clients are non-Caucasian versus 32.7% of the general population) (Benkendorf, 2004; U.S. Census Bureau, 2004); however, genetic counselors, themselves, are a homogeneous group, consisting of predominantly Caucasian females (Parrott & Del Vecchio, 2007; Parrott & Manley, 2004). Lega and others (2005) conducted a demographic survey of the cohort of first and second year genetic counseling students enrolled in the 2003-2004 academic year. Of the 235 responding students, only 13.4% self-identified as non-Caucasian. In addition, approximately 97% of the population was female with a mean age of 25.4 years (Lega, Veach, Ward, & LeRoy, 2005). Providing accessible and effective genetic counseling to a diverse client population has been identified as a “major challenge” to the field of genetic counseling (Weil, 2001). The cultural differences between genetic counselors and their clients have resulted in efforts to address the cultural needs of both clients and professionals (Oh & Lewis, 2005; Schoonveld, Veach, & LeRoy, 2007; Wang, 1994).

Previous studies in the field of genetic counseling focus on the recruitment of minority applicants into training programs and minority members’ experiences (Oh & Lewis, 2005; Schoonveld, Veach, & LeRoy, 2007; Smith, 1998). Oh and Lewis explored the area of minority recruitment by surveying high school and college students about their awareness of genetic
counseling (Oh & Lewis, 2005). This study suggests minority students are less likely to be aware of the genetic counseling field than Caucasian students. Schoonveld, McCarthy Veach, & LeRoy (2007) explored the experiences of a small group of current genetic counseling students and professionals who self-identified as a member of an underrepresented cultural or ethnic minority. Participants noted several barriers to pursuing a genetic counseling career including difficulty learning about the profession, concerns about salary, and worry about fitting into the field. Respondents also acknowledged their experiences could help increase cultural awareness, but at times felt their culture was either ignored or seen as “their sole identifying characteristic.” In addition, the study identified genetic counseling, itself, as a cultural group (Schoonveld, Veach, & LeRoy, 2007), corresponding to broad definitions of culture.

Other endeavors in the field of genetic counseling have focused on theoretical counseling frameworks and the importance of integrating multicultural counseling into training program curricula (Oh & Lewis, 2005; Wang, 1994; Wang, 2001). Wang discussed a developed, cross-cultural genetic counseling teaching tool entitled the Handbook of Cross-Cultural Genetic Counseling (Wang, 1994). The tool aims to help genetic counseling programs incorporate cultural competency into the curricula (Wang, 1994). Lewis examined approaches to multicultural genetic counseling, including race-based genetic counseling in which race is the “superordinate focus of culture in the United States,” and defined by easily identifiable characteristics such as skin color, physical features, and language (Oh & Lewis, 2005). This approach states American culture and the concept of race emerged together through the history of the United States and continues to influence power dynamics between racial groups, often leading to racism. Racism is a barrier to effective counseling; therefore, race-based genetic counseling emphasizes knowledge of intergroup differences and intragroup variability (Oh &
Lewis, 2005). Likewise, the multiculturalism perspective also stresses intragroup variability as well as individual distinctions, focusing on the significance of the counselor’s cultural perspective in addition to the counselee’s racial and cultural groups (Wang, 2001).

More directly related to the measurement of cultural competency in the genetic counseling field, an institutional cultural competency assessment tool was completed by eight program directors who were attending a conference to discuss multiculturalism with minority recruiters from their Midwestern institutions and other diversity experts (Warren, 2004). One question in the cultural competency tool inquired if directors evaluated their students on cultural competency. Seven out of eight program directors indicated they did, but the types of evaluation tools utilized were not specified (Warren, 2004).

Related work in the field of counseling psychology reports counselor cultural competency is positively correlated with perceived counselor characteristics such as the counselor’s attractiveness, expertness, trustworthiness, and general competency (Fuertes & Brobst, 2002). Non-Caucasian clients’ satisfaction is significantly influenced by counselor cultural competency, which supports the idea that cultural competency is important to non-Caucasian clients (Fuertes & Brobst, 2002). Another study examining clients’ and third-party observers’ ratings of therapists’ cultural competency finds non-Caucasian therapists are rated as more culturally competent than their Caucasian peers (Constantine & Ladany, 2000). However, counselors whose clients are of the same ethnicity do not have significantly higher scores than counselors whose clients are of an ethnicity different than their own. This suggests differing ethnicities between client and counselor alone does not decrease cultural competency and, therefore, supports the importance of cultural competence despite differences in demographics between counselors and clients. Counselors’ ratings of cultural competency on several self-report
measures are positively correlated to a social desirability measure, indicating participants’
cultural competency scores may be exaggerated (Constantine & Ladany, 2000; Sodowsky, Kuo-
Jackson, Richardson, & Cory, 1998; Worthington, Mobley, Franks, & Tan, 2000). Additionally,
race is also found to account for a significant amount of variability in cultural competency scores
(Sodowsky, Kuo-Jackson, Richardson, & Cory, 1998). To date, no studies have assessed client
views of genetic counselor cultural competency, nor have genetic counseling students been
quantitatively assessed for cultural competence.

The purpose of this cross-sectional study was to quantitatively assess the cultural
competency of genetic counseling students enrolled in an American Board of Genetic
Counseling (ABGC) accredited training program. Using an existing quantitative instrument for
assessing cultural competency, the Cultural Competence Assessment (CCA) (Schim, Doorenbos,
Miller, & Benkert, 2003), we measured differences between cultural competency scores in the
first and second year genetic counseling students as well as differences between cultural
competency scores in Caucasian and non-Caucasian students. The study results may impact the
teaching of cultural competency in genetic counseling training programs.

**METHODS**

**SAMPLE**

All first and second year students currently enrolled in at least one credit hour at an
ABGC accredited genetic counseling program in the United States or Canada were invited to
participate in the study. Lega (2005) estimated 195 students were admitted to 29 genetic
counseling programs annually; therefore, it was estimated that approximately 400 first and
second year students in 30 genetic counseling programs would be eligible to participate in the
study. Students from five schools which have provisional accreditation were included in the
sample population. Provisional accreditation referred to new programs which have “completed and submitted an application for becoming an accredited program…[and] meet the minimum criteria for providing a Masters Degree in Genetic Counseling as established by the ABGC” (American Board of Genetic Counselors). Students from one school with probationary accreditation were included in the sample population. Probationary accreditation refers to a program which does “not meet the minimum standards for providing educational and clinical training for students and has generalized problems that appear to interfere with optimal education of the candidates” (American Board of Genetic Counselors).

PROCEDURES AND DATA COLLECTION

Doorenbos (2004) compared the mean cultural competency score of hospice care workers who had previous diversity training to those who did not report previous diversity training. The mean cultural competency score for workers with diversity training was 4.3 with a standard deviation of 3.4. The mean cultural competency score for workers who did not have diversity training was 3.4 with a standard deviation of 4.6. The standard deviation ($\sigma$) and the mean difference (D) for the calculation of sample size for our study were based on the data obtained from Doorenbos (2004). The sample size equation and calculation used for our study in which two means are compared, was provided by Eng (2003). The total sample size calculated was 282.2; therefore, each group needed to have 142 people in order to detect a difference in mean cultural competency scores with a power of 80%.

Eligible genetic counseling students were identified by contacting the program directors of the ABGC training programs. Program directors from 30/30 ABGC accredited programs were emailed a short description of the study and asked to forward an attachment to students currently enrolled at their respective institutions. The attachment provided a short description of the study,
explained the use of results, voluntariness, and confidentiality, and described how and when to submit the survey. The students were informed that by completing and submitting the questionnaire, they were giving their consent to participate in the study. The attachment also contained a hyperlink which led the students to the online survey.

Students were allowed a total of six weeks to complete and submit the survey online. Program directors were emailed after three weeks to thank them for their participation and ask them to remind their students to complete and submit the survey.

Submitted surveys were organized into an excel spreadsheet within the secure website on which it was posted. The website was accessible only to the principal investigator through a password. Once data collection was completed, the principal investigator downloaded the excel spreadsheet onto her password protected computer. No identifiable information was collected; therefore, the confidentiality of individual participants was assured.

QUESTIONNAIRE

The survey included a total of 52 questions. Thirty-five questions were from the CCA (Schim, Doorenbos, Miller, & Benkert, 2003) which was designed to measure cultural diversity experience, awareness and sensitivity, and competence behaviors in interdisciplinary healthcare teams. The CCA has been utilized with nursing professionals, social workers, clergy, and hospice care workers (Doorenbos & Schim, 2004; Doorenbos, Schim, Benkert, & Borse, 2005; Schim, Doorenbos, & Borse, 2005). The CCA includes two subscales, the cultural awareness and sensitivity (CAS) subscale and the cultural competence behavior (CCB) subscale. The CAS was measured by 11 statements on a 7-point Likert-like response set ranging from strongly agree to strongly disagree with an additional option of “no opinion.” Seven of the CAS statements were associated with cultural competency; therefore, answers of strongly agree and strongly
disagree corresponded to scores of 7 and 1, respectively. In the remaining 4 CAS questions, answers were inversely coded because the statements were not associated with cultural competency. Therefore, answers of strongly agree and strongly disagree corresponded to a score of 1 and 7, respectively. The CCB was measured by 14 questions on a 7-point Likert-like response set ranging from always to never with the additional option of “no opinion.” Answers of always and never corresponded to a score of 7 and 1, respectively. These items were summed and divided by the number of questions answered for each subscale. Scores ranged from one to seven. Higher scores indicated higher levels of cultural competency, with the highest score being 7.0. The total CCA score was calculated by summing the points earned for every question on the CCA and dividing by the number of questions answered. Answers of “no opinion” or “not sure” were not scored or included in the calculation of CCA, CAS, or CCB scores. The CCA also includes 5 other questions, not included in the CAS and CCB subscales, which assess characteristics about the client population with which an individual works and the individual’s perception of their own cultural competency.

Test-retest reliability for the CCA has been reported as 0.85 and as 0.87 and 0.82 for the CCB and CAS respectively (Doorenbos, Schim, Benkert, & Borse, 2005). Internal consistency reliability was reported as high as 0.92, 0.93, and 0.75 for the CCA, the CCB, and CAS respectively (Schim, Doorenbos, Miller, & Benkert, 2003). Construct, content, and face validity have been established in previous studies (Doorenbos & Schim, 2004; Doorenbos, Schim, Benkert, & Borse, 2005; Schim, Doorenbos, Miller, & Benkert, 2003). The CCA has been used previously to measure cultural competency in individuals from the following populations: nursing, social work, nursing assistants, clergy, volunteer, and administration (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005; Schim, Doorenbos, Miller, & Benkert, 2003).
Thirteen questions came from the Marlowe-Crowne Social Desirability Questionnaire (MCSD) which measures a person’s desire to obtain approval from others. The original MCSD was developed in 1960 and has been used extensively in the past 40 years. The 13 questions used in the study were developed as a “short-form” of the original MCSD by Reynolds (1982). Reynolds studied 608 undergraduate students who voluntarily took the MCSD. Principal factor analysis was performed and all items which had a factor loading of over 0.40 were included in the initial short-form. This included 11 items from the original MCSD. Factor loadings ranged from 0.40 to 0.54. Reliability was calculated for the short form using Kuder-Richardson Formula 20 and found to be 0.74. Inclusion of two additional questions from the MCSD increased the reliability to 0.76 and resulted in the formation of the 13 question short-form or MC Form C. A score of 0.76 was found to be reliable (Reynolds, 1982).

Validity of the MC Form C was determined by Reynolds (1982) by utilizing product-moment correlation coefficients between the short form and the original MCSD. The correlation between these two tests was found to be 0.93 (p<.001). This demonstrated the MC Form C was a valid form of the MCSD.

Four questions came from a survey used by Lega (2005) to survey genetic counseling students about their demographics. These questions addressed the respondent’s age, gender, racial or ethnic group, and the size of the community in which the respondent was raised.

Three questions were modified from a survey tool in a thesis by Bradshaw which surveyed genetic counseling professionals about their ability to perform genetic counseling skills in languages other than English (Bradshaw, 2000). These questions addressed the respondents’ abilities to speak languages other than English, the program the students were currently
attending, and the factors that influenced the respondents’ knowledge of cultures other than their own.

Two survey questions were developed by the research team. These questions addressed the respondent’s country of origin and native language. Members of the research team have expertise in cultural competency and include educators in the fields of genetic counseling, pharmacy, and nursing.

STATISTICAL ANALYSIS

The SPSS 12.0© and SAS 9.1.3© statistical packages were used to analyze data. The CAS score, the CCB score, the total CCA score, and the MCSD score were computed for each respondent. Then, the mean CAS, CCB, CCA, and the MCSD scores for all students, 1st year students, 2nd year students, non-Caucasian students, and Caucasian students were calculated. The mean and median CCA and MCSD scores of the 1st and 2nd year students were compared as well as the mean scores of the Caucasian and non-Caucasian students using the Mann Whitney U test. The Mann Whitney U test is the non-parametric equivalent to the student t test. The Mann Whitney U test compares the medians of two groups and also allows comparison of the variable distribution between the groups. Spearman correlation coefficients were calculated between the CAS, CCB, and MCSD scores. Spearman correlation coefficients are a non-parametric measurement of correlation for variables which are not normally distributed and do not assume a linear relationship between the variables. Questions which assessed the percentage of racial/ethnic or special groups respondents encountered in the past year were not utilized in the analysis.

Students were defined as any person who was enrolled in one or more credit hours at his or her institution. A first year student was defined as any student who was currently enrolled in a
training program but who had not yet completed a full year of clinic and/or course work. A second year student was defined as any student currently enrolled in a training program who had already completed a full year of clinic and/or course work.

**RESULTS**

**SAMPLE**

*Response Rate*

Approximately 400 genetic counseling students were asked to participate in the study and 166 students completed and submitted the survey, providing a response rate of approximately 41.5%.

*Sample Characteristics*

At least one individual from 29/30 genetic counseling programs responded to the survey. The demographic characteristics of the sample population are shown in Table 1. The majority of respondents were Caucasian (85.3%), female (98.1%), spoke English as their native language (93.6%), were from the United States (84.5%), and were from a town with a population larger than 10,000 (71.8%). The mean age of participants was 25.8 years with a standard deviation of 4.8.
Table 1. Respondent Demographic Characteristics Percentage and total number of participants by race, gender, population size of home town city, country of origin, native language, year in genetic counseling training program, and number of languages spoken other than English.

<table>
<thead>
<tr>
<th>Demographic Characteristic</th>
<th>Percentage (N)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Race (n=156)</strong></td>
<td></td>
</tr>
<tr>
<td>Caucasian</td>
<td>85.3 (133)</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>14.7 (23)</td>
</tr>
<tr>
<td><strong>Gender (n=154)</strong></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>1.9 (3)</td>
</tr>
<tr>
<td>Female</td>
<td>98.1 (151)</td>
</tr>
<tr>
<td><strong>Population Size of Home Town City (n=152)</strong></td>
<td></td>
</tr>
<tr>
<td>&lt;500</td>
<td>0.7 (1)</td>
</tr>
<tr>
<td>500-1000</td>
<td>3.3 (5)</td>
</tr>
<tr>
<td>1001-5000</td>
<td>14.5 (22)</td>
</tr>
<tr>
<td>5001-10000</td>
<td>9.9 (15)</td>
</tr>
<tr>
<td>10001-50000</td>
<td>50.7 (77)</td>
</tr>
<tr>
<td>&gt;5000000</td>
<td>21.1 (32)</td>
</tr>
<tr>
<td><strong>Country of Origin (n=155)</strong></td>
<td></td>
</tr>
<tr>
<td>United States</td>
<td>84.5 (131)</td>
</tr>
<tr>
<td>Canada</td>
<td>8.4 (13)</td>
</tr>
<tr>
<td>Other</td>
<td>7.1 (11)</td>
</tr>
<tr>
<td><strong>Native Language (n=156)</strong></td>
<td></td>
</tr>
<tr>
<td>English</td>
<td>93.6 (146)</td>
</tr>
<tr>
<td>Other</td>
<td>6.4 (10)</td>
</tr>
<tr>
<td><strong>Year in Genetic Counseling Training Program (n=155)</strong></td>
<td></td>
</tr>
<tr>
<td>1&lt;sup&gt;st&lt;/sup&gt; year</td>
<td>48.4 (75)</td>
</tr>
<tr>
<td>2&lt;sup&gt;nd&lt;/sup&gt; year</td>
<td>51.6 (80)</td>
</tr>
<tr>
<td><strong>Number of Languages Spoken Other than English (n=152)</strong></td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>57.9 (88)</td>
</tr>
<tr>
<td>1</td>
<td>34.9 (53)</td>
</tr>
<tr>
<td>More than 1</td>
<td>7.3 (11)</td>
</tr>
</tbody>
</table>

STATISTICAL ANALYSIS

*Cultural Competency Assessment (CCA)*

The mean CAS, CCB, and CCA for all students, 1<sup>st</sup> year students, 2<sup>nd</sup> year students, non-Caucasian students, and Caucasian students are shown in Table 2. First year students had the highest mean CCA scores, non-Caucasian students had the highest mean CAS score and Caucasian students had the highest mean CCB score. The average CAS, CCB, and CCA scores
for all groups were greater than 6.14, 4.12, and 5.04 respectively. CAS scores were higher than CCB scores in all groups.

No statistically significant differences between first and second year students or between Caucasian and non-Caucasian students on mean CCA, CCB, or CAS scores were found using the Mann-Whitney U test. Medians, ranges, p-values, and z-scores for CCA, CCB, and CAS scores are shown in Tables 3 and 4.

<table>
<thead>
<tr>
<th></th>
<th>CAS Mean (SD)</th>
<th>CCB Mean (SD)</th>
<th>CCA Mean (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n=164</td>
<td>n=158</td>
<td>n=164</td>
</tr>
<tr>
<td>All</td>
<td>6.14 (0.44)</td>
<td>4.25 (1.22)</td>
<td>5.11 (0.60)</td>
</tr>
<tr>
<td>1st Year</td>
<td>75</td>
<td>6.14 (0.38)</td>
<td>4.27 (0.93)</td>
</tr>
<tr>
<td>2nd Year</td>
<td>80</td>
<td>6.18 (0.39)</td>
<td>4.22 (0.97)</td>
</tr>
<tr>
<td>Caucasian</td>
<td>133</td>
<td>6.15 (0.38)</td>
<td>4.27 (0.93)</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>23</td>
<td>6.18 (0.41)</td>
<td>4.13 (1.04)</td>
</tr>
</tbody>
</table>

Table 2. Mean Cultural Awareness and Sensitivity (CAS), Cultural Competency Behaviors (CCB), and Cultural Competence Assessment (CCA) Scores by Group

Individual scores for the CAS were calculated by summing the 13 questions associated with the CAS subscale and dividing by the number of questions answered for each individual. Individual scores for the CCB were calculated by summing the 17 questions associated with the CCB subscale and dividing by the number of questions answered for each individual. Individual scores for the CCA were calculated by summing the CAS and CCB subscales and dividing by the number of questions answered for each individual. Average scores were then calculated for the CAS, CCB, and CCA.

<table>
<thead>
<tr>
<th></th>
<th>CAS Median (Range)</th>
<th>CCB Median (Range)</th>
<th>CCA Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>6.18 (5.09-6.80)</td>
<td>4.15 (2.43-6.42)</td>
<td>5.09 (3.96-6.48)</td>
</tr>
<tr>
<td>2nd Year</td>
<td>6.18 (3.75-6.40)</td>
<td>4.27 (2.15-6.50)</td>
<td>5.12 (3.75-6.40)</td>
</tr>
</tbody>
</table>

Table 3. Mann-Whitney Comparison of 1st and 2nd Year Student Participant Scores on the Cultural Competency Assessment (CCA) and Subscales

Z-scores and P-values were calculated with the Mann-Whitney non-parametric U test between first and second year students on each subscale of the CCA and the total CCA score. Medians and ranges for each group by subscale are also reported to describe the spread of the variables.
Table 4. Mann-Whitney Comparison of Caucasian and Non-Caucasian Student Participant Scores on the Cultural Competency Assessment (CCA) and Subscales  

Z-scores and P-values were calculated with the Mann-Whitney non-parametric U test between Caucasian and non-Caucasian students on each subscale of the CAS, CCB, and CCA. Medians and ranges for each group by subscale were also reported to describe the spread of the variables.

Marlowe-Crowne Social Desirability Score (MCSD)

The mean MCSD for all students, 1st year students, 2nd year students, non-Caucasian students, and Caucasian students are shown in Table 5. Second year students had the highest mean MCSD score. The average MCSD scores for all groups were greater than 6.28.

No statistically significant differences between first and second year students or between Caucasian and non-Caucasian students on mean MCSD scores were found using the Mann-Whitney U test. Medians, ranges, p-values, and z-scores for MCSD scores are shown in Tables 6 and 7.

MCSD scores were found to be positively correlated to both the CAS and CCB subscale scores. MCSD scores had a stronger relationship with CCB scores than CAS scores. The correlation matrix for CAS, CCB, and MCSD scores are shown in Table 8.

Table 5. Mean Marlowe-Crowne Social Desirability Scores (MCSD) by Group

Individual scores for MCSD were calculated by summing the thirteen questions included on the measurement. Individuals who did not answer 1 or more of the 13 questions were excluded from analysis. Average scores were then calculated from the individual scores based on group.
Table 6. Mann-Whitney Comparison of 1st and 2nd year Student Marlowe-Crowne Social Desirability MC-C (MCSD) Scores  Z-scores and P-values were calculated with the Mann-Whitney non-parametric U test between first and second year students on the MCSD. Medians and ranges for each group by subscale were also reported to describe the spread of the variables.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>MCSD Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1st Year</td>
<td>73</td>
<td>6 (1-12)</td>
</tr>
<tr>
<td>2nd Year</td>
<td>74</td>
<td>7 (1-11)</td>
</tr>
<tr>
<td>Z-score</td>
<td></td>
<td>-1.45</td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td>0.15</td>
</tr>
</tbody>
</table>

Table 7. Mann-Whitney Comparison of Caucasian and Non-Caucasian Student Participant Marlowe-Crowne Social Desirability MC-C (MCSD) Scores  Z-scores and P-values were calculated with the Mann-Whitney non-parametric U test between Caucasian and non-Caucasian students on the MCSD. Medians and ranges for each group by subscale are also reported to describe the spread of the variables.

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>MCSD Median (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>133</td>
<td>7 (2-11)</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>23</td>
<td>7 (1-12)</td>
</tr>
<tr>
<td>Z-score</td>
<td></td>
<td>-0.480</td>
</tr>
<tr>
<td>P-value</td>
<td></td>
<td>0.631</td>
</tr>
</tbody>
</table>

Table 8. Spearman Correlation Coefficients for Cultural Awareness and Sensitivity (CAS), Cultural Competency Behavior (CCB), and Marlowe-Crowne Social Desirability MC-C (MCSD) Scores for All Participants (n=166). Spearman Correlation Coefficients were calculated for the CAS, CCB, and MCSD scales.

<table>
<thead>
<tr>
<th></th>
<th>CAS</th>
<th>CCB</th>
<th>MCSD</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAS</td>
<td>1.000</td>
<td>0.309</td>
<td>0.018</td>
</tr>
<tr>
<td>CCB</td>
<td>0.309</td>
<td>1.000</td>
<td>0.154</td>
</tr>
<tr>
<td>MCSD</td>
<td>0.018</td>
<td>0.154</td>
<td>1.000</td>
</tr>
</tbody>
</table>

Respondents’ Cultural Experiences

Study subjects were asked what factors contributed to their knowledge of culture, what racial/ethnic or special groups they encountered in the past year in their clients, clients’ families,
health care and work environment. Their responses are found in Tables 9, 10 and 11 respectively.

<table>
<thead>
<tr>
<th>Factors Contributing to Knowledge of Other Cultures</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Readings/literature about cultures different than your own</td>
<td>142</td>
</tr>
<tr>
<td>2. Friends/relatives from a culture different than your own</td>
<td>137</td>
</tr>
<tr>
<td>3. Courses in a language other than your native language</td>
<td>116</td>
</tr>
<tr>
<td>4. Travel to countries other than the US or Canada</td>
<td>115</td>
</tr>
<tr>
<td>5. Native speakers of languages other than your native language</td>
<td>88</td>
</tr>
<tr>
<td>6. Lived/worked in a country other than the US, Canada, or your country of origin</td>
<td>44</td>
</tr>
<tr>
<td>7. Medical courses in a language other than your native language</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 9. Frequency of Factors which Contributed to the Respondents’ Knowledge of Cultures Other than Their Own. Individuals were asked to check all factors which applied to them. N represents the number of individuals who checked each factor.

<table>
<thead>
<tr>
<th>Racial/Ethnic Groups Encountered in the Past Year</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Caucasians</td>
<td>163</td>
</tr>
<tr>
<td>2. African Americans</td>
<td>144</td>
</tr>
<tr>
<td>3. Hispanics</td>
<td>134</td>
</tr>
<tr>
<td>4. Asian</td>
<td>121</td>
</tr>
<tr>
<td>5. Arab American/Middle Eastern</td>
<td>37</td>
</tr>
<tr>
<td>6. American Indian/Alaskan Native</td>
<td>12</td>
</tr>
<tr>
<td>7. Other</td>
<td>10</td>
</tr>
<tr>
<td>8. Other</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 10. Racial/Ethnic Groups Encountered by Respondents in the Past Year in Clinical and Health Care Environments. Individuals were asked to check each racial/ethnic group which they encountered in the past year among clients and clients’ families, as well as within the health care environment or workplace. N represents the number of individuals who checked each factor.
Special Population Groups Encountered in the Past Year

<table>
<thead>
<tr>
<th>Special Population Group</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Individuals who have different religious or spiritual backgrounds</td>
<td>137</td>
</tr>
<tr>
<td>2. Individuals who have physical challenges</td>
<td>132</td>
</tr>
<tr>
<td>3. Individuals who have substance or alcohol abuse issues</td>
<td>78</td>
</tr>
<tr>
<td>4. Individuals who are gay, lesbian, bisexual, or transgendered</td>
<td>47</td>
</tr>
<tr>
<td>5. Individuals who did not have a home or whose housing was not secure</td>
<td>34</td>
</tr>
</tbody>
</table>

Table 11. Special Population Groups Encountered by Respondents in the Past Year in Clinical and Health Care Environments. Individuals were asked to check each special population group they encountered in the past year among clients and clients’ families, as well as in the health care environment or workplace. N represents the number of individuals who checked each special population group.

DISCUSSION

Response Rate

The study response rate of 41.5% is similar to the estimated mean response rate of 39.6% (SD = 19.6) for web or email-based surveys (Cook, Heath, & Thompson, 2000). Kittleson (1997) estimates the response rate to be between 25 and 30% for electronic surveys when no follow-up notices are utilized. Follow-up notices are expected to approximately double the response rate. Despite one follow-up notice in the current study, the response rate did not reach the 50-60% estimate suggested (Kittleson, 1997). In addition, the current study does not reach the 65.7% response rate attained by a previous mailed paper and pencil study of genetic counseling students (Lega, Veach, Ward, & LeRoy, 2005), perhaps due to differences in methods, study design, and/or subject matter. One possible reason for not achieving a higher response rate was the timing of the survey release. One program’s graduation date had already passed when the survey was made available at the end of February and several other programs were preparing for graduation.

Sample Characteristics

The demographic characteristics of this study’s sample are considered comparable to other genetic counseling demographic sources but some differences do exist. Lega and others
(2005) conducted a demographic survey of a population of first and second year genetic
counseling students enrolled in the 2003-2004 academic year. Additionally, the National Society
of Genetic Counselors (NSGC) conducts biannual Professional Status Surveys (PSS) assessing
practicing genetic counselors (Parrott & Del Vecchio, 2007). Comparisons of demographics
between these studies and the demographics of our study group are noted in Table 12. Higher
percentages of non-Caucasian students compared to practicing genetic counselors may indicate
an increase in the diversity of the genetic counseling field in the future or an overrepresentation
of non-Caucasian students in the study. A slightly lower percentage of Caucasian students
participated in our study with a correspondingly increased percentage of non-Caucasian students.
An increased percentage of our respondents identified with the Chicano/Hispanic/Latino,
Asian/Pacific Islander, African American, and Bi-racial groups when compared to the other
studies. A lower percentage of respondents self-identified with the “other” category when
compared to previous studies of genetic counseling students. Due to the similarities in
demographic characteristics, the sample population is thought to be representative of genetic
counseling students in the United States and Canada.
### Demographic Characteristic

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Caucasian</td>
<td>86.8%</td>
<td>91%</td>
<td>85.3%</td>
</tr>
<tr>
<td>Non-Caucasian</td>
<td>13.4%</td>
<td>9.9%</td>
<td>14.7%</td>
</tr>
<tr>
<td>Chicano/Hispanic/Latino</td>
<td>2.1%</td>
<td>2.0%</td>
<td>3.2%</td>
</tr>
<tr>
<td>Asian/Pacific Islander</td>
<td>3.4%</td>
<td>4.9%</td>
<td>5.1%</td>
</tr>
<tr>
<td>African American/Black</td>
<td>0.9%</td>
<td>1.0%</td>
<td>1.3%</td>
</tr>
<tr>
<td>Bi-racial</td>
<td>3.4%</td>
<td>--</td>
<td>3.8%</td>
</tr>
<tr>
<td>Alaskan Native/Native American</td>
<td>0.0%</td>
<td>0.0%</td>
<td>0.0%</td>
</tr>
<tr>
<td>Other</td>
<td>3.4%</td>
<td>2.0%</td>
<td>2.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>97.4%</td>
<td>96.0%</td>
<td>98.1%</td>
</tr>
<tr>
<td>Male</td>
<td>2.6%</td>
<td>4.0%</td>
<td>1.9%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>25.42</td>
<td></td>
<td></td>
<td>25.8</td>
</tr>
<tr>
<td>(SD 3.99)</td>
<td></td>
<td>(SD 4.8)</td>
<td></td>
</tr>
</tbody>
</table>

**Table 12. Comparison of Sample Demographic Characteristics**  
Comparison of the percentage of participants in the Lega (2005), PSS (2006), and current study by race, gender, and age.

**Cultural Competence Assessment (CCA)**

No statistically significant differences between 1st and 2nd year students or Caucasian and non-Caucasian students were found. Previously reported CCA and subscale scores were calculated using a 5-point Likert-like scale (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005), rather than the 7-point Likert-like scale used in the current study with the revised CCA. Therefore, comparison of the mean scores of genetic counseling students and other health care professionals and students was not possible.

Previous studies report discrepancies in mean CAS and CCB scores, indicating professionals have higher levels of cultural awareness than cultural competency related behaviors (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005), as also observed with the genetic counseling student population. Health care professionals who either received or did not receive diversity training demonstrated higher scores on the CAS when compared to CCB scores (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005). Possible methods for
increasing CCB scores and therefore, cultural competency behaviors, include identifying ways to
detect cultural differences and then utilizing strategies for health care provision based on those
cultural differences, while continuing to uphold the standards of care established by the provider
(Doorenbos & Schim, 2004).

Several cultural assessments have been developed and implemented in medical student
training, psychiatry, nursing, and other health care fields (Bloch, 1991; Giger, Davidhizar, &
Examples of questions on these questionnaires include: What does your sickness do to you?
How does it work? What views and concerns about discrimination and institutional racism does
the client have? If you are coming in for a problem, have you tried any remedies or done
anything else for this condition before you came here today? Additional questions included in
these assessments, which may be applicable to genetic counseling sessions, are listed in Table
13. While time may not allow for an entire cultural assessment to be conducted with every
genetic counseling client, a few, key questions which allow for identification of cultural
differences could be incorporated into genetic counseling intake forms to insure cultural issues
are addressed in genetic counseling sessions.

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Health Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• What are the most important results you hope to receive from this</td>
<td>• What are your other sources of health care?</td>
</tr>
<tr>
<td>treatment?</td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>• Do you usually take any herbal treatments, home remedies or supplements?</td>
<td>• Why did you come to the health center today?</td>
</tr>
<tr>
<td><strong>1</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>• Have you sought care for this problem or other health problems from other practitioners or healers? Describe the experience.</td>
<td>• Do you feel any conflicts or distress when deciding where to seek health care or what advice to follow?</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
</tr>
<tr>
<td>• Do you have food practices or nutritional needs that you do for your health? Please explain.</td>
<td>• Do you have religious practices/beliefs that influence your health care? Please explain.</td>
</tr>
<tr>
<td><strong>2</strong></td>
<td><strong>2</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Community</th>
<th>Health Beliefs</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Who are the people who make up your household? <strong>2</strong></td>
<td>• What do you think caused your problem? <strong>1</strong></td>
</tr>
<tr>
<td>• Who are your major support people? <strong>2</strong></td>
<td>• Why do you think it started when it did? <strong>1</strong></td>
</tr>
<tr>
<td>• What is the role of your family and members of your community in your health care choices and practices? Please explain.</td>
<td>• What does your sickness do to you? <strong>1</strong></td>
</tr>
<tr>
<td><strong>2</strong></td>
<td>• How severe is your sickness? <strong>1</strong></td>
</tr>
<tr>
<td>• Who is the decision maker in the family? <strong>3</strong></td>
<td>• What are the chief problems your sickness has caused you? <strong>1</strong></td>
</tr>
<tr>
<td>• Is family closeness valued? <strong>3</strong></td>
<td>• What do you fear most about your sickness? <strong>1</strong></td>
</tr>
<tr>
<td></td>
<td>• Who holds the control over the future? <strong>3</strong></td>
</tr>
<tr>
<td></td>
<td>• Do personal actions influence the future? <strong>3</strong></td>
</tr>
</tbody>
</table>

Possible reasons differences between groups were not detected include there were no differences between groups, differences between groups were small, or the groups, themselves, were too small. Previous studies found non-Caucasian psychological counselors had
significantly higher cultural competency scores than Caucasian counselors (Sodowsky, Kuo-Jackson, Richardson, & Cory, 1998). These findings were not replicated with our data.

No significant differences in the cultural competency scores of first and second year students were found. It is unclear whether or not training programs are facilitating forward movement on the cultural competency spectrum from these results. Programs may be assisting the development of cultural competency; however, because the achievement of cultural competency is a process, two years may not be a long enough period to noticeably increase an individual’s cultural competency score. No timeline has been established for the progression of cultural competency. Increasing educational level has been significantly related to increasing CCA scores (Schim, Doorenbos, & Borse, 2005). Largest differences in CCA score were found between individuals with an associate degree and a bachelor degree while some differences were also seen between individuals with a bachelor degree and a graduate degree (Schim, Doorenbos, & Borse, 2005). Genetic counseling students have already received a bachelor degree but have not yet received a graduate degree, indicating differences in CCA between first and second years may be smaller than those observed between bachelors-level and masters-level educated professionals in previous studies. Additionally, 1st and 2nd year genetic counseling students may already possess a masters degree when they enter a training program, increasing difficulty in observing differences in scores.

Marlowe-Crowne Social Desirability (MCSD)

Reynolds studied 608 college students who had an average MCSD score of 5.67 (SD 3.20). Previous studies have also used the MCSD and reported student scores of 4.02 (SD 2.81), 4.19 (SD 2.97), 5.39 (SD 2.85), 5.76 (SD 2.68) (Ballard, 1992; Loo & Thorpe, 2000; Zook & Sipps, 1985). The average score on the MCSD for studies surveying both undergraduate college
students and military trainees is estimated to be 5.37 (SD 3.31). Our study mean MCSD score
(6.64) was higher than previously reported scores, indicating genetic counseling students may
exhibit more socially desirable behaviors and attitudes than other student populations. Some
students reported answering questions which used the words “always” or “never” as difficult
because they did not accurately assess an individual’s personality. Other students reported they
were unsure of how to answer the MCSD questions and felt they may not have been consistent
throughout this portion of the survey. After a review of career motivations in allied health care
(Crossley & Mubarik, 2002; DiCaccavo, 2002; Gamble, Wilkinson, & Dissanayake, 2003;
Hallissey, Hannigan, & Ray, 2000), Lega and others (2005) indicated personality characteristics
could be related to an individual’s choice of career. Therefore, genetic counselors may share
personality characteristics which motivated them to choose their career path and some of these
shared personality characteristics may also influence response pattern on the MCSD.

MCSD scores had a 0.154 Spearman correlation coefficient with CCB scores and a 0.018
Spearman correlation coefficient with CAS scores, indicating MCSD scores and cultural
competency scores are positively correlated, consistent with previous studies which found a
correlation between social desirability and cultural competency scores (Constantine & Ladany,
2000; Sodowsky, Kuo-Jackson, Richardson, & Cory, 1998; Worthington, Mobley, Franks, &
Tan, 2000). As in previous studies, it is possible cultural competency scores were exaggerated
due to this positive correlation. In addition, because MCSD scores have a stronger correlation
with CCB scores than CAS scores, CCB scores may be more inflated than CAS scores, leading
to an even larger divergence of CAS and CCB scores than actually demonstrated.
Respondents’ Cultural Experiences

Respondents appeared to have access to literature pertaining to cultures different than their own. They also indicated they participated in other activities which increased their knowledge of other cultures such as travel to other countries, living or working in another country, taking courses in another language, or learning about other cultures from friends or family members. These activities demonstrate the desire of respondents to learn about cultures different than their own which may be an important component of the cultural competency process (Campinha-Bacote, 2003). *The Process of Cultural Competence in the Delivery of Healthcare Services* is a cultural competency model which includes five constructs: cultural desire, cultural awareness, cultural knowledge, cultural skill, and cultural encounters (Campinha-Bacote, 2003). Desire is defined as “the motivation of the healthcare professional to “want to” engage in the process of becoming culturally competent; not “have to” (Campinha-Bacote, 1998). The CCA does not specifically address issues of desire and it is unclear how cultural desire may have affected respondents’ scores in this study.

Respondents reported encounters with a diverse population in their clinic work and in their health care environment and workplace. The population included racial and ethnic diversity, individuals with various sexual orientations, individuals with special needs, individuals without a home, individuals with differing religious or spiritual backgrounds and individuals who had substance or alcohol abuse issues. Students were able to identify individuals who had different sexual orientations, religious backgrounds, and ethnic backgrounds which may not be reliably based solely on physical appearance. Therefore, we believe students must be conducting at least a partial cultural assessment. The variety of individuals encountered by respondents demonstrates that there is both the opportunity and the need for genetic counseling students to
practice culturally competent care, therefore supporting the need to increase culturally competent behaviors.

**Limitations**

The analyzed sample size was smaller than the estimated 142 per group needed to detect a difference in mean cultural competency scores with a power of 80%. Our response rate was lower than those estimated from previous studies. One possible explanation for the lower response rate was the timing of the survey during the school year. The “no opinion” and “not sure” answers allowed participants to skip questions which decreased the overall sample size. In addition, the scores may not be as reliable as expected when students answered “no opinion” or “not sure” since questions answered in this way were excluded from determining an individual’s CCA score. The limited sample size and the inability to determine differences / similarities between responders and non-responders limit the generalizeability of the study’s findings.

The CCA has been validated in nursing and hospice care populations but has not been validated in the genetic counseling population. The primary investigator received several emails from student participants which indicated some of the questions on the CCA were confusing or difficult to answer. Students were unsure what the assessment intended when it asked how individuals “documented” assessments and adaptations made based on cultural differences and had difficulty answering these questions. Some questions on the CCA may not be applicable to genetic counseling students and scores may be altered due to inapplicability of questions.

The study design was cross-sectional, looking at one group of students at one point in time. Data collected at one time point in student cohort groups do not capture change in cultural competency scores in individual students. Development of a qualitative, rather than quantitative, tool to measure cultural competency in the field of genetic counseling may be warranted.
Implications for Training and Practice

Generally, genetic counseling students appear to have adequate levels of cultural awareness and sensitivity but they do not exhibit cultural competency behaviors at the same level. Some genetic counseling students may not have previous experience with clients before entering into training, which may impact their comfort level in clinic, making it more difficult to implement culturally competent behaviors when first interacting with clients. Following are suggestions for the training of genetic counselors which may increase cultural competency behavior scores. Formal incorporation of cultural assessment questions on genetic counseling intake forms with the collaboration of each program’s affiliated hospitals and/or departments would allow students to document their cultural assessments and assess culture in all sessions. While time is at a premium, integration of questions addressing each area of cultural assessment may not be feasible; however, inclusion of several questions, pertinent to genetic counseling, would be more practical, such as: “Have you sought care for this problem from other practitioners or healers? Describe the experience” (Illinois SEARCH Program, 2003). “Do you have religious or cultural practices/beliefs that influence your health care? Please explain” (Illinois SEARCH Program, 2003). “What do you think caused your problem?” (Kleinman, Eisenberg, & Good, 1978). “What are the chief problems the condition has caused you?” (Kleinman, Eisenberg, & Good, 1978). Additionally, intake forms could include places to document adaptations made to care. For example, specific places to note the use of interpreter services, language of interpreter services, or who to release test results would also increase students’ cultural competency behavior scores.

Organizational cultural competence can positively affect individual’s “access to care, quality of care, and health outcomes” (Linkins, McIntosh, Bell, & Chong, 2002). Furthermore,
organizations can guide and model the cultural competence process for individuals’ within the organization by providing the tools needed to support progression (Linkins, McIntosh, Bell, & Chong, 2002). Programs could include goals related to culture and diversity in their mission statements, as well as in learning objectives for courses within the program. To further incorporate culture into the curricula, related activities can be implemented in already existing courses with appropriate content and timing. Curriculum mapping is one example of a qualitative tool that has been used to assess where, when, and how the teaching of cultural competency and diversity are implemented in a genetic counseling training program (Warren, Wusik, & Raymond, 2006). The program director, as well as several first and second year students, created a map of the curriculum, noting classes and assignments where at least one aspect of cultural diversity and competency were explored (Warren, Wusik, & Raymond, 2006). Students also commented on how each experience affected them and what they learned (Warren, Wusik, & Raymond, 2006). Curriculum mapping has also been utilized by other training programs, such as medical schools (Association of American Medical Colleges, 2005). This technique can help identify a program’s strengths in the teaching of cultural competency and the strategies which may be most effective for their students while also recognizing periods of time where additional methodologies could be put into practice and which teaching tactics were least successful in achieving their goals.

Suggested methodologies include requiring students to visit community-based cultural events, participate in role plays focused on cultural issues, conduct at least one full cultural assessment in clinic, and participate in at least one case utilizing interpreter services. Additionally, assignments which prompt students to explore the definition of health and health care in various cultural groups and the barriers to health care these groups experience would help
prepare students to face these situations in clinic. Recognition of personal biases through interactive activities such as “Sorting People: Can You Tell Someone’s Race by Looking at Them?” (PBS) can also help to increase cultural competency behaviors by enforcing the importance of conducting a cultural assessment rather than relying solely on the physical characteristics of a person to classify their race or ethnicity.

Programs which have a diverse student population and offer students the opportunity to work with diverse populations in clinic will also help to increase culturally competent behaviors. Efforts to increase ethnic minority and male enrollment in genetic counseling programs have been addressed by several studies (Oh & Lewis, 2005; Schoonveld, Veach, & LeRoy, 2007; Smith, 1998; Warren, 2004). Because ethnic minority high school students are less likely to be aware of the field of genetic counseling (Oh & Lewis, 2005), genetic counseling training programs could participate in educational outreach to high schools which have diverse student bodies in order to increase awareness of the field in these populations. Concern pertaining to payment of tuition for graduate school was noted as a barrier to ethnic minorities entering the field (Schoonveld, Veach, & LeRoy, 2007). Programs should work towards identifying tuition support through scholarships and grants for students from underrepresented backgrounds in order to further increase enrollment. In addition, higher numbers of student research projects in the areas of diversity and cultural competency would lead to an increase in knowledge.

The NSGC code of ethics Section IV.4 and IV.2 state genetic counselors should strive to “participate in activities necessary to bring about socially responsible change” and “promote policies that aim to prevent discrimination” (National Society of Genetic Counselors, 1992). Including students in the identification of barriers to health care in the local training program area or on the national level would allow students to actively uphold these sections of the code of
ethics. After the identification of barriers, students could also help with the implementation of strategies to overcome these obstacles such as participation in outreach clinics or the organization of client transportation assistance. These experiences not only fulfill the expectations of the code of ethics, but also prepare students for the type of activities they may be expected to assume in their prospective jobs.

Research Recommendations

Replication of the current study with a larger sample of genetic counseling students may be able to detect differences between groups due to higher power. A higher response rate might be reached by implementing the study well before the end of the school year and graduation. In addition, practicing genetic counselors could be surveyed to determine baseline and benchmark cultural competency levels for the profession. Because the number of professionals is much larger than the number of students, utilization of the CCA with this population may detect differences in groups. Comparisons of CCA scores between counselors with several years experience and counselors who recently graduated, as well as a between counselors who are Caucasian and counselors who are non-Caucasian could help lead to a better understanding of the cultural competency process in genetic counselors.

Creation of a new tool, designed specifically to measure cultural competency in the genetic counseling population, may be more appropriate than utilizing pre-existing surveys from related professions; however, quantitative scales may not best capture the complexity of an individual’s or group’s cultural competency. Instead, perhaps a qualitative instrument which encompasses all aspects of cultural competency, rather than only knowledge and behaviors, would most comprehensively measure cultural competency in the genetic counseling population.
Including an evaluation of training program curricula, attitudes, social desirability, and barriers to providing effective care would help enrich measurement of the multifaceted concept.

Studies examining client perceptions of genetic counselor characteristics and cultural competency levels would also add to the literature in this area, as has been exhibited in related areas such as counseling psychology and medicine (Fuertes & Brobst, 2002; Saha, Arbelaez, & Cooper, 2003). Additionally, studies further investigating recruitment of cultural and ethnic minorities into the field and barriers to recruitment may possibly lead to increased cultural competence over time. Schoonveld and others (2007) indicated salary and lack of prestige were barriers for cultural and ethnic minorities. Investigation of advanced graduate training in genetic counseling is warranted to place the profession at the highest level of prestige. Schoonveld and others (2007) also indicated the perception that genetic counselors did not give back to the community was an additional barrier to cultural and ethnic minorities. Characterization of genetic counseling clients may help rectify this perception and provide genetic counselors with a tool for recruitment of minorities into the genetic counseling field.

The field of genetic counseling is relatively new and lacks the history and research of other professions such as counseling psychology and medicine. Many efforts to characterize cultural competency in these more established fields have been implemented (Constantine & Ladany, 2000; Doorenbos & Schim, 2004; Doorenbos, Schim, Benkert, & Borse, 2005; Saha, Arbelaez, & Cooper, 2003; Schim, Doorenbos, & Borse, 2005; Schim, Doorenbos, Miller, & Benkert, 2003; Sodowsky, Kuo-Jackson, Richardson, & Cory, 1998). Patients’ preferences for the race of their counseling psychologist and physician race, as well as their satisfaction with care have been assessed (Chen, Fryer, Phillips, Wilson, & Pathman, 2005; Constantine, 2002). Nursing professionals and hospice care workers have been evaluated for their cultural
competency levels (Doorenbos & Schim, 2004; Schim, Doorenbos, & Borse, 2005). Because of the uniqueness of genetic counseling, it can not be assumed research from other disciplines can be directly applied, but instead serve as a starting point for researchers in genetic counseling. Recent studies in the field of genetic counseling have enriched the profession’s knowledge of minority experiences and cultural issues (Oh & Lewis, 2005; Schoonveld, Veach, & LeRoy, 2007; Warren, 2004; Warren, Wusik, & Raymond, 2006; Weil, 2001). In order to best serve our clients, we must continue to further explore these areas.

**CONCLUSION**

No differences in cultural competency scores, as measured by the CCA, between first and second year students, as well as between Caucasian and non-Caucasian genetic counseling students were found. Genetic counseling students exhibit higher levels of cultural awareness and sensitivity than cultural competency behaviors. Genetic counseling training programs can play an integral role in increasing behaviors related to cultural competency. These activities may include involving students in cultural competency course mapping, adapting clinical intake forms, and conducting research.

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